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Innovations in the International Financial Markets

by Gerhard Maier, Frankfurt

The appearance of the international financial markets is changing rapidly; new instruments are constantly being hatched and marketed, often with considerable success. However, the ingenuity of the markets does not always meet with applause; the banking supervisory authorities and central banks view the rapid pace of innovation with concern and the banking community also displays occasional unease. On balance, do the positive aspects outweigh the negative ones?

The Bank of England,¹ the Deutsche Bundesbank² and other central banks are paying close attention to the innovations taking place in the international financial markets, and the Bank for International Settlements³ has recently published a 270-page study of the phenomenon. The cause of their keen interest is the speed with which certain innovations have been able to win market share.

There is strong demand for such innovations, otherwise they would not be successful. It is impossible to say a priori whether this demand is fundamentally rational, and any attempt to do so would be presumptuous, but another question that may be asked is whether the demand is being satisfied at the expense of certain general economic interests, such as the stability of the banking system or the effectiveness of stabilisation policy.

The torchbearers of innovation were the US financial markets, which often play a pioneering role on account of their depth and breadth. In addition, they saw the severe restrictions in the USA as a challenge to be overcome by means of new financial instruments.⁴ Restrictions of this kind, such as Regulation Q (which limits interest payments on bank deposits), minimum reserves requirements, the Glass-Steagal Act (which divides commercial banking and securities businesses), or the McFadden Act (which forbids interstate banking in the USA), do not apply to the largely liberalised international markets. It is therefore no surprise that the issues raised by innovations at the international level differ from those associated with financial innovation in the United States, where some of the new instruments that have been developed, such as NOW accounts and

money market funds, can be used directly for payments purposes and can therefore seriously impair monetary policy, primarily because the Federal Reserve System has difficulty defining and controlling the money supply.⁵

The main innovations in the international financial markets can be divided into three groups:

- issues of securities by non-banks but with banks underwriting placements (e.g. revolving underwriting facilities (RUFs) or note issuance facilities (NIFs));
- interest rate and currency swaps;
- financial futures and options.

At present, attention is focused on the banks' underwriting commitments in connection with issues of securities, in other words the family of RUFs, NIFs, and so forth.⁶

Characteristics of the Instruments

The distinguishing feature of these instruments is that the banks involved do not act directly as lenders, as in conventional Euro-credit business, but raise the funds needed by the borrowing company in the money market, which is geared towards short-term financing.⁷ Hence borrowers do not borrow directly from banks but issue

¹ Bank of England: Developments in international banking and capital markets in 1985, Quarterly Bulletin, Vol. 26, No. 1, March 1986, pp. 58-70.

² Cf. Deutsche Bundesbank: Innovationen im internationalen Bankgeschäft, Monatsberichte, Vol. 38, No. 4, April 1986, pp. 25-35.

³ Cf. Bank for International Settlements (BIS): Recent Innovations in International Banking, Basle, April 1986.

⁴ See, for example, Gerhard Maier: USA: Monetäre Innovationen – ihre Ursachen und Konsequenzen für die Geldpolitik, in: Die Bank, No. 11, November 1981, pp. 542-546.

securities, "Euronotes", that are sold in the market. With revolving underwriting facilities (RUFs), the underwriting banks undertake to buy short-term money-market paper issued to bearer with maturities of between 1 and 6 months if they are not taken up by the market or cannot be placed on the agreed terms. Note issuance facilities (NIFs) are credit lines within which bonds with maturities of between 1 and 6 months can be issued. The maximum interest rate that is generally agreed with the borrower will ultimately depend on the creditworthiness of the borrower and the duration of the facility; it will be related to the Euro-market offer rate for first-class banks.

RUFs and instruments of that ilk enable borrowers to raise funds on terms close to those available in the money market, thus forming a bridge between the money and capital markets. The underwriting banks are generally committed to providing the necessary funds themselves at a limited margin if the securities should prove impossible to place at any time during the lifetime of the facility.

The interests of the parties involved – investors, borrowers and banks – differ under this procedure.⁸ Euronotes offer investors a higher rate of interest and also enable them to diversify. Previously, such liquid funds were usually placed with banks as time deposits.

