an enhanced rôle in credit creation to institutions, such as securities houses, which are outside the current reporting system; and by making assets more widely negotiable so that it is more difficult to keep track of their ownership. As a result, changes in reporting banks' assets do not necessarily represent changes in borrowers' liabilities.

The growth of off-balance-sheet business tends to impair the usefulness of those data, which are based largely on the analysis of items appearing on the face of banks' balance sheets. Off-balance-sheet business may transform reported exposures or supplement them with unreported exposures. For example, a currency swap may transform a reported liability in one currency into a liability in a different currency, or the underwriting commitment on a NIF may give rise to a potential credit exposure which has no counterpart on the face of the balance sheet. In addition, off-balance-sheet transactions are frequently highly complex, so that it would be necessary to collect fairly detailed data in order to perform the kind of analysis that is possible with much less detailed information on traditional assets.

The following two sections discuss in detail the extent to which the significance of the existing BIS international banking statistics is affected by the present innovatory trends.

2. Growing importance of international bond markets

As illustrated in Chapter 5, the displacement of activity from syndicated bank loans to the international bond markets has sharply reduced the share of the international banking sector in the intermediation of international credit flows. Such a shift of activity gives rise to a number of statistical monitoring problems. Whereas detailed information on bank credit flows and indebtedness is available from the BIS quarterly and semi-annual international banking statistics, the information on actual credit flows channelled through the international bond markets is more difficult to come by. As regards the use of the funds, figures on the nationality of issuers in the international bond market are readily available. What are, however, much more difficult to obtain are reliable data on net new borrowing (i.e. issues minus redemptions and repurchases) and the outstanding amounts of individual countries' external bonded debt. The situation is worse on the sources side of the international bond markets, where even for gross purchases a nationality breakdown of the buyers is not feasible. A shift from bank credit to the bond markets therefore tends to reduce the statistical transparency of the geographic pattern of international capital flows.

This statistical problem is mitigated to the extent that the banks covered by the BIS reporting system are themselves buyers of international bonds and at the same time their acquisitions of capital-market assets are included in the BIS data. Hence, if a country refinances banking debt through an issue of floating rate notes, this would not affect the BIS statistics to the extent that the banks themselves were the buyers of this paper. Unfortunately, at present the statistical treatment of banks' longer-term bond holdings is not uniform within the BIS reporting system, as the figures collected by some important reporting countries do not yet include such holdings. There is, however, hope that within the next few years the banks' bond holdings will be included in the data supplied to the BIS by all reporting countries. For the banks in the United Kingdom, for example, this information will be available as from the end of 1985.

In order to avoid a further enlargement of the statistical format, the data on banks' bond holdings are not collected separately in the BIS statistics, but are included in banks' overall claims on individual countries. From the point of view of monitoring total international capital flows, this might give rise to problems of double-counting when data on countries' bonded indebtedness are obtained from capital-market statistics. Adding these estimates on indebtedness in the international bond markets to BIS banking data might in this case give rise to double-counting of individual countries' total indebtedness to the international financial markets.

Problems also arise in connection with the banks' rôle as borrowers (issuers) in the Euro-bond market, since very little is known about the holders of these bonds. When, for example, a bank funds its international lending through issues of floating rate notes, it is not possible to identify the nationality structure of the buyers of the bonds or to distinguish by type of institution, such as banks, official monetary institutions and non-banks. Even a reasonably accurate distinction between domestic and foreign holders is not possible, although for purposes of the BIS statistics a simple working assumption has to be adopted. Of course, similar problems have arisen in the past for funds channelled to the international banking system via trustee accounts of Swiss banks, where only very limited information on the ultimate owners of these funds is available.

3. Euro-notes and Euro-commercial paper

Paper issued under back-up facilities, such as NIFs, or in the form of Euro-commercial paper in some respects gives rise to the same type of statistical difficulties as bond issues. If there is a shift in financing from syndicated loans to the issue of short-term money-market paper under (or without) back-up facilities by the banks, the share of international capital flows covered by the BIS international banking statistics will decline, except to the extent that the banks are themselves buyers of such paper. Fortunately, a full geographical breakdown of banks' holdings of such short-term paper is already included (although not separately identified) in the banking data supplied to the BIS by the reporting countries. On the other hand, while the figures on the total outstanding stock of such back-up facilities are being collected by the Bank of England and the OECD, the information on the extent to which the facilities have actually been drawn upon and to which the paper is held outside the banks is not available either in the aggregate or for individual transactions. International credit in the form of Euro-notes and Euro-commercial-paper holdings by non-bank entities would therefore not be reflected in the international indebtedness statistics.

There can therefore be little doubt that the growing quantitative importance of paper issued under back-up facilities or in the form of Euro-commercial paper tends to increase the blank areas on the map of international capital flows. This could, in particular, give rise to problems of statistical interpretation if there are changes in the share of Euro-notes and Euro-commercial paper held by the non-bank sector. For example, it appears that so far the major proportion of the paper issued under back-up facilities has been acquired by banks. If this paper was subsequently gradually unloaded to the non-bank sector, the BIS statistics, covering solely the banking data, would wrongly suggest an underlying slowdown in the trend of international lending.

Special problems with regard to the treatment of NIFs arise in connection with the BIS semi-annual statistics on the maturity structure of international bank lending. Whereas syndicated credits are classified in general according to the life of the contract, banks' holdings of Euro-notes would be reported as short-term. When there is a shift from syndicated loans to financing under back-up facilities, the semi-annual statistics would therefore suggest a shortening in the maturity structure of international lending, an impression which, at least in macro-economic terms, might be somewhat misleading. It could be argued, moreover, that, at times, the paper absorbed by the banks in fulfilment of their back-up commitments may need to be treated differently (i.e. as long-term) from Euro-notes acquired spontaneously by banks for their portfolio purposes.

Another question concerns the treatment of back-up facilities in connection with the item "undisbursed credit commitments" reported in the BIS semi-annual international banking statistics. Inclusion of back-up facilities under this item would give rise to double-counting, when paper issued under these facilities was subsequently acquired for portfolio purposes by non-underwriting banks. In that case the statistics would record both an actual claim and an undisbursed credit commitment vis-à-vis the country in question. On the other hand, since at present only a limited amount of paper has been issued under these facilities and only part of it is held by other reporting banks, omission of these back-ups from the figures for undisbursed credit facilities would clearly tend to understate the banks' commitments vis-à-vis the countries concerned. At the meeting of Central-Bank Statisticians in March 1985 no consensus as to the statistical treatment of these back-up facilities was reached. From a macro-economic point of view, the correct solution would probably be to include these back-ups under undisbursed credit commitments vis-à-vis individual countries but to subtract from these figures the reporting banks' own holdings of Euro-notes, although such a procedure might not meet prudential reporting requirements. At present there is no prospect that the data on banks' holdings of such paper will be available with a breakdown by debtor country.

Fortunately, the problems raised by back-up facilities in connection with the BIS semi-annual statistics are so far only of limited quantitative significance since these semi-annual data encompass only lending to countries outside the reporting area, most of which have so far been able to make only moderate use of such borrowing facilities.

4. Residents' holdings of offshore deposits

Finally, mention should be made of a problem which arises in connection with the fact that some countries, such as the United States, include part of residents' holdings of deposits with banks in the Euro-currency market in their domestic monetary aggregates. Shifts in international credit flows between the international banking sector and the international securities markets may influence the behaviour of these aggregates without themselves having any major monetary significance. For example, the trend towards securitisation by reducing the rôle of the international banking sector as a deposit outlet might somewhat understate the underlying growth of the relevant US monetary aggregates to the extent that such securitised asset holdings have similar monetary attributes.

So far, however, this problem seems to have been of only minor importance. Firstly, the share of the Euro-market component in the domestic monetary aggregates has continued to be in most cases a rather modest one. Secondly, as pointed out in Chapter 5, the growth of non-bank deposits in the Euro-market by residents of the reporting area slowed down much less than non-bank borrowing within the reporting area, so that in this respect the impact of financial innovations does not seem to have been a very dramatic one. In fact, in 1984 new Euro-deposits by reporting-area non-bank entities other than US residents actually accelerated sharply despite the boom of the Euro-bond market and the rise of the NIFs and Euro-commercial paper, although there was subsequently a sharp drop-off in the first half of 1985. Only Euro-deposits by US non-bank entities showed a decline last year, which continued into the first half of 1985, but this was to a large extent due to a repatriation of the funds to the domestic market rather than to transfers into international securities.

5. Need for additional international financial statistics

From the preceding sections it is clear that, in order to enable the central banks to continue to monitor international capital flows, the resultant claim and debt structures and potential threats to the stability of the system, improvements are needed in the coverage and content of the present reporting systems.

While for practical reasons it is not possible to aim at covering all international assets and liabilities, capturing innovation wherever it occurs and expanding the central banks' reporting population materially beyond deposit-taking institutions, consideration should be given to broadening coverage in the following areas:

- fuller and more detailed information on banks' involvement in the securities market;

- information on the arrangements and use of NIFS and other back-up facilities;

- information from outside the banking sector on outstanding bond indebtedness and short-term securities, using where possible data from trade associations and other sources;

- information on banks' off-balance-sheet business, arranging where possible for data to be collected by supervisory authorities in a manner useful for macro-analysis.

The Study Group, recognising the need to avoid excessive reporting requirements, believes that the following improvements should be examined:

(i) In the BIS international banking statistics, on the assets side of the banks' balance sheets, there should be full inclusion of banks' international security holdings, namely all paper issued by non-residents, whether in domestic or foreign currency, and the paper issued in foreign currency by residents;

(ii) In addition to inclusion of the above items in the overall claims figures reported by banks, it might be useful to have separate data on banks' security holdings with the following types of breakdown:

(a) securities issued by banks and non-banks;

(b) longer-term bonds and notes with fixed interest rates and with floating interest rates, Euro-notes, Euro-commercial paper and other short-term securities;

(c) the country of residence of the issuers.

Breakdowns (a) and (b) would be especially useful for macro-economic and macro-prudential monitoring purposes. Breakdown (c) would be of interest especially in connection with monitoring international capital flows and country indebtedness. In particular, breakdown (c) would make it possible to include securities holdings for the purpose of measuring banks' exposure vis-à-vis individual debtor countries, and to exclude security holdings for purposes of avoiding double-counting when estimating individual countries' total external indebtedness (both vis-à-vis banks and other external entities) where the information on the country's total securitised debt is usually available from other sources;

(iii) On the sources side of the banks' balance sheets the quarterly international banking statistics should include international securities issued by the banks. Here again, "international" would encompass all securities issued in foreign currency plus issues in domestic currency abroad. The merit of separate information on the type of paper issued by the banks along the lines suggested above (i.e. by maturity and interest rate terms) would, however, be less clear since interest and currency swaps might significantly affect the actual commitments to which banks had agreed. Moreover, it would not be possible to obtain data on the lenders (i.e. on the holders of these bonds) since this information is in large measure not available to the banks themselves;

(iv) It would probably be sufficient to collect the separate information on banks' security holdings in the framework of the quarterly BIS international banking statistics. For the purpose of the semi-annual statistics the data on banks' security holdings would be part of their overall claims on individual countries. It could also be argued that the figures given in the semi-annual statistics for undisbursed credit commitments should include the underwritten back-up lines of credits such as the NIFs, of course only to the extent that these back-ups had not been drawn upon. However, this treatment of NIFs, as explained in Section (2) above, might give rise to double-counting to the extent that paper issued under NIFs was held by banks other than those providing the back-ups;

(v) In addition to the BIS quarterly and semi-annual statistics, it might perhaps be suggested that banks in individual countries report separately the outstanding international credit back-ups (such as NIFs) granted by them to broad groups of borrowers such as banks and public-sector and other non-bank entities. For that specific purpose it should be explored whether the circle of reporting institutions could be widened beyond those participating in the BIS international banking statistics so as to include other types of financial institutions as well, such as those engaged in the arrangement and underwriting of NIFs, and those distributing the paper issued under such facilities. Moreover, it should be explored whether it would be possible to collect from this wider circle of reporting institutions periodic information on the extent and manner in which the facilities have actually been drawn. Information on the

total amount of credit obtained in the framework of NIFs, together with data on banks' own holdings of paper issued under such facilities, would moreover permit estimates of the aggregate amount of Euro-notes placed outside the commercial-banking sector.

Similar information should also be collected on the amount of non-underwritten securities (i.e. Euro-commercial paper) placed in the markets;

(vi) In order to avoid an undue increase in reporting burdens, it is not suggested that separate new data collection systems should be set up with regard to off-balance-sheet items such as swaps, forward rate agreements and other hedging types of instruments. Nevertheless, it could be desirable to have more information on the size of the markets in these instruments, on the rôle of individual nationality groups of banks in these markets, and on the extent to which these instruments might potentially perform as substitutes for interbank operations. It should therefore be explored whether the information collected or to be collected by supervisors for prudential purposes on banks' off-balance-sheet activities could be usefully aggregated for macro-analysis;

(vii) As regards the longer-term end of the securities markets, detailed information on issuing activity in the primary market is already available from a number of official sources such as the OECD and the Bank of England. These statistics, which are largely compiled from published information on individual deals, provide breakdowns by borrowers, by instruments and by currency and are useful for monitoring the current state of the market. They do not, however, provide direct information on the actual amount of net borrowing (i.e. new issues minus repurchases and redemptions) and therefore on the actual amount of bonded debt outstanding. This kind of information on individual bonds outstanding (net of redemptions) is at present compiled by the Association of International Bond Dealers (AIBD). The data are grouped according to nationality of borrower, currency of denomination and types of instrument, and are quite similar in character to the stock data the BIS collects in the field of international bank lending. It might be considered whether the BIS should use this or any similar data base to broaden its international indebtedness statistics and to derive exchange rate adjusted net capital flows through the bond markets.

