GLOBAL REGULATION OF BANKS

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''No bank ever went bust for want of capital says one senior banker. They go bust because of bad management.'' (Anonymous, quoted in *The Economist*, 16/8/03, p. 63)

4.1. Introduction

The principle objective of this chapter is to review attempts to regulate internationally active banks through global agreements. The chapter begins with a review of the reasons why governments regulate markets in general, and financial markets in particular. It continues with a discussion of why banks, which are part of the financial system, are singled out for additional regulation. Sections 4.3, 4.4 and 4.5 consider different aspects of the international regulation of banks, with a special emphasis on the activities of the Basel Committee. Section 4.6 looks at other international organisations involved in global financial regulation and reform. Many of the rules agreed upon by global organisations have become the drivers for domestic regulation, the subject of Chapter 5. For example, the 1988 Basel agreement ("Basel 1") was for international banks operating in OECD countries but authorities in both the industrialised world and some emerging markets have required their domestic banks to adhere to Basel 1 standards. Likewise, "Basel 2" is expected to become a new benchmark for bank supervision. Having completed a comprehensive study of global regulation, Chapter 5 focuses on bank structure and regulation in, respectively, the United Kingdom, United States, European Union and Japan.

4.2. Why Regulate?

4.2.1. Rationale for Regulating Financial/Banking Markets

Most markets are subject to some degree of regulation for a variety of reasons.

1. There is a need to protect the consumer: ''*caveat emptor*'' ("let the buyer beware") is considered insufficient – putting too much responsibility on the consumer for many goods and services that lack transparency.
2. To check the abuse of oligopolistic and monopoly power: there are many markets in which just one or a few firms operate. The degree of monopoly power held by these firms will affect the pricing of their products. For example, in a pure monopoly, the

amount of output produced by the monopolist is lower and the price charged is higher compared to firms operating in a perfectly competitive market. Governments react either by introducing measures to encourage greater competition and/or monitoring the price set by these firms, and if necessary, intervening to force the firms to reduce prices.
3. To protect the public from criminal activity.
4. To deal with the effects of externalities: the effects of the actions of one agent in the economy on others, which is not reflected through the price mechanism. There are positive and negative externalities. If a neighbour's property is kept in good order, other neighbours benefit not just from enhanced property values but because it is pleasant to look at neighbourhood houses and gardens. A classic example of a negative externality is pollution. Industrial output in the USA can pollute the rivers, lakes and air in Canada. Governments intervene to minimise the effects of negative externalities. For example, the Canadian government might try to reach an agreement with the USA to reduce emissions.

In **financial markets**, these principles apply to the following.

1. Protecting the investor: the quality of many financial products is not easily observed, which makes it important for the investor to be kept fully informed about the risks he or she incurs when purchasing a financial product. Investors are expected to assume some of this responsibility, but often, government directives are needed to ensure financial firms provide adequate information.
2. The concentration of financial firms in the market place: the financial sector is made up of many different markets, from retail banking markets to global bond markets. The competitive structure of each of these markets varies considerably. Global markets tend to be more competitive if firms from all over the world are active in them. Some domestic markets have only a few firms offering banking services. Recall from Chapter 1 the concern expressed by Cruickshank over the apparent lack of competition in the UK payments system because it was controlled by only a few firms. In 2001, the UK's Competition Commission ruled against the proposed merger of Lloyds TSB and Abbey National on the grounds that it would leave the retail banking market too concentrated. In 1998, the federal government of Canada refused the proposed mergers of the Toronto Dominion Bank with the Canadian Imperial Bank of Commerce and the Royal Bank of Canada with the Bank of Montreal on the grounds that the Canadian system would be too concentrated.[1]
3. Illegal activities: agents who engage in financial fraud, money laundering and tax evasion.
4. Externalities: the problem is actions by agents which undermine the stability of the financial system. In the financial markets, contagion often results in negative externalities. For example, in 1998, when it became apparent that a hedge fund, Long Term Capital Markets (LTCM), was about to collapse, concern that its failure might threaten

[1] Concern was also expressed that if one of the newly merged banks got into difficulty and was closed, it would increase monopoly power, and/or the risk of systemic crises should another failure occur. The possible takeover of a major bank (should it get into financial difficulty) by a foreign concern is also considered undesirable, unlike other countries, such as Mexico and New Zealand.

the stability of global financial markets was so great that New York's Federal Reserve Bank intervened and arranged for its rescue by a consortium of international banks, at a total cost of $3.625 billion. The main contributors were the counterparties with very large exposures, and included Goldman Sachs, Salomon Smith Barney, Bankers Trust, Deutsche Bank, JP Morgan, Merrill Lynch, Morgan Stanley, Credit Suisse, UBS, Chase Manhattan, Barclays Capital ($300 million each); Société Générale, Lehman Brothers, Paribas ($100 million each).[2] Though public (taxpayers') money was not used in the LTCM bailout, it was the Federal Reserve Bank of New York which pressured the banks to bail out LTCM because of potential global knock-on effects.

There are many cases where central banks or other financial regulators have intervened to rescue a bank or banks to protect the rest of the banking system. *Contagion*, or the spread of bank problems from one bank to the banking system, arises for a number of reasons. To the extent that banks offer fairly homogeneous products to customers, they are collectively exposed to the same risk. At the micro level, a marginal borrower will seek out all the banks until one makes the loan. At the macro level, all banks are affected by events such as changes in monetary policy.

The reputation of banks is extremely important because of the lack of transparency on bank balance sheets, their intermediary function and the cost of acquiring information. Any market rumour can undermine depositor confidence. The banking system is particularly vulnerable to contagion effects, when lack of confidence associated with one poorly performing bank spreads to other, healthy banks. It arises because customers know that once a run on a bank begins, liquidated bank assets will decline in value very quickly, so they will want to withdraw their deposits before a run. Thus, even healthy banks may be subject to a bank run.[3] If most banks are affected, the financial system may well collapse.

The vulnerability of banking to contagion creates ***systemic risk***; the risk that disturbances in a financial institution or market will spread across the financial system, leading to widespread bank runs by wholesale and retail depositors, and possibly, collapse of the banking system. An extensive collapse will result in the loss of intermediation, money transmission and liquidity services offered by banks which, in turn, will cause an inefficient allocation of resources in the economy. In the extreme, the economy could revert to barter exchange.

Systemic banking risks are aggravated by the interbank and euromarkets, which, as was noted in Chapter 2, play a crucial role in the global banking scene. The interbank market acts as a risk absorber and risk spreader but at the same time makes the global banking system vulnerable to certain exogenous shocks.

Additional problems arise because of the macroeconomic role played by banks; they help to implement government monetary policy. For example, the government may use the banks (changing a reserve ratio or setting a base rate) to achieve certain inflation and/or monetary growth targets. If the banking system collapses, there may be a dramatic reduction in the money supply, with the usual macroeconomic implications.

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[2] *Source*: Dunbar (2000), *Inventing Money*, pp. 221–223.

[3] Diamond and Dybvig (1983) provide a rigorous treatment of bank runs.

Thus, bank failures can create substantial negative externalities or ***social*** costs,[4] in addition to the obvious private costs of failure. So in most countries, to minimise the chance of governments having to rescue a bank or banks, the national banking systems are singled out for special regulation, known as ***prudential regulation***, which is typically more comprehensive than regulation of other sectors of the economy, even other parts of the financial sector. The prudential regulation of banks is concerned with minimising the social costs of bank failure (which lead to the collapse of the financial system) but at the same time, ensuring that banks do not take advantage of the fact they are singled out for special regulation, and possibly protection. For example, many countries offer some form of deposit protection to bolster confidence and counter bank runs. Experience has shown that to be fully effective, 100% deposit insurance is often required. These schemes escalate moral hazard problems, and part of the regulatory role will be to ensure such problems are minimised.

As this chapter proceeds, it will become apparent that prudential regulation focuses on bank regulation at the micro level, i.e. ensuring each bank behaves in a prudent manner, to prevent systemic failure arising from contagion if one bank fails. Boreo (2003), among others, has called for more attention to be paid to "macroprudential regulation" – preventing the banking system as whole from getting into trouble because they are exposed to the same collective risks – so an entire banking system can encounter problems simultaneously. For this reason, Boreo argues, equal attention should be paid to the aggregate exposures of banks. The macro component is considered in Chapter 8, which includes a review of financial crises, where banks' exposure to collective risks is often found to be a key contributor to the crisis itself.

To summarise:

- *Financial fragility* can provoke a loss of confidence in a bank/banks and provoke a bank run, preventing the bank/banks from offering an important product/service: *liquidity*.
- The banking system is vulnerable to *contagion*: contagion occurs when a lack of confidence associated with one bank (e.g. a bank that has just failed) causes a run on other banks as depositors, fearing the worst, withdraw their cash. The problem here is one of incomplete information – depositors do not have the information to distinguish between healthy and failing banks.
- The presence of contagion contributes to *systemic risk*: the risk that problems in one bank will spread throughout the entire sector, via contagion. Once the entire financial system collapses, there is no mechanism for money transmission and in the extreme, the absence of a payments system, the country reverts to a barter economy.
- Bank failures have obvious private costs, but there are *social* costs too.
- The issue of microprudential regulation shifts to macroprudential regulation if banks in one or more countries are collectively exposed to the same risks, a point which is taken up in Chapter 6.

[4] *Social cost* refers to the total cost of an activity, including private costs borne by the main party and all "external" costs borne by others. The private costs from collapse of a financial firm are incurred by investors, depositors, employees and, in some cases, customers of the bank. Social costs are incurred if the financial sector collapses because the economy loses its system of financial intermediation and money transmission.

Unfortunately, the special treatment of banks has a downside. Not only does it divert government resources away from other activities, it can create ***moral hazard*** problems. The concept of moral hazard was introduced in Chapter 1. In the regulation of the banking system, the traditional line is that moral hazard can arise for one of two reasons. First, if deposit insurance is offered to discourage runs on banks and second, if a bank is considered so important to the economy that they are deemed by regulators to be "too big to fail". The existence of one or both these conditions can alter the incentives of depositors and bank management. Most governments offer some degree of insurance. Customers with deposit insurance know their capital is safe, giving them little incentive to monitor the activities of their bank. It is even possible that bank managers' behaviour will be affected – some may be inclined to undertake riskier activities, especially if the bank is encountering difficulties. Here, the manager may go for broke, hoping the gamble pays off and the bank survives. If not, at least depositors are protected. The same points apply if depositors or bank management know (or think it likely) their bank is considered too big to fail, making it probable the bank will be rescued by the state.

Or so the standard argument goes. However, the logic is somewhat flawed. Managers will worry about loss of jobs and status if a bank fails, but why should they have any special concern for depositors once the bank collapses? Any bank manager trying to undertake riskier activities because of deposit insurance and/or the attraction of "too big to fail" status will encounter objections from well-informed shareholders who stand to lose their capital. Even some depositors have an incentive to monitor managerial behaviour because insurance is normally capped at some deposit level, their type of deposit does not qualify for insurance,[5] there is *co-insurance*, or all three.

A more likely scenario is the ***looting hypothesis***, first described by Akerlof and Romer (1993). Consider the situation where a bank has, for whatever reason, got itself into serious problems, and senior management has enough inside information to know there is a good chance the bank could fail within a few years, at which time they will lose their jobs. They could respond by undertaking riskier activities[6] to boost short-term profits, which enhance their status and salary, and boosts the bank's share price, which they can take advantage of by cashing in stock options. Well-informed shareholders may also sell their shares when prices are high, turning a blind eye to the reasons for the sudden increase in short-term profits. There is a small chance the risky undertakings might restore the bank to economic health, in which case, all parties are better off. However, if the strategy is unsuccessful and the bank fails, then senior managers (and possibly, major shareholders) have used the breathing space to feather their nests. To make matters worse, managers have every reason to undertake sizeable gambles because the downside is truncated. It is someone else's problem whether the bank collapses with losses of £1 or a million pounds.

[5] For example, most regulators exclude deposits held in foreign currencies. In Japan, the 100% deposit insurance introduced in 1998 is gradually being withdrawn, and now only applies to "liquid" deposits.

[6] E.G. Managers could raise short-term rates to attract more deposits, thereby expanding the balance sheet and making more loans. Or they can invest in junk bonds, where immediate interest payments are high even if the issuers defaults in the longer term. In both cases, short-term profits rise, along with salaries and stock option values.

4.2.2. Free Banking

An alternative school of thought advocates free banking. In the 19th century, free banking was unregulated by government authorities, they did not need a charter or licence to operate, and issued their own bank notes. There were periods of free banking in Scotland (1716–1844), Sweden (1831–1903), Switzerland (1826–1907) and Canada (1867–1914). Cameron (1972) argued that Scottish free banking fostered economic growth because of the intense competition between the banks, which forced them to innovate. He credits the banks as being the first to introduce branch banking, interest paid on deposits, and overdraft facilities. Dowd (1993) argued the free banking episodes in Scotland, Sweden and Canada were highly successful.

Modern-day usage of the term "free banking" refers to a highly competitive system operating without a central bank or regulations. Proponents of free banking claim central banks have the potential to encourage collusive behaviour among banks, thereby increasing their monopoly power. In the absence of government regulation, private banks have a collective interest in devising a framework to prevent runs. It could take the form of private deposit insurance and/or a private clearing house, which acts as lender of last resort. See, among others, Dowd (1993), Friedman and Schwartz (1986), White (1986). However, a private clearing house could also encourage collusion among banks. In Chapter 1, recall Cruickshank (2000) claimed that the private settlements system in the UK has resulted in the big banks exercising monopoly power, resulting in higher settlement charges for banks and customers. Furthermore, private deposit insurance and/or lender of last resort institutions merely replicate what a central bank does, so the same monitoring problems exist, creating incentives to free-ride.

Free banking also raises macroeconomic issues, because banks issue their own notes. No bank should have an incentive to issue too many notes because they will be exchanged for specie at that bank, thus running down its reserves. However, Nelder (2003) argues the above is only true if holders of the notes have to return to the bank where they are issued. However, if the notes issued by the different banks are perfect substitutes (or perceived to be by the public), then smaller banks have an incentive to issue an excessive supply of notes because there is a greater chance they will be redeemed at the larger banks. He argues that in the Swiss case, this resulted in an over-issue of notes, causing the depreciation of the Swiss franc. As a result, the banks agreed to give up their right of issue, and approved the establishment of a central bank, controlled by the federal government. Nelder argues Sweden and Scotland also experienced periods of excess issue, but Canada escaped it because there was little in the way of effective price competition between the banks.

