THE EFFECTS OF BIS CAPITAL ADEQUACY RATIOS ON BANK FINANCING

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ABSTRACT

This paper examines the effect of the Bank for International Settlements solvency ratios on bank financing, with particular reference to Irish and UK major clearing banks. The paper discusses the rationale behind bank regulation and in particular capital adequacy ratios. These ratios are a measure of own capital to total assets employed, weighted by risk. Because these ratios are based on accounting numbers, accounting rules will affect the size of both capital and total assets. The paper shows how different accounting rules in the US and UK can result in quite different measures of capital. The paper also examines financial innovation and portfolio adjustments by banks in response to these ratios, and considers some evidence for changes in asset composition in response to risk weightings.

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This paper examines some effects of one particular government imposed regulation on banks, that is the Bank for International Settlements (BIS) capital adequacy ratios. The European Union has a requirement for almost identical ratios. The effects of capital adequacy rules on banks are also of interest because of the proposed application of similar capital adequacy rules to firms trading in securities by December 1995.

The paper begins with a discussion of the context in which this particular regulation was introduced. It then examines some problems in interpreting capital adequacy ratios because of both differing accounting rules in different countries and different rules by regulators as to what

constitutes bank capital. Some responses by banks to capital adequacy directives in terms of financial innovation and portfolio adjustments are also considered.

BANKS AND RISK: THE CASE FOR REGULATION

Financial firms, and in particular banks, operate in an environment characterised by asymmetries in information. In particular, the solvency of one bank may be affected by the failure of another bank because of loss of confidence and large-scale withdrawals. Banks borrow on a short-term basis and lend on a long-term basis. As a result there is a mismatch between the date to maturity of assets and liabilities, and hence there is a possibility of contagious bank failures. State guarantees to depositors and guarantees by central banks to act as lender of last resort may prevent sudden losses of confidence.

A further implication of information asymmetries between borrowers and lenders is that there is a gain to lenders who collect information on borrowers and also a gain to borrowers of below average risk to signal this to potential lenders. Otherwise the cost of funds would reflect average quality and perhaps result in the exclusion of low-risk low-return projects and the dominance of high-risk high-return projects. Financial intermediaries such as banks emerge as a co-ordinating mechanism between lenders and borrowers. However, this, in turn, may result in adverse selection between depositors and banks. Potential depositors may be unable to distinguish between banks adopting a high-risk lending strategy and those adopting a low-risk strategy. Deposit rates may reflect average risk. Monitoring by depositors and signalling by low-risk banks may cause deposit interest rates to move in line with risk. This is likely to be more efficiently carried out by a public agency with access to non-market information, particularly given moral hazard problems such as fraud or high-risk lending (Quinn, 1992; Lucey and Quinn, 1993).

Because of the possibility of contagious bank runs and because of information asymmetries between depositors and banks, regulatory agencies often act as lender of last resort and may also provide deposit insurance, often up to some specified limit. Sometimes a lender of last resort facility may be justified on a 'too big to fail' policy. However, a lender of last resort facility may in turn encourage banks to hold a riskier asset

portfolio. Equity shareholders have a limited liability for future losses but will capture all future gains, while the guarantor (the State) has a potentially unlimited liability for future losses (Kane, 1992). Kane also argues that regulatory authorities adopt an arbitrary approach to the measurement of capital.

Deposit insurance schemes may also have implications for the riskiness of the lending portfolios of banks. Depositors (given deposit insurance) will not be influenced by the riskiness of a bank's lending and hence may be indifferent between banks with high-risk loans and those with low-risk loans.

There have also been some critics of bank regulation. For example, Tussing (1970) has argued that protection of the public interest and prevention of bank failure have become so linked that 'they are used interchangeably'. Kaufman (1991) argues that there is a strong tendency for the lender of last resort 'to view crises as more severe than they actually are and the costs of intervention as smaller than they actually are'.