Borrowers also benefit from the new financing methods, particularly the comparatively fine margins and the flexibility with which the facilities can be used. The continued availability of funds over the long term can be further ensured by concluding stand-by arrangements with the banks if the borrower considers this necessary in the light of an assessment of his market position.

From the standpoint of the banks, lower yield requirements can be set for the new-style facilities than for loans that impinge fully on their balance sheets. The banks earn commission without their own funds being committed to the same extent as with loans.

"The credit risk is shared between the holders of the notes, who stand to lose if the borrower fails before the notes mature, and the banks (underwriters), who face

the prospect of having to take up the notes of a borrower in whom investors have lost confidence. For holders of Euronotes, the notes are an asset and as such will appear on their balance sheets. The underwriting commitment, however, does not appear on the face of the balance sheet."⁹

Note issuance facilities have won a considerable share of the market in recent years, rising from US \$ 1.0 billion in 1981 to \$ 3.3 billion in 1983, \$ 18.9 billion in 1984 and \$ 49.4 billion in 1985, when they accounted for around 21 % of the volume of the international credit and capital markets.¹⁰

Financial Swaps

Swap transactions are also experiencing a boom at present.¹¹ A swap is an operation in which the two parties accord each other the cost advantages that each enjoys in a particular market.¹² Swaps may relate to liabilities or assets, although the most common form is the liability swap. There are two basic variants of both types of swap – interest-rate swaps and currency swaps.

The basic form of such operations can be illustrated clearly by examining the first currency swaps concluded between the World Bank and IBM.¹³ The World Bank had already borrowed rather intensively in the Swiss market at comparatively low interest rates, so that the terms it could obtain deteriorated. It therefore took up a dollar loan bearing a relatively high interest rate. By contrast, IBM was in a position to borrow in the Swiss market on favourable terms. As the World Bank enjoyed more favourable terms in the dollar market than IBM could obtain, it was in IBM's interest to exchange debtor positions with the World Bank by internal agreement. IBM paid the dollar interest to the World Bank, which passed it on to its lenders; similarly, the World Bank paid the interest in Swiss francs to IBM, which likewise paid it to the creditors. When the operations reached maturity, each party paid the other the loan principal in the currency it had obtained through the swap and settled with its own creditors.

¹⁰ Cf. BIS, op. cit., p. 130.

¹¹ See, for example, John A. MacBride Price, Jules Keller, Max Neilson: The Delicate Art of Swaps, in: *Euromoney*, April 1983, pp. 118-125; Rolf Levedag: Kreativität eines freiheitlichen Marktes wird jetzt unter Beweis gestellt, in: *Handelsblatt*, October 4, 1983; David Bock, Christine I. Wallich: Currency Swaps. A Borrowing Technique in a Public Policy Context, World Bank Staff Working Papers, No. 640, Washington, May 1984; Jochen Rudolph: Das große Spiel für Finanzjongleure, in: *Frankfurter Allgemeine Zeitung*, September 20, 1985.

¹² Cf. Benedikt Fehr: Virtuose Swap-Konstrukteure, in: *Frankfurter Allgemeine Zeitung*, July 2, 1986.

¹³ Cf. Peter Montagnon: Capital markets: now the frontiers come down, in: *Financial Times*, July 9, 1985.

⁵ Cf. Gerhard Maier: Das US-Geldmengenrätsel: Eine Herausforderung an Theorie und Politik, in: *Kredit und Kapital*, Vol. 15, No. 2, 1982, pp. 293-300.

⁶ Cf. Peter Montagnon: The Euronote Explosion: Why the central banks are worried, in: *Financial Times*, May 9, 1985.

⁷ Cf. Ekkehard Störck: Die Kreditrisiken werden breiter aufgefächert, in: *Blick durch die Wirtschaft*, June 7, 1985.

⁸ Cf. Ekkehard Störck, op. cit.

⁹ BIS, op. cit., p. 9.

