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**Research Report**

## Financial reporting of derivatives in banks: Disclosure conventions in Germany, Great Britain and the USA

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# Dokumentation

**Financial Reporting of Derivatives in  
Banks: Disclosure Conventions in  
Germany, Great Britain and the USA**

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Dokumentation Nr. 96-02

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# 1 Introduction

The Group of Thirty, the Bank for International Settlements (BIS), the Institute of International Finance (IIF) and central banks in various countries are concerned with financial market stability in an environment of rapid growth and increasing complexity of derivatives business<sup>1</sup>. As a consequence, greater attention has been paid to the supervision and transparency of derivatives activities in financial institutions, which are the major players in these markets. Through capital requirements for market and credit risk exposures as well as disclosure of meaningful and accurate information, the BIS and the IIF want to impose strong market discipline upon banks and reduce the risk of bank runs.

Concerning the transparency of derivatives activities, two major issues have been addressed by people involved in the standards setting process: Firstly, they try to develop sound accounting standards for derivatives, to provide the foundations for credible and comparable balance sheets and income statements. Secondly, they attempt to define disclosure requirements which help the readers of financial statements to assess the risks resulting from derivatives and trading activities.

This paper explains the current state of the discussion on these issues by addressing the following questions. Firstly, what are the present accounting conventions for derivatives in US, UK and German banks and what recommends the BIS and the International Accounting Standards Committee (IASC)? The analysis distinguishes between accounting for derivatives held or issued for trading purposes and accounting for non-trading derivatives. Secondly, what supplementary information on the earnings from derivatives activities as well as their credit risk, market risk, liquidity risk, the applied risk management system and the risk philosophy of the company is disclosed in the notes and the management report? 1994 and 1995 annual financial statements of banks are explored to approach this question. Thirdly, what is the information value of these disclosures? To what extent do actual disclosures help to assess earnings and risks resulting from the bank's derivatives activities?

The analysis covers the derivatives reporting conventions in the USA, the UK and Germany and includes recommendations from the BIS and the IASC. Germany was chosen as an accounting system that stresses the principle of prudence and the protection of creditors. The USA and the United Kingdom, on the other hand, are examples for accounting regimes that emphasise the information value and economic substance of reporting. The two Anglo-American countries are included in the study, because the US system is more formal, more explicitly codified and more regulated than the UK system. Recommendations from the BIS and the IASC are covered, since they play a major role in the process of

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<sup>1</sup> Derivatives are future, forward, swap, or option contracts, or other financial instruments with similar characteristics.

international harmonisation of accounting rules and disclosure requirements<sup>2</sup>. In this sense, the presented review of disclosure conventions in banks reveals problems of comparability across institutions and countries as well as the gap between recommended and actual disclosures.

The paper is organised as follows. Section 2 illustrates different accounting rules for derivatives and their effect on earnings as well as supplementary disclosures that may help to understand the outcome of trading and hedging activities. The risks resulting from derivatives business are addressed in section 3. While quantitative disclosures on credit and market risks are emphasised, qualitative disclosures complement the discussion. Section 4 concludes the paper.

## **2 Assessing the Return of Derivatives Activities**

In this section, I describe the accounting rules, supplementary disclosures and problems related to accounting for derivatives. An understanding of these issues is necessary in order to interpret the outcome of derivatives business and to estimate the quality and volatility of future earnings of an entity.

### **2.1 Accounting Methods for Derivatives**

Economic profits or losses and reported earnings might be different, for example because of delayed recognition of items affecting income. Therefore, it is useful to describe first the earnings impact of different accounting methods for derivatives.

Mark-to-market valuation measures relevant items at market values<sup>3</sup> or fair values<sup>4</sup> and recognises all gains and losses in an entity's financial statements in the period their prices change. This method best reflects the economic gain or loss of the reporting period.

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<sup>2</sup> IAS reporting rules are applied by more and more Japanese, French, Swiss, and German banks.

<sup>3</sup> Market value is the amount obtainable from the sale, or payable on the acquisition, of a financial instrument in an active market (IAS 32, no. 5).

<sup>4</sup> Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction (IAS 32, no. 5). The best indicator for the fair value is the market value. In circumstances where it is considered that the indicative market price may not be achievable, however, the market value should be adjusted (SORP 1995, p.33-34).

Unit valuation involves that every contract is accounted for separately with regard to the imparity principle<sup>5</sup>. The problem of this approach is, that it does not give a true and fair view of the financial situation, if derivatives are used for hedging purposes. Hedging is the risk reduction by the means of risk compensation, that is certain assets or liabilities are combined with offsetting positions in a way that the risk of the whole position is lower than the risk of the single asset or liability. The principle of unit valuation does not reflect these relationships, since unrealised losses in the hedged item are reported in earnings while unrealised profits in the hedging instrument are ignored. As a result, losses are reported in earnings which cannot occur in this amount due to the hedging relationship<sup>6</sup>. In response to such anomalies, two methods of hedge accounting have been developed, which associate changes in the value of the hedging instrument with changes in the value of the hedged position: the compensatoric valuation with regard to the imparity principle and deferral hedge accounting.

The compensatoric valuation with regard to the imparity principle applies the imparity principle not to single items, but to the hedge position as an evaluation unit.

In the case of deferral hedge accounting, the recognition in earnings on the derivative is deferred (as assets or liabilities) until the offsetting loss or gain on the hedged position is recognised. Only when income or expense on the underlying event is recognised, the offsetting loss or gain on the hedging instrument will be recorded, whether or not the derivative instrument will be terminated. Neither the income statement nor the equity section of the firm's balance sheet are affected until the underlying critical event occurs, at which time the economic effect of both the underlying event and the related hedges are recorded and reflected in the firm's financial statement.

The effects of these different accounting methods on reported earnings are illustrated in figure 1. It is assumed, that changes in value occur in the current reporting period and that both the hedged item and the hedging instrument mature in the next reporting period.

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<sup>5</sup> The imparity principle - often called the principle of prudence - requires that profits are reported in earnings only when they are realised, whereas losses are also reported when they are recognised.

<sup>6</sup> Steiner, Tebroke and Wallmeier (1995), p.534 and Scheffler (1994), p.124.

Figure 1

Earnings effect of different accounting methods

Accounting method	hedged item	hedging instrument	effect on earnings	
			current period	at maturity
No hedge accounting (unit valuation)	Loss	Profit	Loss	Profit
Compensatoric valuation	Loss	Profit	L - P	
Deferral hedge accounting	Loss	Profit		Loss, Profit
Mark-to-market accounting	Loss	Profit	Loss, Profit	

## 2.2 Accounting Standards and Industry Practices

Derivatives are usually reported in accordance with the way they are used. The international tendency is to distinguish between derivatives held or issued for trading purposes and those issued for purposes other than trading. It is presumed that derivatives are held for trading reasons unless it can be demonstrated that they constitute non-trading hedges<sup>7</sup>. There are, however, differences across countries in respect of the accounting methods applied to trading and non-trading derivatives.

In the USA, of the four basic types of derivatives, only two - forwards and futures - are directly addressed by existing authoritative accounting rules<sup>8</sup>. No specific accounting rules have been established for swaps or options. Therefore, accounting for a wide range of derivatives activities has been shaped by industry practices and analogies drawn from accounting rules on forwards and futures<sup>9</sup>.

<sup>7</sup> See, for example, SFAS 119, no. 30; SORP (1991), no. 11a and SORP (1995), p.41.

<sup>8</sup> Forwards are addressed in SFAS 52 and futures are addressed in SFAS 80.

<sup>9</sup> See US General Accounting Office (1994), p.92.