B. Issues for financial reporting

The function of financial accounting is to provide managers of firms and external users of published financial statistics with accurate and up-to-date information necessary for decision-making. There can be little doubt that many of the financial innovations examined in this Report have rendered internal managerial accounting more difficult and the existing disclosure practices misleading. In view of the rapid changes under way, these accounting questions are all the more acute because the absence of clearly established guidelines has accentuated the inconsistencies in accounting procedures across institutions. This is particularly true for those positions or commitments which are carried off-balance-sheet and on which information is frequently not even reported.

The accounting problems arising from these new instruments are best examined from two points of view. The first concerns the most appropriate manner in which specific instruments should be reported in financial statements

and how they should be related to other positions, most importantly those existing on the balance sheet. This set of issues also concerns how and when gains and losses should be recognised and shown in the income statement.

The second way in which accounting questions can be examined is from the point of view of the users. On the one hand, for management and supervisors these innovations affect their appraisal of organisational control systems and of performance, since the monitoring of exposures is rendered more complex. On the other hand, for external users of accounts - shareholders and creditors, and the tax authorities - inadequate accounting hampers the evaluation of risk and return relationships. The second part of this section discusses the implications of the ambiguities of treatment for the transparency of bank exposures and the risk-taking behaviour of banks more generally.

1. Examples of "off-balance-sheet" accounting problems

(a) Futures markets

One possible set of accounting problems arising from off-balance-sheet transactions is best illustrated by interest rate futures, although many of the same issues apply equally to options contracts or more generally to any position implying a forward commitment. As we have seen in Chapter 7, banks commonly employ interest rate futures, such as the Euro-deposit contract, as a tool of their asset/liability management. When futures are used to hedge interest rate risks this allows banks to reduce their interbank lines, lower their credit exposures and improve their gearing ratios.

Most of the problems arising with respect to the accounting treatment of futures positions concern the timing for recognition of gains and losses. On the exchanges, futures contracts are marked to market daily, which means that positions are effectively closed every day, thus favouring current recognition of daily gains and losses in the income statement. As a result, if the gains and losses on a position being hedged by futures are deferred for accounting purposes, employing futures may give rise to spurious changes in the profit and loss account throughout the period in which the hedge is in place.

The proper treatment of interest rate futures in these circumstances has given rise to considerable debate within the accounting profession. In the United States the Financial Accounting Standards Board (FASB) has set up standards designed to differentiate between futures positions used to hedge a particular instrument from those regarded as speculative. According to these accounting standards, if the position is regarded as a hedge the changes in value could be deferred or amortised over the life of the item being hedged. However, this poses the problem of defining precisely when a futures position constitutes a hedge for another position and at present there does not appear to be a consensus with regard to the best manner of making such as assessment. It also means that positions in futures may be carried in a bank's accounts under two different accounting principles - deferred accounting and marking to market.

While the interest of accountants has centred on the best manner to account for specific positions being hedged via futures, the supervisory authorities have been particularly concerned about possible mismanagement arising from the failure to assess the impact of a futures position on the interest rate exposure of a bank's overall portfolio. Supervisors have

correctly pointed out that a futures position that reduces the interest rate exposure on a specific transaction may increase the interest rate exposure for the entire balance sheet. Banks, however, fear that there are practical difficulties in measuring such a macro-exposure effectively, since there is no widespread agreement on how to assess interest rate risks for an entire portfolio.

As a result of these diverse possible opinions regarding the proper accounting of a bank's positions in futures, varying practices are followed by different institutions. This renders the interpretation of actual and potential exposures quite difficult and sometimes not comparable across institutions.

(b) Swaps

The accounting issues associated with swaps were described in detail in Chapter 2. As in the case of futures, the central issue is whether to view all swap contracts as trading positions or to treat them as hedges of underlying assets and liabilities. Trading positions are generally marked to market daily, while on-balance-sheet assets and liabilities are usually valued at cost or at whichever is lower, cost or market.

Current accounting practices for swaps are very flexible. Swaps that hedge commitments valued at cost usually receive the accounting treatment applied to other long-term assets or liabilities. Swaps which involve an open position on exchange rates are valued at market prices. Swaps which take interest rate positions are generally either marked to market or valued at whichever is lower, cost or market. In both cases this is consistent with the treatment of other speculative on or off-balance-sheet positions. Swaps which hedge other swaps or which hedge or are hedged by trading positions do not have general accounting rules that apply to them and treatment varies considerably across institutions. These positions are generally only partially hedged. Many dealers mark the unmatched swaps to market on a daily, weekly or monthly basis to reflect the liquidation value of the position.

The basic problem with marking swaps to market is that the market value is not well defined. The prices used in the procedure are somewhat subjective as in most over-the-counter transactions, since there are often no readily available quotes in thinly traded markets. Another problem with valuing some swaps at cost and others at market prices is that under different circumstances traders face incentives to move swaps from one book to another in order to realise short-term gains.

Assuming a swap has a material effect on the financial condition of the firm, the existence of the swap and its terms should in principle be disclosed in the footnotes to the financial statements. At this juncture, however, most accountants in the United States apparently consider swaps not to have a material effect on the financial condition of the firm and in any case few appear in public financial statements. This significantly lessens the usefulness of company accounts.

(c) The "sale-leaseback"

The accounting implications of "off-balance-sheet" business are also illustrated by the "sale-leaseback", a transaction not discussed elsewhere in

this Report, but which has been increasingly used by many banks. In such a transaction, the owner of a particular property sells the property and simultaneously leases it back from the new owner. The immediate effect of the "sale-leaseback" is to generate more liquidity on the balance sheet. In addition, if the asset that was sold had previously been undervalued in the balance sheet because of historic cost accounting, or for other reasons, the sale-leaseback would improve the capital-standing of the firm. In the case of banks, it may also strengthen capital ratios for supervisory purposes if the asset which is sold carries a higher weight in the risk asset ratio than the instrument received in exchange or if the asset had been excluded altogether from the measurement of capital. In the extreme case in which the accounting treatment for sale-leasebacks requires that only the cash payment be reported, the firm will have improved its measured liquidity, strengthened its capital ratios and possibly increased its net equity.

Under these circumstances, the increased leverage undertaken by means of the sale-leaseback will go largely unrecorded. There can be no doubt that this represents a misleading picture of the actual transaction undertaken by the lessee, since the lease has engendered a stream of future liabilities to be paid to the new owner and lessor during the life of the lease. One possible way of overcoming this drawback is to capitalise the stream of lease payments and carry this capitalised value on the balance sheet as a liability against the use of the asset. This will give a more accurate picture of the health of the firm since the firm has raised its future liabilities to the full extent of this stream of lease payments. On this matter accounting conventions vary across countries. In some only the cash payment is carried in the books while in others the liability incurred through the lease appears as well.

The three examples discussed above illustrate the types of specific problems raised by off-balance-sheet business. It is not difficult to find analogous problems arising from positions in options, the provisions of guarantees and virtually all other types of off-balance-sheet business. These problems raise two general types of concern. The first regards the transparency of reporting of positions and the second the risk-taking behaviour of banks.

2. Transparency

One effect of off-balance-sheet business is to render the interpretation of banks' exposure to particular risks less clear. Off-balance-sheet business, however, is not a new phenomenon, since banks have always been involved in forward markets and granted standby lines of credit. In this respect the issue of transparency is one deriving from the increasing volume of off-balance-sheet transactions and from the complexity of some of the specific instruments employed. These two developments raise different questions for the various users of the accounts.

For management, the question of transparency concerns the best way of monitoring the general and specific exposures of the bank. With respect to managerial accounting practices the issue is really one regarding the best way to fold in the off-balance-sheet activities with the remaining bank exposures. In the case of currency options, for example, management must decide whether the foreign exchange exposure should be valued according to a marking to market on the basis of "delta" or whether to follow another procedure, such as that of accounting on the basis of the face value of the contract. Similarly, management must establish guidelines on the basis of which the nominal

commitments of standbys granted under NIFs can be related to the credit limits of specific borrowers. Since the degree to which banks are committed under these standbys is not clear (see Chapter 1), the manner in which this folding-in takes place is to some extent arbitrary. Accounting for credit risks under swaps also appears to be a matter for the judgement of the management of individual banks.

A second set of users of accounts are the banks' counterparties in the interbank markets, the non-bank depositors and ultimate shareholders. Despite public disclosure of banks' positions being far from complete in most countries, over time credit assessments have nevertheless been made on the basis of periodic publications of financial statements. The effect of off-balance-sheet business is to cloud even further the meaning of these published reports and to render relative credit assessments more difficult. Although there is evidence to suggest that markets can often pierce through the veil of accounting changes explicitly designed to inflate earnings artificially,* the effects of under-reporting or non-reporting of positions have not been the subject of serious examination and would appear to be less easily recognised.

Finally, supervisory and regulatory exposure assessments may be significantly affected by the growth of off-balance-sheet transactions. The principal issue for regulators is one of measurement analogous to that which is faced by management. Bank regulators must decide to what extent the overall and specific exposures undertaken through off-balance-sheet business are related to those which are on the balance sheet. They must decide on appropriate criteria for making such comparisons, for deriving necessary capital ratios and specific loan concentration limits, and finally for assessing the overall health of banks.

3. Risk taking

The absence of widely accepted and recognised accounting practices in general, and specifically with respect to off-balance-sheet items, as well as the lack of information in published financial statements, raises the issue of whether firms have been willing to assume more risks than if their positions were disclosed and understood by the market. In particular, firms may have increased their implicit leverage and undertaken a greater concentration of exposures than would have been possible otherwise. Historical experience with specific banking problems arising from off-balance-sheet commitments suggests that this outcome has often occurred in the past. In assessing the likelihood of this increase in risk taking resulting from that widespread use of these innovations, it is essential to bear in mind three factors.

Firstly, it is important to recognise that off-balance-sheet transactions generally tend to alter the nature of risks. For example, when futures markets are used as a substitute for interbank business, the credit risk faced by a bank is significantly reduced and this explains the improvement in the measured capital ratios for supervisory purposes which takes place in these circumstances. At the same time, however, if changes in the value of the position in the futures markets do not match those of the position being hedged, the bank is open to a new, though lesser, risk, namely that arising from changes in the "basis" - the spread between the price of the futures contract and that of the position being hedged. These new risks may need to be accounted for in the measurement of risk exposures and require a different type of management and supervisory treatment than a perfect hedge.

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* For example, share prices appear immune to changes in the method of computing depreciation allowances.

Secondly, depending on circumstances, off-balance-sheet transactions may either under or overstate the nature of the risks undertaken by banks depending on the manner in which they are recorded. For example, if foreign currency options do not enter into the computation of the net foreign currency exposure of banks and if these options are covered by transactions which are recorded for this purpose, the banks' exposure may be overestimated. Conversely, if an open position taken through the writing of options were unrecorded, the bank might appear to have a flat position in foreign currency.

Finally, these difficulties in risk assessment and the problems arising from the interpretation of positions may have led banks to make less use of particular off-balance-sheet transactions which might otherwise have reduced their overall risk exposure. In the previous example taken from the options market, if the positions in options cannot be offset against other exposures, this may mean that firms will abstain from using these instruments and possibly assume greater risks than would be warranted.

In the light of these observations, it is difficult to say whether, taken in isolation, the effect of accounting rules for particular financial innovation may have encouraged risk-taking behaviour or discouraged hedging activity. Nevertheless it appears that as a result of several innovations which require a daily assessment of risks, difficulties of measurement may have rendered the monitoring of positions by banks' management more complex and difficult. This may mean, particularly in the short run, that the overall positions of banks may become more unbalanced and risky, and, as a consequence, that the managerial monitoring of performance is not as tight as it probably has been in the past.

Chapter 12

Issues for macro-prudential policy

We turn now to some of the macro-prudential policy implications of the developments described in Parts II and III of this Report, that is, their implications for the overall stability and structure of the financial system and for central banks' responsibilities for that system. Issues relating to the prudential supervision of individual financial institutions are not examined in detail here, although the innovations considered in this Report have important implications for supervisors - not least in ensuring that individual institutions recognise, report and control the various risks they are undertaking. However, insofar as these issues relate to the supervision of banks they are being considered separately by the Basle Supervisors' Committee.[1] The aim here is to consider how the innovations which are taking place, and the forces shaping them, may be changing not only the risks undertaken by various parts of the financial system, but also the potential for systemic risks arising from them and the changing structure of the financial system.

Although banks from all Group of Ten countries are making use of most or all of the new instruments on which the Report focuses, banks from a number of these countries engage in these activities only through overseas branches or subsidiaries. Consolidated supervision should require the supervisors of the parent bank to take the same account of the transactions wherever they take place, and in this respect all banking supervisors face similar problems. But important differences in the existing structures of the banking systems of the various countries mean that some of the broader issues discussed below, regarding the changing rôle of banks, have rather different implications from one country to another. For example, the trend towards banks' greater involvement in international securities raises fewer new questions for those European countries with "universal banks", which have traditionally held and underwritten securities, than it does in the United States and other countries where banks and securities houses are distinct. The possibility that the rôle of banks in financial intermediation may become relatively less important than in the past is obviously greater in these latter countries, and in some of them questions will arise regarding prudential responsibility for the securities houses which are becoming an increasingly important part of the financial structure. Further differences between countries arise according to whether or not the central bank is also the banking supervisor and more generally according to the traditional or statutory scope of and limitations on the rôle of the central bank.

The number of combinations of these differences existing in national financial structures, the scope of banking supervision, the responsibilities of the central bank, and indeed the mix of international assets already held by different nationalities of banks, makes it impracticable to reach general conclusions about the implications of innovation for macro-prudential policy. Some countries are undoubtedly more affected than others by the trends discussed in the remainder of this chapter, though it seems unlikely that any country will be wholly immune. Even if the macro-prudential implications of

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1 See Committee on Banking Regulations and Supervisory Practices, The management of banks' off-balance-sheet exposures - a supervisory perspective, Basle, March 1986.

innovation have to be resolved differently in each country, the degree of global integration being observed means that some co-ordination of national responses will be very desirable.