An interest-rate swap is constructed along similar lines. Here it is a question of exchanging interest payment liabilities in one and the same currency but calculated on different bases.¹⁴ As a rule, fixed-rate interest is swapped against floating-rate interest and vice versa. It should be emphasised that this operation does not entail transfers of principal. The way in which it works can be illustrated by a further example. Let us assume that an energy company is interested in a fixed rate of interest so that it can calculate investment over the long term but it can obtain favourable terms for a floating-rate loan; it seeks a partner who can obtain long-term funds at a favourable fixed rate of interest but prefers to borrow at a floating rate.¹⁵ Such swap agreements may also be concluded with banks that have financed floating-rate loans with funds bearing a fixed rate of interest and which may therefore face problems of interest rate fall (interest rate risk).

In practice, interest-rate and currency swaps are often combined. Swap agreements are not confined to the more common currencies. For example, the international financial markets have recently seen the issue of numerous loans in Australian and New Zealand dollars involving swap operations. Swaps have also

contributed greatly to the tremendous expansion in the ECU sector of the international financial markets.

The market in swaps accelerated sharply during the first part of this decade and available evidence suggests that it is most likely to continue to expand rapidly.¹⁶ The global market for swaps was put at about \$ 3 billion in 1982. Outstanding swaps are estimated to have amounted to \$ 80 billion at the end of 1984 and to have jumped to almost \$ 150 billion by mid-1985.

Financial Futures

There has also been an expansion in so-called financial futures and options. These are forward transactions, that is to say they are related to future events either in order to make a profit (speculation) or to reduce risk (hedging).¹⁷ Financial futures are standardised contracts for the future delivery or receipt of a given quantity of specified securities of a given quality.¹⁸

¹⁷ See, for example, Michael H o c h g ü r t e l : Der Financial Futures Markt – eine Einführung, in: Außenwirtschaft, Vol. 37, No. 2/3, 1982, pp. 329-344; K. Alec C h r y s t a l : A Guide to Foreign Exchange Markets, Review, Federal Reserve Bank of St. Louis, Vol. 66, No. 3, March 1984, pp. 8-11; Financial Times, Section III, Survey: Financial Futures and Options, December 11, 1985; Beate R e s z a t : Devisenterminmärkte – Störfaktor der Währungspolitik?, in: Sparkasse, Vol. 102, No. 4, April 1985, pp. 135-138; Katharine C a m p b e l l : Financial Futures and Options: Their Uses and Abuses, in: The Banker, May 1985, pp. 99-116.

¹⁸ Cf. Götz-Peter N o w a k : Financial Futures, in: Zeitschrift für das gesamte Kreditwesen, Vol. 37, No. 24, 1984, p. 1134; Beate R e s z a t , op. cit., p. 137.

¹⁴ Cf. Rolf L e v e d a g , op. cit.

¹⁵ Cf. Jochen R u d o l p h , op. cit.

¹⁶ Cf. BIS, op. cit., p. 10.

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ZENTRALBANKINTERVENTIONEN AN EFFIZIENTEN DEISENMÄRKTEN

(CENTRAL BANK INTERVENTION ON EFFICIENT FOREIGN EXCHANGE MARKETS)

This study was conducted at the Institute for Stabilization and Structural Policy at the University of Bonn and was supervised by Prof. Dr. Manfred J. M. Neumann. It deals with the current problem of foreign exchange market interventions by the central banks in order to dampen short-term exchange-rate fluctuations. The author looks into the questions, under what conditions interventions have a stabilizing or destabilizing effect on exchange-rate changes, how can destabilization be proven empirically and whether it is possible to draw up specific guidelines for drafting stabilizing intervention rules.

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V E R L A G W E L T A R C H I V G M B H - H A M B U R G

The most popular types of financial futures are the currency future and the interest future. The latter is a standardised agreement between buyer and seller whereby a predetermined round amount of a specified financing instrument – a three-month Eurodollar time deposit of \$ 1 million, for example – will be transferred on a predetermined future date at an agreed price. Currency futures relate to specified volumes of foreign currency. All dealings in such contracts must be conducted on the floor of an exchange, where the prices at which transactions are struck are all immediately notified to all other market participants by the exchange administration. In this respect futures differ from conventional forward transactions, which are concluded on an individual basis. The most important futures exchange is located in Chicago.