Though the free banking idea is interesting in theory, it is very unlikely that the regulatory systems of western countries will be dismantled to allow an experiment.[7] For this reason,

[7] New Zealand introduced a form of free banking in the 1990s, removing all deposit insurance and requiring banks to publish detailed information on their financial status so that all agents are kept fully informed. However, given that all but one savings bank is foreign owned, it could be argued that the New Zealand government saves money by importing prudential regulation from abroad, since the foreign banks are regulated by the governments of the countries in which they are headquartered. In 2003, the Reserve Bank of New Zealand (RBNZ) Amendment

the issue is not explored any further. The rest of this chapter is devoted to issues related to the global regulation of banks.

4.3. International Regulation

The international coordination of prudential regulation at global level is increasingly important. As was discussed in Chapter 2, there has been a rapid growth of international banking, and financial conglomerates. A number of arguments favour global coordination of prudential regulations.

First, policy makers, bank management and regulators recognise that problems with the global institutions and markets could undermine the stability of the international financial system, and therefore the environment in which all banks operate.

Second, if a branch or subsidiary of a bank is located in another country, there is the question of which supervisory authority should have jurisdiction over the branch. Home country regulators will want to ensure a bank's overseas operations meet their supervisory standards because foreign operations will be difficult to monitor but affect the performance of the parent. Host country authorities are concerned with the effect the failure of a foreign bank could have on the confidence in its banking system. They will want to see the foreign branch to be adequately supervised, but will lack information about the parent operations. For these reasons, effective international coordination will only be achieved if there is good communication between the supervisory authorities.

Third, if all multinational banks are required to meet the same global regulations, compliance costs will be similar. Hence a global approach to regulation can help to level the competitive playing field for banks with international operations.

It is worth noting that decisions taken by international regulators are increasingly being used as benchmarks for other banks. For example, the Basel Committee's (see below) 1988 agreement on capital standards was adopted by not only the member countries, but also by governments that were not signatories to the agreement. Also, many regulators impose the Basel agreements on domestic banks.

On the other hand, it could be argued that international banking is largely wholesale, making prudential regulation less important from the standpoint of consumer protection, depending as it does on interbank and corporate business. However, the performance of a global bank will affect the confidence of depositors and investors located in the home country. Unprotected wholesale depositors are capable of starting bank runs, and the enormous size of the interbank market creates the potential for a rapid domino effect. Often, the first indication of a problem bank is when it has trouble raising interbank loans – wholesale depositors will be the first to withdraw their money.

An excellent example of this phenomenon is Continental Illinois Bank, rescued by a "lifeboat" in 1984. The bank was highly dependent on the interbank markets for funding,

Act introduced some additional controls, which include a requirement that the Reserve Bank consider whether managers are "fit and proper" when registering a bank, any buyer of more than 10% of a bank must seek approval, and more information must be included in the disclosures. See Bollard (2003).

which was quickly cut off once rumours about its health began to circulate. The rapid loss in liquidity merely exacerbated the problems, prompting a rescue organised by the Federal Reserve. Furthermore, if a global bank acquires a bad reputation as a result of some international transaction, and has a retail presence in its home country, it may find itself the target of a run. Finally, global financial conglomerates, if they get into difficulties, can cause problems in more than one country.

4.3.1. The Basel[8] Committee

Two major international bank failures in 1974 (Bankhaus Herstatt and Franklin National Bank[9]) resulted in the formation of a standing committee of bank supervisory authorities, from the G-10 countries (Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, the UK and USA) plus Luxembourg and Switzerland. It has a permanent secretariat (of 15) based at the Bank for International Settlements in Basel, and meets there about once every three months.

The ***Bank for International Settlements*** is owned by the central banks – it does not participate in Basel's policy-making, provides a venue for the Committee's secretariat and for membership meetings. Traditionally, members came from western central banks but since 1994, there are 13 member central banks from emerging markets.

The main purpose of the Basel Committee is to consider regulatory issues related to activities of international banks in member countries. Their objective is to use concordats and agreements to prevent any international banking operation from escaping effective supervision.

The ***1975 Basel Concordat*** was the first agreement. The home and host countries were given supervisory responsibilities as follows:

	Country supervisor
Liquidity – foreign bank subsidiary	Host
Solvency – foreign bank subsidiary	Host
Liquidity – foreign branch	Home

The Concordat stressed that consolidated data should be used to supervise the activities of a global bank, and provide an accurate picture of performance. Offshore banking centres (see Chapter 2) are not party to this agreement – the Committee did not consider them to pose a major threat to international financial stability because their operations are relatively minor.

In 1983 the Committee approved a ***Revised Basel Concordat***, when gaps in the supervision of foreign branches and subsidiaries came to light after the Banco Ambrosiano affair. Banco Ambrosiano Bank failed in 1982, after its Chairman, Roberto Calvo, was found hanging from Blackfriars Bridge in London. Depositors panicked upon hearing the news; a lifeboat rescue was launched by the Bank of Italy ($325 million), but the bank was declared

[8] Readers will note the change in spelling compared with Heffernan (1996). In 1998, the city of Basel voted to adopt this German spelling, rather than the English (Basle), French (Bâle) or Italian (Basilea) versions.

[9] See Chapter 7 for more detail on these failures.

bankrupt in late August 1982. The bank's Italian operations were taken over by a new bank, Nouvo Banco Ambrosiano.

The Luxembourg subsidiary (BA in Milan owned 69% of Banco Ambrosiano Holdings) also suffered a run on deposits, but the Italian central bank refused to inject any cash. Nor would the Luxembourg Banking Commission. It, too, failed. As a result of this case, the Concordat was revised so that home and host supervisors now have *joint* responsibility for solvency problems of subsidiaries and liquidity problems from either a subsidiary or branch. Solvency problems associated with any foreign branch are dealt with by the parent country's central bank.

A number of issues were not addressed by either Concordat. First, no reference was made to lender of last resort (LLR) responsibilities. Recall a lender of last resort normally aids a bank in the event of a liquidity crisis. Lifeboat operations serve a similar purpose, where the central bank persuades other healthy, private banks that it is in their interest to inject liquidity into the ailing bank.

However, the Basel Committee did not feel able to offer guidelines because the LLR function is normally assumed by central banks, and the Basel Committee members do not necessarily come from the central bank.[10] However, LLR intervention or lifeboat rescues have been quite frequent in most westernised countries in the post-war period. There will be problems with achieving satisfactory international coordination if a run on foreign branches or subsidiaries occurs because the parent has run into difficulties. Guttentag and Herring (1983) identified three types of banks that are vulnerable under the current arrangements: banks headquartered in countries with no LLR facilities (such as Luxembourg); banks headquartered in countries with non-convertible currencies or a shortage of foreign exchange reserves; and subsidiary banks with ambiguous access to the parent bank facilities.

The Basel Committee also side-stepped another issue related to financial stability – the extension of deposit insurance to all deposit liabilities. Normally deposit insurance excludes wholesale and interbank deposits, on the grounds that these depositors are better informed about the financial health of a bank and therefore do not need it. Foreign currency deposits tend to be excluded because of the concern that deposits might be shifted between the foreign bank and its parent, to the detriment of the former. However, if deposit insurance was expanded, its effects on moral hazard would have to be considered.

4.3.2. The 1988 Basel Accord (Basel 1)

The 1988 Basel Accord was a watershed because it established Basel's main *raison d'être*: to focus on the effective supervision of international banking operations through greater coordination among international bank supervisors and regulators. Improved international financial stability would be a key consequence of the Committee's actions.

[10] Some countries, such as the UK, have representatives from both the Financial Services Authority and the Bank of England.

The 1988 Basel Accord established a single set of capital adequacy standards for international banks of participating countries from January 1993.[11] With the arrival of a new revised accord (see below), the 1988 Accord will be known as Basel 1 henceforth. ***Basel 1*** requires all international banks[12] to set aside capital based on the (Basel) risk assets ratio:

$$\text{Basel risk assets ratio} = \text{capital/weighted risk assets}$$

Specifically:

$$\frac{\text{Capital (tier 1 \& 2)}}{\text{Assets (weighted by credit type)} + \text{credit risk equivalents (weighted by counterparty type)}}$$

where capital is defined as follows.

- Tier 1 or core capital: common equity shares, disclosed reserves, non-cumulative preferred stock, other hybrid equity instruments, retained earnings, minority interests in consolidated subsidiaries, less goodwill and other deductions.
- Tier 2 or supplementary capital: consisting of all other capital but divided into (1) *upper tier 2* – capital such as cumulative perpetual preferred stock, loan loss allowances, undisclosed reserves, revaluation reserves (discounted by 55%) such as equity or property where the value changes, general loan loss reserves, hybrid debt instruments (e.g. convertible bonds, cumulative preference shares) and (2) *lower tier 2* – subordinated debt (e.g. convertible bonds, cumulative preference shares).

Risk weights are assigned to assets by credit type. The more creditworthy the loan, the lower the risk weight.

- 0%: cash, gold, bonds issued by OECD governments.
- 20%: bonds issued by agencies of OECD governments (e.g. the UK's Export and Credit Guarantee Agency), local (municipal) governments and insured mortgages.
- 50%: uninsured mortgages.
- 100%: all corporate loans and claims by non-OECD banks or government debt, equity and property.

Off-balance sheet instruments (e.g. letters of credit, futures, swaps, forex agreements) were converted into "credit risk equivalents",[13] and weighted by the type of counterparty to a given claim. Again, OECD government counterparties receive a 0% weight; 20% for OECD banks and public sector agencies.

[11] Basel 1 originated from the risk assets ratio, originally known as the Cooke Ratio, adopted by the UK and US regulatory authorities in 1980. See for example, the Bank of England (1980) "Measurement of Capital".

[12] Many countries adopted the standard for all banks, both domestic and international. For example, in the EU, the ratio applies to all credit institutions.

[13] Since credit risk equivalents were abandoned with the introduction of market risk measures in 1996, the method of conversion is not discussed.

Example: Simple Bank

Simple Bank plc has the following balance sheet (£ billions):

Liabilities	**Assets**
Equity: £15	Cash: £2
Disclosed reserves: £2	OECD government bonds: £30
Subordinated debt: £5	Interbank loans*: £20
Customer funding (e.g. deposits): £180	Mortgages (uninsured): £50
Loan loss reserves: £3	Company loans: £103
TOTAL: £205	TOTAL: £205

* All interbank loans are to banks located in OECD countries.

From the information given in the balance, tier 1 and tier 2 capital are:

$$\text{Tier 1} = £15 + £2 = £17 \text{ billion}$$

$$\text{Tier 2} = £5 + £3 = £8 \text{ billion}$$

Assuming capital is defined as tier 1 + tier 2, total capital = £25 billion.
A simple capital assets ratio, with assets unweighted, would be capital (tier 1&2)/assets = 25/205 = 12.195%.
Assuming the Basel 1 agreement applies, the use of weightings would change the denominator of the risk assets ratio for Simple Bank:

$$2(0) + 30(0) + 20(0.2) + 50(0.5) + 103(1) = 4 + 25 + 103 = £132 \text{ bn}$$

The Basel 1 risk assets ratio is 25/132 = 18.9%.

This ratio is higher than the simple capital assets ratio because assets are now weighted, hence some assets (cash and OECD government bonds) go to 0 or are lower than if unweighted.

So far, off-balance sheet items have been ignored. Suppose the off-balance sheet items of Simple Bank have been computed and equal £13 billion. Then the denominator of the risk assets ratio becomes 132 + 13 = 145, and the risk assets ratio is 25/145 = 17.24%.

The Basel Accord requires banks to set aside a *minimum* of 8% capital; 4% for core capital. At least half the capital must be tier 1, and is set aside as a safeguard against bad credit or counterparty risk. As any July edition of *The Banker* shows, the average risk assets ratio for the top UK, US and other OECD banks is in fact much higher. *The Banker* ranks the top 1000 banks by tier 1 capital and reports other performance data, including the Basel risk assets ratio. Of the bottom 25 banks measured by the Basel ratio, it ranges from just over 8% to slightly below 4%. The vast majority of the top 50 banks (ranked by the Basel ratio) are reporting double digit risk assets ratios, some even exceed 100%.[14] Many OECD

[14] *Source*: see the July edition of *The Banker* in recent years.

regulators ask for higher ratios. For example, in the USA, to be labelled "well capitalised" banks must have a Basel ratio $\geq$10% – see Chapter 5.

Before the agreement was even implemented, Basel 1 was being criticised for a number of reasons. Some argued using equity as a measure of capital fails to recognise that different countries allow their banks varying degrees of access to the stock market. For example, French nationalised banks in the 1980–90s had no access and relied on government injections of capital. Though privatisation has largely resolved this issue, it does demonstrate the potential problem with using equity. On the other hand, ignoring equity would be unthinkable because it is a key source of capital for shareholder owned banks. A more serious debate is whether the book or market values should be used in the computation of tier 1 and 2 capital.

The difference between market and book values of equity is more pronounced in periods of interest rate and stock market volatility, and, indirectly, if changes in credit ratings raise or lower asset values. Regulators opted to use the book rather than the market value to compute the capital assets ratio largely because of the potential for volatility. Using market values can be the source of wild fluctuations in tier 1 capital from year to year. In the Japanese case, tier 1 would have soared in the 1980s, only to fall dramatically from late 1989 onwards, thereby adding to the pressure to find new capital (and/or reduce assets) to meet the 8% minimum.

Ambiguity about the constituents of tier 1 and 2 capital has encouraged agents to innovate to get round the regulations. Also, different standards apply in each country. Take tier 2 capital as an example. In the 1990s, Japanese banks could not issue subordinated debt but US banks did. Also, Japanese regulators allowed their banks to treat 45% of unrealised capital gains on cross-shareholdings as reserves for tier 1 capital, though regulations have since been tightened.[15] Nonetheless, these points illustrate that it is difficult to obtain comparable measures of tier 1 and 2 capital. Scott and Iwahara (1994) argued differences in tax and accounting rules cause the measurement of capital to vary widely among countries, rendering different countries' risk assets ratios incomparable.

Second, the Accord alone could never achieve the objective of a level playing field among international banks, because the degree of competition in a system is determined by other factors, such as the structure of the banking system and the degree to which a government is prepared to support its banks. Until recently, Japan's well-known "safety net" meant Japanese banks could borrow capital more cheaply from wholesale markets than banks from countries where failures have been allowed. Also, they received substantial capital injections throughout the 1990s and into the early 2000s (see Chapter 8).