A. The desirability of innovation

The international financial system has entered a period of fierce competition and rapid innovation. In many of our nations this carries over to developments within domestic banking and financial markets. On the face of it, this must have improved the responsiveness of the system from the perspective of its customers. It is they who benefit from a narrowing of bid/offer spreads and lending margins and from the availability of a vast array of new products that have filled many of the gaps in the spectrum of financial services. These new products will have helped many firms, and also individuals, to cope with the financial stresses of the last few years. At the same time, the resources devoted to the financial services industry have grown, both intellectual resources, with the need to develop new products, and financial resources, with the increasing investment by non-financial firms in the financial sector. The changes have been accompanied by an increased emphasis on opportunities for trading profits and gains from the origination, underwriting and distribution of financial assets. One sense in which innovative techniques might be said to increase the efficiency of the financial system would be by reducing the cost to customers of using hedging or intermediation services. Where this is so, there is a prima facie case for permitting markets to innovate in ways which are expected to be profitable, leaving central banks and supervisors to adjust their own techniques to take account of the innovation. Indeed, this has been the thinking behind many of the deregulatory moves taken by the authorities in various countries, which have encouraged financial innovation.

There are, however, other senses in which innovation might add to the efficiency of the financial system, for example by accelerating the speed of response of prices to new information. To assume that this is desirable begs a number of questions. In a world with many imperfections in various markets, the possibility certainly exists that financial innovations - even if they appear to increase the efficiency of the financial system - may fail to improve economic welfare overall. In particular, the benefits of what appears to be competitive pricing may be offset if in fact it turns out to have been mispricing, which weakens the stability of the financial system; rigidities in labour and product markets may lead to "overshooting" of exchange rates and interest rates; and general attempts to hedge in the face of volatility may be self-defeating if they result in increased volatility.

What we can recognise is that many innovations have arisen from profit opportunities available to those able to exploit existing imperfections within the financial sector. In many cases, it may well be that arbitraging away such imperfections will be socially beneficial. But some of the "imperfections" which the innovators are manoeuvering their way around represent official measures, such as capital adequacy requirements, which had been imposed earlier in the interest of the safety and soundness of the financial system or to try to combat externalities and other forms of "market failure". Others constitute regulations designed to serve the needs of domestic monetary and credit policy objectives, and still others are meant to serve investor protection needs. Where innovations have been primarily a means of circumventing regulation, the easiest response might seem to be to extend the

scope of the regulations to cover the new technique. In some cases, this will be the preferred response. But the retention of regulations for social ends will keep open the opportunity to earn above normal private returns for those able to exploit these imperfections, so continuing to attract resources into the financial sector. The amount of innovation now occurring might in fact be a signal that the external environment is changing too extensively to rely upon modest responses, and it may be necessary to consider a much broader policy response to the new circumstances.

It is, therefore, desirable to pay attention to the forces which have been shaping financial markets in recent years and, in particular, to whether they are likely to be temporary or permanent. Some of the forces identified in Part III, such as the large shifts in the distribution of the current-account surpluses and the rapid shifts from inflationary to disinflationary policies, may be reversible, particularly if a more stable economic environment can be sustained. To this extent, these forces are less likely to give rise to a need for fundamental changes in regulatory and other official techniques. But where the financial system is changing in response to more durable forces, such as technological developments, then policy responses may need to be more fundamental. Particular attention will need to be paid to the speed and form of deregulation. It is not possible to generalise as to whether deregulation should proceed quickly or slowly, for the attraction of a cautious, step-by-step approach which enables the effects of each step to be observed can easily be lost if the elimination of some restrictions before others introduces new incentives and opportunities leading to potentially destabilising flows. We may also have to recognise that the rate of innovation, and therefore the need for policy-makers and regulators to be able to respond quickly and flexibly, may have been given further impetus by the establishment of "market development" (i.e. R and D) groups within financial institutions.

B. Implications for the rôle of banks

There is growing sentiment expressed by many bankers and market analysts that innovation, global market integration and the increased flow of savings through institutionally managed funds are combining to lessen the importance of banks as a channel for direct credit intermediation with prime borrowers. To this list of factors may be added the burden of domestic monetary (reserve requirement) and prudential[2] (capital adequacy) controls and the lowered credit ratings of some banks.[2] Those banking organisations which are particularly exposed to these pressures have tended to respond with a mix of actions, including shifts to off-balance-sheet alternatives to direct credit intermediation and liquidity support functions for their large business customers' increased direct lending to what is, on average, a different and possibly lower quality tier of customers; greatly increased emphasis on investment banking and capital-market services, within the limits permitted under national law; and, in some cases, a strategic refocusing on serving the consumer and smaller corporate sectors.

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2 It is sometimes difficult to reconcile the concern over poor rates of return and future profit prospects with the strength of current reported earnings at several of the largest international banks, including some with a particular wholesale focus. To some extent, the greater variability of earnings performance among large banks is consistent with what one would expect in a more competitive, less regulated environment. Also, it may be that large banks are earning less from traditional activities, and that high profits on innovative business explain strong earnings in some institutions.

Some of these responses - especially those which take business off banks' balance sheets - can be viewed narrowly as devices to avoid capital adequacy and reserve requirements and to show a higher reported return on assets. In those cases, the appropriate policy response may well be to extend the ambit of those requirements. But consideration of why banks are seeking to avoid these requirements suggests that a more comprehensive response may be needed.

It is now widely recognised that international banking grew very quickly in the 1970s on the basis of macro-economic and other assumptions which in the event proved invalid. With the development of syndicated credits, large borrowers made greater use of banks to intermediate credit than they had done previously. This encouraged banks to commit capital resources and recruit staff in the expectation of high rates of return and continuing growth, which proved to be disappointed. They were left with sizable amounts of loans which, in the light of subsequent events, turned out to have been underpriced. At the same time, disinflation and other developments in the 1980s also brought other categories of domestic assets under pressure in many countries. Supervisory authorities in most countries reacted by raising their capital requirements for banks and encouraging strengthened provisions for banks whose capital positions had not kept pace with asset growth in the 1970s and/or encouraging strengthened provisions for banks whose provisions had not kept pace with the potential write-offs against problem credits.

At the same time, however, the factors described in Chapter 5 led to the securitisation of international credit flows, perhaps representing a return to what would have been regarded as normal before the 1970s. Where banks now hold more international securities, the result has simply been to change the form of their lending; but some of the flows now by-pass banks completely. A consequence of this has been to attract a new group of institutions free of the legacy of lending in the 1970s - the securities houses - to types of international intermediation which had previously been dominated by commercial banks. The combination of capital constraints on banks and the addition of a new group of competitors left some commercial banks simultaneously facing a shortgage of capital and overcapacity in the market.

Many smaller international banks, but also some larger ones, have reacted to this state of affairs by reducing their international activity, especially in syndicated lending, and shedding excess resources, including staff. Other banks have chosen to stay in international business, despite currently depressed rates of return. Aggressive competition among these banks has been one of the forces behind innovation as they have tried to preserve their market shares, some by concentrating on managing securities issues, others by becoming market-makers in currency options, and others by developing specialised skills in swaps. Some large banks have shed their retail operations to concentrate on institutional and investment banking.

Competition of this nature is bound to raise prudential concerns. How acute these concerns should be must depend in part on whether a gradual recovery in the demand for international banking services can be expected to make use of any present excess capacity in the industry. In any case, the fact that there appears to be increasing tiering among banks, with large and small banks pursuing different policies, raises the question of whether supervisory policies fashioned around traditional banking activities continue to be appropriate.

It is true that the particular innovations discussed in this Report may significantly affect one sector of banking business: large, particularly international, institutional business. Smaller corporate business and personal banking have thus far been scarcely touched by these particular innovations. But many of the same general forces that have given rise to these innovations have, at least in some countries, brought on very significant changes in these segments of the domestic market. In the United States, for example, there has been a significant move by large domestic corporations to meet short-term borrowing needs in direct markets rather than from banks, and there is growing evidence to suggest that the smaller corporate and personal banking sectors are the target for the next wave of vigorous competitive efforts at market penetration by large banks. Elsewhere private-sector domestic borrowing is still intermediated largely through banks, though in several countries greater competition from outside the banking system is requiring banks to pay higher interest rates on smaller deposits.

It is not clear whether or to what extent there has been a permanent shift of large corporate business away from banks, perhaps as a result of the wider and faster availability to non-banks of the information which previously helped give banks some of their advantages in credit assessment and in market-making. To some extent, the disintermediation also results from changes in lenders' perceptions - these changes have enabled large corporations and prime sovereign borrowers to obtain funds on terms as fine as or finer than those available to banks, given that banks are subject to capital regulations. To the extent that this is just cyclical, the process is likely to be reversed as banks recover their standing. But there are also indications that in a number of countries there may have been structural shifts in the banking industry, which will be less easily reversed. Nor does the trend towards greater direct capital-market intermediation via investment banks and institutional investors seem likely to be easily reversed, in the absence of a major structural change in the capital markets, as corporate borrowers have become more sophisticated and have developed in-house banks.

Perhaps many banks will find that they are unable to retain prime corporate business except of the most operational kind, such as money transmission services. Those banks which do succeed in retaining the higher-quality customers as borrowers will require special qualities of innovativeness and the financial size to be able to take large positions quickly in response to their customers' needs. The need for size probably means that a smaller number of institutions will emerge with a presence in the market. It may be difficult for many banks to operate across the full range of business sectors from personal to large corporate, since the culture and management skills required for a quick-footed trading operation will be quite different from those required in more traditional, credit-oriented banking operations. However, some major institutions are successfully competing across the full spectrum.

If there were to be a permanent shift in comparative advantage in favour of direct capital-market intermediation, then policy would have to adapt to a different, perhaps smaller, rôle for banks in the future with respect to their deposit-based lending. This would raise a number of issues. Many countries limit the extent to which banks can diversify into other lines of business, and regulations often make it impossible for banks to leave the banking industry, except by merger. Even in cases where banks fail, restructurings sometimes mean that the banking population is not reduced.

If reducing capacity in banking should prove less difficult in the future than it has been in the past, there might still be various systemic risks as large banks adapt to this changing rôle. These relate to the question of the future ability and capacity of large banks to play the rôle of lenders of next to last resort in support of large financial and non-financial firms and financial markets generally. There are several dimensions to this issue.

That banks continue to be viewed by the market and themselves as playing this rôle tends to be borne out by the extent to which bank-originated credit and liquidity-enhancing devices support direct capital-market funding instruments. However, if the size of large banks' funding and capital capacity continued to shrink relative to the degree of direct capital-market intermediation, questions would arise about the capacity of banks to fill this rôle. In particular, eventually risks could arise if the banks were suddenly called upon in the face of adverse market conditions to advance large amounts of funds against their various back-stop facilities.

Another dimension of this issue is whether institutional investors in the capital markets are likely to be more susceptible than banks to rush to sell assets in the event of a significant credit failure. Past reactions of investors in markets such as those for US certificates of deposit and commercial paper suggest this may well be so. One reason is related to the special fiduciary rôle many of these investors see for themselves. Another is that they tend to regard their holdings as short-term low-risk liquid assets. A third reason is the likelihood that they would have both less detailed information than would a bank on which to base a credit decision and less of a business-relationship reason to continue to support a particular borrower or to work to keep a particular market functioning. Problems in the securities markets could face banks with sudden large funding demands. In addition, deterioration in the value of security holdings could pose problems for banks, especially in countries where they are required to mark their holdings of securities to market prices.

The process of innovation is also having important implications for the structure of the banking and financial industry. Some countries have long taken the view that various financial activities should be conducted by separate institutions, others require different activities conducted within the same corporate group to be separately capitalised. The Glass-Steagall and Banking Holding Company Acts in the United States are perhaps the most frequently cited examples of such restrictions. Similar restrictions are imposed in Japan, where there is also segmentation within the banking system. Italy, too, separates different types of banking institution. While these types of restrictions were initially established to serve a mix of policy goals, including prudential considerations, it is becoming increasingly difficult to sustain them in the face of the forces and the types of innovations described above.

The forces for change appear strongest in those countries with the sharpest division between investment and commercial banking. But the distinctions between types of institution are becoming blurred elsewhere, too, as commercial banks place more emphasis on generating fee and trading income and investment banks (especially from the United States) expand their international activities in competition with commercial banks.

Given this, and assuming that policy considerations continue to favour viewing banks as playing a special rôle in the financial system, then it would seem important to reconsider the need for domestic restrictions on banks' ability to grow and diversify into closely related financial activities. At the same time, the context for any such reassessment would seem to require a balancing of these considerations against public policy concerns over risk aspects of new activities, as well as questions of public (investor and depositor) protection. It may well be that permitting greater diversification of banks' activities is desirable, though the question has arisen whether it should take the form of retention of separately capitalised functional entities operating under common management and ownership of a banking group (or bank holding company, in the US parlance). To this extent, diversification efforts by banking organisations would tend, over time, to promote the further development of diversified financial services conglomerates. The present trend in that direction seems both clear and powerful, although there remain many unanswered questions as to whether such firms will in fact enjoy economic gains that make them more effective competitors than large banking organisations or securities firms which do not so diversify. It is also clear that this trend will make it increasingly difficult to sustain regulatory and supervisory distinctions among financial institutions based on the form of the institution, rather than the functions being performed.

C. Implications for the scope of prudential supervision

A notable feature of many of the recent innovations, particularly in swaps and NIFs and more generally through securitisation, has been their active promotion by financial intermediaries other than commercial banks. The US investment banks have been prominent in this respect, and it seems likely that they have been helped by all of the factors mentioned earlier - a shift in comparative advantage away from commercial banks resulting mainly from technological developments, the institutionalisation of savings via non-bank investors, a weakening of commercial banks' position relative to certain other institutions, and investment banks' regulatory advantages compared with commercial banks (in particular those whose off-balance-sheet risks are taken into account in capital adequacy tests).