Anyone wishing to protect an existing securities portfolio against a rise in interest rates and the associated fall in the market value of his holdings (hedging) can do so by selling an interest-rate future, such as a contract in particular US Treasury bonds. If the rise in interest rates occurs, he will make a profit, because he can buy back the future for less than the price at which he sold it, so that at least part of his loss from the fall in the market value of the portfolio will be offset. Similar hedging transactions to protect foreign currency positions can be carried out by means of currency futures. On the other hand, futures can also be used for speculation if there is no corresponding counterposition, such as exists in the example above.

The speculative interest in futures stems mainly from the fact that only a small capital outlay is required initially, so that considerable leverage effects can be achieved. While the contract price amounts to only a fraction of the contract value (e.g. \$ 1,500 on Treasury bills worth \$ 1 million), the profits or losses are calculated from the price variations and the high nominal value of the contract.¹⁹ A very small price change of 1 basis point, that is to say 0.01, brings a gain or loss of \$ 25 on a 90-day Treasury bill. The leverage of the futures markets caused by the high contract values, large price fluctuations and the fixed term of contracts is often underestimated.

The prospect of swift and substantial profits and the fact that the speculator's view of risk is totally different to that of the hedger favour the involvement of speculators in the market. It is only the readiness of speculators to purchase the high risks that hedgers wish to sell that

generates the market breadth and growth in turnover that give the exchanges the necessary liquidity.²⁰

Financial futures thus as a rule serve to transfer risks to market operators who consider themselves better placed to bear them in view of their market position. Options can also be used to transfer risks. The most common form is the currency option. Buying a currency option gives the purchaser the right, but not the obligation, to buy (call option) or sell (put option) foreign exchange at the agreed exchange rate until the agreed maturity.²¹ The seller of the option undertakes to deliver or accept foreign exchange at the agreed rate if the option holder exercises his right. The unusual feature of an option is that the risk is divided asymmetrically between the buyer and the seller; the buyer bears only a limited risk, since at worst he will let his option expire and thus lose only the outlay on the option (option premium and transaction costs), but the risk borne by the option seller is practically unlimited.

Common to all these facilities, swaps, futures and options is the fact that the liabilities to which they give rise are not recorded in the balance sheet. These "off-balance-sheet activities" are therefore disregarded by conventional monitoring mechanisms.

Securitisation and Disintermediation

The innovations described above are causing a far-reaching upheaval in international financial business. The conventional banking activities of deposit-taking and credit-granting are losing ground (disintermediation). Their place is being taken increasingly by security-based financing relationships in which the banks act only as brokers, a process commonly termed securitisation.

Rapid innovation and the associated trend towards securitisation is due to changes in the economic environment, in other words shifts in the structure of the world economy. For one thing, macro-economic trends have helped to foster structural change and innovation.²² Most important are the sharp rise in inflation and the increased volatility of interest rates and exchange rates. Higher volatility has generated an increase in the risk exposure of those financial intermediaries which fail to maintain a strict match in the term structure of their assets and liabilities. There has been a need on the part of both financial intermediaries and non-financial institutions to develop effective

¹⁹ Cf. Dieter Claus: Zinstermingeschäfte – eine erfolgreiche Variante der Financial Futures, in: Sparkasse, Vol. 99, No. 11, 1982, p. 460.

²⁰ Cf. Dieter Claus, op. cit., p. 460.

²¹ Cf. Brian Gendreau: New Markets in Foreign Currency Options, in: Business Review, Federal Reserve Bank of Philadelphia, July/August 1984, pp. 3-12; Peter Fischer-Erlach: Wie funktionieren Devisenoptionen, in: Die Bank, No. 7, July 1984, pp. 329-331.

²² BIS, op. cit., p. 7.

hedging devices and strategies to deal with the increased risks related to volatility, and there has been an incentive to develop new financial instruments which can be used to transform and shift the burden of risk.

A sharp shift during the 1980's in the geographic pattern of net flows of international savings and investment, as reflected in the distribution of current account imbalances, has also been a contributing factor.²³ To the extent that this shift has interacted with the distinct preferences of investors and borrowers in different geographic areas for particular forms of financial assets and liabilities, it can be held at least partly accountable for the changes in the structure of international financial intermediation and the development of new financial instruments. Thus, the sharp fall in OPEC investible surpluses and the reduced access to credit by the major LDC borrowing countries after the onset of the international debt crisis are consistent with a reduced supply of bank deposits and a matching reduction in bank credits.