CAPITAL ADEQUACY RULES AND THE REGULATION OF BANKS

In practice, most countries have relied on supervisory powers to ensure against fraud and prevent excessive risk-taking. But more recently regulatory authorities have focused on increasing the ratio of own capital to total capital as a means of ensuring bank solvency. One advantage of such an approach is that increasing the capital asset ratio reduces the incentive to undertake high-risk lending (Furlong and Keeley, 1989). The greater the proportion of own capital involved in lending, the greater the loss to owners of equity, and hence the greater the incentive to adopt low-risk lending strategies.

Recent banking regulation has focused on what constitutes an adequate ratio of capital to total liabilities. The main influences have been the Bank for International Settlements (BIS) and EU directives. Under these rules there are two main definitions of capital known as Tier I and Tier II. Tier I and Tier II capital is then expressed as a proportion of risk weighted assets. Brown, Mallett, and Taylor (1993, ch. 5) define the

main components of Tier I capital to include paid-up share capital, plus disclosed reserves. Tier II capital includes Tier I capital plus undisclosed reserves and revaluation reserves, general provisions, certain perpetual capital instruments and subordinated term debt. Later sections examine in greater detail the effect on Tier I and Tier II ratios of accounting/regulatory rules and various capital instruments.

Given that financial firms may operate in a number of different countries, and that the Single European Act is likely to lead to greater cross-border investment within the EU, there is a need for rules for regulating financial firms operating in different markets. For example, in relation to banks, source-country regulators are required to ensure that the group as a whole conforms to capital adequacy rules.

ACCOUNTING RULES AND CAPITAL ADEQUACY RULES: SOME PROBLEMS

The BIS/EU capital adequacy rules are regarded as important indicators of financial strength for banking firms and are given considerable prominence in stockbroker reports and the financial press. Given the significance attached to these rules, it is important to understand some of the difficulties in measuring capital, particularly in cross-country comparisons.

The Bank for International Settlements (1988, p. 18) has set a target standard ratio of total capital to risk weighted assets of 8 per cent and a core capital element (Tier I) ratio of 4 per cent, which it expected would be reached by the end of 1992. The EU own funds and solvency directives (89/299/EU and 89/647/EU) stipulate similar ratios (Central Bank of Ireland, 1991) again to be implemented by the end of 1992. Although there is no minimum Tier I capital ratio specifically identified, an overall minimum 'solvency ratio' of 8 per cent is set. Since there is also a requirement that the total of Tier II items cannot exceed Tier I items, in effect the minimum Tier I ratio is 4 per cent. When publishing BIS/EU ratios in their annual report and accounts, banks generally report Tier I capital and 'Total Capital'. Total Capital is defined under BIS/EU rules as Tier I capital plus Tier II capital minus unconsolidated investments in credit and financial institutions.

The BIS/EU capital adequacy ratios are in effect ratios of own capital to total assets. This raises issues as to how capital and, because of the direct relationship between retentions and capital, how income should be measured. Regulators place considerable emphasis on accounting measures of capital. However, this emphasis may be misplaced. According to White (1991) one major reason for the crisis in the savings and loan sector in the US was the flawed information system — that is, an accounting system based on historic cost rather than current values. At a more extreme level, the Bingham Report (1992) states that the auditors of BCCI reported that in September 1988 the risk asset ratio was comfortably above the Basle minimum (p. 59). In April 1989, it was reported as 1 per cent above the minimum (p. 64) and at 31 December 1990 it was estimated at 5.2 per cent. Yet the auditors reported to the Bank of England on 22 June 1991 that in 'PW's [Price Waterhouse] view the falsification and deception had been on such a scale that the true financial history of BCCI was unlikely ever to be recreated' (p. 140).[1]

In calculating BIS/EU ratios, different accounting rules for measuring capital may pose a number of difficulties. Further complications may result from rules developed by regulators: for example, the distinction between accounts which are externally audited and those which have been examined only by internal auditors is important. Under the EU own funds directive, interim profits if externally audited may be included as part of Tier I, but if internally audited they form part of Tier II (Brown et al., p. 56). External auditing of interim profits may be nearly as costly as for full-year profits, and so this could form a relatively expensive and hence little used source of Tier I capital.[2] For banks, one of the more important issues relates to off-balance sheet capital or 'hidden capital'. Kane (1992) argues that such capital allows income smoothing or may allow the distribution of guarantor funds.