Related features of the forces giving rise to these innovations are greatly increased levels of investment-banking-type activities within banking organisations. Within those countries with Glass-Steagall-like restrictions, there are pressures to break down regulatory barriers to further bank participation in securities underwriting and investment advisory services. To the extent that those restrictions are relaxed, or successfully overcome, there will be even more direct competition between commercial banks and investment banks, but perhaps under separate regulatory and prudential structures. Similar pressures are present in countries like the United Kingdom where, even though there is no legal distinction between commercial and investment banks, institutions have nevertheless tended to specialise in one field or the other. Even in continental European countries with universal banking systems, the attitude of the authorities and the behaviour of the banks themselves seem to align the large banks more with commercial than with investment banking.

It is almost too easy to conclude from the above that steps should be taken to remove all the restrictions on commercial banks or to impose equivalent limitations on non-bank financial firms, such as the investment

banks. The case for regulating the latter group more closely would be reinforced if there were likely to be some permanent shift of banking business to these institutions. One difficulty with this argument is that it is hard to know where to stop, for following this approach could lead to an ever-widening net which sought to bring within it those institutions which at each stage were just outside the scope of banking regulation and supervision.

A more practical problem is that it is not a simple matter of investment banks assuming a greater share of the banking business of funding credit from deposit-like sources. Rather, it is a case of investment banks and others using new market instruments and unbundled products to bring large borrowers directly to the market-place in order to raise credit. Thus, it would be awkward at best to promote a simple extension of banking-like regulatory and supervisory standards to non-bank competitors.

If the prime purposes of banking supervision are viewed narrowly to be the protection of depositors and of the payment system, then only those institutions which take deposits from the public, including those which make up the payment system, should be covered. Taken to its logical extreme, this view has led some in the United States to propose that "banks" should be confined to the narrowest of rôles as holders of safe deposits and transactions balances which would support portfolios of near riskless highly liquid assets. All other financial and non-financial firms would be free to operate in whatever financial markets they chose, taking on whatever risks those markets would permit them to bear, provided they remained separate from banks. Even if this radical change were judged desirable by a particular country, it seems improbable that such a structure could ever be achieved, given the configuration of integrated global banking and financial markets, and the present rôle played by large banks in those markets.

More importantly, a broader view of the rôle of banks and of banking supervision would lead to a very different view, which sees the special rôle of banks being based not only on their deposit-taking and payment activities, but also on their rôle as a backstop source of liquidity and as channels through which monetary and credit policy are conducted. Consistent with this latter view, the broader purposes of banking supervision are seen as including not only the protection of depositors and the payment system, but also assurance of the strength of the banking system and, through that, the financial system more generally. These purposes include protection against development of systemic risks and limiting the degree of moral-hazard risks to central banks arising from the safety nets which support banks and their depositors.

Abstracting from these more general thoughts, and returning to the present environment, banking supervisors seek to protect depositors and the payment and financial systems by supervising institutions within the banking system, although as noted earlier the scope of their responsibilities varies significantly between countries. But the financial and payment system and the liquidity of deposits can also be threatened by losses in particular industries or major companies. Banks themselves are often able prudently to marshall and lend the funds needed to prevent unnecessary damage to the financial system; in cases where this is not possible, such problems may be addressed by lending by central banks to meet the liquidity needs of otherwise solvent institutions. This is typically done through the intermediation of the banking system.

This approach may be satisfactory in respect of potential failures originating outside the financial system. But where - as with the new instruments - near-banks are conducting similar business to banks, and there is a greater likelihood that their failure could damage the financial system, a more preventative strategy seems to be called for. Specifically, a case can be made for reducing the risk posed by the potential failure of large non-bank financial firms by extending bank-like regulation and supervision to them, even though they do not themselves take deposits from the public and would not fit neatly under the particular supervisory standards applicable to banks. Thus, one of the more complex emerging prudential policy issues is whether it is not or will not soon be necessary to ensure that every major financial-services firm is subject to some form of prudential supervision over its consolidated worldwide operations. Extension of supervisory responsibilities, however, would run the risk of suggesting that similar central-bank liquidity support was available to such institutions as is currently available to banks in the countries concerned.

D. Implications for risk assessment

The current trends toward disintermediation of the international business of large banks suggest that banks may be less likely to be in a position to accommodate a sudden increase in demand for liquidity. The question that arises then is to what extent are the types of off-balance-sheet innovations covered in this study contributing to this situation.

An important characteristic of some of the new instruments is their ability to transfer interest or exchange rate exposure from one agent to another (e.g. options, swaps, FRAs, futures). To a large extent, these transfers of exposure are being used to hedge previously unmatched positions, and so an overall reduction in the sum of risks faced by individual economic agents may be resulting. But sometimes the consequence may be that exposures become concentrated on a small number of agents; this tendency is seen most clearly in the case of options - possibly because they require a high degree of technical expertise. As banks hedge their own options books through buying options on exchanges written by a concentrated group of firms, they and their supervisors need to satisfy themselves that these firms, the exchanges and their clearing houses are between them in a position to bear the risk. Closer co-operation may be needed between banking supervisors and those responsible for the supervision of futures and options exchanges.

It is also possible that the existence of easy hedging opportunities would encourage some agents to take on more exposure than would otherwise have been the case, in the expectation that it could easily be hedged if circumstances changed. A growing volume of unhedged exposures may at times result in wider interest and exchange rate swings if many market participants move simultaneously, first as the exposures are taken and then as they attempt to hedge them. In the case of currency options, there are reasons to believe that hedging techniques may result in greater exchange rate volatility at times.

There are two ways in which the new instruments can give rise to increased credit exposures. The first is that each of the risk-spreading instruments involves an actual or potential credit exposure for one or both of the parties. Although individually the risks may be small (e.g. in exchange-

traded futures), the enormous growth in turnover can result in aggregate in a substantial addition to banks' credit exposure. This credit exposure is particularly difficult to measure because in many cases it is conceptually and technically complicated (e.g. swaps and options) and because unlike conventional loans it is not evenly spread over time. For example, the exposure on a swap can fluctuate from positive to negative. Most instruments give rise to a sharp peak of exposure for a matter of days or hours at settlement, which, at times of high turnover, can become very large relative to an institution's total assets. Given the difficulty of measuring these exposures, should attempts be made to reduce them by establishing - as some investment banks have suggested - more clearing-house meachanisms along the lines of futures exchanges? The main object would be to reduce the potential domino effect of one institution's failure being transmitted to others.

The other way in which new instruments can add to credit exposures is by facilitating borrowing. Some innovations have been designed to overcome what might otherwise have been constraints on borrowers' access to credit: NIFs and the securitisation of lending in general have reduced the importance of capital adequacy requirements as a constraint on banks' ability to intermediate credit flows; and swaps have enabled borrowers to continue to raise funds from markets which might otherwise have started to discriminate against them. This raises the potentially troublesome possibility that the lowest credit-quality spreads and standards prevailing in any major capital market could become the general standard. Moreover, as was discussed in Chapter 11, the trend towards securitisation, and especially the shift from bank credit to the security markets, is making it harder to monitor international capital flows. The various statistical problems, together with the increasing importance of off-balance-sheet commitments, will tend to render it more difficult to monitor developments in the field of country indebtedness and of related risk concentrations. A reduction in the comprehensiveness of aggregate bank lending statistics and the data held by "centrales des risques" may enable borrowers to borrow more than would have been the case if the full extent of their debt had been known.

So far, however, there is little evidence that such considerations have led to additional credit being created (as distinct from credit being provided through different routes). Only in the United States has a rapid acceleration in total credit been observed, and this may or may not owe something to the type of innovatory developments discussed in this Report.

The process of securitisation and its emphasis on trading assets may also lead to a shorter-term view being taken: assets may be bought because of the prospect of gains in the immediate future, with the underlying credit quality overlooked. The capital markets have seen a series of instruments such as mismatch FRNs and bonds with warrants or conversion options which are designed to take advantage of short-term trading opportunities but give rise to long-term - in some cases perpetual - credit obligations. It is not clear that all investors properly assess the short-term prospects or the long-term credit quality.

There is indeed some danger that the new instruments possess greater risks than their users realise. In view of the inevitable lack of experience with the new instruments, assessment of the risks attaching to them is not always easy. Even though many of the instruments fall outside existing supervisory restraints, banks have by and large made efforts to assess the risk

attaching to them. There is widespread understanding amongst the major users of the innovations of, for example, the credit risks attaching to swaps, and of the sizable losses that can be suffered on writing options if volatility is underestimated. But this understanding does not always extend to all banks involved, nor - in a very competitive environment characterised by low profitability - is it always reflected in pricing. Inadequate account may be taken of correlations between various risks, such as the effects which might be felt over a wide range of a bank's business from a sudden shock such as a sharp exchange rate change. As noted above, some forms of securitisation, such as transferable loan facilities and sub-participations, may also lead to inadequate credit assessment.

These shortcomings are being studied by the banking supervisors, and improved reporting and control requirements for individual banks should address most of their problems. Further consideration perhaps needs to be given to how non-banks might be encouraged to ensure they have adequate internal control over their use of new instruments. Some large corporations in both private and public sectors are, for example, said to be actively trading swap portfolios. To what extent those responsible for these corporations have been able to assure themselves that only reasonable risks are being taken, we do not know. But it would in any event seem necessary, if individual institutions are to be able to make proper credit assessments of their counterparties, for off-balance-sheet risks to be set out in public accounts. Virtually no such information is currently available in respect of banks or other companies. It is particularly important that banks should have such knowledge in respect of other banks and near-banks with which they are considering undertaking exposures.

A further risk attaching to the innovations is that there are legal doubts about some aspects of them, especially where different national jurisdictions impinge. Banks' ability to offset swap contracts with a failed counterparty is a particularly grey area; and in some countries gaming laws could render FRAs, futures, options or swap contracts unenforceable in certain circumstances.

E. Conclusions

The two main themes of this chapter have been the need for central banks and banking supervisors to concern themselves more with: (a) the implications of the changes taking place in the financial system for the ability of large international banks to play their traditional rôle in credit intermediation, and in particular to serve as intermediate sources of liquidity in times of financial-market stress; and (b) the blurring of distinctions between banks and other financial institutions that operate outside the traditional banking system in some countries.

Both lead to questions about the scope of the central banks' rôle in providing the ultimate support to the financial system and the inter-relationship between that rôle and prudential supervision. The tentative conclusions one might draw from this analysis can be summarised as follows:

(i) while some of the driving forces behind the development of particular innovations may be temporary and reversible, much of what is occurring may be leading to lasting changes in financial-market practices and the institutional structure of those markets;

(ii) both the general process of financial innovation, and the particular forms considered here, offer obvious potential benefits in terms of improving efficiency;

(iii) however, some of the techniques used to increase efficiency, particularly the reliance on advanced computing and communications technology, make the system vulnerable to serious problems in the event of technical failure;

(iv) at the same time, there are a number of important macro-prudential policy issues posed by these developments, related mainly to the degree to which the changing structure of the international financial system will have the resilience needed to withstand stress and permit the conduct of strong anti-inflationary policies, when needed;

(v) among these concerns is the risk that the process of greater direct capital-market intermediation will lessen the ability of large banks to serve as liquidity buffers to the financial system, while at the same time increasing the risk arising from possible disruptions in markets for "securitised" assets;

(vi) the changes in institutional structure which are being brought about by these innovations are likely to make it more difficult to sustain sharp regulatory and supervisory distinctions based on the form of the financial institution, rather than the functions which are being performed. There can be considerable potential for awkward regulatory and supervisory overlaps in such a structure, given the diversity of regulatory responsibilities both within and between countries for banks, securities houses, insurance companies and savings institutions;

(vii) at the same time, the financial system - in some countries more than others - may be becoming increasingly exposed to the risks of gaps in prudential oversight over the consolidated international operations of non-bank financial conglomerates. This is made particularly important by the dependence of banks on non-banks, for example, in hedging their exposure on options they have written. As these firms rarely, if ever, fit neatly into the oversight domain of a particular type of regulator (e.g. insurance, securities, bank), central banks may find themselves increasingly expected to assume some form of residual responsibility for these types of firms.

Chapter 13

Consequences for the conduct and effectiveness of monetary policy

This chapter examines the implications of innovation, deregulation and structural change in international financial markets for the relationship between monetary policy and the domestic macro-economy. Four principal effects are identified. Firstly and foremost, the international mobility of capital has risen, with the result that the exchange rate has become increasingly important as a channel of monetary policy. Secondly, the scope for monetary policy to operate via changes in the availability of credit has been reduced, and the importance of the price channel (i.e. interest rates and exchange rates) has risen. Thirdly, the effect on the economy of a given change in monetary policy - in terms of its timing, incidence and ultimate effect - has become more difficult to predict. And fourthly, in many countries the meaning and usefulness of some indicators of monetary policy, such as the monetary and credit aggregates, are changing and have at times tended to erode. The consequences of these effects for the conduct of monetary policy are also described.

The causes of change in the relationship between monetary policy and the macro-economy can be seen as the outcome of some of the broad trends identified in earlier chapters of this Report. One of these is the systematic breaking down of market segmentation in certain national markets, which has been driven by deregulation and increased competition, but also by the introduction of new products (e.g. the interest rate swap). The second broad trend is the global integration of financial markets, which has contributed to a further increase in international capital mobility. In addition, the relationship between monetary policy and the macro-economy has been influenced by the increasingly widespread use of variable rate financing techniques and by the development and progressive refining of specialised financial instruments which "unbundle" and facilitate the transfer of market and credit risks inherent in traditional financial instruments. The latter two developments may tend to obscure and shift the incidence of monetary policy, and perhaps also to reduce its ultimate effect.

