

doc
CA1
EA534
95C11
ENG

62673241 (E)

UNCLASSIFIED

POLICY STAFF COMMENTARY No. 11

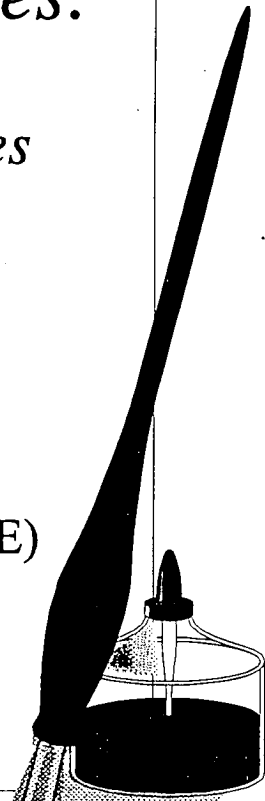


Traders in Tennis Shoes: Derivatives, Volatility, Risk and Supervisory Issues

James McCormack
Economist

Economic and Trade Policy (CPE)
Policy Staff

(May 1995)



Dept. of External Affairs
Min. des Affaires extérieures

MAY 26 1995

RETURN TO DEPARTMENTAL LIBRARY
BIBLIOTHÈQUE DU MINISTÈRE

Policy Staff Commentaries are short papers on issues of interest to the foreign policy community. The views expressed are not necessarily those of the Government of Canada. Comments or enquiries on Commentaries should be addressed to the author.

B43272 387

Traders in Tennis Shoes: Derivatives, Volatility, Risk and Supervisory Issues

Recent turmoil in international financial markets, including the collapse of Barings Bank, the Mexican economic crisis and the fall of the U.S. dollar against both the deutschemark and the yen, has drawn much attention. The news media and other observers have portrayed these events as symptomatic of an increasingly fragile world financial order. The system appears unable to respond to shocks, and seems increasingly subject to speculation and the influence of financial derivative instruments that are not easily understood. As a result, there have been suggestions from the public and private sectors that the G-7 leaders "do something" at the upcoming summit in Halifax to enhance financial market stability. This Commentary will provide some context for those suggestions by examining derivatives markets, and where G-7 energies might best be directed to deal with the risks that financial instability and derivatives pose for markets and participant firms.¹

There are two related themes that are woven into most suggested reforms of financial markets. First, there is concern about excess volatility in financial markets, and particularly in foreign exchange markets. Second, the markets' capacity for large and instantaneous flows of capital ties them together to such a degree that there is concern about the possibility of either an institutional collapse (such as Barings Bank) or difficulties in a specific market (such as Mexico) spreading rapidly and uncontrollably around the world. The risk that troubles in a market or firm cannot be contained, and adversely affect other markets or firms, is known as systemic risk. Before considering the merits of these concerns, it is helpful to explain briefly the concept of derivative financial instruments, their uses and the markets in which they trade.

Derivatives: What Are They and Where Are They Traded?

A derivative is a financial instrument whose value is linked to or derived from the price of an underlying security or commodity. Among the most common and easily understood derivatives are futures and options. A futures contract specifies the purchase or sale conditions of an asset at some future date. An options contract is

¹ For an earlier Commentary on exchange rate volatility, see J. McCormack, *Not Out of the (Bretton) Woods Yet: Exchange Rate Disequilibria, Trade and Suggested Reforms*, Policy Staff Commentary No. 6, February 1995.

similar, but the holder is not compelled to purchase or sell, and will only do so if it is to his or her financial advantage. The purpose of a derivative is to allow for the separation and exchange of risks with respect to the price of an underlying asset. This "unbundling" of risks allows for the transfer of certain risks to agents more capable and/or willing to bear and manage them. As well as risk management, derivatives can be used for speculative purposes, whereby the holder is exposed purposely to certain risks based solely on the possibility of generating profits from underlying price movements.