The use of credit risk equivalents for off-balance sheet instruments was considered far too simplistic. Effectively all on- and off-balance sheet items were treated the same, and the market or price risk associated with the growing off-balance sheet activities of many banks were largely ignored. The credit risk equivalence measure took account of the possibility of default on corporate bonds but no capital had to be set aside to allow for the possibility that

[15] Since September 2001, Japanese regulators have required banks to subtract any equity losses from their capital base, which will adversely affect their Basel ratios. Until 2002, unrealised profits on equity holdings were reported on a mark to market basis, but historical costs were used for unrealised losses. Since 2002, equity holdings have had to be marked to market even if they are showing a loss.

the price of bonds might fall with a rise in market interest rates. Or, an OECD government bond maturing in 30 years time carries a higher interest rate risk than one maturing in a year. In Basel 1, both receive a 0% weighting in the computations, which is acceptable from the standpoint of credit risk, but the different interest rate risks (arising from differences in maturity) are ignored. Nor are liquidity, currency and operating risks accounted for. For this reason, the 1996 Market Risk Agreement replaced the use of credit risk equivalents – it applies a capital charge for the market risk associated with all traded instruments, whether on- or off-balance sheet.

It should be remembered that national bank supervisors are monitoring banks' exposure to these risks. For example, most regulators use a liquidity ladder to estimate liquidity exposure, and monitor short and medium-term foreign exchange exposure of the banks they regulate. Also, the Basel 2 proposals (see below) deal with some of the risks largely ignored by Basel 1.

The weightings used in Basel 1 are simplistic. Commercial bank loans have a 100% weighting while OECD government debt is given a 0% weight, and OECD bank claims have a 20% weight even though some corporations have a higher external credit rating than the banks they do business with. For example, a loan to Marks & Spencer or General Electric, with AAA rating, receives a 100% weight, while loans to Italian or Japanese banks are weighted at 20%, even though the long-term debt rating for the top 5 Italian banks ranges from A+ to AA−; likewise for Japanese banks – long-term debt ratings for the top 5 vary from A to A−. [16] All corporations get the same weight, independent of whether their rating is AAA or BBB.

The weight for corporations and other counterparties is 50% for off-balance sheet items converted into credit risk equivalents, just half the risk weight assigned to corporate loans. Basel reasoned that only the most sophisticated banks were involved in off-balance sheet activity, hence the weight could be lower.

Such anomalies can and do tempt banks to engage in ***regulatory capital arbitrage*** – using a financial instrument or transaction to reduce capital requirements without a corresponding reduction in the risk incurred. For example, a bank may agree to a 364-day credit facility on a rollover basis because no capital need be set aside for credit arrangements between banks and a customer that are rolled over within a year. If the maturity of the agreement is a year or more, it is subject to the same capital regulations as a loan that matures in 30 years. More generally, banks are tempted to keep their capital charges to a minimum by exploiting loopholes even though the overall risk profile of the bank is higher.

Basel 1 does not reward banks which reduce their systematic risk – that is, no recognition is given for risk diversification of a bank's loan portfolio. While the Accord limits the concentration of risk among individual customers, over-exposure in a particular sector is ignored. A bank which lends €500 million to two sectors will set aside the same amount of capital as a bank lending €1 million to 500 different firms. In general, banks with a highly diversified portfolio set aside the same amount of capital as a bank with the same total value of commercial loans concentrated in just one industry. Nor is there any reward for geographical diversification.

Basel 1 is accused of being a "one size fits all approach" – there is little recognition that banks undertake different financial activities. A US/UK investment bank in the USA has

[16] *Source: Bankscope*, annual reports of top 5 banks (by assets), 2002.

quite different risk profiles from universal banks engaged in wholesale and retail banking activities. The balance sheets of a UK building society or German savings bank will be quite unlike the large universal (e.g. Deutsche Bank) or "restricted universal" banks (e.g. Barclays Bank plc). Yet all these banks are expected to conform to the same risk assets ratio requirements.

The regulations act as a benchmark, which could give some banks a false sense of security, causing them to make sub-optimal decisions. For example, since loan concentration in a specific industry is ignored by the ratio, banks may become complacent about the lack of portfolio diversification across sectors. They may also allocate too many resources to satisfy the Basel requirements (or find ways of getting round them), at the expense of other types of risk management.

In defence of Basel 1, it is worth emphasising that the Accord called for a *minimum* amount of capital to be set aside. As was noted earlier, many of *The Banker*'s top 1000 banks by tier 1 capital have ratios far in excess of 8%. Furthermore, banks are subject to additional supervision in their own countries. For example, as will be shown in the next chapter, the UK's Financial Services Authority applies a "risk to objectives" approach to all financial institutions, including banks. It also requires banks to satisfy other criteria. American banks are subject to scrutiny by multiple regulators, and pay different deposit insurance premia depending on the size of three different ratios. Finally, managers of publicly owned banks must answer to their shareholders. If a stock bank were to engage in excessive amounts of regulatory arbitrage which substantially increases its risk profile, it would not be long before concerns were voiced by shareholders and national regulators.

4.3.3. Basel Amendment (1996)[17] – Market Risk

The Basel Committee began to address the treatment of market risks in a 1993 consultative document, and the outcome was the 1996 Amendment of Basel 1[18] to be implemented by international banks by 1998. It introduced a more direct treatment of off-balance sheet items rather than converting them into credit risk equivalents, as was done in the original Basel 1.

As defined in Chapter 3, market risk is the risk that changes in market prices will cause losses in positions both on- and off-balance sheet. The "market price" refers to the price of any instrument traded on an exchange. The different forms of market risk recognised in the amendment include: equity price risk (market and specific), interest rate risk associated with fixed income instruments,[19] currency risk and commodities price risk. Debt securities (fixed and floating rate instruments, such as bonds, or debt derivatives), forward rate agreements,

[17] The details of the agreement can be found in Basel Committee (1996).

[18] In total, there were five amendments to the 1988 Accord – in 1991, 1994, 1995 (allowed for more netting, two counterparties could offset their claims against each other; these changes were prompted by the 1990 BIS Committee/Lamfalussy Report on Interbank Netting Schemes), 1996 and 1998 – some securities firms which fulfilled certain criteria were recognised as OECD banks, and thus their risk weighting was reduced to 20%. The amendments in 1991, 1994 dealt with, respectively, loan loss provisions and any OECD country which rescheduled its external sovereign debt in the past 5 years.

[19] A change in interest rates will affect the value of a fixed income security, such as a bond.

futures and options, swaps (interest rate, currency or commodity) and equity derivatives will expose a bank to market risk. Market and credit risk can be closely linked. For example, if the rating of corporate or sovereign debt is upgraded/downgraded by a respected credit rating agency, then the corporate or sovereign bonds will rise/fall in value.

In the numerator of the Basel ratio, a third type of capital, ***tier 3*** capital, can be used by banks but only when computing the capital charge related to market risk, and subject to the approval of the national regulator. Tier 3 capital is defined as short-term subordinated debt (with a maturity of less than 2 years), which meets a number of conditions stipulated in the agreement, including a requirement that neither the interest nor principal can be repaid if it results in the bank falling below its minimum capital requirement.

Whether the Amendment raises or lowers the capital charge of a bank depends on the profile of its trading book. However, as will be shown below, banks using the "standardised" approach are likely to incur higher capital charges, unless positions are well hedged or debt securities are of a high investment grade.[20] Under the Amendment, one of two approaches to market risk can be adopted, internal models or standardised.

Market risk – the internal model approach

Banks, subject to the approval of the national regulator, are allowed to use their own internal models to compute the amount of capital to be set aside for market risk, subject to a number of conditions. The market leader is JP Morgan's Riskmetrics™. Value at risk was discussed at length in Chapter 3. This subsection shows what Basel requires of banks if they use a VaR model. Throughout, it will be assumed they are using the Riskmetrics™ model, so the key equation is:

$$\mathrm{VaR}_x = V_x(\mathrm{d}V/\mathrm{d}P)\Delta P_t \tag{4.1}$$

where

V_x: the market value of portfolio x
$\mathrm{d}V/\mathrm{d}P$: the sensitivity to price movement per dollar market value
ΔP_t: the adverse price movement (in interest rates, exchange rates, equity prices or commodity prices) over time t

There are several critical assumptions underlying any VaR computation, which were outlined in Chapter 3. Basel has certain specific requirements to be satisfied.

1. Bank models must compute VaR on a daily basis.
2. The four risk factors to be monitored are interest rates (for different term structures/maturities), exchange rates, equity prices and commodity prices.
3. Basel specifies a one-tailed 99% confidence interval, i.e. the loss level is at 99%; the loss should occur 1 in 100 days or 2 to 3 days a year. Recall the choice of 99% is a more risk averse/conservative approach. However, there is a trade-off: a choice of 99% as opposed

[20] This treatment of market risk was also adopted by an EU second capital adequacy directive, CAD-II (1997).

to 95% means not as much historical data (if it is a historical database being used – see below) are available to determine the cut-off point.

4. The choice of holding period (t in the equation above) will depend on the objective of the exercise. Banks with liquid trading books will be concerned with daily returns and compute DEAR, daily earnings at risk. Pension and investment funds may want to use a month. The Basel Committee specifies 10 working days, reasoning that a financial institution may need up to 10 days to liquidate its holdings.
5. Basel does not recommend which frequency distribution should be used. Recall that Riskmetrics™ employs a variance–covariance approach. Banks that use variance–covariance analysis normally make *some allowances* for non-linearities, and the Basel Amendment requires that non-linearities arising from option positions be taken into account. For either approach, Basel 2 requires the specification of a *data window*, that is, how far back the historical distribution will go, and there must be at least a year's worth of data. Generally, the longer the data run the better, but often the data do not exist except for a few countries, and it is more likely that the distribution will change over the sample period.

Computation of the capital charge using the internal model

If the bank is employing its internal model once VaR is computed, the capital charge is set as follows:[21]

$$[\text{MRM}(\text{10-day market risk VaR}) + \text{SRM}(\text{10-day specific risk VaR})][\text{trigger}/8] \qquad (4.2)$$

where

MRM: a market risk multiplier, which is 3 or 4 depending on the regulator – the lower the multiplier, the greater the reward for the quality of the model in its treatment of systematic risk
SRM: a specific risk multiplier, which can be 4 or 5 – a lower multiplier indicates a greater reward for the way a given bank's model deals with specific risk
trigger: the number assigned is based on the assessment of the quality of a bank's control processes, it can vary between 8 (assigned to US and Canadian international banks) and 25 – the higher the trigger number the higher the overall capital charge

If an internal market model is used, it is estimated that a bank could reduce its capital charge by between 20% and 50%, depending on the size of the trading operations and the type of instruments traded, because the bank's model will allow for diversification (or model for correlation between positions) whereas the standardised model does not.

The 1996 Market Risk Amendment also introduced restrictions on the total concentration of risk. If the risk being taken is greater than 10% of the bank's total capital, the

[21] This equation is taken from Crouhy *et al.* (2000), p. 65.

regulator must be informed, and advance permission must be obtained for any risk that exceeds 25% of the bank's capital.

Unlike the standard approach, banks using an approved internal model can allow for the correlation between four market risk categories: interest rates (at different maturities), exchange rates, equity prices and commodity prices. Thus, banks are rewarded for portfolio diversification that reduces market risk, and so reduces the capital they must set aside.

In a theme that continues in the Basel 2 proposals (see below), the Committee is encouraging banks to have a risk management system that not only satisfies regulatory requirements, but ensures the bank has a framework to manage all the risk exposures generated by its business activities. To be approved by the regulators, in addition to a VaR model (which meets the criteria discussed above), the risk management system should:

- Allocate the capital to various business units.
- Use RAROC to track the performance of each business unit and the bank as a whole.
- Record all positions in a centralised system.
- Conduct regular stress testing and scenario analysis (see Chapter 3) to ensure their risk management systems can cope with extreme market conditions, such as a sudden loss in liquidity or exchange rate crises.
- All models should be subject to a system of continuous evaluation, and tests of the risk management system should be done independently of traders and the front office.

4.3.4. Basel and Related Problems with the VaR Approach

The numerous problems arising from the use of VaR, many of which derive from the assumptions underlying the model, were discussed in Chapter 3. One, perhaps unjust, criticism is that VaR does not give a probability of bank failure. However, it was never meant to because it is designed to establish a capital requirement for *market* risk, one of many types of risk the bank faces. Due to the amount of attention it has received, there is a tendency to forget that it deals with just one aspect of a bank's risk. Nonetheless, there are other problems related to the use of the Basel VaR.

Under the current Basel rules, the more sophisticated banks may employ their own advanced risk models if the country regulator approves. However, all banks will have to meet the minimum VaR standards. In a crisis, all will react the same way.

Just as Goodhart (1974) demonstrated that statistical relationships break down once employed for policy purposes, Danielsson (2000, p. 5) argues that a model breaks down once regulators use a model like VaR to contain risk.

As shown in equation (4.2), Basel requires VaR to be multiplied by 3 (sometimes 4 if there are large differences between the actual and predicted outcomes) to determine the minimum capital requirement. The larger banks have objected because the incentive to use sophisticated models is reduced. Basel justifies the requirement because of the problems with the VaR approach. In the absence of strong evidence, Shin *et al.* (2001) recommend a reduction in the multiplication factor, to be increased if it is found that losses are under-predicted.

Basel requires capital to be set aside for market risk based on a 10-day time horizon, Danielsson (2002) demonstrates that the production of 10 (working) day VaR forecasts is technically difficult, if not impossible. For example, suppose 1 year (250 days) is used to produce the daily VaR. To compute a 10-day VaR, 10 years' data would be needed. To get round this problem, Basel recommends taking the daily VaR and multiplying it by the square root of 10. However, Danielsson shows the underlying assumptions with respect to distribution are violated if the square root method is used.

Most banks employ very similar VaR models, or use the standard approach. However, banks differ widely in their objectives and exposure to market risk. A small savings bank or building society in the EU is unlikely to be exposed to much market risk but must adopt the standard approach nonetheless, which is costly. Other banks may be exposed to types of market risk not well captured by VaR methods.