Another important trend has been the changing regulatory environment affecting national financial markets. There have been two aspects to this.²⁴ One has been the growing worldwide tendency to deregulate and to reduce structural rigidities and barriers to competition in domestic financial markets. The other aspect of the regulatory environment fostering innovation has been the increased attention which supervisory authorities have begun to pay to the adequacy of financial institutions' capital ratios, particularly as the quality of some international and domestic assets has come into question. The blame for this lies primarily with the debt crisis, that is to say the developing countries' payments difficulties, which brought the risk of default on numerous bank loans. The effect has been to create an incentive for banks to increase their activity in business subject to less stringent capital requirements – a powerful motivation to shift to off-balance-sheet products.

Another trend which has spurred innovation and structural change is the recent widespread application of new communications and computer technology to financial markets and financial transactions.²⁵ This has greatly reduced the cost of the often highly complicated devices, some of which would otherwise be unviable.

Finally, growing competition in international financial markets is a factor increasing the pressure for

innovation and structural change.²⁶ There are at least two causes of the rise in competition over and above the worldwide trend towards deregulation, and these have both a direct and an indirect effect in the process of innovation. First, technological change appears to foster a rise in competition as the developers of new technology seek to exploit its advantages in as many markets as possible. Secondly, the shifting patterns of savings and investment may put pressure on financial institutions whose markets are shrinking to innovate and to compete more aggressively for a larger share of their traditional market or to expand into new areas of business, and for institutions resident in geographic areas with excess liquidity to seek new ways of deploying it.

Pros and Cons

As with so much else, financial innovation has both advantages and disadvantages. Some stem directly from the way in which the instruments themselves are constructed, others are the result of the interaction of all innovations, in other words their combined effect. Let us first list the positive aspects.

From the standpoint of investors, the new instruments widen the spectrum of possible investments, while from the viewpoint of borrowers they extend the range of available refinancing methods. They are thus tailored to the needs of both investors and potential borrowers. They also reduce the information and transaction costs of financial intermediation, improving the fungibility of financial assets and hence increasing market liquidity. In addition, several innovations have a pronounced insurance character (e.g. futures, NIFs).²⁷ Ultimately, they improve the efficiency of the markets in that prices react more quickly to fresh information, although it is a moot point whether this improvement is to be seen in a basically positive light. It cannot be ruled out that it may increase the volatility of prices, i.e. of interest and exchange rates. Nevertheless, empirical studies do not tend to confirm this fear.²⁸

An important consequence of innovation, and especially the development of swaps, is that financial markets have become far more closely integrated worldwide, increasing capital mobility considerably. This improves the international allocation of capital, so that financial resources can be deployed more efficiently worldwide. Heightened financial flexibility, the reduced cost of financial intermediation, easier risk spreading

²³ BIS, op. cit., p. 7.

²⁴ BIS, op. cit., p. 8.

²⁵ BIS, op. cit., p. 8.

²⁶ BIS, op. cit., p. 8.

²⁷ Cf. Markus L u s s e r: Auswirkungen der Finanzinnovationen auf die Assekuranz, in: Neue Zürcher Zeitung, May 24, 1986.

²⁸ Cf. BIS, op. cit., p. 213.

and improved international capital allocation should ultimately make productive investment easier and hence stimulate capital formation and economic growth.

Despite its beneficial effects, the innovation process is arousing mixed emotions. Even leading members of the banking community occasionally admit to feeling rather uneasy,²⁹ the main reason being that large international banks appear to have lost comparative advantage to international security markets. In connection with securitisation, and particularly the emergence of NIFs, first-class borrowers are raising capital increasingly through the issue of securities. It is feared that the average quality of banks' loan assets will gradually decline. However, it seems to be rather an exaggeration for John Plender to claim in the *Financial Times* that "securitisation removes good credit risks from bank balance sheets and leaves poor risks on them".³⁰ The BIS considers that the new instruments may be underpriced, that is to say that gross income from the transactions is insufficient, on average, to compensate fully for their inherent risk.³¹ It believes, however, that this may be a temporary phase that will last only until the end of the learning process that is inevitably associated with the introduction of new instruments. It also points out that securitisation loosens the relationship between lenders and borrowers.³² If it becomes necessary to restructure a borrower's loan capital, it should not automatically be expected that the banks will afford the same assistance if transferable securities are involved as with conventional loans. The possibility that lenders are widely dispersed adds further complication.