It is well known that accounting measures of income and profit vary between different national accounting systems. For example, US and UK GAAP produce different measures of income and capital for the same time periods and firms. **Table 1** shows net income attributable to ordinary shareholders using US and UK/Irish GAAP. It shows that US GAAP produces lower measures of income in all cases except for AIB for the year 1990. Dividends are the same under both sets of accounting conventions, and so it might be expected that equity shareholders'

wealth is lower using US accounting conventions. However, **Table 2** shows that equity capital measured using US GAAP is higher than that using UK GAAP for some banks (AIB and sometimes Barclays). The main reasons for the differences in net equity values may be explained by the inclusion of goodwill and debt issue expenses which have been written off against reserves, and also the inclusion of proposed dividends. Negative amounts relate to property revaluations which are excluded under US GAAP.

A further example of different national accounting rules resulting in different measures of capital occurred when Mitsubishi Bank reported non-performing loans twice as large using US GAAP compared with Japanese GAAP (*Financial Times* (F.T.), 18 June 1994).

The BIS definition recognises that elements of the definition of capital are discretionary in the light of 'national accounting and supervisory

Table 1: Net Income (£m) Attributable to Ordinary Shareholders Using US and UK/Irish GAAP

	1992		1991		1990		1989	
	US	UK	US	UK	US	UK	US	UK
AIB[1]	71.5	107.6	76.9	104.7	103.8	97.2	101.6	135.0
Royal Bank of Scotland[2]	-17.8	10.6	13.1	72.7	182.2	193.6	136.7	147.1
National Westminster[3]	125.0	164.0	-59.0	65.0	302.0	370.0	157.0	198.0
Barclays[3]	-343.0	-250.0	127.0	242.0	513.0	589.0	300.0	452.0

Notes

1 Reporting currency is Irish Pounds. The year end date refers to December for 1992 and March of the following year for 1989–91.

2 Reporting currency is Sterling. The year-end date is 30 September of each year.

3 Reporting currency is Sterling. The year-end date is 31 December of each year.

Table 2: Ordinary Shareholders' Equity (£m) Using US and UK/Irish GAAP

	1992		1991		1990		1989	
	US	UK	US	UK	US	UK	US	UK
AIB[1]	1017	885	1021	858	998	884	751	666
Royal Bank of Scotland[2]	1706	1780	1557	1601	1459	1508	1356	1411
National Westminster[3]	4876	5222	4390	5257	5271	5894	5184	5948
Barclays[3]	5279	4919	5407	5740	6150	5519	n.a.	n.a.

Notes

1 Reporting currency is Irish Pounds. The year end date refers to December for 1992 and March of the following year for 1989–91.

2 Reporting currency is Sterling. The year-end date is 30 September of each year.

3 Reporting currency is Sterling. The year-end date is 31 December of each year.

regulations' (BIS, 1988, p. 5). Hence BIS ratios will vary according to which national accounting system is used.