Market risk – the standardised approach

Banks without an approved internal model for estimating market risk exposure are required to use Basel's standardised approach. Recall the objective: to replace the credit risk equivalents used in Basel 1 with a more sophisticated treatment of off-balance sheet items. No VaR computation is used. Instead, the amount of capital to be set aside is determined by an additive or building bloc approach based on the four market risks, that is, changes in interest rates (at different maturities), exchange rates, equity prices and commodity prices. In every risk category, all derivatives (e.g. options,[22] swaps, forward, futures) are converted into spot equivalents. Once the capital charge related to each of these risks is determined, it is summed up to produce an overall capital charge. The computation does not allow for any correlation between the four market risk categories. Put another way, portfolio diversification is not accepted as a reason for reducing the capital to be set aside for market risk.

Equity risk

Determining the market risk arising from equities is a two-stage process, based on a charge for specific risk (X) and one for market risk (Y). To obtain the specific risk the net (an offset of the long and short of the spot and forward position) for each stock is computed. The net exposure of each share position is multiplied by a risk sensitivity factor, which is 8% for specific and market risk, but if the national regulator judges the portfolio to be liquid and well diversified, the systematic risk factor is reduced to 4%. In the example below, it is assumed to be 4%.

[22] Option positions are converted at their delta equivalents. Recall from Chapter 3 that delta measures the sensitivity of the option price to a change in the underlying asset. If a bank has 500 call options on an equity, each with a delta of 0.5, then the equivalent is 250 shares. A further allowance is made for gamma risk, i.e. the sensitivity to a change in delta.

Example: Computing the Capital Requirement for Equity Risk

Assume the bank holds three equities in its portfolio, and the regulator has judged it to be well diversified. Then:

Equity	Long positions ($m)	Σ Short positions ($m)	*X* factor specific risk (net* × 8%)	*Y* factor market risk (gross** × 4%)	Capital required *X* + *Y* ($m)
1	100	25	75* × 0.08 = 6	125 × 0.04 = 5	11
2	75	25	50 × 0.08 = 4	100 × 0.04 = 4	8
3	25	50	25 × 0.08 = 2	75 × 0.04 = 3	5

*Net: column 1 − column 2.
**Gross: columns 1 + 2.

Though there is some allowance for diversification (depending on the regulator), the method assumes the βs (i.e. systematic/market risk) is the same for all equities.

Foreign exchange and gold risk

Recall that all derivatives have been converted into the equivalent spot positions. A bank's net open position in each *individual* currency is obtained – all assets less liabilities, including accrued interest. The net positions are converted into US$ at the spot exchange rate. The capital charge of 8% applies to the larger of the sum (in absolute value terms) of the long or short position, plus the net gold position.

Alternatively, subject to approval by national regulators, banks can employ a simulation method. The exchange rate movements over a past period are used to revalue the bank's present foreign exchange positions. The revaluations are, in turn, used to calculate simulated profits/losses if the positions had been fixed for a given period, and based on this, a capital charge imposed.

Interest rate risk

The capital charge applies to all debt securities, interest rate derivatives (e.g. futures, forwards, forward rate agreements, swaps) and hybrid instruments. The *maturity approach* involves three steps.

1. Obtain a net overall weighted position for each of 16 time bands. Before they are summed, the net position in each time band is multiplied by a risk factor, which varies from 0 at the short end to 12.5 at the long end.
2. 10% of each net position in each time band is disallowed to take account of the imperfect duration mismatches *within* each time band – known as *vertical disallowance*.

3. There is another problem: the interest rates in the different time buckets may move together, which is resolved through several *horizontal disallowances*, which vary from between 30% and 100% (i.e. no disallowance) in recognition that the degrees of correlation will vary. The matched long and short positions between the time buckets can be offset, but:
   - a 40% disallowance applies in the first set (0–1 year);
   - a 30% disallowance applies to the other two sets of time bands, i.e. 1–4 years and over 4 years;
   - there is a 40% disallowance for adjacent time buckets, and a 100% disallowance between zones 1 and 3.

Duration, explained in Chapter 3, is an *alternative* approach banks can employ to determine the capital to be set aside for interest rate risk. In each time band, the sensitivity of each position is computed by employing the duration for each instrument. The horizontal disallowance is 10% but the charge related to vertical disallowance is lower because duration allows sensitivity to be measured more accurately.[23]

Commodities risk

This risk is associated with movements in prices of key commodities such as oil, natural gas, agricultural products (e.g. wheat, soya) and metals (e.g. silver, copper, bronze) and related risks such as basis risk, or changes in interest rates which affect the financing of a commodity. The capital charges are obtained with a methodology similar to that used for the other three categories, but it will not be discussed here.

This outline[24] of the standardised approach has been kept brief for several reasons. First, depending on their activities, banks using this approach are more likely to incur substantially higher capital charges than if they opt for the internal model approach, because offsetting correlations between the four risk categories are ignored. Banks with a large trading book would be the hardest hit. Second, a bank will incur substantial costs because it still has to change its systems to comply with the standardised model. Taken together, these points provide a strong incentive for most banks to invest in a risk management system which ensures their internal model is approved.

4.4. Basel 2 – The Three Pillar Approach

> *''New Capital Regulation Rules, known as Basel 2, will more closely align regulatory requirements with economic risk, and will have a profound effect on banking industry structures and practices.''* (Citigroup/Smith Barney, *Basel II Strategic Implications*, October 2003, p. 3)

[23] Recall from Chapter 3 that unlike the maturity approach, duration distinguishes between the average life of an asset or liability and their respective maturity.

[24] Readers interested in a more detailed description of the standardised approach, with worked examples, are referred to Crouhy *et al.* (2000), pp. 137–150 and Basel (1996). Some of the material used above is based on their book.

In response to criticism of the 1988 Accord, a number of changes were made, culminating in the 2001 proposal.[25] The original plan was for the proposal to be discussed among bankers and members of the Basel Committee, agreed on by January 2002, and adopted by 2004. However, over 250 (largely negative) comments from banks, together with the Committee's three impact studies, prompted it to make substantial changes to the original document. A final consultative document was published in April 2003, with comments invited until the end of July 2003. The new agreement was reached in May 2004, and is published in full (251 pages!) by the BIS on behalf of the Basel Committee on Banking Supervision (2004). The standardised approach will apply to the G-10 countries by the end of 2006 and the "advanced" approaches will take effect from the end of 2007. During the first year of implementation, banks and national regulators are expected to run parallel computations, calculating capital charges based on Basel 1 and 2.

However, US regulators have thrown a spanner in the works. In February 2003 it was announced that just 10 of the most active global US banks would adopt the advanced IRB approach (see below); another 10 or so are expected to abide by the Accord. In addition, it will apply to the largest broker dealers in the USA, according to new rules recently proposed by the Securities and Exchange Commission. The rest of the American banks will continue to use Basel 1. The matter is discussed later in the chapter, but the decision does undermine the potential impact Basel 2 will have.

It is also worth emphasising that though the Basel agreements apply to the international banks in member countries, many countries require all their banks to adhere to the Basel rules. For example, part of the European Union's Capital Adequacy Directive II (CAD-II) requires all EU credit institutions to adopt the Basel 1 standards. Basel 2 will be part of the new Capital Requirements Directive, which must be passed by the EU Parliament. Elections were held in June 2004, and included the 10 new countries for the first time. The first opportunity for the Directive to be put to the EU Parliament is in late 2004/5. Once passed by the EU, each of the 25 member states incorporate the Directive into their respective laws. For example, it becomes part of UK law once it is ratified by parliament.

Finally, since the membership of the Bank for International Settlements (and the Basel Core Principles Liaison Committee) has expanded to include key developing countries, and regulators from these countries often require their banks to adopt Basel 1/2, many countries with no direct representation on the Basel Committee aspire to treat the Basel rules as a benchmark for their banks.

The new Accord seeks to achieve the following objectives.

1. It moves away from the "one size fits all" approach characteristic of Basel 1. The emphasis is on "mix and match". That is, each bank can choose from a number of options to determine its capital charge for market, credit and operational risk. Table 4.1 illustrates the choices open to banks.
2. Recognition that in terms of credit risk, lending to banks or corporates can be more *or less* risky than to OECD sovereigns. As a result, risk weightings have been changed

[25] The market risk amendment of Basel 1 and the contents of the first consultative document on Basel 2 was heavily influenced by the Group of Thirty (G-30) (1993) report on derivatives. The G-30 is an influential group of senior representatives from academia, the private and public sectors.

Table 4.1 Basel 2's Risk Pillar 1: Summary of Approaches

Credit risk	Operational risk	Market risk (unchanged from 1996 amendment)
(1) Standardised approach (2) Foundation IRB approach (3) Advanced IRB approach	(1) Basic indicator approach (2) Standardised approach (3) Advanced measurement approaches	(1) Standardised approach (2) Internal model

Source: Part of the table comes from BIS (2003a), p. 3.

to such an extent that a bank or corporation can receive a lower risk weight than the country where it is headquartered.

3. Explicit recognition of operational risk, with capital to be set aside, though overall the amount of capital set aside should remain at 8% of total risk assets.
4. Subject to the approval of national regulators, banks will be allowed to use their own internal rating models for the measurement of credit, market and operational risk. Otherwise, banks will have to adopt a standardised approach drawn up by the Basel Committee.
5. In addition to the new "risk pillar", new "supervisory" and "market discipline" pillars have been introduced.

Thus, the proposal consists of three *interactive*, "mutually reinforcing" pillars:

PILLAR 1 **Risk Assets Ratio**	**PILLAR 2** **Supervisors**	**PILLAR 3** **Market Discipline**
Measurement of risk assets ratio changed to include: (1) New measurement of credit risk; (2) Measurement of market risk (unchanged since 1966); (3) Measurement of operational risk.	Role of supervisors in their review of banks: to encourage banks to develop *internal* methods to assess capital, setting capital targets consistent with the bank's risk profile and its internal control methods	Use of market discipline: banks to disclose their method for computing capital adequacy, how they assess risk, credit risk mitigation techniques

Pillar1 – Minimum Capital Requirements

Basel 1(with 1996 Amendment)	**Basel 2(2006/7)**
Capital (tier 1 & 2) / Credit risk + market risk	Capital (tier 1 & 2) / Amended credit risk + market risk +operational risk

The definition of tier 1 and 2 capital used in Basel 1 is retained. However, over the longer term the Basel Committee plans to review what constitutes eligible tier 1 capital. The minimum requirements to set aside, 4% of capital (for tier 1) or 8% (for tier 2), remains unchanged.

The market risk measure introduced in the 1996 amendment is part of the new risk assets ratio, and was discussed at length earlier in the chapter. The only change proposed is to have one system for determining the trigger charge [see equation (4.2)]. There are important changes in the measurement of credit risk and, for the first time, an attempt to measure and impose a capital requirement for operational risk.

4.4.1. Pillar 1 – Credit Risk Measures

Measures of credit risk have been changed to deal with some of the criticisms of Basel 1. Banks must adopt one of three measurements: Standardised (modification of existing approach); "Foundation Internal Ratings Based Approach" and "Advanced Internal Ratings Based Approach".

The standardised approach to credit risk

Banks lacking sophisticated models for assessing risk will be required to adopt the standardised approach under Basel 2. Even with the standardised approach, the Basel Committee has recognised the need for more flexible treatment with respect to credit risk. The major modification involves the use of a wider band of risk weightings, from 0% for very low risk to 150% for high risk loans. The credit risk weights for loans to countries, banks, corporates and securitised assets are summarised in Table 4.2. There is no longer a distinction between OECD and other sovereigns – a sovereign risk weighting will be determined by external rating agencies or a qualified export credit agency (see notes below Table 4.2).

Weightings for other assets are as follows.

(a) Residential mortgages: 35%
(b) Commercial mortgages: 100%
(c) Personal loans: 100%
(d) Venture capital: the decision of the national regulator
(e) All other assets: 100%[26]

The above changes mean, for example, that if a corporation is rated BB– by a rating agency, the bank may be asked to assign a risk weight of 150% to that asset, so it will have to

[26] This list is not exhaustive. The Committee also specifies weights for past dues loans, higher risk categories, commitments and some other categories. See paragraphs 41–56 of Basel (2004) for more detail.

Table 4.2 Credit Risk Weights Under the Standardised Approach

Credit Rating	AAA to AA−	A+ to A−	BBB+ to BBB−	BB+ to B−	Below B−	Unrated
Sovereigns & central banks*	0%	20%	50%	100%	150%	100%
Banks[1]	20%	50%	100%	100%	150%	100%
Banks[2]	20%	50%	50%	100%	150%	50%
Credit Rating	**AAA to AA−**	**A+ to A−**	**BBB+ to BB−**	**Below B−**	**Unrated**	
Corporate	20%	50%	100%	150%	100%	
Credit Rating	**AAA to AA−**	**A+ to A−**	**BBB+ to BBB−**	**BB+ to BB−**	**Below BB−**	**Unrated**
Securitised assets**	20%	50%	100%	150%	Deducted from capital	Deducted from capital

* For sovereigns, supervisors may opt for the credit scores produced by qualified Export Credit Agencies, in which case the risk weight (in brackets) for ECA risk scores is as follows: risk score = 1 (0%), 2 (20%), 3 (50%), 4–6 (100%), 7 (150%).

** For more detail on how Basel 2 proposes to treat securitised assets, see section IV of Basel (2003a).

[1,2] Supervisors can use one of two options for all banks in their respective countries. Option 1: banks are assigned a risk weight one category less favourable than the weight given to the country, except for countries where the sovereign rates B+ to B−, in which case the score is capped at 100%. Option 2: banks are assigned a risk weight based on the external credit ranking of the bank itself. Securities firms are ranked as banks provided they are subject to comparable supervision and regulation. If not, they are treated as corporates.

set aside 12% of the value of the loan as capital. On the other hand, firms with treble A ratings carry a risk weight of 20%, meaning the bank need set aside only 1.6% of the value of the loan. The changes give banks an incentive to loan to more highly rated corporations, whereas under Basel 1, the amount of capital to be set aside was always the same, independent of corporations' risk profiles. Small and medium-sized enterprises are generally not rated at all. The German government, among others, expressed concern at higher capital charges imposed on the *mittelstand*. However, in the final version, the approach taken has satisfied the critics, and the consensus is that Basel 2 is unlikely to result in a reduction in the availability of finance for small and medium-sized enterprises (SMEs) (see below).

Some on-balance sheet netting is to be allowed on the banking book provided it meets specified standards. However, there is no provision that would encourage banks to spread their risks across a group of loans.