Consequences for Economic Policy

It is no surprise that the process of innovation is viewed with concern by the supervisory authorities.³³ Securitisation reduces their knowledge of both cross-border exposures and sectoral exposures within national economies by taking a growing proportion of

credit transactions off banks' balance sheets – by giving an enhanced role in credit creation to institutions outside the current reporting system, such as securities houses, and by making assets more widely negotiable, with the result that it is more difficult to keep track of their ownership. Consequently, changes in reporting banks' assets do not necessarily represent changes in borrowers' liabilities. It must be said that the authorities in countries such as Germany, where universal banks are common, are less affected than those in the USA, where a sharp distinction is still drawn between credit institutions and securities houses.

Particularly close attention is being paid to NIFs and other facilities, because the banks' underwriting activities entail commitments that do not appear in their balance sheets and become effective only if the borrower's creditworthiness is impaired.³⁴ Indeed, the supposed high liquidity of negotiable credits rapidly evaporates as soon as the debtor gets into financial straits, so that it is little more than "fair weather" liquidity. For that reason, the Bank of England reacted last year by taking such facilities into account when making a balance-sheet assessment of credit risks, a stance that was followed by the German Federal Banking Supervisory Office this year.

Monetary policymakers, on the other hand, can view developments in the financial markets with detachment. Problems arise only for those central banks that attempt to manipulate the volume of credit directly; management of the money supply is scarcely affected. Nonetheless, the innovations contribute to the globalisation of markets and may therefore reinforce international interest rate linkage and the effects of exchange rate changes. By contrast, the fear that innovations such as futures may dampen the real impact of interest rate changes and hence necessitate larger interest rate fluctuations appears to be groundless.³⁵ Instruments of this kind provide protection only against future interest rate changes but not against the current interest rate level, so that high real interest rates continue to have a restraining effect.

On balance, the innovation process is to be welcomed. It can undeniably lead to problems, but these can be contained if all the parties involved, particularly the banks and their supervisory authorities, behave responsibly.

²⁹ See, for example, Klaus C. Engelen: Mehr Risikobewußtsein, in: *Handelsblatt*, June 5, 1986.

³⁰ John Plender: Deregulation gains that add up to zero, in: *Financial Times*, August 29, 1985.

³¹ Cf. BIS, *op. cit.*, p. 200.

³² Cf. C. W. McMahon: Change and Development in International Financial Markets, in: *Deutsche Bundesbank, Auszüge aus Presseartikeln*, No. 47, July 22, 1985, p. 9.

³³ See, for example C. W. McMahon: Managing Change in International Banking: A Central Banker's View, in: *Deutsche Bundesbank, Auszüge aus Presseartikeln*, No. 62, September 23, 1985, pp. 6-11; Wolfgang Kuntze: Neue Geschäfte – neue Aufsichtsregeln, in: *Wirtschaftswoche*, No. 6, January 31, 1986, pp. 94-95; Leonhard Gleske: Finanzinnovationen aus der Sicht der Notenbanken und der Bankenaufsichtsbehörden, in: *Die Bank*, No. 6, June 1986, pp. 280-285.

³⁴ Cf. Peter Kulmburg: NIFs – Ein Boom stiftet Unsicherheit, in: *Börsen-Zeitung*, October 12, 1985.

³⁵ Cf. Markus Lusser: Finanz-Futures und die Notenbank, in: *Zeitschrift für das gesamte Kreditwesen*, Vol. 39, No. 2, 1986, pp. 54-56; Peter Bofinger: Geldpolitik im Zeichen der sogenannten Finanzinnovationen, in: *Sparkasse*, Vol. 103, No. 4, April 1986, pp. 146-148.