In some countries, revaluation reserves (largely relating to land and buildings in the UK) may be included as part of capital in accounting standards and by regulatory authorities. Revaluation reserves are particularly important for Japanese banks and relate largely to ownership of equity shares. In a study of 734 Japanese companies quoted on the Tokyo stock exchange and with a stock market valuation greater than 5 billion yen in 1984, Prowse (1992) found that 20.5 per cent of the equity was owned by banks. This compared with 0.2 per cent of US equities owned by banks. Revaluation reserves arising from revaluation of fixed assets may be fully included as part of Tier II capital, but revaluation reserves consisting of the difference between the historic cost of an asset (generally equities) which is shown in the Balance Sheet and their market value may be only partially counted as Tier II capital (BIS, 1988, Annex 1, p. 3). The BIS definition of Tier II capital refers to such

reserves as 'latent reserves'. The net effect is that stock market movements may have a direct effect on Japanese banks' ability to lend. One effect of the fall in reserves of Japanese banks caused by falls in the stock market is to reduce both international lending and domestic lending (F.T., 26 May 1995). Asset deflation in Japan and other countries has in turn been blamed for prolonging the world economic recession by some — for example, the chairman of the US Federal Reserve Board (F.T., 27 November 1992).

Similar but less pronounced effects occur amongst UK and Irish clearing banks. Of nine banks examined in the period 1988–92, eight revalued fixed assets upwards, but four which revalued assets upwards in the period 1988–89 revalued assets downwards in 1991 (Barclays, Lloyds, NatWest and Royal Bank of Scotland). In 1992, National Westminster reported a decline in property values of Stg£297 million but reduced its revaluation reserve by only £93 million.

It was possible until 1 January 1993 under Irish and UK accounting rules to revalue assets, thus creating reserves, and then to capitalise reserves via a scrip issue (Brown et al., p. 51). Thus the surplus arising from revaluation is effectively treated as part of Tier I capital. Examples of banks which both revalued fixed assets and capitalised reserves are Bank of Ireland and Barclays.

There are other accounting issues, which have been discussed in the 'creative accounting literature', that affect the definition of income and hence capital via retentions. For example, all banks examined in this study reported a pension surplus and this had varying effects on their pension costs.[3] Secondly, some banks had capitalised costs. Finally, currency movements may also account for a substantial part of the variability in capital ratios from year to year. The Tier I capital ratio fell for Barclays Bank for 1990 but rose by 14 per cent for Lloyds in 1991 because of currency movements.

THE USE OF PREFERENCE SHARE AND OTHER COMPLEX CAPITAL ISSUES

The previous section has shown how accounting rules can affect bank measures of capital. While it is important to understand these rules, they

do not necessarily provide scope for banks to achieve a more favourable capital adequacy ratio. One solution for banks is to issue complex financial instruments. The use of some of these financial instruments provides an interesting example of financial innovation, in the sense of using an existing financial instrument in a novel way. This follows the well-known distinction between invention and innovation developed by Schumpeter. Schumpeter (1947, p. 150) gives the following definition: 'Invention is finding new things. Innovation *is getting new things done*'.

There are two contrasting viewpoints of the causes of financial innovation, one of which is associated with Merton (1990) who argues that financial innovation is a function of: (1) demand to complete markets — for example, risk reduction via hedging; (2) lowering transactions costs or increasing liquidity; (3) reducing agency costs. Miller (1986) in contrast argues that financial innovation is primarily a function of taxation or government regulation.

The most common way to improve Tier II capital is to issue long-term debt and several banks have issued long-term debt in recent years. However, debt which may be redeemed does not count as part of Tier II capital where the level of debt is equal to or greater than 50 per cent of Tier I capital. Hence banks also issue irredeemable debt or perpetual debt. **Table 3** shows the balance sheet totals for redeemable and irredeemable debt for the years 1988 and 1992–93. Perpetual debt has also been issued with a call option (for example, after five years) which may be exercised by the issuer. However, this does not affect the classification of the debt as irredeemable for regulatory purposes (F.T., 12 February 1993). Barclays Bank (F.T., 8 April 1993 and 13 April 1993) issued perpetual debt with a call option after 15 years, which resulted in the bond being priced at a lower yield similar to that of a 15-year bond. From June 1993 to August 1993, £1.3 billion of bonds with call options were issued. One particular problem that arose was their classification as variable rate bonds and hence fears that they might become subject to higher tax charges to discourage 'bond-washing' (F.T., 15 November 1993).