The common practice in US banks is as follows: If derivatives are held to profit from trading activities, mark-to-market accounting is applied, that is realised and unrealised gains and losses are reported on the income statement as trading revenue<sup>10</sup>. Alternatively, if the objective is to hedge financial risks and if the hedge accounting criteria are fulfilled, changes in the value of derivatives are accounted for using the same basis of accounting as the underlying asset or liability being hedged (hedged item)<sup>11</sup>.

If the underlying asset or liability is carried on the balance sheet at current market value (for example securities available for sale), the derivative product used as a hedge is also carried at current market value, and any applicable gains or losses are reflected currently in the income statement. This practice is similar to the accounting for derivatives used for trading (mark-to-market valuation). But if the underlying asset or liability is carried on the balance sheet at historical cost, or the hedged item is reported as an off-balance-sheet item, changes in the market value of the derivative product are not recorded in income until the income statement effects of the hedged item are realised in a later transaction (deferral hedge accounting)<sup>12</sup>. In the case of interest rate derivatives, for example, realised and unrealised gains and losses are deferred and amortised as adjustments to interest income or expense over the lives of the assets or liabilities.

Accounting standards in the United Kingdom and Germany provide an even less comprehensive framework for accounting for derivatives than US rules. Consequently, UK and German accountants have to take a pragmatic approach, guided by the fundamental accounting concepts of the going concern, matching, prudence and consistency.

Generally, in the United Kingdom any valuation method, including fair valuation, is permissible, providing it results in a true and fair view<sup>13</sup>. For financial institutions, the British Bankers' Association and the Irish Bankers' Federation give more precise recommendations, which are identical to US industry practices: trading or speculative transactions should be measured at fair value while hedging transactions should be valued on an equivalent basis to the related assets, liabilities, or off-balance-sheet instrument (either mark-to-market or deferral hedge

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<sup>10</sup> See for example BankAmerica Corporation Annual Report 1994, p.54; Bank of Boston Annual Report 1994, p.66; The Bank of New York Annual Report 1994, p.22; J.P.Morgan Annual Report 1994, p.48.

<sup>11</sup> See for example Bank of Boston Annual Report 1994, p.67; Flemmings Annual Report 1995, p.21.

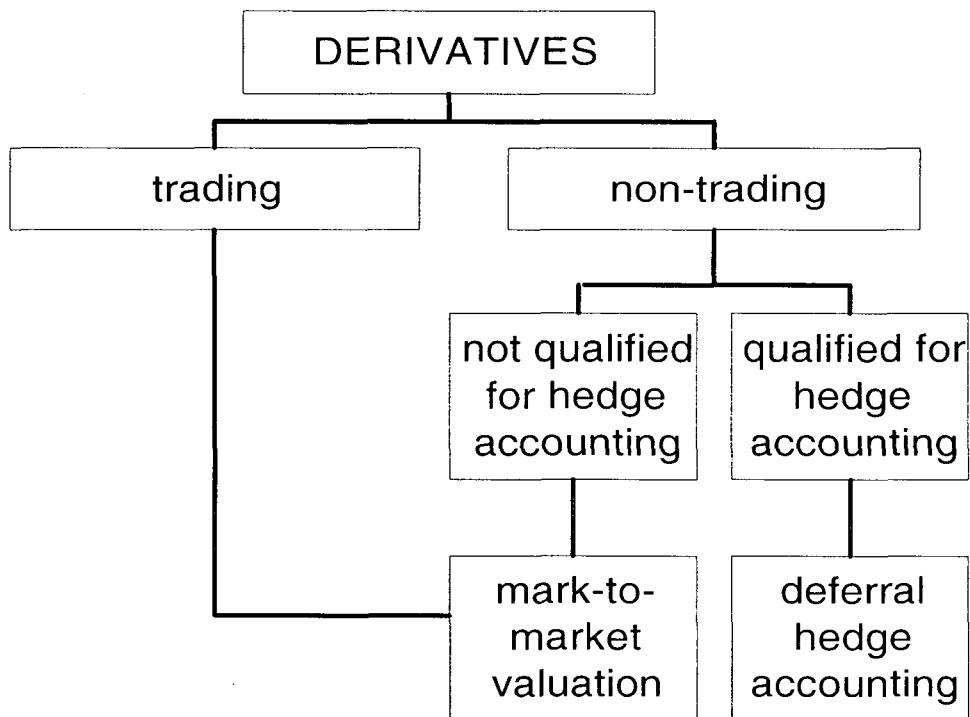
<sup>12</sup> Examples for this accounting practice can be found in BankAmerica Corporation Annual Report 1994, p.55; The Bank of New York Annual Report 1994, p.22; Chemical Banking Corporation Annual Report 1994, p.50.

<sup>13</sup> See Schedule 9 of the UK Companies Act, which lays down no particular valuation methods for derivatives.

accounting)<sup>14</sup>. This proposal is supported by the Accounting Standards Board and is applied in practice<sup>15</sup>.

Figure 2

Current accounting standards for derivatives by the FASB and the British Bankers' Association



In Germany, financial instruments generally have to be valued at the lower of cost and market with the single security as valuation base (unit valuation)<sup>16</sup>. However, hedges can be considered as evaluation unit in certain circumstances<sup>17</sup>. In these cases the imparity principle is applied to this evaluation unit, not to the single item. Mark-to-market accounting and deferral hedge accounting are not consistent

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<sup>14</sup> SORP (1991), no. 39.

<sup>15</sup> See Scheffler (1994), p.145 and, for example, NationsBank Annual Report 1994, p.62-63; Standard Chartered Annual Report 1994, p.36; HSBC Holdings Annual Report 1994, p.50-51.

<sup>16</sup> Handelsgesetzbuch (HGB) § 252,1, no. 3.

<sup>17</sup> See KPMG (1995), p.139-147 for details.



with German accounting principles, because they contradict the imparity principle, the principle of historical cost accounting and the realisation principle<sup>18</sup>.

In practice, German banks structure and hedge their trading positions (that is derivatives and other financial instruments) in product or instrument portfolios and apply the compensatoric valuation method with regard to the imparity principle to these portfolios<sup>19</sup>. Non-trading derivatives are generally valued with the unit valuation method. If derivatives are used for hedge purposes, they are accounted according to the method applied to the hedged instrument. In this context, usually the compensatoric valuation method on micro level is applied<sup>20</sup>.

The IASC does not prescribe certain accounting rules for trading positions. According to the proposed exposure draft E 48, however, "a financial asset or financial liability that is not intended to be held for the long term or to maturity and is not classified as a hedging instrument should be remeasured at each balance sheet date and reported at its fair value"<sup>21</sup>. Therefore, gains or losses of trading positions are recognised in income as they arise (mark-to-market accounting). For hedge positions, deferral hedge accounting is the recommended accounting method<sup>22</sup>.

### **2.3 The Problem of Unclear Hedge Accounting Standards**

The major problem in accounting for non-trading derivatives is to define what items qualify for hedge accounting. Three principles are widely accepted as the basis for hedge accounting treatment in most countries<sup>23</sup>:

- (i) The existing asset, liability or off-balance-sheet instrument to be hedged actually exposes the firm to market risk caused by changes in factors such as interest or exchange rates.
- (ii) The positions included in a hedge transaction must be risk-offsetting in the sense that the hedging instrument reduces the enterprise's exposure to risk.
- (iii) The hedge transaction is clearly identified and properly documented, so that a third party can understand the hedging relationship.

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<sup>18</sup> Scheffler (1994), p.226.

<sup>19</sup> See for example Deutsche Bank Annual Report 1994, p.69; Commerzbank Annual Report 1994, p.54; Bayerische Hypotheken- und Wechsel-Bank Annual Report 1994, p.82.

<sup>20</sup> See for example Dresdner Bank Annual Report 1994, p.79; Bayerische Vereinsbank Annual Report 1994, p.68; Commerzbank Annual Report 1994, p.54; Bayerische Hypotheken- und Wechsel-Bank Annual Report 1994, p.82; BfG Bank Annual Report 1994, p.58.