In the discussion that follows the primary concern is with the implications of the cumulative effects of the broad process of innovation and structural change. It is possible to be more certain about its implications for monetary policy than about the effects of any particular innovation taken in isolation. Individually, particular innovations are probably best seen as contributing at the margin to the broad trends which are influencing the conduct of monetary policy, and as facilitating a process which in some countries has been under way for some time and is already far advanced.

It is worth noting, too, that the ensuing analysis cannot be taken as describing the experiences of all countries as being homogeneous or uniform. The consequences of the broad process of innovation and structural change vary considerably from country to country, in part because the domestic environment in which innovation is occurring also varies. In some countries, certain key elements of deregulation such as interest rate decontrol were implemented long before the present wave of innovation began, while in other countries the

recent pace of innovation has been more intense. Similarly, the differences in the inflationary environment among countries seem to have been important. For example, in the low inflation countries, there has been less encouragement to the widespread adoption of floating rate instruments. In general, in countries where the environment has been the most stable, there has been less inducement and the degree of innovation has been less.

A. Capital mobility and the rôle of the exchange rate as a transmission mechanism for monetary policy

One important consequence of the innovations and structural changes which are considered in this study is that capital flows between national markets have become increasingly sensitive to variations in interest rate differentials and exchange rates. The progressive elimination of capital controls and other deregulatory moves initially gave strong impetus to this trend. But the increasingly widespread use of new instruments such as the currency swap and the (multiple-component) note issuance facility has also contributed, as borrowers and lenders have gained progressively easier access to a wide range of close substitute forms of credit. The result has been that the international mobility of capital, which was already high, has risen further. National financial markets have become more closely tied together, with the consequence that disturbances in any one national financial market are more rapidly transmitted to other markets.

There is a vast range of literature on the implications for monetary policy of a high degree of substitutability among international assets.[1] Subject to certain simplifying assumptions, it has been possible to derive some fairly straightforward theoretical results for the case of floating exchange rates: (a) when capital is immobile, changes in monetary policy are transmitted to the economy primarily through changes in interest rates; (b) when capital is mobile internationally, changes in monetary policy have their effect on the economy through induced changes in interest rates and the exchange rate; (c) the relative importance of the exchange rate channel is enhanced (at the expense of the interest rate channel) as the degree of international capital mobility rises.

Practical experience in some countries as well as more recent theoretical work has shown, however, that the implications for monetary policy of a high degree of capital mobility are less straightforward than the conclusions drawn from simple theoretical models would suggest. These conclusions depend crucially on key assumptions about other aspects of the economy in addition to the degree of capital mobility, for example the degree of aggregate flexibility of prices and wages in the short run, how expectations about the future path of the exchange rate are formed, and how firmly these expectations are held.

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1 See, for example, Chapters 3 and 4 of Boothe, Clinton, Coté and Longworth, International Asset Substitutability, Theory and Evidence for Canada, Bank of Canada, February 1985.

The assumptions concerning the formation of exchange rate expectations are particularly important because they can affect the dynamic path of adjustment which the exchange rate will follow. Assuming that the majority of exchange-market participants can predict with some degree of accuracy the ultimate effect on the exchange rate which a change in monetary policy will have, then a change in monetary policy can cause the exchange rate initially to overshoot its new long-run value. This occurs because changed expectations in the exchange market induce adjustments in the spot exchange rate which occur more rapidly than the pace at which the real economy can adjust to the change. As a result, when capital mobility is high large short-run swings in the exchange rate can be expected to occur in response to changes in domestic or foreign monetary policy.[2] The potential magnitude of these swings and their consequences for economic activity and inflation may provide an important constraint on the willingness of the authorities to engage in discretionary policy.

A further complication to be considered - suggested by recent experience - is the possibility of unstable exchange rates. In the foregoing case the exchange rate can be volatile in the short run, but there is a presumption that it will move eventually to a new equilibrium level. It is interesting to consider also the implication when exchange rate expectations are not well focused in the sense that market participants are unable to assess correctly in advance the new equilibrium level of the exchange rate. In these circumstances an initial change of monetary policy (say, an easing) would lead to some depreciation in the exchange rate, and there would be a tendency for the rate to "overshoot". But unless expectations regarding the equilibrium level of the exchange rate were firmly held, overshooting could conceivably develop into a cumulative process. This might happen, for example, in a bandwagon-type of situation, if the initial estimates of the future level of the rate were subsequently revised in response to movements in the exchange rate. In this case, any attempt on the part of a central bank to reduce the domestic interest rate independently by monetary expansion would generate an exchange rate depreciation which would tend to feed on itself. In addition, if inflationary expectations were closely tied to movements in the exchange rate or exchange rate changes were incorporated quickly and fully into domestic prices, then an easing of monetary policy could risk touching off an inflationary spiral which, ultimately, might be brought to an end only by reversing the initial change in policy. When exchange rates are prone to overshooting, and expectations are unstable, the consequences of changing monetary policy may be sufficiently risky to inhibit its active use. Because of this it is possible that the scope for discretionary monetary policy may actually be diminished by a high degree of capital mobility.

A related point is that foreign monetary shocks can be transmitted rapidly to the domestic economy. Not only is it theoretically possible for discretionary domestic policy to be destabilising when the degree of capital mobility is high, but it is conceivable, too, that a foreign monetary shock, about which there were unstable expectations, could set off a cumulative movement in the exchange rate with substantial inflationary implications. The domestic central bank might then be constrained to "import" or match the change in foreign monetary policy. Thus a high degree of capital mobility may make it extremely difficult for a country, particularly if it is "small" and "open", to follow a policy that is independent of those being followed abroad.

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2 The phenomenon of overshooting exchange rates is not of course uniquely associated with changes in monetary policy. Other events which induce changes in exchange rate expectations (e.g. natural disasters, announced changes in fiscal policy) can also cause exchange rates to overshoot.

Just how relevant these last two theoretical possibilities are for the world in which central banks are required to operate depends on the way in which expectations are formed and on the degree of capital mobility that actually exists. On the first point there is some evidence to suggest that exchange rate expectations are not always tied to a rational assessment of the consequences of changes in underlying economic fundamentals. The Group of Seven Report on exchange-market intervention, for example, acknowledged that there may have been periods when bandwagons dominated movements in exchange rates. Presumably these situations could re-emerge at some point in the future.

Regarding capital mobility, the evidence examined by this Study Group indicated that it is indeed high, but that actual experience varies to some extent from country to country. Capital mobility and financial-market interdependence rose dramatically through the 1970s, spurred on by the progressive removal of capital controls in some large industrial countries. Moreover, it is the Study Group's view that the process of deregulation which began in some large domestic financial markets early in the 1980s has augmented the degree of international capital mobility, as have the processes of international competition and global integration, which are at the root of this Report. The progressive securitisation of international credit flows is symptomatic of a high degree of international capital mobility. Some financial innovations, such as the currency interest rate swap and the multiple-component note issuance facility, are also contributing to further increases in the degree of international capital mobility. As a result capital flows in response to variations in yield in domestic financial markets have become large, and there is a tendency for changes in interest rates in any one national market to be transmitted rapidly and in increasing degree to other financial markets. It appears that innovations are occurring in response to opportunities provided by a high level of international capital mobility, and in turn are contributing to that mobility. Nevertheless, the point has by no means been reached where either nominal or real yields in all domestic financial markets are equalised.

The practical significance of concluding that capital mobility is high and rising, but far from perfect, is that the more extreme situations noted above that are theoretically possible when exchange rate expectations are highly volatile are not generally applicable in today's world, although they can be relevant from time to time for particular countries. At best they should be seen as describing tendencies and a limiting position towards which the industrial countries are progressing. Thus it is most useful to think of a spectrum of possible implications for the conduct of monetary policy, with the point in the spectrum occupied at a particular time by any individual country being dependent on its own circumstances.

Some countries, including the smaller EMS countries which maintain a system of fixed exchange parities, have long recognised the importance of orienting monetary policy towards foreign exchange rate objectives, and the need for partners to harmonise their monetary policies. What may be changing for these countries as capital becomes more mobile internationally is more a matter of degree rather than the appearance of some new operating constraint.

For other countries which allow their exchange rate to be determined more freely by market forces or permit the exchange rate to fluctuate within relatively wide margins, the implication of a rising degree of international capital mobility is that the external sector has become a more important constraint on the conduct of an independent monetary policy.

This means that, in some circumstances, the costs of conducting an independent policy will be higher while the benefits are likely to be lower. In practice the freedom to conduct an independent policy has declined, particularly where and when expectations about prices and exchange rates are highly volatile. More generally, small open economies can find themselves constrained to react to changes in policy elsewhere, sometimes to the point where the need to offset external disturbances can become the principal determinant of domestic monetary policy. Similarly, policy-makers in the larger economies increasingly have to consider the effects on output and price of a change in the exchange rate when estimating the possible effects of a change in their own monetary policy, as well as the feedback effects of counterbalancing changes in monetary policies abroad.

Rising international capital mobility has also meant that the incidence of monetary policy has increasingly fallen on the external sector of the economy. When capital is highly mobile internationally, monetary policy actions which seek to raise or lower domestic interest rates are likely to induce large capital inflows or outflows. These capital flows limit the amount of the change in domestic interest rates which otherwise could be achieved, and induce movements in the exchange rate which in turn affect profitability and output in the external sector of the economy. Moreover, this impact on the external sector has been exacerbated in the major economies by their increased openness, which has occurred more or less contemporaneously with the rise in international capital mobility.

It is not clear whether the exchange rate has become the principal channel of monetary policy in more than a limited number of countries. Again the significance of the change has been one of degree, with some countries being more affected than others. In the largest countries interest rates remain the most important channel through which monetary policy has its effects on the real economy, but recognition of the importance of the exchange rate channel has begun to rise markedly in some countries such as the United States and Japan. In smaller, more open economies such as Canada, the exchange rate may have become the dominant channel of policy.

Another consequence of a high degree of international capital mobility is that countries appear to experience less difficulty in financing current-account and government fiscal imbalances for extended periods of time. This means for one thing that governments can choose to delay implementing needed policy adjustments for longer periods than might otherwise be possible. On the other hand, the increased availability of financing can have the advantage of permitting the necessary time for needed policy adjustments, once taken, to have their beneficial effects on the economy.

Both the magnitude of the present fiscal and current-account imbalances between the United States and other large industrial countries, and the extended period of time for which they have persisted, seem to provide an example of the ease with which imbalances can be financed when capital is highly mobile internationally. There is, however, no guarantee that these financial flows will coincide with the macro-economic policy objectives of all governments concerned.

A final implication of a high degree of capital mobility is that, because it implies a rising degree of economic interdependence, a good case can be made for strengthening existing mechanisms for multilateral surveillance.

Domestic macro-economic policies - both monetary and fiscal - are likely to achieve their maximum desired effect when there is a reasonable degree of co-ordination in the policies of the major industrial nations. Indeed, the principle is already explicit in the EMS arrangement, in the generally recognised practical limitations on the scope of any member nation to select a particular mix of fiscal and monetary policies or to follow a broad policy thrust significantly different from its partner countries for any length of time. Where countries in addition to EMS members are involved, a strengthened surveillance mechanism could be expected to promote more effective policy co-ordination, particularly if it were to involve the more active rôle for the International Monetary Fund outlined in the recent Group of Ten Deputies' report on the international monetary system.

B. The rôle of the interest rate as a transmission mechanism for monetary policy

The changes in the financial system which have occurred and are now occurring have enhanced the rôle of interest rates relative to direct credit allocation techniques in transmitting monetary policy effects to the economy. Previous deregulatory measures (e.g. the elimination of interest rate ceilings in some countries at an early date), more recent deregulatory initiatives in other countries and financial innovation have contributed to this process. Examples of key financial innovations include the increased use of variable rate lending, the trend towards securitisation which is leading to greater amounts of credit being intermediated using marketable instruments, the development of markets for new financial instruments, the deepening of markets for existing instruments, and the development of secondary markets. One effect of this process has been to ensure that an increasing range of financial instruments has become exposed to price risk or to variations in interest rates. Moreover, the range of close substitutes for particular forms of credit has been greatly enhanced. The upshot has been that, increasingly, changes in the general level of market interest rates are being transmitted more rapidly and more pervasively to all sectors of the economy.

In some countries the impact of a change in monetary policy has historically been transmitted to the economy partly through changes in interest rates and partly through changes in the availability of credit. The availability of credit has been regulated both directly, through quantitative limits on particular forms of credit, and indirectly, through the imposition of interest rate ceilings. Although such credit-rationing techniques have disappeared in many countries as an effective channel of monetary policy, they remain a relatively important channel in other countries. The importance of credit availability effects seems likely to diminish in these countries, however, as a consequence of the innovations and structural changes which are now occurring, since they provide a means for frustrating the intended effects of interest rate ceilings and the imposition of quantitative restrictions on credit growth. Many sectors of the economy, to which only a limited range of sources and types of credit were once available, are now gaining access at low opportunity cost to an ever-expanding range of close substitutes available from domestic or international markets. Attempts to constrain growth of the aggregate supply of credit by imposing restrictions on the balance sheets of particular domestic financial institutions (e.g. banks) have become susceptible to being offset through the expansion of the balance sheets of unconstrained domestic financial institutions, a consequence of the phenomenon

of "market interpenetration", or by direct access to international capital markets. In addition, these traditional forms of constraints are becoming increasingly irrelevant as the importance of off-balance-sheet business continues to expand.