Credit risk: foundation and advanced internal ratings based approach

Subject to the approval of the national supervisor, these banks may use their own internal ratings and credit information to determine how much capital is to be set aside for credit

Table 4.3 Foundation vs Advanced IRB

Data Input	Foundation IRB	Advanced IRB
Probability of default (PD)	Supplied by bank-based on own estimates	Supplied by bank-based on own estimates
Loss given default (LGD)	Supervisory values set by Basel	Supplied by bank-based on own estimates
Exposure at default (EAD)*	Supervisory values set by Basel	Supplied by bank-based on own estimates
Maturity (M)**	Supervisory values set by Basel or at the discretion of national supervisors, supplied by bank-based on own estimates, with an allowance to exclude some exposures (e.g. make them fixed maturity)	Supplied by bank-based on own estimates, with an allowance to exclude some exposures (e.g. make them fixed maturity)

* EAD: refers to loan commitments – the amount of a loan or credit line that is likely to be drawn at the time of default, and equivalent to potential credit exposure (PCE) discussed in Chapter 3.
** In IRB, the average maturity is assumed to be 3 years, though under special cases, adjustments will be possible: a minimum of 1 year and a maximum of 7.
Source: BIS (2003a), p. 5.

risk. Basel has introduced these options to reward banks with sophisticated risk weighting systems, which should lower the capital to be set aside to cover credit risk. It also increases the likelihood that ratings will be based on *economic capital*, the capital set aside to cover unexpected losses. This is considered an improvement over *regulatory capital*, which is set aside based on regulatory dictates such as the Basel 1 or 2 risk weightings. The difference between the foundation and advanced IRB relates to the data supplied by a bank, and the data provided by the supervisor. Table 4.3 summarises the differences.

A bank must satisfy some minimum requirements to be approved for use of the internal ratings approach (IRB). The conditions include:

- Differentiation of credit risk.
- Clear criteria for the internal ratings system and a complete ratings assignment.
- The probability of default (PD) is estimated for each group of borrowers assigned to internal grades.
- PD data: banks must have at least 2 years of data from the time Basel 2 takes effect, rising to 5 within 3 years.
- LGD: advanced IRB banks are to supply 7 years of data for loss given default (LGD), though they are encouraged to develop a database covering a complete economic cycle. Banks can use data from other sources, such as rating agencies or other banks.
- Internal validation.

- Risk components: the bank uses its own. Supervisors are to approve the method by which the risk components are converted into risk weights for the computation of risk weighted assets.
- A bank's internal ratings and VaR must be part of an integrated risk management system. For example, while VaR is used to assess market risk and the regulatory capital to be set aside, the risk management system must determine the economic capital (used to set limits), look at performance via a risk adjusted return on capital (RAROC), etc.
- Satisfy the disclosure standards specified under pillar 3.

Risk weights under foundation IRB

Table 4.3 applies for all corporate, sovereign and interbank exposures. Once the supervisory authorities approve a bank's use of the foundation IRB approach, there is the question of how the risk weights will be applied. Basel assigns two risk weights. The first risk weight is a function of PD, which is supplied by the bank; the second a function of LGD.[27] The values for LGD, along with EAD, are supplied by Basel, and will depend on the nature of the exposure.

Basel had intended to include expected losses in the risk weightings but the final agreement (June 2004) replaced this with a requirement that if a bank finds the actual provisions it set aside is less than expected losses, it must be deducted from tier 1 and tier 2 capital, subject to a maximum cap.

For *retail* exposures, *no* distinction is drawn between IRB and advanced IRB. All IRB (foundation and advanced) banks are expected to supply internal estimates of PD, LGD and EAD based on pools of exposures.[28] Retail loans are divided into three categories: (1) residential mortgages; (2) revolving retail loans – mainly unsecured revolving credits, such as that incurred by agents who roll over most of their credit card payments; and (3) other retail – non-mortgage consumer lending including loans to SMEs with annual sales of less than €5 million. Basel provides the risk weight formula to obtain risk weighted assets in each of the three categories. The risk weight is obtained using a Basel specified risk correlation, and formulae using PD, LGD and EAD.[29]

The loan loss rates on different types of loans are used to obtain estimates of the loss given default, LGD. Once LGD is known, together with PD, a risk weight is derived. The risk weight for retail exposures is assumed to be about 50% of corporate exposures, based on the reasoning that personal loan portfolios are more highly diversified.

In the original proposals, loans to small and medium-sized enterprises (SMEs – defined as firms with annual sales of <€50 million) were to be treated like retail loans, but in the final document,[30] the IRB risk weight formula for corporates is to be used, adjusted for firm

[27] While PD and LGD will be used to determine the risk weights, Basel also intends to impose an additional multiplier of 1.5 to allow for further cover in case of model errors. At the time of writing, there is strong opposition to it, and it may not appear in the final document.

[28] Unlike corporate exposures, where the values are estimated for individual exposure.

[29] For the detailed formulae, readers are referred to Basel (2003a, paragraphs 298–301).

[30] See Basel (2004).

size. The corporate risk weight is adjusted using the formula: $0.04 \times 1[(S - 5)/45]$, where S is the annual sales in € millions. If €50 $\geq S \geq$ €5 million, then the formula is used. €5 million is a floor: anything less is treated as €5 million, or the firm can opt to have the loan treated as a retail loan. SMEs are treated as retail loans if their total exposure to the banking group is less than €1 million–the bank in question treats these loans the same way as other retail exposures.

Securitisation

For IRB banks *originating* securitisations, a bank must calculate K_{IRB}, which is the amount of capital that would have been set aside if the underlying pool of assets had not been securitised. If the bank is in a first loss position (i.e. in the event of a default on the securitised assets it has to absorb the losses that are a fraction of (or equal to) K_{IRB}), then the position must be deducted from capital. In other words, banks that do not pass on the full credit risk to a third party will have to set aside capital. The amount set aside is determined by a ratings based approach if the security is externally rated. If IRB banks *invest* in securitisations, a formula is used to estimate how much capital is to be deducted based on the external rating given, or, if they are unrated, other factors. However, in the June 2004 agreement, it was acknowledged that some aspects of the treatment of securitisation was under review.

Credit risk mitigation: collateral, guarantees and credit derivatives

Basel recognises collateral, guarantees and credit derivatives as "credit risk mitigants", because the presence of any three may mean that in the event of default, some assets are recovered, which reduces the size of a loss for the bank. However, certain restrictions apply, depending on the risk management approach adopted by a bank.

Collateral

Collateral backs a loan, and in the event of default, is used to recover some assets, Thus, collateral affects LGD – the higher the quality and amount of collateral, the smaller the LGD. Under Basel 2, what is accepted as recognised collateral depends on the approach adopted by the bank.

- *Standardised approach*: The main components of recognised financial collateral include cash (held on deposit at the bank granting the loan[31]), gold, government securities rated BB– and above or at least BBB (when issued by non-government entities, including banks and securities firms); unrated securities if they are issued by a bank, are traded on a main exchange and qualify as senior debt, equities (or mutuals/UCITS[32]) that are part of a main index (e.g. the FTSE 100).

[31] This type of cash collateral is an example of *netting* – it effectively means banks are offsetting assets and liabilities of a given counterparty, provided the bank has recourse to the deposits in the event of default.
[32] UCITS: undertakings for collective investments in transferable securities (e.g. unit trusts).

- *IRB*: the main components are all collateral under the standard approach, equities (or mutuals/UCITS) traded on a main index, receivables, and some types of commercial/residential and property.
- *Advanced IRB*: all forms of physical collateral are accepted, in addition to the collateral listed under IRB.

Guarantees

A guarantee is provided through a backer. For example, another bank can guarantee a loan. The key risk is the quality of the guarantor. Thus, a guarantee, depending on its quality, will affect the probability of loan default (PD). Ischenko and Samuels (2001) show that for a given expected loss, the risk weight on LGD will be lower than that on PD. It means banks are likely to opt for lending with collateral rather than guarantees, because the risk weight will be lower.

Credit derivatives

Though excluded as a possible credit risk mitigant in the earlier consultative documents, in the third paper (BIS, 2003c), Basel accepted that credit derivatives, in the form of credit default swaps (CDSs), can give a form of insurance against loss. The main issue surrounds what constitutes a credit event, i.e. what constitutes default, and in particular, what types of restructuring constitute default. Basel's current position is that banks can use them to lower capital requirements provided the credit default swap includes restructuring as a form of default event if it results in credit losses, unless the bank has control over the decision to restructure.

Advanced internal ratings based approach and credit risk

As Table 4.4 shows, if a bank's credit risk management system is approved for the advanced internal ratings based approach (AIRB), the bank supplies its own estimates for PD, LGD, EAD and maturity. There are no rules on what factors should be used for the purposes of risk mitigation. Furthermore, all physical collateral is recognised, unlike the limited recognition of property and equity under IRB. Basel 2 proposals reward more sophisticated risk management systems by reducing the amount of capital to be set aside. The reasoning is that their models account for economic capital sufficiently well to satisfy regulatory capital requirements. Ischenko and Samuels (2001) estimated that for some banks, adopting an AIRB will reduce capital requirements by 10–20% compared to IRB.

A more recent publication by Citigroup Smith Barney (2003) concluded there was little difference by way of capital relief if the AIRB was used in place of IRB, but AIRB is significantly more costly to introduce.

4.4.2. Pillar 1 – Operational Risk

Operational risk (OR) is a new controversial addition to the denominator of the risk assets ratio. Recall Basel's definition of operational risk from Chapter 3, which in more recent documents has changed very slightly:

''. . . Operational Risk is defined as the risk of losses resulting from inadequate or failed internal processes, people and systems, or external events.'' (BIS, 2003a, p. 8)

Based on the most recent Basel publications at the time of writing, a bank may adopt one of three approaches (or a variant of the basic standardised approach) in the measurement of operational risk.

- *Basic indicator*: A capital charge based on a single indicator for overall risk exposure, the average (positive) annual gross income over the previous 3 years. Then the capital set aside is 15% (the *alpha* factor) of this, i.e.
  capital charge = (0.15) × (average annual gross income).
- *Standardised*:[33] To qualify for the use of this approach, banks must have in place an operational risk system, which complies with minimum criteria outlined by Basel. This approach requires banks to identify income from eight business lines. The capital charge for each business line is gross income multiplied by a fixed percentage (*beta* factor), which varies between 12% and 18%. The total capital to be set aside is the sum of these capital charges. The business lines and accompanying beta factors are summarised in Table 4.4. The total capital to be set aside is a three-year average of the regulatory charges calculated for each year. Negative capital charges (arising from negative income) for a given business line can be used to offset positive capital charges from other business lines in that year. However, if the aggregate capital charge for a given year turns out to be negative, it is entered as a 0 in the numerator of equation (4.2). The total capital charge[34] is then:

$$K_{\mathrm{TSA}} = \left\{ \sum\nolimits_{1-3} \max \left[\sum (\mathrm{GI}_{1-8} \times \beta_{1-8}), 0 \right] \right\} /3 \tag{4.3}$$

where

K_{TSA}: capital charge using the standardised approach
$\sum_{1-3}$: sum over 1 to 3 years
GI_{1-8}: annual gross income in a given year for each business line
β_{1-8}: fixed percentage of the level of gross income for each business line, given in Table 4.5.

- *Advanced measurement approaches (AMAs)*: AMAs are for banks meeting more advanced supervisory standards. Banks use their own methods to assess their exposure to operational risk, and from this, determine the amount of capital to be set aside. Banks are allowed to purchase insurance against operational risk, and use it to reduce the OR capital charge by up to 20%. However, to use insurance, banks must meet certain conditions. The most important is that the insurer is A-rated (by external agencies) in terms of its ability to

[33] An alternative standardised approach may also be used, subject to the approval of the national supervisor. It is similar to the standardised approach but for retail and commercial banks, loans and advances, multiplied by a fixed factor (0.035) is used instead of gross income. The other business lines remain unchanged. See Basel Committee on Banking Supervision (2004), p. 139.
[34] Source of equation (4.3) and Table 4.4: Basel Committee on Banking Supervision (2004), p. 140.

Table 4.4 Operational Risk – Standardised Approach

Business lines	Beta factors (%)
Corporate finance, β_1	18
Trading & sales, β_2	18
Retail banking, β_3	12
Commercial banking, β_4	15
Payment & settlement, β_5	18
Agency services, β_6	15
Asset management, β_7	12
Retail brokerage, β_8	12

meet claims. In addition, the insurance coverage must last at least a year, be explicit in terms of the OR it is covering, and may not have any exclusions or limitations arising from regulatory action.

For banks with global operations and numerous subsidiaries, the final agreement notes that a "hybrid approach" to operational risk may be used. Subject to the approval of a national supervisor, a parent bank with international operations, when employing AMAs for calculating capital to be set aside, can allow for diversification gains *within* its own operation but is not allowed to include group-wide benefits. Significant subsidiaries can use the head office model, parameters, etc. to compute their operational risk but the amount of capital set aside must be based on the same criteria as those used by the parent bank. Subsidiaries deemed of minor significance to the group's operations can (subject to agreement by the supervisor) be allocated a charge for OR from the group-wide calculation, or use the parent's methodology to compute the charge.

4.4.3. Pillar 2 – Responsibilities of National Supervisors

This pillar identifies the role of the national supervisors under Basel 2. Basel has identified four principles of supervisory review:

1. Supervisors are expected to ensure banks use appropriate methodology to determine Basel 2 ratios, and have a strategy to maintain capital requirements.
2. Supervisors should review banks' internal assessment procedures and strategies, taking appropriate action if these fall below standard.
3. Banks should be encouraged by supervisors to hold capital above the minimum requirement.
4. Supervisors are expected to intervene as early as possible to ask a bank to restore its capital levels if they fall below the minimum.

To fulfil these objectives, an ongoing dialogue between supervisors and banks is necessary. Also, supervisors are likely to focus on banks with a history of taking higher than average risks.

Pillar 2 does not give explicit detail on how supervisors should behave, and is likely to be used to back up pillar 1, and possibly, deal with some of the more controversial aspects of pillar 1. For example, the Committee has recently emphasised the importance of conservative stress testing for banks adopting the IRB approach. Supervisors should require these banks to devise a conservative stress test in order to test how their capital requirements might increase given a particular scenario. Based on the test results, banks should ensure they have a sufficiently robust capital buffer. If capital falls below the necessary amount, supervisors would intervene and require the bank to reduce its credit and/or market risk exposures until it can cover the capital requirements implied by the relevant stress test.