<sup>21</sup> IAS ED 48, no. 162-163.

<sup>22</sup> IAS ED 48, no. 150-156.

<sup>23</sup> See, for example, US General Accounting Office (1994), p.97; SORP (1995), p.41; IAS ED 48, no. 133; Scheffler (1994), p.155.

However, the actual application of these hedge criteria is difficult due to the lack of clear accounting rules on

- (i) the degree to which the hedge must correlate to qualify for hedge accounting;
- (ii) the question, in which cases hedge accounting methods can be applied on the portfolio level and not just on the combination of individual assets or liabilities and their hedging instrument;
- (iii) the frequency of reassessment<sup>24</sup>;
- (iv) the application of hedge accounting to anticipated future transactions<sup>25</sup>.

The described lack of consensus could result in different valuation practices. Firms can use this situation to smooth out fluctuations in earnings' reports. As a result, firms with similar economic characteristics might look different on their financial statements and firms with different economic characteristics might look similar.

## **2.4 Supplementary Disclosures in the Notes**

### **2.4.1 The Accounting Method Applied**

The existence of alternative accounting treatments for financial instruments makes it particularly important for banks to disclose their accounting policies. The Statements of Financial Accounting Standards (SFAS)<sup>26</sup>, the Statements of Recommended Accounting Practice (SORP)<sup>27</sup>, the German Commercial Code (HGB)<sup>28</sup> and the IAS<sup>29</sup> require such notes.

Knowing the accounting methods applied, readers of financial statements can conclude that, for example, with the same economic characteristics earnings will be less volatile with deferral hedge accounting or compensatoric valuation than with the mark-to-market method or unit valuation.

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<sup>24</sup> If a position being hedged changes, or a hedge proves not to be as effective as first envisaged, hedge transactions should be reclassified as trading (SORP 1995, p.9 and IAS ED 48, no. 165). It is not defined, however, how often positions should be reassessed.

<sup>25</sup> Hedges of anticipated transactions generally qualify for hedge accounting, if it is highly probable that the future transaction will materialise (IAS ED 48, no. 144; US General Accounting Office, 1994, p.98-99; SORP, 1995, p.41-43). There is, however, no comprehensive definition, in what cases future transactions are highly probable.

<sup>26</sup> SFAS 119, no. 8.

<sup>27</sup> SORP (1991), no. 44 f.

<sup>28</sup> HGB § 284, 2, no. 1-3.

<sup>29</sup> IAS 32, no 47b and 52.

## 2.4.2 Fair values

Even more important, however, is the disclosure of fair values and related carrying amounts, which is demanded by the Financial Accounting Standards Board (FASB)<sup>30</sup> and the International Accounting Standards Committee (IASC)<sup>31</sup> for all on- and off-balance sheet financial instruments. Fair values depict the market's assessment of the present value of net future cash flows embodied in them, discounted to reflect both current interest rates and the market's assessment of the risk that the cash flows will not occur. Therefore, they should help investors and creditors in assessing performance and future cash flows of the company. Furthermore, fair values reveal hidden reserves. The difference between fair values and carrying amounts can be used to adjust reported earnings for the mark-to-market value of financial instruments, because adjusted earnings are more comparable.

Although they probably best reflect the economic situation, market or fair values for derivatives are not always an objective and comparable measure. While the FASB assumes that the market price is the best measure of fair value wherever a market exists, the British Bankers' Association believes that adjustments have to be made in circumstances where the market price may not be achievable. This would apply where the market is illiquid or where the position held is particularly significant<sup>32</sup>. Where market prices do not exist, for example for most over-the-counter (OTC) derivatives, fair values have to be estimated with pricing models. As long as estimating techniques and volatility parameters used for these estimations are not standardised, differences across banks might be significant. Therefore, SFAS 107 (no. 10) notes that an entity shall disclose the method and significant assumptions used to estimate the fair value of financial instruments.

## 2.4.3 Deferred Gains or Losses

As mentioned before, in the USA and in the United Kingdom, for non-trading derivatives usually deferral hedge accounting is applied, if they are used for hedging purposes. Deferral amounts produce earning effects that are divergent from cash flows. For instance, the amortisation of a deferred gain from a terminated derivative contract will not produce one whit of cash in the periods it is recognised. If deferred gains or losses are significant, they may bear on the quality of future earnings. Furthermore, large amounts of deferred gains or losses from terminated contracts might be the result of misguided hedging operations, or ones that have been executed on the fringes of speculation.

The FASB does not require entities to provide information about gains and losses deferred as a result of hedging existing assets and liabilities. Only for

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<sup>30</sup> SFAS 107, no. 10, SFAS 119, no. 10 and 15(b).

<sup>31</sup> IAS 30, no. 19 and IAS 32, no. 77.

<sup>32</sup> SORP 1995, no. 12.

derivatives designated as hedges of anticipated transactions, SFAS 119 (no. 11c) requires information on the amount and timing with respect to the anticipated transaction, the amount of hedging gains and losses explicitly deferred, and a description of events that result in recognition of gains or losses. The British Bankers' Association and the IASC recommend similar disclosures<sup>33</sup>.

### 3 Assessing the Risks of Derivatives Activities

Financial statements should help investors and creditors in evaluating not only the return, but also the risk of their investment. Risk is defined here as the financial loss potential. The most important risks to a financial institution are

- (i) Credit risk, which is the risk that a counterparty may fail to fully perform its financial obligations.
- (ii) Market risk, which is the exposure to the possibility of financial loss resulting from unfavourable movements in interest rates, currency rates, equity prices and commodity prices.
- (iii) Liquidity risk, which is the risk that the firm is unable to meet its funding requirements or execute a transaction at a reasonable price.
- (iv) Operational risk, which is the risk that inadequate internal controls, procedures, human error, system failure, or fraud can result in unexpected losses.
- (v) Legal risk, that arises from uncertainty of the enforceability of the firm's claims to clients and counterparties.

Risks or losses expected with high probability at the balance sheet date should be reflected in reported earnings<sup>34</sup>. Unexpected risks, on the other hand, are not reported in the balance sheet and the profit and loss account. To allow an assessment of these unexpected risks, financial institutions have to disclose additional information in the notes and the management report. While disclosures referred to all major kinds of risk in the 1994 Annual Reports<sup>35</sup>, quantitative

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<sup>33</sup> SORP 1995, p.24 and IAS 32, no. 91

<sup>34</sup> In the case of credit risk, for example, expected risk can be defined as