What are the consequences for the conduct of monetary policy? One school of thought argues that the effectiveness of monetary policy as a stabilisation policy tool is reduced. There are two reasons for this. Firstly, there will be a degree of reluctance on the part of the authorities, which was not previously present, to use monetary policy to influence the economy. This will occur because the interest elasticity of the demand for the various components of output, while rising, is still low, i.e. the cutting edge of policy is not well honed. As a result larger increases in interest rates will be required in order to achieve a given impact on final spending which otherwise could have been achieved through credit restraint and much less variation in interest rates. These changes risk pushing the level of rates to unacceptably high levels. Secondly, it has become increasingly difficult for the authorities to have an influence on relative rates of interest and, therefore, on the relative supplies of particular forms of credit and deposits. This is due to the process of competition, innovation and structural change, which has led to the rates of interest on competing forms of credit and deposits being closely tied to changes in the general level of market interest rates. When the central bank takes action to change the general level of interest rates, other market-related rates of interest also change. It is argued that, if particular sectors and financial instruments can no longer be the principal target of discretionary changes in monetary policy, then policy becomes such a broad spectrum or blunt instrument that the willingness to use it will be substantially reduced.

A second point of view is that it can as easily be argued that to the extent that the incidence of monetary policy becomes less sector-specific and more generalised, it is therefore more equitable and its attractiveness as a tool of stabilisation policy is enhanced.

A final group observes that the importance of the exchange rate as a channel of policy has also tended to increase along with the importance of the general level of interest rates. As discussed above, the more the effect of a change in policy is transmitted through variations in the exchange rate, the more its effects are borne by the external sectors of the economy, with the incidence of monetary policy falling on the export and import competing industries and the tourist industry. Considerations of equity and pressures for protection in this case, too, may tend to reduce the attractiveness of discretionary changes in monetary policy.

The conclusion to be drawn from the foregoing arguments is that the thrust of monetary policy will change along with the relative importance of the different channels of policy. With the exception of the tradable goods and services sector, the effects will be widespread rather than concentrated on particular sectors of the economy as in the past.

C. Other effects on the timing and effectiveness of monetary policy

Is the timing and effectiveness of monetary policy altered by the process of financial innovation and technical change? It is difficult to reach a precise answer to this question, particularly since relevant empirical work has not been undertaken.

One broad trend which is likely to have influenced the effectiveness of monetary policy is the increasingly widespread use of variable interest rate instruments and interest rate hedging techniques, particularly in countries which experience high rates of inflation. Variable rate financing differs from fixed rate financing in terms of the effect on the economy in three ways. Firstly, it provides borrowers with a vehicle to avoid being locked permanently into high debt service costs should they undertake new investment projects during periods of high interest rates. Secondly, it ensures that debt servicing costs rise on all outstanding debts when interest rates rise, and it transfers the higher debt service payments to creditors in the form of increased interest income. Thirdly, it creates a solvency risk for any debtors who were approaching the limit of their debt servicing capacity prior to an increase in interest rates.

The first of these effects is the easiest to analyse in terms of its impact on the effectiveness of monetary policy. It is generally agreed that a tightening of monetary policy has its effect on the economy by inducing corporations and consumers to postpone spending decisions. Once the fear of being locked permanently into higher interest rates is removed, the incentive to delay spending is reduced, particularly when tighter monetary policy is thought to be a temporary or shortlived phenomenon. The impact of a given interest rate move is reduced as a result.[3] It is less clear whether the second effect has any net impact on monetary policy, even though the entire outstanding stock of indebtedness is affected: the effects on debtors may be largely offset by the effects on creditors. While higher debt service costs provide an incentive to debtors to reduce their aggregate spending, the higher interest income will stimulate creditors to increase aggregate spending. The net effect, which in any case is likely to be small, will depend on such factors as the two groups' relative propensities to spend and save, and on whether interest expense and interest income are treated in a symmetrical fashion under prevailing income tax law. The third effect (increasing the solvency risk) tends to increase the impact of a given change in interest rates and may assume some importance in circumstances where the share of floating rate lending in total lending is relatively large and the rise in the level of interest rates is strong.

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3 If the expected future course of short-term interest rates were accurately reflected in the term structure, and the long-term (fixed) interest rate, therefore, was in fact equal to a weighted average of the expected level of future short-term interest rates, the shift from fixed rate instruments to floating rate instruments would have no consequences for the impact of monetary policy. The limited empirical evidence which is available, however, is divided on the question of whether long-term interest rates incorporate expectations of future short-term interest rates exclusively. Indeed, some evidence implies that long-term interest rates at times also include a substantial risk premium. We therefore tend to discount the possibility that the increasing popularity of variable rate financing will be neutral with respect to the effectiveness of monetary policy.

Possibilities for shifting the incidence and the timing of the effects of a change in policy may be found in the new instruments like futures and options. Capital gains or losses on financial assets can be hedged, as can the costs of financing new spending decisions. Similarly, new products like swaps and FRAs can be used by financial institutions to adjust and tailor mismatches in the maturity structure of their assets and liabilities. Non-financial corporations can use swaps to transform floating rate debt into long-term fixed rate debt, thereby eliminating their apparent exposure to the risks associated with floating rate financing. Whether these developments have any net impact on the effectiveness of monetary policy is an open question. To the extent that the burden of risk can be redistributed using these instruments to economic agents who are in the strongest position to bear it, it is possible that the effect of a change in policy may be reduced and its impact delayed. However, as argued in Chapter 10, there are concerns that the new financial instruments are actually concentrating risk in institutions which are still in the process of developing mechanisms for assessing, pricing and managing it. Thus the impact of a change in monetary policy could as easily be enhanced and its impact accelerated. A more basic issue is the question of the changes to the transparency of the financial system which have occurred as a result of financial innovation (see Chapter 11). Without accurate data on the off-balance-sheet exposure of both financial and non-financial corporations, it is not possible to predict with any degree of certainty the incidence, timing or effectiveness of a given change in monetary policy.

An additional way in which the effectiveness of monetary policy is affected by financial innovation involves the development of more depth in existing financial markets and the growth of relatively active secondary markets (e.g. the secondary swap market). These developments increase liquidity and may provide individual economic agents with greater opportunities to unwind unfavourable balance-sheet positions rapidly (also at lower costs) in response to changing circumstances, and are thereby likely to serve to blunt the effects of monetary policy in the short run.

D. The implications for monetary aggregates and other indicators of monetary policy

The effects of financial innovation and structural change in domestic financial markets on the monetary aggregates have already been the subject of extensive discussion and debate,[4] and there is little need to do more than list them here. The operational usefulness of targeted aggregates has been adversely affected in several - though not all - countries. The proliferation of financial instruments which combine the liquidity characteristics of traditional transactions-type instruments with a market-related rate of return has required periodic redefinition of the narrower aggregates in Canada, the United Kingdom and the United States. This has been necessary in order to retain a stable statistical relationship between the aggregates and key nominal spending variables. Moreover, the demand for money, however defined, in some countries appears to have become unstable as a consequence of the process of innovation and structural change. Monetary aggregates have been subject to large, unpredictable shifts in countries where innovation is far advanced. As a result of the increased tendency to pay market-related rates of interest on many of the key components of the aggregates, the negative relationship between the demand for the aggregate and the level of interest rates under the direct control of the central bank has

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4 See, for example, Financial Innovation and Monetary Policy, BIS, Basle, March 1984 and Trends in Banking in OECD Countries, OECD, Paris, 1985.

been reduced. In the case of some of the broader aggregates, the measured interest elasticity is close to zero.

The specific types of financial innovation under investigation in this Report have probably had minimal impact on the narrow monetary aggregates. They may eventually have an impact on some of the more broadly based monetary aggregates, particularly when the broadest monetary aggregates are defined to include deposits which support the international business of the banks. Contributing factors would include: the broad processes of deregulation in national financial markets (permitting non-banks to compete more effectively with banks) and securitisation (including developments such as the floating rate note), which appear to be stripping away business which traditionally was intermediated through the banking system; and the proliferation of off-balance-sheet business, which requires no supporting deposit base. Each of these developments has the effect of shifting relationships between the volume of bank assets (or their associated deposit base) and any given level of economic activity or nominal spending. In addition, the process of global integration of financial markets carries with it the implication that investors are freer and more likely to transfer their holdings of certificates of deposit and other interest-bearing deposit balances between currencies and national banking systems. This further increases the likelihood of an unstable relationship between national monetary aggregates - especially the broadest aggregates - and measures of nominal spending. Moreover, the problem is compounded when national statistical reporting systems are unable[5] to distinguish between resident and non-resident holdings of deposit balances.

The innovations which we consider in this Report may also have important implications for the growth and stability of some of the more broadly based credit measures. This would depend in part on whether or not particular credit aggregates were defined to include the newer international financial instruments in addition to the more traditional forms of credit which they are progressively displacing. Suppose, for example, that statistics on the newer forms of credit such as FRNs, NIFs and RUFs cannot be collected systematically, and that these instruments are therefore omitted from the definition of the broader domestic credit aggregates. If the growing use of new credit instruments occurs at the expense of the more traditional domestic credit instruments, the traditionally defined credit measures must give a misleading picture of the extent of overall credit growth. But the broadly based credit measures could also become less reliable if the development of new financial instruments were contributing to a rapid growth of credit - at least during any transitional period until a new relationship is established. This could trigger significant shifts in the estimated relations between domestic credit measures and the nominal spending aggregates such as GNP or its principal components. As noted elsewhere in this Report, there has been rapid growth in credit in the United States which appears to be due in part to financial innovation and deregulation.

The process of financial innovation and structural change appears to have complicated considerably the "information extraction" problem faced by central banks. In countries where the narrower monetary aggregates have become increasingly difficult to interpret as guides to monetary policy, there has been an attempt to supplement the information inherent in the narrow aggregates with information obtained from other indicators of economic conditions. Unfortunately the thrust of the argument in this section is that some other potential sources of information, such as broad monetary and credit aggregates, are also affected by the process of innovation and structural change.

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5 This has been a particular problem recently in the Netherlands.

Glossary of terms

AIBD: Association of International Bond Dealers.

American-Style Option (also American Option): an option which may be exercised at any time up to and including the expiration date.

Arbitrage: trading strategies designed to profit from price differences for the same or similar goods in different markets. Historically the term implied little or no risk in the trade, but more recently it has come to suggest some risk of loss or uncertainty about total profits. (For two arbitrage strategies in options see Conversion and Reverse Conversion.)

Assignment (Swap Market): the sale of a swap contract by one party to another, usually for a lump-sum payment. Swap assignments are cumbersome because they require the approval of the remaining original party.

At-The-Money: an option is at the money when the price of the underlying instrument is very close or equal to the option's exercise price.

Back-To-Back Loans: two parties in different countries make loans to one another, of equal value, each loan denominated in the currency of the lender and each maturing on the same date. The payment flows are identical to those of spot and forward currency transactions. Currency swaps have a similar structure except that there is not necessarily any "loan" on the balance sheet.

Basis: the spread or difference between two market prices or two interest rates. For example, the spread between commercial paper and Eurodollar rates or the spread between a futures price and the price of the underlying asset.

Basis Point: one one-hundredth of one percentage point, most often used in quotation of spreads between interest rates or to describe changes in yields on securities.

Biased View: see Uncovered Writing.

Black-Scholes (also Black-Scholes Model): a widely used option pricing equation developed in 1973 by Fischer Black and Myron Scholes. Used to price OTC options, value option portfolios, or evaluate option trading on exchanges.

Break-Even Point: the price of the underlying instrument at which an option buyer just recovers the initial outlay or premium. For a call option, the break-even point is the exercise price plus the premium; a put option's break-even point is the exercise price minus the premium.

Butterfly Call Spread: an options strategy designed to profit from stable or decreasing volatility. The spread involves trades in four call options, all with the same expiration date: the purchase of an option with a low exercise price; the sale of two calls with an intermediate exercise price; the purchase of a call with high exercise price.

Profit is generated when the price of the underlying remains within an established range. Loss is limited to the net premiums paid to set up the position.

Calendar Call Spread (also Time Call Spread or Horizontal Spread): an options strategy designed to profit from the rapid decline in time value as options approach expiration. The position involves the sale of a near-term call option and the purchase of a call option with a more distant expiration date. Barring an increase in volatility, the time value on the nearby option will erode more quickly (as its maturity approaches) than will the time value on the more distant option. The trader expects that the cost of unwinding the position will be less than the net premiums received when it was established.

Call Option: see Options.

Capped Floating Rate Notes: a type of floating rate note (see FRN), which sets an upper limit on the borrower's interest rate. The lender forgoes the possibility of obtaining a return above the cap rate, should market interest rates exceed the cap rate, but in return receives higher-than-usual spreads over LIBOR. In essence, the note issuer obtains an interest rate cap - a form of option - from the buyer.

Cash Settlement: the settlement provision on some option and futures contracts which do not require delivery of the underlying instrument. For options, the difference between the settlement price on the underlying and the option's exercise price is paid to the option holder at exercise. For futures contracts, the exchange establishes a settlement price on the final day of trading and all remaining open positions are marked to market at that price. (See Marking to Market.)

CBOE: Chicago Board Options Exchange.

CBT (also CBOT): Chicago Board of Trade.

CD (also Certificate of Deposit): a negotiable certificate issued by a bank as evidence of an interest-bearing time deposit.

Clearing House Interbank Payments System (CHIPS): a computerised network for transfer of international US dollar payments linking over 100 depository institutions which have offices or subsidiaries in New York City. Messages covering payments between the various depository institutions are entered into the CHIPS computer over the business day. At the end of each day, participants' net positions are settled through the Federal Reserve's funds transfer system.

CME: Chicago Mercantile Exchange.

Collateralised Mortgage Obligations (also CMOs): mortgage-backed bonds on which principal is repaid periodically. CMOs generally consist of several tranches or classes with various classes receiving principal repayments in a prescribed order. Principal in the first class is retired before the mortgage amortisation and prepayments are used to pay down the principal in the second class, and so on.

COMEX: the Commodity Exchange. A New York exchange trading futures contracts on gold and silver and option contracts on gold futures.