4.4.4. Pillar 3 – Market Discipline

The main purpose of pillar 3 is to reinforce pillars 1 and 2. Providing timely and transparent information, or even knowing they have to provide it, gives the market a role in disciplining banks. Participating banks are expected to disclose:

- Risk exposure.
- Capital adequacy.
- Methods for computing capital requirements.
- All material information, that is, information which, if omitted or mis-stated, could affect the decision-making of the agent using the information.
- Disclosure should take place on a semi-annual basis; quarterly in the case of risk exposure, especially if the bank engages in global activities.

The Committee plans to issue templates banks can use to ensure the disclosure principles are adhered to. It considers pillar 3 an important component of Basel 2, especially for banks using the IRB approaches in credit risk, AMA for operational risk and their own internal models for market risk. These banks have far greater discretion in terms of computation of capital charges they incur, and it will be difficult for supervisors to master every detail of the approach they take. Market discipline should discourage attempts by banks to cut corners in their risk assessment.

4.4.5. A Critique of Basel 2

There were numerous criticisms of Basel 2, but some were addressed during the consultative process (e.g. SMEs). The problems with the use of VaR were discussed earlier. Here, the more general problems related to the Basel 2 framework are reviewed. Perhaps the most serious is that it moves with the economic cycle, i.e. it is pro-cyclical. To the extent that the creditworthiness of financial and non-financial firms moves with the cycle, the method for calculating the amount of capital to be set aside in a given year means less will be needed during an economic boom; more during a downturn. The nature of recession (falling stock markets, downgrading of firms experiencing falling profits by independent rating agencies, and higher loan losses as a result of increased default rates) will reduce banks' risk assets ratios. Since raising capital, even if possible, will be more costly, banks are likely to cut back on their activities (e.g. reduced lending, less trading), which in turn will aggravate the downturn.

Hawke (2001) gives an interesting example of the effect of pro-cyclicality. When Basel 1 was being implemented in the late 1980s/early 1990s,[35] the US banking system was in the throes of a crisis. Banks were facing mounting losses – even the Deposit Insurance Corporation was threatened with insolvency. Many US bank supervisors thought Basel 1 aggravated the crisis as banks struggled to get their Basel risk assets ratios up to 8%, either by reducing lending and/or trying to raise new capital in a depressed market.

The Basel Committee addressed this criticism in several ways. Compared to earlier proposals, the ***risk curve***, or the relationship between capital charges and the probability of default, has been flattened for corporate and retail loans. Also, banks have been asked to take a long run view (rather than just one year) when they determine the internal ratings of borrowers. This means the ratings should reflect conditions over a number of years, taking the whole business cycle into account. If banks are estimating their probability of default (which in turn feeds into the capital to be deducted), they are advised to use the full economic cycle. When making loan decisions, banks should note the stage of the economic cycle and employ stress tests to identify economic changes that will affect their portfolio. The information can be fed into the determination of their capital requirements. However, it is often difficult to assess how long a stage of the cycle will last. There is also a more general challenge: to collect sufficient data, especially in the early years.

A recent study suggests that the external ratings of the creditworthiness of firms could also fuel the problem of pro-cyclicality. Amato and Furfine (2003) reported that it is rare for the rating of a large corporation or bank to change. This finding is consistent with the general claim that credit ratings are not related to the cycle because they are relative measures. A bond rated AAA signals that it is less risky than a bond rated BB. Nonetheless, it has been shown that ratings move with the business cycle,[36] though this alone does not necessarily mean the ratings themselves are influenced by the cycle. This is the question Amato and Furfine set out to address, using data on the economic cycle, financial ratios and the ratings themselves. The ratings data include both investment and speculative grade; from Standard and Poor's monthly ratings of all firms – January 1981 to December 2001. Amata and Furfine report that for small changes in business risk, ratings remain unchanged. However, they find evidence of "overshooting" when a rating is changed. Upgradings were found to be excessive; downgradings too severe. Furthermore, the excessive optimism/pessimism is directly correlated with the state of the macroeconomy, meaning the upgrade/downgrade will aggravate a boom/recession.

Perversely, Basel 2 could raise the amount of systemic risk for banks using the standardised approach. They have little incentive to diversify because they are not rewarded for it, though this was also true in the case of Basel 1.

Recall the original purpose of the Basel 1 accord was to establish a level playing field for international banks in terms of regulatory capital to be set aside. Banks can pick and choose from different parts of Basel 2, which means all banks have an equal opportunity to

[35] Recall the Basel 1 accord was reached in 1988 but international banks had until 1993 to implement it.
[36] See Graph 1 of Amato and Furfine (2003) and Nickell *et al.* (2000).

determine the amount of regulatory capital to be set aside. However, the complex details and/or proportionately higher compliance costs for some banks means the playing field is no longer level.

As was noted earlier, Basel 2 will be used by 10 to 20 of the most internationally active US banks, but the rest of the American banks will use Basel 1. This has important competitive implications. The US banks which do adopt Basel 2 are the ones with sophisticated in-house models, so they will employ advanced approaches to the treatment of credit, market and operational risks, i.e. internal ratings for market risk, advanced IRB for credit risk and AMA for operational risk. Therefore it is likely their overall capital requirements will fall. Furthermore, there are no onerous new compliance costs for the thousands of US banks which continue to employ Basel 1, which may give them a cost advantage if the capital charge based on Basel 1 is lower. This gives US banks a competitive edge over their European or Japanese counterparts. On the other hand, banks adhering to Basel 1 will not experience a reduction in the capital they must set aside, while banks in other countries may. Also, the US sets quite rigorous regulatory standards (see Chapter 5), which may offset any cost advantage they achieve because they do not adopt Basel 2.

The big European banks which see the major US banks as their main competitors in wholesale markets will have their competitive position further undermined, for two reasons. First, it was noted earlier that Basel 2 is to be part of the Capital Adequacy Directive III before it is implemented in Europe. According to Milne (2003), contrary to expectations, the fast track Lamfalussy option[37] will not be used for the CAD III, which means that most of Basel 2's technical details will have to be passed by the European parliament, a process that will take, at the minimum, three to four years. US banks which adopt Basel 2 will do so immediately after their regulators approve its use. Their capital requirements are likely to be lower, while the European competitors will have to set aside larger amounts of capital under the old Basel 1 accord. This competitive edge for the top US banks will continue until the Capital Adequacy Directive III is passed. Second, once Basel 2 is part of a European directive, any component of it that dates or is affected by financial innovation will be extremely difficult to update/amend because it is part of a European law.

The problems outlined above will hit London's financial district particularly hard, and could undermine its leading international position in financial markets. The UK's Financial Services Authority may be forced to take unilateral action, and require banks in London to implement Basel 2 ahead of the EU's CAD III.

Some commentators have suggested that there is a danger of banks that are part of financial conglomerates moving their credit risk to another non-bank financial subsidiary to reduce the amount of capital they have to set aside. For example, credit derivatives might transfer the credit risk related to a loan to an insurance company. Or assets could be securitised and sold to third party insurers. However, the final version of Basel 2 (BIS, 2003c; Basel Committee, 2004) has tightened up many loopholes and should prevent some aspects

[37] After the development and qualified acceptance of the Lamfalussy fast track procedure for securities law, the expectation was that it be used for Basel 2. However, only the Annexes of Basel 2 are deemed "level 2", that is, they can be amended by a special committee. The main document of Basel 1 is classified as "level 1", and therefore will be part of a directive – any amendment will require approval by the European parliament, and then adopted by the national legislatures.

of regulatory arbitrage that occurred under Basel 1. Also, such behaviour is unlikely to be ignored by national regulators: this is an example where pillar 2 could re-enforce pillar 1.

A related concern is that the Basel requirements are encouraging banks to transfer credit risk off their balance sheets. As was documented in Chapter 3, the credit derivatives market grew from virtually nothing in the early 1990s to $2 trillion by 2002. These are forms of ***credit risk transfer***: banks originate the loan (agree to lend money to firms and individuals) but transfer the risk from the bank to purchasers of loans or securities. The trend to move loans off-balance sheet began with the issue of mortgage backed securities in the 1970s, followed by, in the 1980s, the sale of sovereign debt, syndicated loans and corporate debt. However, now it is credit risk which is being transferred. Most of the institutional investors assuming this credit risk (as a consequence of securitisation or the use of credit derivatives) do not have in-house credit risk departments and rely on credit rating agencies. The agencies have expertise in assessing personal, firm or country risks, but do not look at the aggregate picture (the techniques for portfolio credit risk analysis were discussed in Chapter 3), even though institutional investors typically purchase, or insurance is written for, bundles of loans or bonds. Banks no longer hold risk but are conduits of risks.[38]

On the other hand, only a few of the top global banks are active in this market. Recall BIS (2003e) reported that 17 (19) US banks sold (bought) credit protection and only 391 out of 2220 banks supervised by the Office of the Comptroller of Currency held any form of credit derivatives. *Risk Magazine* reported 13 firms were behind 80% of transactions in credit derivatives.[39] Finally, *The Economist* claimed roughly 8% of US commercial and industrial loans were insured ($60 billion).[40] All of these figures indicate responsibility for the majority of the credit risk associated with lending remains in the banking sector.

The emphasis on the use of external ratings raises other issues. To reduce capital requirements, banks using the standardised approach will want to lend to rated firms. Most rated corporations are headquartered in the USA, and to the extent that corporations do business with their own national banks, it gives US banks an additional competitive advantage, at least in the short run. Another problem is the absence of a strong ratings culture in Europe and Japan. For example, Moody's rates 554 corporates in Europe; 221 of these are in the UK, another 121 in the Netherlands. In France and Germany, the numbers are as low as 43 and 45; respectively. That leaves just 127 other firms spread throughout Europe. In Japan, just 191 corporates are rated.[41] However, given the importance Basel will place on rating agencies, it is likely their business will spread rapidly in Japan and Europe. Regulators will have to identify the most accurate, requiring them to meet a set of criteria to be accepted as a recognised agency.

Small and medium-sized enterprises, and firms located in emerging markets, may find it more difficult to raise external finance because they are not rated. To address this issue, the

[38] The term "conduits of risk" first appeared in *The Economist* (2003b), p. 62.

[39] These figures were reported by *Risk Magazine* and the OCC to BIS researchers. See BIS (2003d).

[40] *The Economist*, 5 July 2003, p. 81.

[41] *Source*: Ischenko and Samuels (2001), table 12, which took the figures from Moody's. Note the figures are for Moody's only – other rating agencies offer their services, so the totals will be higher. However, if the proportions are the same, it means that only $\frac{1}{3}$ of European firms are rated, and about 10% of Japanese firms, compared to the USA.

final document (2004) confirmed the use of an adjusted formula based on the IRB corporate risk weight for SMEs with sales revenues ranging from €5 to €50 million. Otherwise, if SMEs are classified as retail, they could benefit from the flatter risk curve noted earlier.[42] However, there is no allowance for portfolio diversification through SME exposure.

In the USA, only four agencies (Standard and Poor's, Moody's, Fitch IBCA and Dominion Bond Ratings) are officially recognised by the Securities and Exchange Commission (SEC), giving them effective control over the US market. This raises the issue of monopoly power in the ratings sector. A US congressional subcommittee has asked the SEC about its relationship with these agencies. The subcommittee has expressed concern that the arrangement could limit the operation of a free market and prevent consumer interests from being served. Just three of these rating agencies are global players, meaning they are exposed to even less competition outside the USA.

There is also a potential for conflict of interest because increasingly, ratings firms advise banks on their risk management systems. The ratings agency may be tempted to give higher ratings to banks acting on their advice, though this is unlikely provided there are effective firewalls between the ratings agency and its offshoot offering the advice. However, it could increase the number of banks using similar risk management techniques. The degree to which they are correlated will mean banks react in similar ways to changes in the financial markets/macroeconomy, thereby aggravating any boom or recession.

Excessive prescription is another problem. The final agreement (2004) is 251 pages, with detailed instructions given for the implementation of Basel 2, especially the new risk assets ratio. To quote Hawke, who was referring to the (2003c) document:

> *''When I complained to the Basel Committee about the complexity of the paper, I am roundly admonished. . . 'We live in a complex world. Don't quibble if we try to fashion capital rules that reflect that complexity'. But. . . the complexity we have generated goes far beyond what is reasonably needed to deal with sensible capital regulation. It reflects, rather, a desire to close every loophole, to dictate every detail, and to exclude to the maximum extent possible any opportunity for the exercise of judgement or discretion by those applying and overseeing the application of the new rules. . . Any effort to simplify runs the danger {of upsetting} compromises that have been hammered out.''* (Hawke, 2001, pp. 48–49)

The detailed computations needed if banks adopt either of the IRB approaches could discourage financial innovation and expansion into new markets because of the paucity of historical data necessary to compute PD and LGD. Also there are many recent examples where national regulators have encouraged healthy banks to merge with problem banks to avert a failure. Under Basel 2, any bank with IRB status will be reluctant to agree to such a merger if it means their IRB status is removed for several years because it will take that long to improve the risk management system of the weak acquisition. Thus, regulators could lose a useful tool in the resolution of banking problems, which could increase systemic risk.

Milne (2003) identifies another problem arising from too many rules. He argues that regulators may find it difficult to oversee the actions of banks that opt for the advanced

[42] German banks are developing their own internal ratings of SMEs, using both financial ratios and measures such as quality of management. The ratings will influence a SME's loan rate but will be internal to the bank.

approaches and compute their capital obligations in Basel 2. For example, if using the IRB approach they will compute PD and LGD using sophisticated models and a considerable amount of judgement. Independent analysts or supervisors may find it difficult to assess the quality of the risk management input at this level of sophistication, and it will pose a considerable challenge to their resources. There are ways of dealing with this problem, such as requiring external auditors to verify the quality of the capital adequacy requirements as assessed by the banks, or to have supervisors monitor the work of other national supervisors. However, these are costly options. Another possibility is to tighten up disclosure requirements so that banks (after some lapse in time to preserve confidentiality) had to disclose the detailed computations of PD and LGD. But by this time, it might be too late.