$$\sum_{i=1}^N \text{Credit exposure}_i * \text{Probability of default}_i,$$

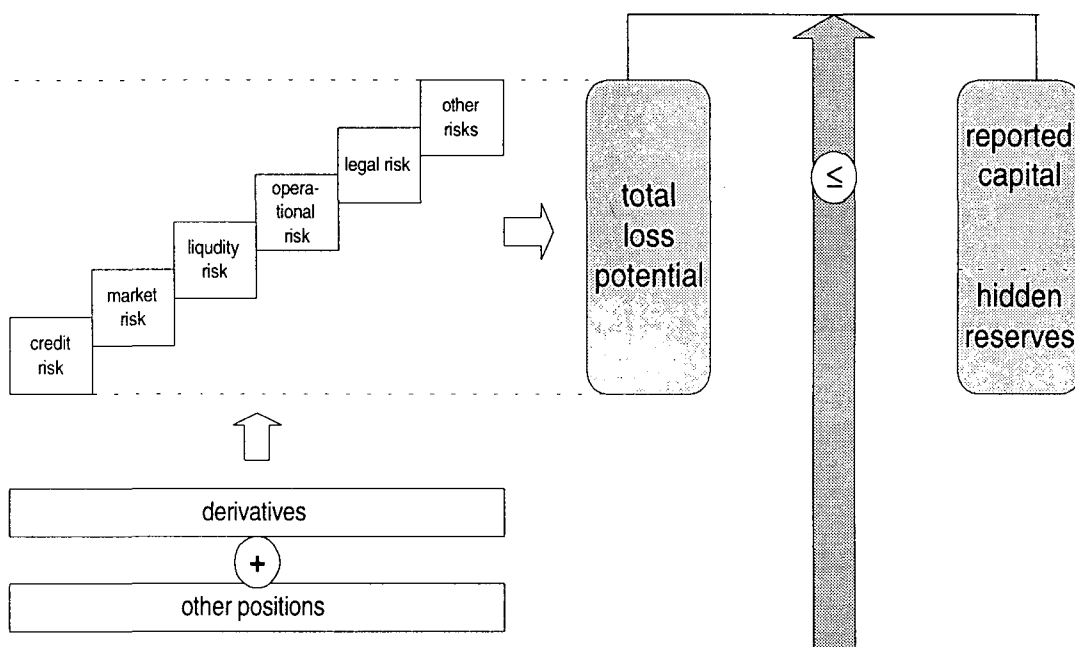
with  $i$  denoting the relevant counterparties and  $N$  the total number of counterparties to the financial institution (correlation effects are ignored). For this expected credit risk, banks have to make provisions.

<sup>35</sup> See Basle Committee on Banking Supervision and Technical Committee of the International Organisation of Securities Commissions (1995b) for details.

disclosures were restricted to credit and market risks. Only these risks are to a certain extent financial measurable and can therefore be addressed by the bank's risk management in a formal, structured way. Other risks are not less important, but they cannot be quantified. Banks employ standard risk avoidance techniques to mitigate them.

Although only credit, market and liquidity risks of derivatives are addressed here, readers of financial statements should keep in mind that the total loss potential of a financial institution depends also on other bank positions and risk categories, as shown in figure 3. To avoid the bank's insolvency, managers have to guarantee that at every point in time the total loss potential is covered by reported capital and hidden reserves.

Figure 3  
Composition and coverage of total risk potential



## 3.1 Credit Risk

When assessing the credit risk of derivatives, it is appropriate to differentiate between exchange-traded and OTC instruments. For an exchange-traded derivative, there is nearly no risk of default, since most exchanges have been very successful in organising trading to ensure that their contracts are always honoured<sup>36</sup>. For the OTC market, however, the no-default assumption is less defensible. Accordingly, the following discussion on credit risk pertains primarily to OTC contracts.

### 3.1.1 Credit Risk Measurement

#### (a) Credit Exposure

The credit exposure of derivatives is different from the exposure of loans. Firstly, not the principal, but the replacement costs are at risk. Secondly, default on derivatives require more than one condition to exist simultaneously: The counterparty must be in financial distress and the market value of the contract to the financial institution must be positive. Thirdly, at any point in time, the bank is exposed not only to the current values of derivatives but also to potential changes in values.

An institution's current credit exposure from derivative contracts is best measured as the positive mark-to-market replacement cost of all derivative products on a counterparty by counterparty basis, taking account of any legally enforceable bilateral netting agreements, collaterals and other credit enhancements<sup>37</sup>.

Potential credit exposure can be defined as the exposure of the contract that may be realised over its remaining life due to movements in the rates or prices underlying the contract<sup>38</sup>. Potential credit exposure depends on the volatility of the

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<sup>36</sup> Both futures and options exchanges typically mark exposures to market each day. In the case of futures exchanges, members' exposures to the clearing house are eliminated each day through margin payments. In the case of options exchanges, clearing house exposures to written options are fully collateralised (Basle Committee on Banking Supervision and IOSCO, 1995a, p.7).

<sup>37</sup> Netting on a bilateral basis - which is usual for OTC-derivatives, has the following effect: positive mark-to-market values on transactions for one counterparty are offset by negative mark-to-market values for the same counterparty, reducing the overall credit risk exposure of the financial institution. Collaterals, guarantees and other credit enhancements reduce credit exposure only to the extent of their quality and marketability. Therefore, to calculate actual exposure to credit risk, the market value of relevant collateral should be subtracted from the netted credit exposure. It has to be considered, however, that collateral held by an institution in excess of its netted credit exposure to a counterparty would not reduce current credit exposure below zero. It could only reduce potential credit exposure (see Basle Committee on Banking Supervision and IOSCO, 1995a, p.9).

<sup>38</sup> See Basle Committee on Banking Supervision and IOSCO (1995a), p.8.

instrument in question and its remaining time to maturity<sup>39</sup>. To estimate potential credit exposure, entities have to generate a probability distribution of the present value of the replacement cost of the portfolio<sup>40</sup>.

Credit exposure is a measure of the maximum credit loss, since it is assumed that all counterparties to the financial institution default immediately in the case of current credit exposure or at the end of the holding period in the case of potential credit exposure. A more precise measure of the loss potential resulting from credit risk can be obtained when the probability of default is also taken into consideration.

## (b) Probability of Default

As mentioned above, expected credit losses should be reflected in earnings. To calculate unexpected losses, on the other hand, one needs to estimate the distribution of future defaults. The loss potential on the transaction level could then be expressed as

Potential credit exposure \* Potential default rate,

where the potential default rate is the probability of default at the end of the holding period, that is not exceeded with a certain probability. In the case of derivatives, the probability of default and its distribution depend on the following factors:

- (i) The creditworthiness of the counterparty: The more creditworthy the counterparty, the lower the probability of default.
- (ii) The maturity of the transaction: the longer the maturity of the derivative financial instrument, the more likely it is that the firm's credit quality will deteriorate, that is the higher the probability of default.
- (iii) The volatility of the underlying financial price: The more volatile the underlying financial price, the more likely it is that there will be a price movement sufficiently large to put the counterparty into financial distress (whenever the financial instrument is not or not adequately used for hedging purposes)<sup>41</sup>.

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<sup>39</sup> With more time remaining until contract expiration, the bank's potential exposure increases, that is, the possible deviation in the financial price from its level at origination increases (Smithson and Smith 1995, p.439-440).

<sup>40</sup> This can be done by simulation analysis, i.e. multiple scenarios are generated by means of a statistical model. At each point in time under a given scenario, the mark-to-market value of each transaction in the portfolio is computed, and the replacement cost of the entire portfolio is calculated, taking account of netting provisions where applicable. This process is repeated for a large number of scenarios to generate a probability distribution of the present value of the replacement cost of the portfolio at each point in time (Smithson and Smith, p.451).

<sup>41</sup> See Smithson and Smith (1995), p.462-463.

### (c) Concentration Risk

In order to calculate the credit loss potential of a financial institution, exposures and potential default rates have to be aggregated, taking risk reducing diversification effects into account. Therefore, the composition of the bank's portfolio is essential for evaluating credit risk. Concentration of credit exposure to specific borrowers or counterparties within specific business sectors or regions is generally considered - other factors being equal - to indicate a greater credit loss potential.

Currently, only a few banks are able to calculate potential credit losses associated with derivatives and trading activities, because calculations are very complicated. Simulations involve numerous assumptions and consider a number of variables, including duration of the credit exposure, default probabilities, volatilities, collateral values, and expected recovery rates in the event of default, as well as the diversification across counterparties, industries, and geographic regions of the bank's global credit portfolio.