Banks have also issued preference shares (**Table 3**). Cumulative preference shares count as part of Tier II, but non-cumulative perpetual preference shares count as part of Tier I capital. Brown et al. (1993, p. 48)

Table 3[1]: Balance Sheet Totals of Debt and Preference Shares for the Years 1988 and 1992–3

Stg£ million

	Non-Cumulative Preference Shares		Undated Debt		Dated Debt	
	1992/93	1988	1992/93	1988	1992/93	1988
AIB[2] IR£	110.5	0.0	368.2	255.8	277.6	122.2
Bank of Ireland[3] IR£	178.9	49.8	246.6	106.4	340.8	207.9
Bank of Scotland[4]	200.0	0.0	386.8	141.0	610.5	241.4
Barclays[5]	122.0	0.0	1390.0	996.0	2375.0	1507.0
Lloyds[6]	0.0	0.0	1221.0	1022.0	1041.0	1037.0
Midland[7]	480.0	0.0	1026.0	888.0	1183.0	1348.0
NatWest	318.0	14.0	2236.0	1302.0	2837.0	1789.0
Royal Bank of Scotland[8]	196.5	0.0	421.8	207.4	700.0	637.2
Standard Chartered[9]	0.0	0.0	1006.7	868.8	385.9	474.3

Notes

1 The premium on issuing shares is also included in Table 3 in so far as it was possible to identify. The premium on issuing preference shares is often shown as part of reserves in the balance sheet.
2 Years ending 31 March 1989 and 31 December 1992.
3 Years ending March 1989 and March 1992.
4 Years ending 28 February 1989 and 1993. These are irredeemable.
5 The 1992 Annual Report states that in certain circumstances the undated notes would acquire the characteristics of preference share capital (Note 23, p. 123, Annual Report, 1992).
6 Year ending 31 December 1992. A note in the 1988 accounts indicates that in certain circumstances undated loan stock becomes similar to preference shares.
7 Years ending 30 September 1989 and 1992.
8 Years ending 30 September 1989 and 1992.
9 Years ending December 1988 and 1992.

elaborate further to the effect that such shares may be treated as part of Tier I even though they are redeemable at the option of the issuer with the consent of the regulator, in this case the Bank of England. NatWest issued undated debt convertible into preference shares in November 1992 and this was counted as part of Tier I capital (F.T., 13 April 1993). Preference shares are a relatively more expensive form of external finance given that dividends on preference shares are not tax-deductible, and the dividend is subject to ACT and hence affected by recent changes to the rate of imputation in the UK. Hence preference shares are relatively more costly and their use gives some indication of the benefit to banks of complying with BIS/EU capital adequacy regulations.

Undated or perpetual debt is known as upper Tier II capital and dated debt as lower Tier II capital. Subordinated dated debt is easier to issue but cannot, when combined with preference shares, exceed 50 per cent of Tier I capital (Central Bank of Ireland, 1991; Deasy, 1990). In addition, both dated debt and redeemable cumulative preference shares must have an original maturity of at least five years. Finally, there have also been issues of Tier II capital (undated subordinated notes) which could be converted into Tier I capital in the form of non-cumulative preference shares (F.T., 27 November 1992).

Table 4: The Classification of the Main Forms of Capital and Capital Adequacy Ratios

Paid-up share capital	Tier I
Disclosed reserves (largely retentions)	Tier I
Perpetual non-cumulative preference shares[1]	Tier I
Perpetual subordinated debt	Upper Tier II
Revaluation reserves	Upper Tier II
Undisclosed reserves	Upper Tier II
Redeemable cumulative preference shares	Lower Tier II
Dated debt	Lower Tier II

Notes

1 Non-cumulative preference shares may be treated as part of Tier I in the UK provided that the consent of the Bank of England is obtained.