Commercial Paper: a short-term unsecured promise to repay a fixed amount (representing borrowed funds plus interest) on a certain future date and at a specific place. The note stands on the general creditworthiness of the issuer or on the standing of a third party that is obligated to repay if the original borrower defaults. The most active commercial-paper market is in the United States. (See also Letter of Credit.)

Commodity Futures Trading Commission (CFTC): the Federal agency which regulates futures trading in the United States.

Conventional Mortgage: a residential mortgage made in the United States by a private lender without government-agency guarantee or insurance.

Conversion: an arbitrage strategy in options involving the purchase of the underlying instrument offset by the establishment of a synthetic short position in options on the underlying (the purchase of a put and sale of a call). The overall position is unaffected by price movements in the underlying instrument. This trade would be established when small price discrepancies open up between the long position in the underlying and the synthetic short position in the options. (See Arbitrage, Reverse Conversion, and Synthetic Positions.)

Convertible Bond: bond giving the investor the option to convert the bond into equity at a fixed conversion price.

Country Risk: the risk that most or all economic agents (including the government) in a particular country will for some common reason become unable or unwilling to fulfil international financial obligations.

Coupon-Stripping: the process of producing single-payment (zero coupon) instruments from existing conventional bonds. It can be accomplished either by separating the coupons from the principal or by selling receipts representing the individual coupons and principal on a security held by a trustee.

Covered Writing: generally refers to selling call options "covered" by an equal or larger long position in the security underlying the option. It is a strategy intended to augment overall returns by earning fee income on the options written against securities held for normal investment purposes.

Currency Swap: a transaction in which two counterparties exchange specific amounts of two different currencies at the outset and repay over time according to a predetermined rule which reflects interest payments and possibly amortisation of principal. The payment flows in currency swaps (in which payments are based on fixed interest rates in each currency) are generally like those of spot and forward currency transactions.

Currency Warrants: usually, detachable options included in securities issues giving the holder the right to purchase from the issuer additional securities denominated in a currency different from that of the original issue. The coupon and price of the securities covered by the warrant are fixed at the time of the sale of the original issue. Can also be a currency option in negotiable form.

Deep Discount Bonds: coupon-bearing securities that sell at prices well below par. Generally refers to seasoned bonds whose prices have declined in secondary-market trading because market yields have risen well above the levels prevailing at the time they were issued. Tax consequences discourage new issuance of deep discount bonds in the United States.

Delta: the change in an option's price divided by the change in the price of the underlying instrument. An option whose price changes by $1 for every $2 change in the price of the underlying has a delta of 0.5. At-the-money options have deltas near 0.5. The delta rises toward 1.0 for options that are deep-in-the-money, and approaches 0 for deep-out-of-the-money options. (See At-The-Money, In-The-Money, Out-Of-The-Money, and Delta Hedging.)

Delta Hedging: a method option writers use to hedge risk exposure of written options by purchase or sale of the underlying asset in proportion to the delta. For example, a call option writer who has sold an option with a delta of 0.5 may engage in delta hedging by purchasing an amount of the underlying instrument equal to one-half of the amount of the underlying that must be delivered upon exercise. A delta-neutral position is established when the writer strictly delta-hedges so as to leave the combined financial position in options and underlying instruments unaffected by small changes in the price of the underlying.

Delta-Neutral: see Delta Hedging.

Direct-Pay Letter of Credit: see Letter of Credit.

Dual-Currency Bonds: long-term securities denominated in two currencies. The most common types have been bonds with initial payment and interim coupon payments in a non-dollar currency, say Swiss francs or yen, and a fixed final principal payment in US dollars.

Duration: a measure of a security's maturity which takes into account the periodic coupon payments. Specifically, it is the weighted average maturity of all payments of a security, coupons plus principal, where the weights are the discounted present values of the payments. As such the duration is shorter than the stated term to maturity on all securities except for zero coupon bonds, for which they are equal because the zero coupon bond is a single-payment security.

ECU: European Currency Unit.

End-User (Swap Market): in contrast to a swap-trading institution, a counterparty which engages in a swap to change its interest rate or currency exposure. End-users may be non-financial corporations, financial institutions or governments.

Euro-Commercial Paper (ECP): notes sold in London for same-day settlement in US dollars in New York. The maturities are more tailored to the needs of issuer and investor than the standard Euro-note terms of 1, 3, and 6 months. This is a recent development in the Euro-market.

Euro-Commercial-Paper Facility: facility for issuing short-term notes without a back-up line and generally with flexible maturities.

Euro-Note: a short-term note issued under a NIF or Euro-commercial-paper facility (See Note Issuance Facility and Euro-Commercial-Paper Facility).

European-Style Option (also European Option): an option which may be exercised only on the expiration date. It is an alternative to an American option, which can be exercised on any business day prior to expiration, or on the expiration date.

Exercise Price (also Strike Price): the fixed price at which an option holder has the right to buy, in the case of a call option, or to sell, in the case of a put option, the financial instrument covered by the option.

Expected Volatility: the degree of volatility that option pricing formulae assume will prevail over the remaining life of an option.

Expiration (also Expiration Date, Expiry, and Maturity Date): (1) the date at which a European-style option may be exercised at the choice of the holder; (2) the date before or at which an American-style option may be exercised.

Federal Financial Institution Examination Council: an organisation of regulatory agencies responsible for US depository institutions. It is designed to promote more uniform supervisory and examination policies. The agencies include: Federal Deposit Insurance Corporation; Federal Home Loan Bank Board; Federal Reserve Board; National Credit Union Association; Office of the Comptroller of the Currency.

Federal Funds Market: a market for unsecured loans between depository institutions in the United States in immediately available funds, essentially reserves held at Federal Reserve Banks. Most activity is for next-day maturity. Term Federal funds refers to longer maturities which can be up to several weeks or months.

Federal Home Loan Banks: US Government agencies that regulate and lend to savings and loan associations and savings banks.

Federal Home Loan Mortgage Corporation (also FHLMC and Freddie Mac): a US corporation owned by the nation's twelve Federal Home Loan Banks and designed to help maintain the flow of mortgage money to the residential housing market. FHLMC buys conventional mortgages from thrift institutions and other mortgage lenders and packages them into FHLMC-guaranteed Participation Certificates (PCs) for sale to mortgage buyers. Often, the transaction involves a swap of PCs for mortgages with the mortgage lender.

Federal National Mortgage Association (also FNMA and Fannie Mae): a corporation owned by private shareholders but chartered by the US Government to support the housing market. FNMA holds a large portfolio of mortgages, some of which are federally guaranteed or insured while others are uninsured (so-called "conventional" mortgages). To fund the purchases of mortgages FNMA sells debentures and short-term notes in the credit markets. FNMA also packages pools of mortgages.

Fedwire: the Federal Reserve's electronic funds and securities transfer network.

FHA-Insured Mortgage: a residential mortgage made in the United States by a private lender and insured by the Federal Housing Administration, which operates programmes for mortgage and loan insurance to provide assistance for families who can fulfil the obligations of a mortgage loan but who may not be adequately served by the private market.

Forward Rate Agreement (FRA): an agreement between two parties wishing to protect themselves against a future movement in interest rates. The two parties agree an interest rate for a specified period from a specified future settlement date based on an agreed principal amount. No commitment is made by either party to lend or borrow the principal amount; their exposure is only the interest difference between the agreed and actual rates at settlement.

FRABBA terms: standard terms agreed by the British Bankers' Association for interbank trading of FRAs. (See Forward Rate Agreements.)

FRN: a medium-term security carrying a floating rate of interest which is reset at regular intervals, typically quarterly or half-yearly, in relation to some predetermined reference rate, typically LIBOR. (See LIBOR.)

Futures Contract: an exchange-traded contract generally calling for delivery of a specified amount of a particular grade of commodity or financial instrument at a fixed date in the future. Contracts are highly standardised and traders need only agree on the price and number of contracts traded. Traders' positions are maintained at the exchange's clearing house, which becomes a counterparty to each trader once the trade has been cleared at the end of each day's trading session. Members holding positions at the clearing house must post margin which is marked to market daily. Most trades are unwound before delivery. The interposition of the clearing house facilitates the unwinding since a trader need not find his original counterparty, but may arrange an offsetting position with any trader on the exchange. (See Margin and Marking to Market.)

Gamma: the sensitivity of an option's delta to small unit changes in the price of the underlying. Some option traders attempt to construct "gamma-neutral" positions in options (long and short) such that the delta of the overall position remains unchanged for small changes in the price of the underlying instrument. Using this method writers can produce a fairly constant delta and avoid the transactions costs involved in purchasing and selling the underlying as its price changes.

Government National Mortgage Association (also GNMA and Ginnie Mae): a wholly-owned government corporation in the US Department of Housing and Urban Development which is designed to support the housing market. To help provide secondary-market liquidity, GNMA guarantees privately issued securities backed by pools of federally insured or guaranteed mortgages. In the most common form of GNMA security, monthly interest payments and amortisation and prepayments of principal on mortgages are "passed through" to the holder.

Grantor: see Writer.

Hedge: to reduce risk by taking a position which offsets existing or anticipated exposure to a change in market rates.

Hedge Ratio: the proportion of underlying securities or options needed to hedge a written option. The hedge ratio is determined by the delta. (See Delta and Delta Hedging.)

Implied Volatility: the degree of volatility "implied" by the market price of an option. Since all other variables used in the theoretical option pricing formulae are observable, market participants frequently solve the equation "backwards" to determine the amount of volatility built into the market. Some option traders "trade" volatility, buying options when their implied volatility is low and selling options when their implied volatility is high.

In-The-Money: option contracts are in the money when there is a net financial benefit to be derived from exercising the option immediately. A call option is in the money when the price of the underlying instrument is above the exercise price and a put option is in the money when the price of the underlying is below the exercise price.

Interest Rate Cap: an option-like feature for which the buyer pays a fee or premium to obtain protection against a rise in a particular interest rate above a certain level. For example, an interest rate cap may cover a specified principal amount of a loan over a designated time period such as a calendar quarter. If the covered interest rate rises above the rate ceiling, the seller of the rate cap pays the purchaser an amount of money equal to the average rate differential times the principal amount times one-quarter.

Interest Rate Mismatch (also Interest Rate Gap or Gap): the risk/opportunity banks face that a shift in interest rates will reduce/increase interest income. The mismatch arises out of the repricing schedule of assets and liabilities. The banks' traditional interest rate mismatch, lending long-term and borrowing in short-term markets, exposes them, for example, to the risk that rates will rise: as interest rates rise, low-yielding short-term liabilities will be replaced and repriced more rapidly than assets. Some money-centre banks manage their interest rate mismatches actively in the hopes of taking advantage of anticipated interest rate changes.

Interest Rate Swap: a transaction in which two counterparties exchange interest payment streams of differing character based on an underlying notional principal amount. The three main types are

coupon swaps (fixed rate to floating rate in the same currency), basis swaps (one floating rate index to another floating rate index in the same currency), and cross-currency interest rate swaps (fixed rate in one currency to floating rate in another).

Intermediary (Swap Market): a counterparty who enters into a swap in order to earn fees or trading profits. Most intermediaries, or swap dealers, are major US money-centre banks, major US and UK investment and merchant banks and major Japanese securities companies.

International Banking Facilities (also IBFs): a means by which US banks may use their domestic offices to offer foreign customers deposit and loan services free of Federal Reserve reserve requirements and interest rate regulations.

Intrinsic Value: the net benefit to be derived from exercising an option contract immediately. It is the difference between the price of the underlying and the option's exercise price. An option generally sells for at least its intrinsic value.

Irrevocable Revolving Credit Agreement: a binding commitment by a bank to lend to a customer. (See Revolving Credit Agreement.)

ISDA: International Swap Dealers Association.

Junk Bonds: high-yielding bonds that are below investment grade and are at times used in corporate take-overs and buy-outs. Investment-grade securities are generally those rated at or above Baa by Moody's Investors Services or BBB by Standard & Poor's Corporation.

LDC Loan Swaps: the exchange by one lender of some or all of its exposure to a particular borrower in an LDC with a second lender for its exposure to a borrower in the same or a different LDC. In some transactions loans are sold for cash or swapped for equity.

Letter of Credit (also Standby Letter of Credit): the most common form is an obligation on the part of a bank to a third party to redeem a customer's maturing security if the bank's customer cannot perform. Banks in North America often extend letters of credit to back securities issued by tax-exempt borrowers or to back commercial paper. Standby letters of credit call upon the bank to redeem issues upon the default of the borrower. Under direct-pay letter of credit, the bank pays off all maturing obligations and obtains reimbursement from the borrower.

Leveraged Buy-outs: corporate acquisitions through stock purchases financed by the issuance of debt (which may include Junk Bonds).

LIBID: London Interbank Bid Rate. The rate which a bank is willing to pay for funds in the international interbank market.

LIBOR: London Interbank Offered Rate. The rate at which banks offer to lend funds in the international interbank market.

LIFFE: the London International Financial Futures Exchange.

LIMEAN: the mean of LIBID and LIBOR.

Loan Sale: the sale, transfer or assignment of a loan or a loan participation to a third party with or without the knowledge of the borrower.

Log-Normal Distribution: a normal probability distribution of a variable expressed in logarithmic form. This distribution is often used for prices of assets or commodities because it implies that the price can rise to infinity but cannot fall below zero. (See Normal Distribution.)

Long Option Position: the position of a trader who has purchased an option regardless of whether it is a put or a call. A participant with a long call option position can profit from a rise in the price of the underlying while a trader with a long put option can profit from a fall in the price of the underlying instrument.

Macro-Prudential Policy: activities of central banks and other national authorities designed to promote the safety and soundness of the overall banking system as well as the orderly growth and efficiency of the financial system. In part, macro-prudential activities such as the lender-of-last-resort rôle and deposit insurance are intended to assure the resiliency of the overall system so as to withstand major shocks to confidence.