### 3.1.2 The BIS Recommendations for Credit Risk Disclosures

A guiding principle for future developments in derivatives disclosure is the recommendation from the Bank for International Settlements (BIS). In the Fisher Report (1994), the BIS proposes the following disclosures:

Table 1  
BIS recommendations on credit risk disclosures

<b>Current credit exposures</b>	<b>Likelihood of default</b>	<b>Potential future exposures</b>	<b>Management performance</b>
Net replacement values when close-out netting arrangements are in place, otherwise gross replacement values	Braking down current exposures by credit quality and/or counterparty type.	Braking down current exposures by maturity and giving some indication of the firm's estimate of potential future credit exposure.	<ul style="list-style-type: none"><li>• A measure of actual losses over the reporting period;</li><li>• a measure of actual losses relative to capital supporting the activity in which the losses occurred;</li><li>• variability of credit exposures over time - high, low, average gross or net replacement values over the reporting period.</li></ul>



Surprisingly, a deviation between OTC and exchange traded derivatives is not explicitly recommended by the BIS.

### 3.1.3 Credit Risk Disclosure Practice

#### (a) USA

In the USA, there are extensive regulatory disclosure requirements on the credit risk of derivatives. Entities have to disclose the following information:

- (i) The notional principal amount of financial instruments, disaggregated by their category (class of financial instrument, business activity, risk or other category that is consistent with the management of those instruments)<sup>42</sup>.
- (ii) The maximum accounting loss resulting from financial instruments with off-balance-sheet credit risk, disaggregated by category of financial instrument<sup>43</sup>. Enforceable netting agreements can be considered according to FASB Interpretation 39 (no. 5).
- (iii) The entity's policy for requiring collateral or other security on financial instruments it accepts and a description of collateral on instruments presently held<sup>44</sup>.
- (iv) The nature and terms of the financial instruments and a discussion of their credit and market risk<sup>45</sup>.
- (v) Information about significant concentrations of credit risk from an individual counterparty or groups of counterparties (for example the maximum accounting loss for each concentration)<sup>46</sup>.
- (vi) Average fair values of the financial instruments held or issued for trading purposes, distinguishing between assets and liabilities<sup>47</sup>.

The question is, how accurate credit risk can be assessed with the minimum information required by the FASB. Since derivatives are usually recorded marked to market in the balance sheet, the maximum accounting losses are similar to the gross positive market values. If enforceable netting agreements are taken into consideration, accounting losses are an acceptable measure of current credit

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<sup>42</sup> SFAS 119, no. 8.

<sup>43</sup> SFAS 105, no. 18a and SFAS 119, no. 14b.

<sup>44</sup> SFAS 105, no. 18b.

<sup>45</sup> SFAS 119, no. 8.

<sup>46</sup> SFAS 105, no. 20 and no 101.

<sup>47</sup> SFAS 119, no. 10a.

exposure. However, average fair values are a better indicator for the credit risk exposure of derivatives than end-of-period exposures, since positions typically fluctuate, and the ending balance may not always be representative of the range of balances during a period. Since companies want to present to their shareholders the best possible picture of financial beauty, the level of derivatives may even have been managed down to show as little year-end exposure as possible. Therefore, the requirement of average fair value disclosures of derivative financial instruments in the trading book increases the information value considerably.

However, SFAS 119 also has some drawbacks. First, entities do not have to differentiate between exchange traded and OTC derivatives. Second, potential credit exposures do not have to be disclosed. Third, derivatives counterparty credit quality is not reported and the effect of collaterals and other credit enhancements do not have to be quantified. Fourth, lack of quantitative thresholds for determining reportable concentrations of credit risk makes this disclosure dependent on management's judgement. Finally, no information on the management performance has to be disclosed.

In their 1994 and 1995 Annual Reports, only a few US banks and security firms disclosed significant information on credit risk going beyond that required by current accounting standards<sup>48</sup>.

## **(b) United Kingdom**

Whereas disclosure requirements in the USA are applicable by all companies, Britain has special Statements of Recommended Accounting Practice (SORP) for banks.

The "SORP - Off-Balance-Sheet Instruments" (no. 44b) requires a table providing a breakdown of off-balance-sheet contract amounts, disaggregated by broad transaction groupings (for example exchange rate related contracts, interest rate related contracts, index related contracts etc.). In respect of interest and exchange rate related contracts, the credit risk weighted amount and the net replacement cost should also be given<sup>49</sup>. Moreover, any significant concentrations

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<sup>48</sup> Exceptions are, for example, J.P.Morgan (Annual Report 1994, p.58 and 1995, p.57) and Morgan Stanley (Annual Report 1994, p.66), providing a breakdown of their derivatives credit exposure according to credit ratings or industry groups. Bankers Trust (Annual Report 1994, p.67 and 1995, p.84) split their fair value disclosures in OTC and exchange-traded financial instruments. HSBC Holdings plc (Annual Report 1995, p.47) showed the replacement cost of derivatives by residual maturities.

<sup>49</sup> Credit risk weighted amounts are calculated according to regulations by the banking supervision and take into consideration current and potential credit exposures as well as the counterparty's probability of default. Net replacement cost is the cost of replacing all transactions that have a positive fair value and should be calculated by netting transactions with a positive value against those with a negative value to the extent that the bank has a legal right to offset.

of off-balance-sheet items must be disclosed. Large banks in the UK followed more or less detailed this recommendation<sup>50</sup>.

In their discussion paper and exposure draft "Statement of Recommended Accounting Practice - Derivatives" (p.44), the British Bankers' Association and the Irish Bankers' Federation recommend additional disclosures on derivatives for reporting periods beginning on or after 23 December 1995:

- (i) Banks should provide an analysis of counterparty credit risk for all transactions based on net replacement cost divided, at a minimum, between financial and non-financial institutions. Further information about counterparty types considered particularly relevant to their operations are recommended. This may involve, for example, the provision of an analysis based on a geographical division, or a breakdown of OECD/non-OECD counterparties, or the provision of information based on internal credit ratings. Broad counterparty groupings are preferred to credit rating agency categories as agency ratings do not cover all the counterparties with which a bank will do business.
- (ii) Banks should also provide a maturity analysis of exposures arising from its derivatives. This should be based on the net present values of all expected future cash flows relating to its derivatives across maturity bandings based on a remaining life of one year or less, one to five years, and five years or over. In order to provide information indicative of counterparty credit risk, the maturity analysis should be given for both notional principal amounts and the net replacement cost.

Banks did not apply the new standard in their 1995 Annual Reports. However, once it is implemented, readers of financial statements can assess the current credit exposure and significant credit concentrations. The maturity analysis of exposures and the breakdown of counterparty's exposure according to counterparty groupings helps to evaluate the probability of default of counterparties to the financial institution.

### (c) **Germany**

In Germany, there are no legal disclosure requirements on the credit risk of derivative financial instruments. The Federal Association of German Banks (1995), however, recommends a reporting scheme, that is based on an IIF proposal.

Separate disclosure for OTC and exchange traded products in this scheme increases the information value considerably. The notional amounts of different

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<sup>50</sup> See, for example, HSBC Holdings Annual Report 1994, p.41-42; Lloyds Bank Directors' Report and Accounts, p.29; Schroders Annual Report 1994, p.39, StandardChartered Annual Report 1994, p.66.

product types by remaining maturity give some insight in the extent of involvement in derivatives activities, but do not help much in assessing credit risk.