There are various other restrictions on capital described in both the EU own funds and solvency directives and BIS capital adequacy rules. **Table 4** above summarises the relationship between different forms of capital discussed in this paper and Tier I and Tier II ratios.

OTHER EFFECTS: REDUCTIONS IN LENDING AND OFF-BALANCE SHEET FINANCING

Apart from changes in gearing ratios, banks may also respond to capital adequacy ratios by adjusting their lending portfolios. In particular, lending which has a higher-risk weighting has been reduced and replaced with lending with a lower-risk weighting. As discussed above, Japanese banks are expected to fall within the BIS guidelines by reductions in total lending. UK and Irish Banks could also improve their capital ratios by adopting a similar strategy. Because different classes of lending attract different risk weightings (for example, lending to OECD governments attracts either a zero or 10 per cent risk weighting), banks have an incentive to adjust their asset portfolios by, for example increasing the proportion of assets consisting of government loans.

Berger and Udell (1993) use US banking data to examine the hypothesis that the reallocation of capital from loans to government securities was partly caused by the introduction of risk weightings. The authors also examine other hypotheses seeking to explain the relative shift in asset composition, such as regional factors caused by the decline in real estate values and hence decline in collateral; a restructuring of non financial balance sheets, involving the substitution of quoted debt and equity for bank borrowing, as a reaction to high-debt equity ratios in the 1980s; and a general long-term trend of declining lending by banks caused by the growth of other forms of non-bank suppliers of credit. The authors conclude that a change in asset portfolios as a response to the BIS ratios was the least likely explanation (p. 43), and that voluntary retrenchment and increased scrutiny of loans by regulators are more consistent with the data. The authors note that larger banks (assets in excess of $1 billion) and banks with weak capital ratios have more substantial credit reallocation effects. The shift in asset portfolios was also found to be consistent with regional effects, balance-sheet restructuring and long-term trends, but it did not prove possible to distinguish between these latter variables.

However, Haubrich and Wachtel (1993) in a study of US banks conclude that the large increase in government securities as a proportion of total loans since 1989 is 'strongly related' to the introduction of risk-weighted capital requirements. Moore (1992) in a study of US quoted banks concludes that loan growth is a function of capital ratios, and Laderman (1994) concludes that capital-deficient banks in the US were constrained in loan growth in the period 1989–92.

Another possible effect of the BIS capital ratios is that banks have reduced their reliance on the inter-bank market and increased their use of derivative and off-balance sheet markets to hedge risk (BIS, 1992, p. 7). The reliance placed on capital adequacy ratios plus reduced transparency of off-balance sheet transactions may also have the effect of increasing the dominance of the best capitalised firms in derivative markets.

Table 5 shows that for banks in this study, while there was some growth in lendings to customers (net of provisions) between 1988 and 1992, there was a much larger growth in investment securities. This relative change may be partly explained by the lower-risk rating of holding government and other securities and hence relative improvement in capital ratios. US banks have increased their holdings of US government securities from 10 per cent of total assets in 1990 to 17 per cent in 1993 (F.T., 16 April 1993).

There are various theories which seek to explain the relative shift of assets in the US banking sector to government securities. One explanation is that the Federal Reserve was effectively guaranteeing profits to banks in order to recapitalise them by ensuring a steeply upward-sloping yield curve where banks could intermediate (borrow short and lend long), or in other words have a mismatch of the time date to maturity of assets and liabilities at no risk (F.T., 5 March 1994).