The treatment of operational risk (e.g. capital to be set aside based on gross income) is considered unworkable, and OR itself is difficult to quantify. These views are shared by academics and practitioners alike. The Americans rejected Basel 2 for most of its banks because, they argue, it is too costly for them to switch. Also, their regulators believe it is impossible to quantify operational risk,[43] making the resulting capital charge inherently subjective. They argue operational risk should be part of pillar 2 – monitored by regulators, with no explicit charge. European officials want all banks to be able to use insurance on operational risk to reduce the OR portion of the capital charge, independent of the approach they adopt.

Ischenko and Samuels (2001) claim the Basel Committee's remarks indicate they are focusing on two risks. *Rogue trader risk*: such as Barings (1995) and Allied Irish Bank (2002). If banks were required to set aside explicit capital for this type of risk, it would give them a greater incentive to monitor their positions. *IT risk*: relates to the concern on the reliance of computer systems to complete large numbers of banking transactions. However, there have been no real disasters arising from computer failure, though liquidity has been strained in certain cases; "9/11" is a good example. Back-up systems meant, relative to the scale of the disaster, there was no serious disruption and minimal loss of data.

Ischenko and Samuels (2001) estimated that for some banks, adopting the Advanced IRB will reduce capital requirements by 10–20% compared to IRB. Citigroup Smith Barney (2003) concluded there was little difference by way of capital relief if the AIRB was used in place of IRB, but AIRB is significantly more costly to introduce. More generally, Ischenko and Samuels (2001) argue the banks primarily engaged in investment banking, asset management, proprietary trading, custody and clearing will be the most adversely affected by capital charges for operational risk (OR), because of the emphasis placed on setting aside capital for rogue trading or the collapse of a bank's IT system. For the more traditional bank with proportionately large amounts of credit related business, the OR charge will be small and the capital savings made from the new proposals for credit risk (especially if the bank adopts an advanced internal ratings approach) could be substantial.

Three quantitative impact studies were conducted by the Basel team. The results of the first two indicated higher capital charges (compared to Basel 1) in the majority of cases, and in response to these findings, the proposals were revised. The final quantitative study was

[43] Even though the Basel third quantitative impact study (Basel, 2003b) indicates quantification is feasible.

Table 4.5 Percentage Change* in Capital Requirements

	Standardised (%)			IRB Foundation (%)			IRB Advanced (%)		
	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
G-10 group 1	11	84	−15	3	55	−32	−2	46	−36
G-10 group 2	3	81	−23	−19	41	−58			
EU group 1	6	31	−7	−4	55	−32	−6	26	−31
EU group 2	1	81	−67	−20	41	−58			
Other groups 1&2	12	103	−17	4	75	−33			

* The percentage change in minimum capital requirements, compared to the current Basel 1 Accord.
Source: BIS (2003b), table 1.

initiated in October 2002, and the results (BIS, 2003b) published in May 2003. 188 banks from 13 G-10 countries, and 177 banks from 30 other countries took part in the third study. Banks were divided into group 1 (globally active, diversified, large banks, with tier 1 capital in excess of €3 billion) and group 2 (smaller, more specialised). Table 4.5 summarises the key findings. After the revisions implemented from the consultation documents, the findings were much more positive, especially if banks adopt one of the two advanced procedures which rely on their own internal ratings system. Table 4.5 shows that the average capital reduction is between 2% and 6% for globally active banks.

Compared to the previous two quantitative impact studies, the findings were much more positive, especially if banks adopt one of the two advanced procedures which rely on their own internal ratings system. As can be seen from the Min and Max columns, the variation is considerable. Recall the objective of Basel 2: to bring in more sophisticated systems of risk measures so that banks could set aside capital for market, credit and operational risk, but with no change to overall capital burden (compared to Basel 1) or even a reduction in it. For banks using the standardised approach, column one shows the capital charge is higher, especially for the G-10 group 1 and the "other" category – countries including Australia, Hong Kong, Norway, Singapore and a large number of emerging market countries such as China, Russia, Hungary, the Czech Republic, India, Malaysia, Thailand and Turkey. While most G-10 group 1 banks are likely to have systems in place to qualify for the IRB foundation or advanced approaches,[44] this is not the case for many of the banks headquartered in countries from the "other" category.

If the IRB foundation approach is used, the capital charge will fall for most banks, but again, it increases for the G-10 group 1 banks and the "other" category. The report notes that G-10 group 1 banks have, on average, less retail activity than group 2 banks – banks with large retail exposures tended to do better because the new risk weightings are lower compared to Basel 1, with the exception of past due assets. Furthermore, the standardised approach was used by most of the banks to compute operational risk figures; a few used the basic indicator approach; only one used the advanced approach.

[44] In addition, the report notes that G-10 group 1 banks have far less retail activity than group 2 banks – banks with large retail exposures tended to do better because of the new risk weightings.

Table 4.5 shows that for banks adopting the IRB advanced approach, average capital charges will fall. Note, however, that very few banks in the "other" category will have the systems in place to qualify for this approach. Indeed, there were so few banks from the IRB category that they could not be reported because of fears they could be identified.

Basel 2 could prove most onerous for the "other" group, many of which come from emerging markets, not necessarily because they are inherently riskier but because they do not have sophisticated risk management systems in place.

The Min and Max columns show the wide variation of impact the Basel 2 framework will have. No matter what approach is used, some banks stand to gain a great deal, while others will suffer a large increase in the capital charge.

For the more sophisticated banks that experience a reduction in their capital requirements, more capital will be released. If, overall, more capital is released than set aside, "surplus" capital will emerge. Too much capital will increase competition, encourage consolidation (capital surplus banks will be looking for capital weak banks), and possibly greater risk taking. The latter outcome would be a bit of an irony: regulators, by creating a situation of surplus capital, end up encouraging the banks to engage in riskier activities.

It appears that banks in most of the G-10 countries are quite advanced in their preparations to adopt pillar 1 of Basel 2. In a recent survey,[45] over 75% of large (assets in excess of $100 billion) and medium-sized (assets ranging from $25 to $99 billion) banks in North America, Europe and Australia are planning to be using IRB by 2007 and to have IRB Advanced by 2010. Over 60% of European banks report being at the "implementation" stage, compared to 12% in the USA and 27% in Asia and the emerging markets. Progress on meeting Basel 2 operational risk requirements has been slower, with less than half the North American, European and Australian banks expecting to be using the Advanced Measurement Approach (AMA) by 2007, rising to 70% by 2010. About 62% consider their preparations for pillars 2 and 3 to be "poor" or "average". For the larger banks the cost of complying with Basel 2 ranges from between €50 million (60%) and €100 million (33%). The majority of medium-sized banks (more specialised) are expecting the cost to be less than €50 million.

4.5. Alternative or Complementary Approaches to Basel

The Basel Committee claims that Basel 2 has been designed to encourage banks to use their own internal models to compute a capital charge. Critics argue the incentives are not there, the approaches discussed in this section are examples of ***incentive compatible regulation***: the objective is to improve the incentive of individual banks to have accurate risk management systems, either through use of the market or regulators, or both.

4.5.1. The Pre-commitment Approach

This proposal would deal with private banks' criticism of Basel, that if a bank is allowed to use its own internal model, the minimum capital requirement is too high because it is

[45] All the figures in this paragraph come from *The Banker* (2004), pp. 154–165. The article is based on a survey of 200 global leading banks undertaken by FT Research for Accenture, Mercer Oliver Wyman and SAP.

based on VaR multiplied by 3 or even 4. The larger banks claim this requirement creates a disincentive to use more sophisticated models of risk management.

The Fed's *pre-commitment* proposal (1995): The Federal Reserve suggested that banks and trading houses "pre-commit" a level of capital they believe to be necessary to cover losses arising from market/trading risks. The amount pre-committed would be based on the bank's own VaR model.

At the end of a specified period, the regulator would be able to impose penalties (e.g. a fine or a non-monetary fine, such as not being able to incur certain types of market risk over a period of time) on a bank which failed to set aside enough capital. If the bank over-commits, it penalises itself by setting aside too much capital.

Such a system would remove the responsibility of the regulator to endorse a particular model, which is necessary in Basel 2's internal model approach. It gives each firm an incentive to find the best model and to add the appropriate multiplication factor to the estimate of possible losses to ensure against incurring a penalty.

The problem with pre-commitment is that banks are penalised at a time when they are under-capitalised – similar to the pro-cyclical problem discussed in Basel. Also, if all banks failed to meet their target because of an unexpected event, it could create systemic problems itself.

4.5.2. Subordinated Debt

Another example of an incentive based approach is that all banks be required to have a certain percentage of their capital in *subordinated debt*: uninsured, unsecured loans which are junior to all other types of lender, that is, the lenders would be the last to be paid off in the event of bankruptcy. However, a number of issues need to be dealt with if it is to be successful. A clear signal that these creditors will not be bailed out is necessary. Thus, only well-informed buyers, such as institutional investors, should have access to it, which could be done if the debt is issued in very high denominations. The choice of correct maturity is also important. If too short, there is a reduced incentive to monitor. If too long, banks would issue the debt at infrequent intervals, and the market would be unable to give an indication of its view on that debt, which would undermine market discipline. Most proposals suggest a maturity of at least 1 year. The amount suggested is between 2% and 5% of total assets, with a reduction in capital contributions to ensure a fair capital burden. Some propose quarterly debt issues so the market can adequately signal the banks' debt value. However, there is a question of whether even the largest banks could issue this debt so frequently. Subordinated debt is most likely to work with the largest banks, i.e. with assets of at least $10 million. For smaller banks, the transactions costs would be high and it is unlikely there would be enough liquidity for small bank issues, meaning the spreads would convey very little information. To be effective, regulators must take punitive action if the yield on the debt falls below a certain level, e.g. the equivalent of BBB corporate debt or junk bond yields on the secondary market. The regulators would then intervene and declare the bank insolvent.

There are a number of advantages arising from the use of subordinated debt. The holders of the subordinated debt, sophisticated creditors, have a strong incentive to monitor the actions of the bank because they lose all their investment in the event of failure. If traded,

the debt would be a means of providing a transparent, market price of the risk a given bank is taking. Finally, regulators in some countries (e.g. the USA) are required to take prompt, corrective action or a least a cost approach when dealing with a problem bank. Regulators would be concerned about runs on debt if there were any rumours about the condition of the bank, which would reinforce this requirement.

There are also disadvantages. First, the same rules would apply to all banks above a certain size, independent of the type of bank, its management and the riskiness level. The use of such debt also implies that bank regulators have access to less information than the market place, since the idea is to use sophisticated investors to provide early warning of problems via the sale of the debt. In some developed economies, such as the USA, the opposite is true. Ely (2000) states that a US bank with assets of $100 billion pays bank regulators over $4 million in fees, which should be enough for all the bank's financial information to be carefully examined. By contrast, the market relies on the publication of quarterly indicators, and does not have access to detailed information that regulators have. Second, if each bank subsidiary in a financial holding company structure was required to issue subordinated debt, there would be two-tier disclosure with the regulator: at the FHC consolidated level and at subsidiary level. This would be costly for the banks. Next, in the case of a financial conglomerate the issue arises as to which parts of the conglomerate would have to comply with the requirement to issue such debt. Also, problem banks would be tempted to avoid full disclosure or massage the figures at the time the debt was issued. However, with the Sarabane Oxley rules, the bank executives run a high risk of jail or heavy fines. As was noted above, if the debt was issued quarterly, it would be costly for the bank and could mean the market was flooded with bank debt, thereby forcing up yields, which merely indicated excess supply rather than anything inherently wrong with the bank. Yields would also be forced up in times of systematic problems, for example, in 1998 with the LTCM and Russian government debt default.

Finally, requiring banks to issue subordinated debt might cause market manipulation. For example, an institutional investor could buy up a large portion of a bank's subordinated debt and short sell its common stock at the same time. The speculators would then dump the debt in an illiquid market, forcing up the yields, which could trigger intervention. This would be likely to cause the stock price of the bank to fall, at which time the investor closes out the short position: the gain would exceed the loss on the sale of the SD. Bank management could do nothing about it – a bank can buy back its own common stock but its management would not be allowed to buy subordinated debt.

4.5.3. Cross-Guarantee Contracts

Ely (2000) argues this is another market oriented method to encourage banks to be safe and sound. A cross-guarantee contract is a form of private insurance against insolvency. The guarantors provide unconditional guarantees of the financial firms' (including banks) liabilities. It would be negotiated on a firm by firm basis, and to operate in the financial sector, a firm would be required to find a guarantor. The guarantor would be paid a premium that would reflect how risky each bank's activities were. In a simplistic example, a retail bank offering a diversified range of intermediary services would be far less risky than a firm specialising in proprietary trading.

The guarantor and guaranteed firm would jointly agree on a supervisor to monitor compliance with the cross-guarantee contract; hence supervisory arrangements would apply to a particular bank according to the risk profile of that particular bank's assets. It would get rid of the "one size fits all" approach, though so do the Basel 2 proposals. Also the large universal banks would need a group of guarantors, and close monitoring of the guarantors would be necessary to ensure they have the funds to cover an insolvency.

4.6. International Financial Architecture

4.6.1. The Meaning of International Financial Architecture

Though the term "international financial architecture" is relatively new, institutions such as the Basel Committee have been working towards a common system of regulating global banks for over two decades. National bodies concerned with containing national crises, such as Sweden's central bank and the Bank of England, have been around for centuries.

However, the agenda for *international financial architecture* is much broader, bringing together the various organisations dealing with international finance in an attempt to regulate banks, other global financial institutions and the financial system as a whole. The objectives are to design a global financial structure, and a means of regulating and coordinating institutions within that structure, to minimise the probability of a major financial crisis occurring. Also, to have in place methods for dealing with a crisis, should it occur.