### Scheme I

Derivatives business volumes as at (date) in millions of DM

		Notional amount				Credit risk
		Remaining life				
		≤ 1y	1-5 y	> 5 y	Total	
Interest rate contracts						
OTC products	FRAs					
	Interest rate swaps (single currency)					
	Interest rate options (bought)					
	Interest rate options (sold)					-----
	Other interest rate contracts					
Traded products	Interest rate futures					-----
	Interest rate options					-----
Foreign exchange contracts						
OTC products	FX forwards					
	Cross currency swaps					
	FX options (bought)					
	FX options (sold)					-----
	Other FX contracts					
Traded products	FX futures					-----
	FX options					-----
Equity / index contracts						
OTC products	Equity / index swaps					
	Equity / index options (bought)					
	Equity / index options (sold)					-----
	Other equity / index contracts					
Traded products	Equity / index futures					-----
	Equity / index options					-----
Other contracts						
OTC Products	Precious metals contracts					
	Other Contracts					
Traded products	Futures					-----
	Options					-----

The credit risk in the proposed scheme can be quantified in two ways: One option is to apply the credit equivalent defined in the solvency directive by the European Union<sup>51</sup>. The advantage of this approach is, that the disclosed number reflects current and potential credit exposure. There are two methods to calculate

<sup>51</sup> See solvency directive 1989, which was incorporated in German law in 1990 (Deutsche Bundesbank, Die neuen Grundsätze I und I a über das Eigenkapital der Kreditinstitute, Sonderdruck Nr. 2 a, June 1990.)

the credit equivalent: the mark-to-market method and the remaining life method. In the case of the mark-to-market method, for example, potential credit exposure is considered by an add-on, which is added to current replacement costs and depends on the time to maturity and the risk category (interest rate risk, foreign exchange risk and other price risks). There is, however, a lack of comparability of this number. It depends on the method used to calculate the credit equivalent and on supervisory regulations, which might be different from country to country. Therefore, the Federal Association of German Banks and the IIF prefer the second option, that is the disclosure of market values. They argue that market values are the only objective measure of credit risk. The probability of default can be assessed by Scheme II.

### Scheme II

Counterparty structure in derivatives business as at (date) in millions of DM

<b>Type of counterparty</b>	<b>Credit risk</b>
OECD governments	
OECD banks	
OECD financial institutions	
Other undertakings, private persons	
Non-OECD governments	
Non-OECD banks	
Non-OECD financial institutions	

The Federal Association of German Banks notes that the alternative proposal of the IIF, based on ratings, is less informative: external ratings are often not available, even for important German companies and, owing to their subjective character, internal ratings as classification criteria would severely restrict the comparability of the data given.

The classification by product (Scheme I) should only contain gross amounts because, owing to the widespread multi-product agreements, the effects of netting agreements cannot be meaningfully allocated to types of product. The counterparty classification (Scheme II), on the other hand, should take account of enforceable netting agreements<sup>52</sup>.

All large banks in Germany provided in their 1994 and 1995 Annual Reports on a voluntary basis exactly the schemes proposed by the Federal Association of German Banks. In Scheme I, they complied with the recommendation from the Federal Association of German banks and disclosed gross replacement costs. In Scheme II, on the other hand, the majority of banks reported gross replacement costs and did not take enforceable netting agreements into account. In addition to

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<sup>52</sup> Federal Association of German Banks (1995), p.9.

the proposed schemes, some banks showed the credit equivalent amount of their derivatives<sup>53</sup>.

#### (d) IASC

The IASC disclosure requirements for the credit risk of derivatives correspond to US rules<sup>54</sup>. The only striking difference is, that not the maximum loss of book value, but the maximum credit loss has to be disclosed.

## 3.2 Market Risk

### 3.2.1 Market Risk Measurement

There is no consensus on a single best method of measuring market risk exposures. However, Value-at-risk (VAR) concepts are becoming widely used in financial institutions. VAR is derived from statistical estimates of the losses a portfolio could experience, due to changes in underlying prices, over a given holding period and for a given confidence interval<sup>55</sup>.

The beauty of this method is that all market risk is reduced to a common measure that shows likely declines in portfolio value that will be exceeded some proportion of the time. Ideally, banks should be able to aggregate interest rate risk, foreign exchange risk and other market risks to one VAR number, taking correlation effects between different instruments and risk categories into account. Such a number would describe the market risk exposure of the entire firm. Looking at the market risk of derivatives in isolation would not give a true view of their exposure, since risk compensating effects between on- and off-balance-sheet instruments are ignored. In practice, most financial institutions are not able, yet, to calculate the market risk exposure of the entire firm level. However, they form portfolios along the lines determined by the bank's organisational structure and measure and manage the risks of these portfolios. Most common is the application of VAR techniques in trading portfolios. The market risk of non-trading positions is usually measured differently and managed separately. Most banks still apply conventional asset/liability management techniques to these positions.

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<sup>53</sup> See, for example, Bayerische Vereinsbank (Annual Report 1995, p.95), Dresdner Bank (Annual Report 1995, p.57), Bayerische Hypotheken- und Wechselbank (Annual Report 1995, p.92).

<sup>54</sup> See IAS 32, no. 66, 74 and 76 for details.

<sup>55</sup> The holding period refers to the time interval over which changes in value of a given portfolio is assessed.

### 3.2.2 The BIS Proposals for Market Risk Disclosures

The BIS (1994) believes that the information stemming from internal risk management systems should be conveyed to the users of financial statements in summary form. Although many banks may not yet have sophisticated risk management information systems that cover the entire firm, they should draw upon information about the portfolios for which risk management systems exist.

In the Fisher Report (1994), the BIS gives some examples for reasonable disclosures on market risk. These examples can be classified in information on the loss potential, expressed in VAR, and information on the risk management performance.

#### (a) Value at Risk Disclosures

According to the BIS, for the relevant portfolios, firms should disclose the high, low, and average VAR, for holding periods of one-day, and two-weeks, that occurred during the reporting period.

High, low, and average VAR's are required, since the VAR at the balance sheet date does not provide appropriate insights about market risk due to the speed with which positions in derivatives and other instruments can be altered. Furthermore, banks tend to close out open positions at the end of a reporting period, with the result that end-of-period VAR's are significantly below average VAR's<sup>56</sup>.

This proposed disclosure would convey information about the riskiness of the firm's portfolio during the reporting period, and in the case of firms whose portfolios change over the reporting period, the disclosures would indicate the degree to which the firms' risk profiles change. The use of holding periods longer than one-day provide an indication of the portfolio's exposure to market liquidity risk, that is the risk that positions cannot be closed out when desired.

For firms that do not use VAR, a measure of actual outcomes could also reveal riskiness. The histogram of daily changes in portfolio value over the reporting period would be an example for such a disclosure.

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<sup>56</sup> There might be two reasons for this effect: Firstly, financial institutions tend to close out open positions over the Christmas holidays and the New Years Day. If the reporting year is identical with the calendar year, the ending exposure will therefore be below average. Secondly, companies want to present their shareholders the best possible picture of their financial beauty.

## **(b) Disclosures on the Risk Management Performance**

In addition to the risk profiles, the BIS requires some information that allows an assessment of the firm's capacity to manage its exposures to market risk. This could be achieved by disclosing, for example

- (i) a histogram of the ratio of daily variation in portfolio value to daily VAR;
- (ii) the five or ten largest one-day declines in portfolio values together with the one-day prior estimate of the one-day VAR;
- (iii) a chart in which daily VAR is plotted against the daily change in portfolio value (one variable on the y-axis and the other on the x-axis).

This information is particularly important for trading portfolios, because the unpredictability of market prices and the unstable nature of correlations between different prices implies that trading outcomes will be variable. For this reason, the disclosure of only average changes in portfolio market value is not sufficient. Some measure of extreme outcomes, or the tails of the frequency distribution of changes in portfolio value, are required for an assessment of the firm's ability to manage its risk within a range determined by its appetite for risk.

Over time, successful risk management would tend to keep the frequency of large declines in portfolio value below a level consistent with a firm's appetite for risk. VAR could provide information about a firm's appetite for risk in the management of that portfolio. The comparison of the VAR with the frequency of the declines in portfolio value that exceed VAR is, therefore, a measure of risk management performance. Superior risk management would tend to keep the frequency of large losses below the frequency associated with the confidence level of the VAR.

In order to interpret the quantitative data, the parameters of the VAR figures have to be disclosed. In addition, the relationship of the portfolio about which quantitative disclosures are made to the rest of the firm should be made clear.