Derivatives are traded in two ways -- on organized exchanges or on so-called over-the-counter (OTC) markets. Organized exchanges such as the Chicago Mercantile Exchange offer standardized contracts, set margin requirements and act as clearinghouses to guarantee contract performance. The organized exchange is itself the counterparty in each transaction, and is subject to government regulation. The OTC market is an informal market consisting of dealers, or market makers (mainly commercial and investment banks) that trade electronically. One advantage of OTC contracts is that they can be tailored to suit specific requirements, i.e., contracts need not be standardized. Dealers manage their derivatives portfolios by hedging against risks that they are exposed to in providing OTC contracts, either by matching up counterparties wishing to offset different risks or by using exchange-traded derivatives.²

Derivatives markets, including those in Canada, are dominated by a relatively small number of large commercial banks, investment banks and securities dealers.³ This reflects the preference of derivatives users to deal mainly with institutions with the highest credit ratings, as well as the complexity of derivatives and the expertise (normally found in only the largest institutions) required to service the market effectively.

In 1993, the notional principal outstanding for exchange-traded derivatives was close to U.S.\$7.84 trillion.⁴ In 1992, the latest complete year for which data are

² See P. A. Abken, "Over-the-Counter Financial Derivatives: Risky Business?", in *Economic Review*, Vol 79, No. 2, Federal Reserve Bank of Atlanta, Atlanta GA, March/April 1994, p. 4.

³ See S.M. O'Connor, *The Development of Financial Derivatives Markets: The Canadian Experience*, Bank of Canada Technical Report No. 62, Ottawa, June 1993, pp. 28-9; and B. Quinn, *Derivatives - A Central Banker's View*, in Quarterly Bulletin, Bank of England, London U.K., August 1994, p. 278.

⁴ See Bank for International Settlements, *64th Annual Report*, Basle Switzerland, June 1994, p. 112. The notional outstanding amount of derivatives is not an accurate portrayal of credit risk. The credit risk of a derivative contract is the cost of replacing the contract if the counterparty defaults.

available, the notional principal outstanding for OTC derivatives instruments was about U.S. \$5.3 trillion.⁵ By comparison, at the end of 1993, all bonds, notes and other debt securities of all public and private sector borrowers in domestic and international securities markets (excluding any derivative products) amounted to \$19.3 trillion.⁶

So why is it that derivatives receive so much (mostly negative) attention? It is a combination of the size and rapid growth of the market, the possibility of using derivatives with a great deal of leverage⁷, the idea that they are largely unregulated (at least in OTC markets), the fact that they can be made exceedingly complex and the fact that there are only a few firms that dominate the market. With these considerations in mind, we return to the concerns of volatility and systemic risk.

The First Concern: Excess Financial Market Volatility What, If Anything, Should Be Done?

The Tobin Tax

An old idea that is receiving renewed attention in terms of reducing excess volatility in financial markets, and particularly foreign exchange markets, is that of a transactions tax, or what has come to be known the Tobin tax.⁸ It is argued that a small tax on each financial market transaction -- including the exchange of derivatives -- would reduce speculation, thereby reducing volatility and improving the efficiency of financial markets.

The credit risk is only a small fraction of the notional amount.

⁵ See Bank for International Settlements, *op.cit.*, p. 112.

⁶ See Bank for International Settlements, *op.cit.*, p. 111.

⁷ A simple example illustrates the leverage possible with derivatives. Rather than purchasing an asset, an investor can purchase a call option on an asset that he/she believes will increase in price. A call option allows the holder to purchase a fixed quantity of an asset at a fixed price on or before a specified expiration date. The price of the option is a fraction of the asset price, but, if the asset price rises, the holder of the option is able to accrue profits as if he/she actually held the asset.

⁸ For discussions of transaction taxes, see C.S. Hakkio, "Should We Throw Sand in the Gears of Financial Markets?", in *Economic Review*, Vol. 79, No.2, Federal Reserve Bank of Kansas City, Kansas City MO, Second Quarter 1994, pp. 17-30; V.G. France, L. Kodres and J.T. Moser, "A Review of Regulatory Mechanisms to Control the Volatility of Prices", in *Economic Perspectives*, Vol. 18, No. 6, Federal Reserve Bank of Chicago, Chicago IL, November/December 1994, pp. 15-25; B. Eichengreen, J. Tobin, and C. Wyplosz, "Two Cases for Sand in the Wheels of International Finance", in *The Economic Journal*, No. 105, Blackwell Publishers, Oxford U.K., January 1995, pp. 162-72; and P. Garger and M.P. Taylor, "Sand in the Wheels of Foreign Exchange Markets: A Sceptical Note", in *The Economic Journal*, No. 105, Blackwell Publishers, Oxford U.K., January 1995, pp. 173-80.