Table 4.6 shows the key global institutions concerned with preserving the stability of the international financial system. These organisations focus on the international coordination of regulations in a particular area, including banking, securities, insurance and accounting. The exception is the Financial Stability Forum, which is trying to ensure the *effective implementation* of all these rules. For example, at its September 2003 meeting, the FSF identified a number of areas which, in their view, required close monitoring and/or action. The issue of credit risk transfer (CRT) from the banking sector to non-banking financial areas, notably the insurance sector, which is arising from the use of credit derivatives (see Chapter 3). It reported that a work plan had been set up to investigate the issue and address concerns about financial stability posed by CRT. The need for greater transparency in the reinsurance industry was also discussed, as was the role of offshore financial centres in an increasingly integrated global financial market. It looked forward to stronger arrangements by these centres in the areas of supervision, information exchange and regulation. Other areas considered were corporate governance and auditing standards.[46]

There are other organisations which also focus on the broader picture, including the IMF and the World Bank. The *International Monetary Fund* (IMF) was created by the 1944 Bretton Woods Agreement. With a membership of 182 countries, its primary concern is with the balance of payments, exchange rate and macro stability, with a responsibility for economic surveillance around the world. Member countries are encouraged to meet

[46] BIS (2003), "The Financial Stability Forum Holds its 10th Meeting", *Bank for International Settlements Press Release*, 11 September 2004. Available at www.bis.org

Table 4.6 International Organisations Concerned with Financial Stability

Name	Date Established	Objective	Who Meets	Membership
Basel Committee on Banking Supervision	1975	Supervision of international banks but many countries (e.g. EU states) apply standards to all banks	Supervisors + central bankers from G-10	12 countries + observer status: E Commission, ECB, BIS Financial Stability Group
International Organisation of Securities Commission (IOSCO)	1990	Pre-dates 1990 but membership increased after that date. Supervisors of securities firms	Supervisors of securities firms (e.g. SEC, FSA)	91 countries
International Association of Insurance Supervisors (IAIS)	1994	Supervisors of insurance firms	Supervisors of insurance firms	80 countries
International Accounting Standards Committee (IASC)	1973	To harmonise accounting rules world-wide. Set up the IASB to implement agreed global accounting standards.	3 or 4 day meetings per annum	16 delegations – each with 3 members plus observers
International Accounting Standards Board (IASB)	2001	To implement a set of global accounting standards. Advised by a 49 member Standards Advisory Council	Monthly meetings	14 members from 9 countries
Financial Stability Forum (FSF)*	1999	To advocate stronger development & implementation* of international standards; to access, identify and take joint action on vulnerable points that could undermine the stability of the international financial system; to improve information flows, coordination and cooperation among the various members. No executive role but rather, to encourage the other groups to take action	Supervisors + international supervision bodies, central banks (+ECB), finance ministries, IMF, World Bank, OECD, BIS	G-7 + Australia, Hong Kong, Netherlands, Singapore (42)

* FSF: emphasis on EFFECTIVE implementation of standards, rather than devising them.
G-7: Canada, France, Germany, Japan, Italy, UK, US.
G-8: as above + Russia.
OECD: G-10: G-7 plus Netherlands, Belgium and Sweden + Switzerland – joined in 1984.
G-30: The Group of 30: a private group of very senior representatives from the private and public sectors and academia.
Objective: to improve understanding of international economic issues.

macroeconomic targets. Also, since the 1980s, the IMF has been involved in rescheduling loans/facilitating new ones in the event of major problems (e.g. default or requests by sovereign countries to reschedule debt repayments). If a country is having problems repaying its external debt (private, public, or both), it puts pressure on lenders to extend financing in exchange for the Fund increasing its lending; and on problem debtor countries to implement macroeconomic adjustment programmes including meeting inflation targets and reducing the size of government debt relative to GDP.

The *World Bank* was also created by the 1944 Bretton Woods Articles of Agreement. The Bank is a development agency, arranging external finance for developing and emerging markets with little or no access to private lending. The external finance consists of project finance or loans, granted on condition that certain structural adjustments, etc. be made. It also encourages private foreign direct investment.

Both institutions have expanded their financial policy departments and are concerned with financial stability, but mainly at the macro level. The *Financial Sector Assessment Programme* (FSAP) is a joint programme run by the IMF and the World Bank. Introduced in 1999, it signalled that these institutions were intending to play a greater role monitoring and trying to preserve global financial stability. By April 2003, approximately 95 countries (both developed and emerging market) have either been, or are about to be, assessed. The assessments cover the macroeconomy, identification of points of vulnerability in the financial systems, arrangements for managing financial crises, regulation, supervision and soundness of the financial structure. There is a direct link with the Basel Committee and the WB/IMF through the *Core Principles Liaison Group*: its remit is to draw up methods for assessing different aspects of the financial sector and for setting up new capital standards. In its most recent public statement (IMF, 2003), concern was expressed that the programme is turning out to be costly, stretching IMF/World Bank resources. Though these reports are thorough, there is a question about their necessity, especially among the G-10 countries, which are reported on by the organisations such as the OECD and produce their own extensive statistics and analyses.

4.6.2. Ongoing Issues Related to International Bank Supervision

International coordination of banking regulation and supervision has come a very long way since the formation of the Basel Committee in 1975. However, there continue to be a number of outstanding issues to be addressed.

Harmonisation of national supervisory arrangements

Increasingly, bilateral meetings are being used to improve harmonisation between supervisors of different countries. They are used to exchange information and draw up memoranda of understanding (MOU). The MOU broadly defines the areas in which the information exchange takes place, dealing with ongoing financial issues and firms. For example, Evans (2000) reports the UK's FSA has over 100 MOUs with other supervisors. Keeping the lines of communication open in the event of serious cross-border problems is very important, and requires contact and communication at both the formal and informal level.

Improved compliance

Improved compliance with agreed standards set by bodies such as the Basel Committee. The traditional approach has been the assumption that once a standard (e.g. the Basel risk assets ratio) has been agreed upon, the members of the group would implement the new standard. However, there are problems with this method:

- Failure to apply the rules.
- Different interpretation of the rules (e.g. tier 2 capital – Basel 1).
- In the case of Basel, a membership limited to developed countries, though this is changing.
- For organisations such as IOSCO and IAIS, the membership is so large and the secretariat so small (6 and 5, respectively with 91 and 80, respectively country members) that the rules are impossible to enforce, even if these organisations saw enforcement as part of their remit, which they do not.
- Basel and IOSCO have attempted peer review but abandoned it for lack of resources, issues related to confidentiality (e.g. how much information does a member pass to the peer member conducting the review?) and a reluctance on the part of one member to pass judgement on another because it could upset bilateral relationships. The IMF and World Bank may be able to monitor compliance to standards laid down by the international supervisors because they have the expertise and resources, and already have detailed knowledge of most countries' financial sectors. The FSAP is a good example, though these bodies are already concerned that the assessments are stretching their resources. There is a more fundamental issue about whether the IMF/World Bank can be policy advisors/assessors and also act as neutral intermediaries, should a sovereign nation encounter problems repaying their external debt.
- Incentives could be put in place to encourage countries to cooperate with a compliance assessment and make the results public. Incentives could include using the assessments to reinforce attempts at financial reform by a government, getting better ratings from external agencies and the markets, obtaining lower risk weights for government and bank borrowing in a given country, and being given better access to IMF and World Bank loans. Finally, the market would form a poor opinion of countries that did not publish their reports.

Improved disclosure

Improved disclosure by financial firms is an important component of effective international supervision because it can improve market discipline. The disclosure can be direct, provided by the firms themselves (e.g. pillar 3 of Basel 2) or indirect, where the ratings published by independent rating agencies are used. A more radical suggestion is to use spreads on subordinated debt as an indicator of the health of a financial firm. The Federal Reserve Bank of Chicago has provided some evidence that these spreads are a significant indicator of the creditworthiness of banks but to date, there is no serious move to use them for supervisory purposes.

The Financial Stability Forum (2001) reported the results of a working group looking at disclosure by banks, hedge funds, insurance firms and securities firms. The purpose

of the exercise was to issue recommendations on an improved regime of disclosure and the incentives needed to ensure firms participate. The main recommendations called for timely disclosure (at least semi-annual and preferably quarterly) of financial data drawn from a firm's risk management practices. In addition to data on market risk, credit risk, liquidity risk, etc. qualitative information should be provided. The report also called for more information on intra-period disclosures or issues such as the methodology behind the production of statistics.

However, it is important to bear in mind the costs and benefits of disclosure. For example, supervisors rarely disclose the overall assessment of the riskiness of a particular bank because of the effect it might have on the markets if a bank is pronounced "high" risk. This in turn would adversely affect the incentives of the bank to fully disclose its position to the supervisors, and/or to go for broke in the hope of getting the bank out of a problem before the supervisor finds out.

Participation and cooperation by developing countries/emerging markets

All of the key international bodies concerned with prudential supervision have their memberships dominated by the industrialised countries, while the developing nations are normally the recipients of aid and loan packages by the IMF, World Bank, etc. However, greater participation of the emerging market countries is vital if international financial stability is to be achieved, and this is beginning to happen. For example, 13 emerging market central banks are members of the Bank for International Settlements, in contrast to its predominantly western focus at the time of its establishment. The Basel Core Principles Liaison Committee has members drawn from developing nations.

Harmonisation of accounting standards

There are significant differences in the application of accounting standards, even among industrialised countries. In the United States, pre-Enron, the standards were used to ensure that those looking at a firm's accounts would get a "true and fair view" of the firm. The result was a proliferation of accounting rules which, in Europe, are regarded as too onerous. Also, many non-Anglo Saxon countries view firms' accounts as serving a different purpose, such as providing information to creditors and employees. For example, in Germany, methods (e.g. for depreciation) using published accounts must be approved by the tax authorities because tax is determined from the published profits. By contrast, tax authorities in Anglo Saxon countries do not use these accounts to assess tax. In the USA, the Sarbanes–Oxley Act (2002) introduced new, stricter rules designed to prevent a repeat of the poor accounting practices discovered after the spectacular problems uncovered at the bankrupt Enron and WorldCom. External auditors for a firm may no longer offer consulting services, and there are strict new corporate governance rules which apply to all employees and directors of a company. CEOs and CFOs must certify the health of all reports filed with the Securities and Exchange Commission, and face stiff fines/prison sentences if they certify false accounts. A new independent board is to oversee the accounting profession. While the US experience

prompted authorities in other countries to re-examine their laws, no country has introduced new laws similar to Sarbanes–Oxley.

There has been significant progress in the resolution of differences, and a convergence of global standards in accounting. In May 2000, IOSCO agreed to allow the International Accounting Standards Committee (IASC) to produce a set of 30 core accounting standards, that would apply globally. After some debate over structure, the International Accounting Standards Board (IASB) was formed in 2001, with 14 members, from 9 countries: 5 from the USA, 2 from the UK, and 1 member each from, respectively, Australia, Canada, France, Germany, Japan, South Africa and Switzerland.[47] A Standards Advisory Council (SAC) was established to advise the IASB. The IASB has produced one set of international accounting standards (IAS) so that a transaction in any country is accounted for in the same way. A firm meeting these standards could list themselves on any stock exchange, including, it is hoped, the New York Stock Exchange.

In June 2002, the European Commission (EC) agreed that all EU firms listed on a regulated exchange would prepare consolidated accounts in accordance with the IAS from 2005 onwards. In October 2002, it was announced that the IASB and the US Financial Accounting Standards Board (FASB) were committed to achieving convergence between their respective standards by 2005. Should convergence be achieved, the Securities and Exchange Commission (SEC) could accept financial statements from non-US firms which use IAS – they would not have to comply with the US GAAP (Generally Accepted Accounting Principles). However, the issue of whether foreign firms operating in the USA will have to conform to Sarbanes–Oxley remains unresolved – many countries are seeking to have their companies exempted. A separate dispute has arisen over two standards, IAS 33 and 39, which the European Commission is refusing to accept. The rules are concerned with the treatment of financial assets and liabilities, currently reported on the accounts at book value. In earlier periods when few bank assets and liabilities (e.g. loans, deposits) were traded, holding them at book value was not controversial. IAS 39 would make accounting statements more transparent with respect to derivatives – many of the markets for futures, options, etc. are large and liquid due to the growth of derivatives and securitisation. The IASB proposes to replace book value with "fair value" – the market price of the financial instrument. European banks and insurance firms, especially the French, have objected on two grounds. Not all financial instruments are traded in liquid markets, so obtaining a market value is difficult. For options, futures, etc. that are traded frequently, the concern is that fair value would lead to more volatile accounts. In the USA, the SEC will not allow European firms to use international rules unless there is greater transparency. The FSAB has threatened to halt its efforts to converge GAAP and international standards. As this book goes to press, the issue has not been resolved, though HSBC has announced it will adopt the new rules independent of what the EC does. It joins UBS, Dresdner, and other key banks which already use them.

[47] See Table 4.6. The IASB is an independent foundation with a board and group of trustees. The trustees include, among others, Paul Volcker (former Fed Chairman) and a former chairman of the US SEC. Board members are chosen according to technical expertise.

4.7. Conclusion

This chapter began with a review of the reasons for regulating financial markets, and explained why banks tend to be singled out for special regulation. The reader was introduced to key terms such as financial fragility, contagion and systemic risk. The bulk of the chapter focused on the Basel Committee, and its efforts to establish common global regulatory standards for international banks. Rapid financial innovation, together with obvious gaps and inconsistencies in Basel 1, resulted in a major amendment on the treatment of market risk. Proposals for a new "Basel 2" were put forward in 2000, with a recommendation to change the treatment of credit risk, and introduce a new capital charge for operational risk. Pillars 2 and 3, dealing, respectively, with supervisory practices and market disclosure, were added to create a comprehensive system of global bank regulation. It would allow banks to "mix and match" the way capital charges are assessed for credit, market and operational risk. Basel 2 gives banks incentives to employ their own internal models, to achieve convergence in the amount of regulatory and economic capital set aside by banks. The original proposals were attacked by practitioners and academics alike, and Basel's own quantitative impact studies indicate many banks will experience a net increase in the amount of capital they are required to set aside. Additional consultative documents made substantial concessions in response to critics, and Basel 2 was adopted by the Basel Committee in June 2004.

The United States has already declared its hand. An announcement by its regulators means only 10 to 20 US banks will use the most advanced methods to compute their capital charges; the other 8000 or so will continue to use Basel 1, and the 1996 market risk amendment. Failure to bring the USA on board could undermine the authority of the Basel Committee. Whatever its fate, the protracted debate over the content of Basel 2 illustrates the complexities of trying to regulate 21st century banks.

The final sections of the chapter showed that while the objectives of the Basel Committee are important, other organisations are involved in global regulation and there are other key issues, such as the need for a global set of accounting standards.

Chapter 5 looks at the regulation of banks in countries with key international financial centres. The EU is also included, to round out the coverage of banking regulation in the developed world. All of these countries (except the US) plan to integrate the Basel 2 into their domestic regulations, which is why the global regulations were examined first. However, national prudential regulations are also important, and either influence or are influenced by the structure of their respective banking systems. Furthermore, a study of the different systems raises a number of diverse issues, ranging from the optimal number of regulators to problems achieving a single banking market within the EU.