### **3.2.3 Implementation of the BIS Recommendations**

Currently, disclosures on VAR and risk management performance are not compulsory in the USA, the UK and Germany. The reason is that some banks do not yet have the measurement or reporting system to support that disclosure. However, the FASB and the British Bankers' Association recommend quantitative disclosures similar to those proposed by the BIS<sup>57</sup>. The Federal Association of German Banks (1996), on the other hand, believes that market risk disclosures should be restricted to the most important information, in order to guarantee a well-

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<sup>57</sup> FASB 119, no. 12-13 and SORP (1995), p.38 and p.44.



balanced relationship between commercial bank and trading business disclosures. It recommended to disclose only end-of-period VAR numbers for trading activities (if they are material) according to broad risk categories, as demonstrated in scheme III<sup>58</sup>.

### Scheme III

Market risk disclosure as recommended by the Federal Association of German Banks

	Group market risk potential (value-at-risk) at (date)
	in Mill. DM
Interest rate related transactions	_____
Foreign exchange related transactions	_____
Stock and index related transactions	_____
Other transactions	_____
Total	_____

These numbers should include both cash and derivative financial instruments in the trading portfolio and should be calculated on the basis of the parameters proposed by the BIS for market risk capital requirements: a 99% one-tailed confidence interval, a ten-day holding period and an observation period of at least one year<sup>59</sup>. To ensure comparability, banks should explain to what extent correlations are considered. The striking disadvantage of this proposal is, that end-of-period VAR figures are published. As noted before, these numbers might not be representative for the reporting period.

Opponents of VAR disclosures argue that they are not comparable across banks and might therefore be misleading. Styblo Beder (1995) showed that VAR's are extremely dependent on the time horizon, data base, correlation assumptions, confidence level, and methodology. She applied eight common VAR methodologies to three hypothetical portfolios and shows VAR results varying by more than 14 times for the same portfolio. This is because VAR does not provide certainty or confidence of outcomes, but rather expectation of outcomes based on a specific set of assumptions.

In the course of time, however, divergence between VAR figures might decrease. Firstly, there is growing convergence among the major financial intermediaries in the basic analytic tools used for internal risk management. Secondly, the basic parameters suggested by the BIS might become an

<sup>58</sup> See Federal Association of German Banks (1996), p.65.

<sup>59</sup> Basle Committee on Banking Supervision (1996), p.45.

internationally accepted standard for calculating the VAR disclosures. Until such a standard is achieved, readers of financial statements have to look at the methodology and the input parameters used, in order to interpret VAR disclosures.

In the 1994 Annual Reports, VAR disclosures were relatively common in US banks, but exceptional in German and UK institutions<sup>60</sup>. In 1995, however, all German banks with significant trading activities disclosed the end-of-period VAR of their trading portfolio calculated with the BIS parameters (Scheme III)<sup>61</sup>. In UK banks, on the other hand, VAR disclosures are still not common yet.

Major US banks followed the BIS recommendation and disclosed high, low and average VAR as well as some information on the risk management performance<sup>62</sup>. However, the VAR figures of US banks are less comparable than those of German banks, because US institutions applied different input parameters. For example, some used a 99%, others a 95% confidence level to compute VAR. While market risk disclosures referred primarily to the trading activities, some US banks were able to include non-trading activities in their calculations<sup>63</sup>.

### **3.2.4 Other Disclosures on Market Risk**

While the quantitative disclosures proposed above are voluntary, there are also some compulsory disclosures that might help to assess market risk.

In the USA, firms have to provide a discussion of the market risk of off-balance sheet instruments. However, it is not specified how this disclosure should look like<sup>64</sup>. Furthermore, for their 1995 financial statements, banks are required to disaggregate information on fair values and contractual amounts of derivatives segregated by category of instrument and by purpose for which they are held<sup>65</sup>.

In Germany and the UK, banks must only report the types of derivative business they have concluded, classified by currency-based, interest-based and

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<sup>60</sup> Basle Committee on Banking Supervision and IOSCO (1995b).

<sup>61</sup> See, for example, Bayerische Hypotheken- und Wechsel-Bank (Annual Report 1995, p.44), Dresdner Bank (Annual Report 1995, p.41), Deutsche Bank (Annual Report 1995, p.33). Commerzbank (Annual Report 1995, p.22) also showed the average VAR of the trading portfolio and the outcome of two stress scenarios.

<sup>62</sup> See, for example, Bank America (Annual Report 1995, p.38-39), Bankers Trust New York Corporation (Annual Report 1995, p.44-46) and J.P.Morgan (Annual Report 1995, p.17-19).

<sup>63</sup> See Basle Committee on Banking Supervision and IOSCO (1995b) for details.

<sup>64</sup> SFAS 105, no. 17b.

<sup>65</sup> SFAS 119, no. 8 and 9.

other transactions, and state for these categories whether a substantial portion relates to trading business and a substantial portion to hedging business<sup>66</sup>.

In their exposure draft for a Statement of Recommended Accounting Practice - Derivatives, the British Bankers' Association recommends to supplement the breakdown between trading and non-trading business and risk categories with quantitative information. Both the notional principal amounts and, in respect of trading instruments, the gross positive and negative fair values should be given<sup>67</sup>.

What information on market risk can be derived from these disclosures? Contractual amounts and market values do not reveal much about market risk. Higher notional amounts or market values in derivatives do not indicate a higher market risk, because leverage effects of derivatives and compensatoric effects within the portfolio are ignored. This does not mean, however, that they are worthless. In the case of non-trading derivatives, one could try to link notional principal amounts of derivatives to the principal or face amounts of the instruments with which they are associated, for example between a particular debt issue and a swap. This is because one would expect to see a one-for-one relationship between the amount of the debt principal and the amount of the swap principal.

Separate disclosure of trading and non-trading activities is insofar useful, as market risks usually exist only for open positions, not for hedged positions. Non-trading positions are usually held to reduce risk, whereas trading derivatives usually increase total risk of the company. Fair values of non-trading derivatives can be used to verify this statement: If banks use non-trading derivatives to manage risk, then the gains and losses on these derivatives should be negatively related to the gains and losses reported for on-balance sheet financial instruments.

The International Accounting Standards are very general in their disclosure requirements on market risk: For each class of financial asset, financial liability and equity instrument, an enterprise should disclose information about the extent and nature of the financial instruments, including significant terms and conditions that may affect the amount, timing and certainty of future cash flows. Terms and conditions may include, for example, the principal amount, the date of maturity, expiry or execution or the currency in which receipts and payments are required. Furthermore, it is important to disclose hedging relationships<sup>68</sup>.

Interest rate risk is addressed separately. Entities should disclose for all financial assets and liabilities, the contractual repricing or maturity dates, whichever dates are earlier, and effective interest rates, where applicable. Information about maturity or repricing dates indicates the length of time for which interest rates are fixed and information about effective interest rates indicates the levels at which they

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<sup>66</sup> See SORP (1995), p.13 for the UK and § 36 Statutory Order on Banks' Accounts for Germany.

<sup>67</sup> SORP (1995), p.44.

<sup>68</sup> IAS 32, no. 47-55.

are fixed. A bank may disclose, for example, separate groupings of the carrying amounts of financial instruments contracted to mature or be repriced in certain time bands (within one month, one month to three months etc.). The IASC notes that disclosures of this information provide financial statement users with a basis for evaluating the interest rate price risk to which an enterprise is exposed and thus the potential for gain or loss<sup>69</sup>. For trading books, however, this kind of presentation is not very helpful, since positions change frequently and the risk of positions with non-linear properties like options cannot be assessed in this way.

### 3.3 Liquidity Risk

There are two types of **liquidity risk** that can be associated with derivative instruments:

- (i) **Funding risk**, which is the risk that derivatives positions place adverse funding and cash flow pressures on an institution.
- (ii) **Market liquidity risk**, which is the risk that a position cannot be eliminated quickly by either liquidating the instrument or by establishing an offsetting position<sup>70</sup>.