Despite its intuitive appeal, the Tobin tax would not have the desired effects. It is meant to address dealers who trade currencies (and other assets) speculatively through a series of very short term transactions, where profit is made in the form of small percentages on large volumes. However, even a small tax on each transaction (the idea is often associated with a 0.5% tax) could be sufficient to reduce liquidity in financial markets and actually lead to an increase in volatility.⁹ In addition, since it would be impossible for tax administrators to target speculators specifically, all market participants would be subject to the tax, including those trying to hedge legitimate business exposures. It is conceivable that the tax, no matter how small, could price hedging instruments beyond the reach of some businesses, and ultimately reduce economic activity. Further, the Tobin tax would need to be introduced globally and at the same rate, or transactions would move offshore to tax-free or lower tax jurisdictions. From a practical perspective, the coordination and cooperation required for the introduction of a global tax would present innumerable, likely insuperable, difficulties.

Rein in Derivatives Markets

The Bank for International Settlements has concluded that, although derivatives do not likely trigger abrupt changes in market sentiment, there are ways in which they can contribute to, and possibly amplify, certain episodes of financial market volatility.¹⁰ That is not to suggest, however, that during a turbulent period it would be desirable to restrict the trading of derivatives beyond the limitations already imposed by most exchanges. Such trading limits based on price movements, which are known as circuit breakers, are meant to reduce the probability of a market overreaction to news, i.e., overshooting, and to reduce volatility in general. Neither the theoretical research nor the empirical evidence is conclusive in demonstrating that price limits can and do reduce volatility driven by more than very short-term overshooting caused, for example, by misinformation. As a result, the effectiveness of price limits remains subject to considerable uncertainty.¹¹

⁹ Less liquid markets are considered more volatile since large gaps can open between bid and ask prices resulting in potentially large price movements.

¹⁰ See Bank for International Settlements, *Macroeconomic and Monetary Policy Issues Raised by the Growth of Derivatives Markets*, Basle Switzerland, November 1994, pp. 19-20.

¹¹ See V.G. France, L. Kodres and J.T. Moser, *op. cit.*, 19-22.

While it is possible for derivatives to amplify certain episodes of volatility, they do not necessarily do so.¹² In fact, derivatives were developed initially in response to financial market volatility beginning with the increase in international capital flows in the late 1960s and continuing with the breakdown of the Bretton Woods system and the high and variable rates of inflation in the 1970s. The idea that derivatives can only add to volatility is incorrect. As outlined above, derivatives are widely used as instruments to manage risk. As such, they can reduce the tendency for overshooting if it is brought on by so-called "imitative trading" in which investors try to avoid potential future losses by selling assets when prices are falling and buying assets when prices are rising. Since one of the roles of derivatives is to reduce exposure to price variations, they can reduce the incidence of defensive imitative trading.

The Second Concern: Financial Market Integration and Systemic Risk

Several studies have warned that the size and concentration of derivatives activities, combined with derivatives-related linkages between firms and across markets, could cause any financial disruption (either at a particular firm or in a particular market) to spread faster and be harder to contain.¹³ Despite the fact that there has never been systemic financial instability due to derivatives difficulties in a particular firm or market, including the collapse of Barings Bank, it is still considered one of the most serious risks associated with the development of derivatives markets.

Capital Adequacy

For all financial institutions, capital is the cushion against losses that cannot be covered by current earnings. In 1988, representatives of bank supervisory bodies in twelve countries developed risk-based capital standards under the auspices of the Bank for International Settlements. Known as the Basle Accord, the agreement was meant not only to level the international playing field regarding banks' capital

¹² In fact, Kuprianov quotes a 1993 study by the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance System and the Office of the Comptroller of the Currency which found that European foreign exchange market volatility in September 1992 would have been more pronounced had financial institutions not been able to manage their currency positions through the use of derivatives. See A. Kuprianov, "Over-the-Counter Interest Rate Derivatives", in *Economic Quarterly*, Vol. 79, No. 3, Federal Reserve Bank of Richmond, Richmond VA, Summer 1993, p 85.