The very high investments/loans ratios for AIB and Bank of Ireland may be explained by reserve asset requirements set by the Central Bank and also by the relatively more important share of total assets in US subsidiaries, and the high proportion of government securities in total assets in these US subsidiaries. Kaufman (1992) argues that substantial adjustments in bank loan portfolios — for example, from business loans to

residential mortgages, and in particular mortgage-backed securities — result from the classification of risk on an arbitrary basis rather than on 'market perceptions' of risk. Because government securities now account for a relatively larger proportion of bank assets in both the US

Table 5: Lendings by Banks to Customers Compared with Purchases of Government Securities[1]

	Stg£ Million			
	1992/93		1988	
	Lending to Customers	Investment Securities/ Lending to Customers %	Lending to Customers	Investment Securities/ Lending to Customers %
AIB[2]	11,577	33.1	10,220	23.0
Bank of Ireland[2]	9,486	18.4	8,221	15.8
Bank of Scotland	21,636	2.30	8,241	2.90
Barclays	84,458	3.90	63,228	0.55
Lloyds	38,518	4.63	35,808	2.68
Midland	34,931	4.39	34,041	4.06
NatWest	86,297	8.34	65,041	4.24
Royal Bank of Scotland	21,522	4.37	11,883	4.05
Standard Chartered	12,821	9.61	17,499	8.60

Notes

1 The balance sheet date from which this data is taken is the same as in Table 3.

Lending to customers is shown net of provisions and excludes money market funds, or funds loaned to other banks. Investment securities consist of listed and unlisted investments. Listed securities are larger than unlisted securities for all banks examined except Barclays Bank.

2 The amounts for AIB and Bank of Ireland are in Irish Pounds.

and UK the valuation of these securities and the accounting treatment of changes in valuation can have a considerable impact on reported earnings. Some banks — for example, AIB — allocate profits or losses on realisation to income over five equal instalments. The US-based Financial Accounting Standards Board introduced a rule which came into effect in 1994 that will require US-based financial institutions to value government securities on a market-valuation basis (mark to market) in their quarterly reports. Opponents of this rule argue that it will result in large fluctuations in earnings (F.T., 16 April 1993), but in addition it will affect retained profits and hence capital ratios. One effect may be to reduce the proportion of long-dated government securities in bank portfolios.

Apart from reducing loan portfolios, a further technique for enhancing capital ratios is to securitise assets. This is most likely to occur with mortgages. However, the desire of banks to adjust portfolios also interacts with accounting rules relating to the measurement of capital. For example, the UK-based Accounting Standards Board (ASB) proposed (1991) that all securitised assets involving a special purpose vehicle (SPV) should still be shown on the balance sheet. It was argued that such changes would penalise UK-based banks compared with banks in countries with differing accounting conventions. In 1992, the Accounting Standards Board proposed that only the residual risk resulting from securitisation should be shown on the balance sheet (F.T., 10 November 1992).

Other off-balance sheet risks exist which have not so far been incorporated into balance sheets. The Bank for International Settlements (1992) has identified different risks faced by participants in derivative markets. One of these risks follows from the increased complexity of financial transactions which has reduced the transparency of balance sheets. The BIS recommends (p. 4) 'harmonisation of accounting and reporting practices with respect to off-balance sheet instruments' and has more recently proposed an increase in the capital requirements of banks that trade in the foreign exchange, securities and derivative markets (F.T., 1 May 1993). These requirements in turn are likely to influence the capital requirements of companies other than banks trading in securities and other financial instruments.

CONCLUSION

Regulation of banks in recent years has emphasised the importance of own capital to risk-weighted assets. Solvency ratios have been established for banks by the Bank for International Settlements and by EU solvency directives. The BIS/EU ratios have focused attention on how banks measure profit and capital, and in particular the importance of the accounting conventions used. In addition, these ratios have resulted in new forms of bank financing.

NOTES

[1] UK government lawyers have claimed that BCCI falsified accounts over a 10-year period (*Financial Times*, 21 December 1993).

[2] Audit costs for the banks examined varied between £0.7 million for the Bank of Ireland to Stg£4.1 million for Barclays Bank.

[3] For example, the Bank of Scotland has had a large pension fund surplus in recent years. As a result, it has not been necessary for the Bank of Scotland to make any contributions to the main pension scheme in recent years, with a consequent increase in reported profits.

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