Margin: funds or collateral posted as a good-faith performance guarantee. In repurchase agreements lenders of funds often make borrowers post margin by requiring them to deliver securities in excess of the amount of money borrowed. Futures and options exchanges often require traders to post initial margin when they enter into new contracts. Margin accounts are debited or credited to reflect changes in the current market prices on the positions held. Members must replenish the margin account if margin falls below a minimum. In similar fashion, customers must post margin on positions held for them at the exchange clearing house by member firms. (See Marking to Market.)

Market Liquidity Risk: the possibility that a financial instrument cannot be sold quickly and at full market value.

Marking to Market: the process of recalculating the exposure in a trading position in securities, option contracts, or futures contracts. In exchange-traded contracts, the exchange clearing house marks members' positions to market each day using closing market prices. Members must maintain a certain minimum level of margin at the exchange clearing house and must post additional margin if the marking-to-market process reduces margin below the minimum. (see Margin.)

Mean: the "average" of all observations. Specifically, the mean ($\bar{X}$) is equal to the sum of all observations (X_i) divided by the number of observations (n). $\bar{X} = 1/n\sum(X_i)$.

Mirror Swap: a reverse swap written with the original counterparty.

Mortgage-Backed Bonds: bonds traded mainly in the United States which pay interest semi-annually and repay principal either periodically or at maturity, and where underlying collateral is a pool of mortgages. (See Collateralised Mortgage Obligations and Pay-Through Bonds.)

Multiple-Component Facility: facility under which several different options for drawing funds are available to the borrower. These may include issuing notes, drawing on short-term or medium-term credits or swinglines. (See NIF and Swingline.)

Net-Writers: options-market-makers and traders who have written or sold more options than they have purchased.

Normal Distribution (also Normal Probability Distribution): "bell-shaped" curve depicting a symmetric probability distribution of a continuous random variable. The distribution is defined by the mean and standard deviation, such that approximately two-thirds of all observations will fall within one standard deviation above and below the mean, about 95 per cent. will fall within two standard deviations above and below the mean, and so on.

Note Issuance Facility (NIF): a medium-term arrangement enabling borrowers to issue short-term paper, typically of three or six months' maturity, in their own names. Usually a group of underwriting banks guarantees the availability of funds to the borrower by purchasing any unsold notes at each roll-over date, or by providing a standby credit. Facilities produced by competing banks are called, variously, revolving underwriting facilities, note purchase facilities, and Euro-note facilities.

Notional Principal: a hypothetical amount on which swap payments are based. The notional principal in an interest rate swap is never paid or received.

OECD: Organisation for Economic Co-operation and Development. Its members are Australia, Austria, Belgium, Canada, Denmark, Finland, France, West Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. Yugoslavia takes part in certain work of the OECD and is included in statistics relating to OECD countries in this report.

Off-Balance-Sheet Activities: banks' business, often fee-based, that does not generally involve booking assets and taking deposits. Examples are trading of swaps, options, foreign exchange forwards, standby commitments and letters of credit.

Option: the contractual right, but not the obligation, to buy or sell a specified amount of a given financial instrument at a fixed price before or at a designated future date. A call option confers on the holder the right to buy the financial instrument. A put option involves the right to sell the financial instrument.

Options Book: the aggregation of all written and purchased options held by a market participant.

Options Clearing Corporation (also OCC): the corporation which provides clearing facilities for all option trades on US securities exchanges. Its new Intermarket Clearing Corporation assured clearing operations at the New York Futures Exchange on 11th January 1986.

OTC Market (Over-The-Counter Market): trading in financial instruments transacted off organised exchanges. Generally the parties must negotiate all details of the transactions, or agree to certain simplifying market conventions. In most cases, OTC market transactions are negotiated over the telephone. OTC trading includes transactions among market-makers and between market-makers and their customers. Firms mutually determine their trading partners on a bilateral basis.

Out-Of-The-Money: an option contract is out of the money when there is no benefit to be derived from exercising the option immediately. A call option is out of the money when the price of the underlying is below the option's exercise price. A put option is out of the money when the price of the underlying is above the option's exercise price.

Participation Certificates (PC): (See Federal Home Loan Mortgage.)

Partly-Paid Bonds: securities for which the buyer pays only a portion of the total issue price. The holder is obligated to pay for additional amounts at predetermined dates. So far the practice has been limited primarily to issues denominated in US dollars and pounds sterling.

Pass-Throughs: certificates representing ownership in a pool of mortgages. The monthly interest payments, amortisation, and prepayments of principal are "passed through" to the owners of the certificates by firms servicing the mortgage payments. GNMA-guaranteed pass-through certificates are the most common type.

Pay-Through Bond: a mortgage-backed debt obligation of the issuer. Interest and amortisation are paid periodically, as well as prepayments of principal that occur.

PHLX: Philadelphia Stock Exchange.

Physicals: (also Actuals): an option contract on physicals requires the delivery of an actual financial instrument. By contrast, some options call for cash settlement while others require delivery of a futures contract (which may itself require delivery of an actual financial instrument or require cash settlement).

Plain-Vanilla Swap: a US dollar interest rate swap in which one party makes floating rate payments based on six-month LIBOR and receives fixed rate funds expressed as a spread over the rate on US Treasury securities. The maturity is usually five to seven years and deal size is typically at least $50-100 million.

Premium: the price paid for an option by an option holder to the option writer.

Prepayment: a payment of principal made before the scheduled payment date, usually because the mortgage is refinanced or the house is sold.

Put Option: See Options.

Recourse: a general legal term meaning that the purchaser of a financial asset from an original creditor has a claim on the original creditor in case the debtor defaults. Specific arrangements to provide recourse arise in a variety of innovative transactions, including LDC Loan Swaps and various types of securitised assets. Such arrangements can take many forms, including: an explicit guarantee that credit losses will be reimbursed or the assets replaced by assets of similar quality; an agreement to repurchase assets before maturity; or more indirectly, indemnification by a third-party guarantor for any losses that occur.

Reinvestment Risk: the chance that a security's coupons will be reinvested at yields different from the security's stated yield to maturity.

Repurchase Agreement (RP or repo): a holder of securities sells these securities to an investor with an agreement to repurchase them at a fixed price on a fixed date. The security "buyer" in effect lends the "seller" money for the period of the agreement, and the terms of the agreement are structured to compensate him for this. Dealers use RPs extensively to finance their positions.

Reverse Conversion: an arbitrage trade in options involving the sale of the underlying instrument and the establishment of a synthetic long position in options on the underlying (the purchase of a call and sale of a put). (See Arbitrage, Conversion and Synthetic Position.)

Reverse Swap: one form of activity in the secondary swap market. A reverse swap offsets the interest rate or currency exposure on an existing swap. They can be written with the original counterparty or with a new counterparty. In either case, they are typically executed to realise capital gains.

Revolving Credit Agreement: a commitment by a bank to lend to a customer under predefined terms. The commitments generally contain covenants allowing the bank to refuse to lend if there has been a material adverse change in the borrower's financial condition.

RUF: See Note Issuance Facility.

Securitisation: the term is most often used narrowly to mean the process by which traditional bank or thrift institution assets, mainly loans or mortgages, are converted into negotiable securities which may be purchased either by depository institutions or by non-bank investors. More broadly, the term refers to the development of markets for a variety of new negotiable instruments, such as NIFs and FRNs in the international markets and commercial paper in the United States, which replace bank loans as a means of borrowing. Used in the

latter sense, the term often suggests disintermediation of the banking system, as investors and borrowers bypass banks and transact business directly.

Settlement Price: the price of the financial instrument underlying the option contract at the time the contract is exercised. Where necessary, option contracts specify objective standards for determining the settlement price.

Settlement Risk: the possibility that operational difficulties interrupt delivery of funds even where the counterparty is able to perform.

Shelf Registration: Rule 415 of the US Securities and Exchange Commission which allows major corporations to go directly to the equity and debt markets to sell securities quickly. Previous rules, which had required companies to file registration notices with the SEC and wait at least two days for approval, had favoured the formation of syndicates to sell securities. Rule 415 allows blanket registration of issues over the ensuing two years and encourages direct sale of blocks of securities to individual investment houses.

Short Option Position: the position of a trader who has sold or written an option regardless of whether it is a put or a call. The writer's maximum potential profit is the premium received.

Short Volatility Position: an option position designed to profit from an expected decline in the implied volatility component of the option's price. The position can take different forms. One form is to sell options and use delta-hedging techniques to protect against changes in the price level of the underlying instrument. (Also see Straddle Write for another strategy.)

Single-Purpose Corporation: a US corporation set up to issue short-term paper in order to purchase assets of a certain type or to make loans and advances to a single firm. The stock of such corporations is sometimes donated to charitable institutions. The corporation usually issues commercial paper or preferred stock with a dividend reset at short intervals to reflect market rates. Examples of assets purchased include trade receivables and mortgages.

Standard Deviation: a statistical measure of the dispersion of observations on a variable. Specifically, it is equal to

$$\sqrt{1/n \sum_{i=1}^{n} [X_i - \bar{X}]^2}$$

where X_i are the n individual observations on a variable, $\bar{X}$ is the mean (or average) observation, and n is the total number of observations. (See Mean.)

Standby Letter of Credit: see Letter of Credit.

Straddle: an options position designed to profit from an expected increase in the price volatility of the underlying instrument. A straddle consists of the purchase of a put and a call with the same exercise date and exercise price.

Straddle Write: an options strategy designed to profit from an expected decline in the implied volatility component of prices. The position consists of selling a straddle.

Strap: an options straddle position consisting of the purchase of more calls than puts although all have the same exercise price and exercise date. While the trader expects an increase in price volatility, there is also an expectation that the price of the underlying is more likely to rise than to fall.

Strike Price: an option's exercise price.

Strip: an options straddle position consisting of the purchase of more puts than calls although all have the same exercise date and exercise price. While the trader expects an increase in price volatility, there is also the expectation that the price of the underlying is more likely to fall than to rise.

STRIPS (Separate Trading of Registered Principal of Securities): the US Treasury's acronym for zero coupon instruments derived from selected long-term notes and bonds. At a bondholder's request, the Federal Reserve, as the Treasury's fiscal agent, will separate a designated security into its individual coupon components and corpus or principal payment. The pieces may be traded separately and must be maintained on the Treasury's book-entry system.

Student Loan Marketing Association: a US federally sponsored, publicly owned corporation which grants loans to commercial banks, thrift institutions and state lending agencies for the purpose of maintaining or expanding the size of a lender's student loan portfolio.

Swap: a financial transaction in which two counterparties agree to exchange streams of payments over time according to a predetermined rule. A swap is normally used to transform the market exposure associated with a loan or bond borrowing from one interest rate base (fixed term or floating rate) or currency of denomination to another. (See Currency Swaps and Interest Rate Swaps.)

Sweep Accounts: a service provided by a depository financial institution to invest on an overnight basis all, or a portion, of a customer's idle balances.

Swingline: facility for short-term funds which can be drawn at short notice to cover the period between the offer of notes under a note issuance facility and the receipt of funds. (See NIFs.)

Synthetic Positions: combinations of options or the underlying instrument to produce a desired risk/gain position that cannot be obtained directly. Synthetic positions can be established in the following fashion:

(1) long call: purchase put and purchase the underlying.
(2) long put: purchase call and sell the underlying.
(3) long position in the underlying instrument: purchase call and sell put with same strike price and same exercise date.
(4) short position in the underlying: sell call and purchase put with same strike price and exercise date.

Tender Panel: a method for distributing notes issued under note issuance facilities. A group of financial institutions have the right to bid for the short-term notes issued under the facility on each issue date. (See NIFs.)

Term Federal Funds Market: see Federal Funds Market.

Time Value: the imputed monetary value of an option reflecting the possibility that the price of the underlying will move so that the option will become more valuable. The total value of an option, or its price, is comprised of its intrinsic value and its time value.

Uncovered Writers (also Naked Writers): option sellers who do not attempt to reduce their market risk by taking offsetting positions in the underlying security or other options. This strategy is also called taking a "biased" view in option writing, that is, anticipating that the option will fall in value.

Underlying: the designated financial instruments which must be delivered in completion of an option contract or a futures contract. For example, the underlying may be fixed-income securities, foreign exchange, equities, or futures contracts (in the case of an option on a futures contract).

VA-Guaranteed Mortgage: a residential mortgage in the United States made by a private lender and guaranteed by the Veterans Administration. Eligible mortgage borrowers have had a stipulated period of active military service.

Vertical Bull Call Spread and Vertical Bear Put Spread: limited risk/limited gain options strategies involving the purchase of a call (put) at one exercise price and sale of a call (put) at a higher (lower) strike price.

Volatility: the price "variability" of the instrument underlying an option contract, and defined as the standard deviation in the logarithm of the price of the underlying expressed at an annual rate. Expected volatility is a variable used in pricing options.

Volatility View: options positions established to profit from expected changes in the volatility implied by current option prices. For example, traders may buy options when they feel that the level of volatility implied by option prices is low (and will move higher). Conversely traders may sell options if they feel implied volatility, and therefore option prices, are high (and will move lower). These strategies do not involve an expectation on the direction of the price of the underlying but only on the expected variability in its price. (See also Butterfly Call Spread, Long Volatility Position, Short Volatility Position, Straddle and Straddle Write.)

Voluntary Termination (Swap Market): the cancellation of a swap contract which is agreed to by both counterparties. A voluntary termination usually involves a lump-sum payment from one party to the other.

Warrant: tradable instruments conferring on the holder the right to purchase from, or sell to, the warrant issuer a fixed-income security or equity stock under specified conditions for some period of time. Recently, the most common warrants have been sold in conjunction with Euro-bond offerings and enable the holder to obtain a security identical to the original issue.

Writer (also Grantor): the party that sells an option. The writer is required to carry out the terms of the option at the choice of the holder.

Zero Coupon Bonds: single-payment long-term securities which do not call for periodic interest payments. The bonds are sold at discounts from par and the investor's entire return is realised at maturity.