In normal market conditions, funding risk is not significant, since banks have ample resources for growth and recourse to additional liabilities for unexpectedly high asset growth. Accordingly, attempts to analyse liquidity risk as a need for resources to facilitate growth, or outstanding credit lines are of little relevance to risk management. Liquidity risk that does present a real challenge is the need for funding when a sudden crisis arises. What is required for these cases is an analysis of funding demands under a series of „worst case“ scenarios. These include the liquidity needs associated with a bank specific shock, such as a severe loss, and a crisis that is system wide<sup>71</sup>. Since stress scenarios are not standardised at all, quantitative disclosure on this risk is not even discussed, yet. However, the capital position of the financial institution is integral for assessing its funding risk.

Market liquidity risk, on the other hand, is directly relevant for assessing the loss potential resulting from derivatives activities. This kind of risk should be incorporated in VAR via the holding period. The appropriate holding period depends on the speed with which a position's risk profile could be modified, if necessary by liquidation. The holding period, therefore, depends on the instrument

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<sup>69</sup> IAS 32, no. 56-65.

<sup>70</sup> Basle Committee on Banking Supervision and IOSCO (1995a), p.10.

<sup>71</sup> Santomero (1995), p.23-24.

in question, the size of the position and the market conditions in which the position is run down or liquidated. A correct, but impractical approach would consider different holding periods for different positions. The common practice to use a certain holding period of one or ten trading days for all positions, however, does not correctly reflect market liquidity risk: the risk of relatively liquid positions is overstated and the risk of comparably illiquid positions is understated.

To understand market liquidity risk better, investors would benefit from a picture of the bank's position in certain markets as compared to the aggregate size of this market. This is particularly important for OTC derivatives. It may be difficult to unwind such a position in an appropriate time frame because of its size, the availability of suitable counterparties, or the narrowness of the market. OTC contracts can include fundamental elements of market risk that may not be easily replicated using standardised exchange-traded contracts or other OTC instruments<sup>72</sup>. In this sense, the proposal by the Federal Association of German Banks (scheme I) provides useful information, since notional amounts of exchange traded and OTC instruments are published by risk category, by maturity and by product. In the USA and the UK, separate disclosure of OTC contract volumes is not required.

### 3.4 Qualitative Disclosures

The example Barings, where the trader Leeson lost more than the bank's proprietary capital explains, why inadequate internal controls and human error (operational risks) are often considered to be the most important sources of risk. These risks cannot be quantified. However, qualitative disclosures on the risk management and risk control systems as well as the risk philosophy of the entity might help to assess the loss potential resulting from derivatives activities. Moody's, for example, bases 25 per cent of its volatility rating for funds on VAR and the remaining 75 per cent on qualitative factors<sup>73</sup>.

Being aware of the information value of qualitative disclosures, the FASB demands from US entities to explain what they are trying to accomplish with non-trading derivatives. They should disclose their objectives for holding or issuing derivative financial instruments, the context needed to understand those objectives, and their strategies for achieving those objectives<sup>74</sup>.

More comprehensive discussions requires the British Bankers' Association<sup>75</sup>: Banks should disclose

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<sup>72</sup> Basle Committee on Banking Supervision and IOSCO (1995a), p.10-11.

<sup>73</sup> Styblo Beder (1995), p.23.

<sup>74</sup> SFAS 119, no. 11a.

<sup>75</sup> SORP (1995), p.14 and 43.

- (i) an explanation of the use of derivatives;
- (ii) a description of the trading activities including the types of instrument traded and policies for limiting and monitoring the associated risks;
- (iii) a discussion of the bank's risk management policies, including those for controlling credit and market risk, with reference to supervisory requirements and policies on collateral and netting; and a
- (iv) discussion of how derivatives are used in asset and liability management.

Similarly, the Federal Association of German Banks recommends to explain the risk philosophy and the risk control process<sup>76</sup>.

An investigation by the Basle Committee on Banking Supervision and the IOSCO (1995b) shows, that in their 1994 Annual Reports most US, UK and German banks actually provided the proposed qualitative disclosures.

Such information might give some idea of management's overall willingness to take risk and whether there are clear lines of responsibility for managing risk, adequate systems for measuring risk, appropriately structured limits on risk taking, effective internal controls and a comprehensive risk-reporting process.

## **4 Summary and Concluding Remarks**

The major findings of this review of derivatives reporting in banks are as follows: The accounting conventions for derivatives indicate the international tendency to mark all trading activities - including derivatives - to market. Accounting for non-trading derivatives, on the other hand, appears to be one of the least standardised areas of financial accounting. Due to the lack of clearly defined accounting rules, industry practices have established. Usually, derivatives transactions designated for hedging are valued on an equivalent basis to the related assets, liabilities or off-balance sheet instrument, but it is not clearly defined what transactions qualify for hedge accounting treatment. Therefore, there is scope for income smoothing, making earnings less comparable.

In the international context, German accounting rules for derivatives hold an exceptional position. Since the mark-to-market method is not consistent with German accounting principles, banks apply the compensatoric valuation on portfolio level to their trading positions. For hedge positions in asset-liability-management, the same accounting concept is usually employed on a one-to-one basis.

Supplementary notes help to interpret reported earnings. Most important in this context are disclosures of fair values together with carrying amounts, where derivatives are not marked to market. With this information readers of financial

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<sup>76</sup> Federal Association of German Banks (1995), p.6.

statements can adjust reported earnings to make them more comparable across different financial institutions. The FASB and the IASC require this disclosure, while it is voluntary in the UK and Germany.

Concerning disclosures on the risk potential of derivatives, the BIS recommends extensive disclosures. The key element of the BIS proposal is, that disclosed information should be based upon methodologies firms use internally for assessing their risks. Disclosure conventions in the USA, the UK and Germany tie on the BIS recommendations, but they are less comprehensive. Only the USA have broad regulatory disclosure requirements on the risks of derivatives. In the UK and Germany, on the other hand, most disclosures are voluntary, based on proposals by the British Bankers' Association and the Federal Association of German Banks, respectively.

In the 1994 and 1995 Annual Reports, credit risk disclosures focus primarily on current credit exposure and increasingly on counterparty credit quality and concentrations. Concerning market risk, more and more banks disclose the VAR of their trading books. Although actual disclosures on the credit and market risk of derivatives improved considerably, their information value is still limited. First of all, there is a lack of comparability, because US standards and the recommendations by the British Bankers' Association leave financial statement preparers with substantial flexibility in their derivatives disclosures. The proposals by the Federal Association of German Banks, on the other hand, more clearly defines what should be disclosed at minimum and what layout should be chosen. This helps readers of financial statements considerably in understanding and comparing reported numbers. A drawback of German disclosure practices is, that banks usually report end-of-period risks, which might not be representative for the reporting period. In the USA, average and high/low credit and market risks are more common. Finally, information on the risk management performance, that is the firm's ability to manage its risk within a range determined by its appetite for risk, is still exceptional. Such disclosures in conjunction with the qualitative information given on the risk management system and the risk philosophy would enhance the information value of financial statements significantly.

While this paper focused on derivative disclosures, outside stakeholders are interested in the overall return and risk situation of a financial institution. Therefore, what is sought is not inordinate detail on the risk and return of specific instruments or positions, but illuminating disclosures that help to assess the company's risk and return. Hence, the reported VAR and credit concentrations should ideally refer to the whole company, taking into consideration both cash instruments and off-balance-sheet relationships. Credit exposures and probabilities of default, on the other hand, should be disclosed separately for derivatives and for other financial instruments. In this case, separate disclosure increases the information value, since exposures from derivatives activities are more volatile than those of conventional loans.

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