¹³ See, for example, General Accounting Office, *Financial Derivatives: Actions Needed to Protect the Financial System*, Washington DC, May 1994, p. 39.

standards, but also to strengthen the capital position of the international banking system by explicitly linking banks' capital needs to their risk profiles.¹⁴

Given the dynamism of international financial markets, including the rapid emergence of new products and the development of new roles for banks, there will be a continuous need for refinements to the Basle Accord. In addition, the evolving linkages between banks and other financial institutions require strong and growing linkages between their respective supervisors. Both the Basle Accord refinements and the bridge-building between supervisors are already underway. In July 1994, the Basle Committee on Banking Supervision released a revised framework for calculating banks' credit risks that accounts for their exposure to derivatives.¹⁵ At the same time, the Committee and the International Organization of Securities Commissions issued complementary guidelines for the risk management of derivatives.

Although there has been some progress in adapting banks' capital requirements to account for derivatives activities and in drawing together the supervisors of banks and nonbanks, much work still needs to be done. In the U.S., for example, there are no examination requirements and no capital requirements for securities and insurance firm affiliates engaged in OTC derivatives markets.¹⁶ Internationally, the drive to set up global capital standards for securities firms has been the subject of major disagreements between supervisors.¹⁷

Presently, there is no international forum for nonbank supervisors to gather and review market developments, or to exchange information regarding potential systemic risks. This Commentary suggests that such a forum should be established to allow an international group of nonbank supervisors to meet regularly and to maintain a close association with the Basle Committee on Bank Supervision. One of the new body's important tasks would be to decide collectively (with the Basle Committee) whether to take the overall international supervisory framework in a new direction. Two options include an extension of the system already in place for banks (focusing on prudential considerations), and a more functional approach in which institutions are supervised based on the financial services they provide and the functional activities

¹⁴ See P.C. Hayward, "Prospects for International Cooperation by Bank Supervisors", in *The International Lawyer*, Vol. 24, No. 3, American Bar Association Press, Chicago II, Fall 1990, pp. 788-9.

¹⁵ See Bank for International Settlements, *International Banking and Financial Market Developments*, Basle Switzerland, November 1994, p. 23.

¹⁶ See General Accounting Office, *op. cit.*, p. 11.

¹⁷ The biggest difficulty is in setting the appropriate capital charges for equity trading books. See M. Goldstein and D. Foikerts-Landau, *International Capital Markets: Developments, Prospects and Policy Issues*, International Monetary Fund, Washington DC, September 1994, p. 12.

in which they are engaged. It has been suggested that the latter approach would entail no regulatory distinctions by legal classes of financial institutions. Supervisory authorities would monitor firms based on industry-developed codes of conduct. In essence, it would be a move towards self-regulation with supervisors focusing on select firms, for example, those with weaker capital positions or less developed risk management systems.¹⁸

Systemic Risk and Counterparty Credit Risk

Since there are such close linkages between firms dealing in derivatives, systemic difficulties could arise if, for example, one large firm becomes financially troubled and eventually defaults on its commitments as an OTC counterparty. This is known as counterparty credit risk, and is similar to credit risks faced by banks when making loans. The ability of derivatives dealers to evaluate, monitor and react effectively to counterparty credit risk is essential for the efficient functioning of OTC derivatives markets. Reducing counterparty credit risk by only dealing with credit worthy counterparties can help to reduce systemic risk.

The market itself is already facilitating the evaluation of counterparty credit risk in the form of counterparty credit ratings issued by the major credit rating agencies (Standard and Poor's and Moody's).¹⁹ However, there remain several problems that make counterparty credit risk difficult to assess, some of which can best be addressed by an improved, internationally coordinated approach to supervision.

- First, specific accounting rules have not been established for most derivative instruments, resulting in often inconsistent and unreliable financial reporting.²⁰ It is essential that principles be established for the consistent accounting and disclosure of derivatives, and that a mechanism be established for national accounting authorities to work towards adopting uniform practices internationally for banks and nonbanks alike.
- Second, there is considerable uncertainty concerning the legal status of "netting" agreements within countries and across international borders, and the legal treatment of derivatives contracts in different jurisdictions with different

¹⁸ See M. Goldstein and D. Folkerts-Landau, *op. cit.*, p. 16.

¹⁹ See Bank for International Settlements, *International Banking and Financial Market Developments*, Basle Switzerland, February 1995, p. 24.

²⁰ See General Accounting Office, *op. cit.*, pp. 92-3.

bankruptcy laws.²¹ The Legal Risk Review Committee was set up in London in 1991 to identify areas of legal obscurity and uncertainty with respect to British laws affecting financial markets, and to propose remedies. Given the international nature of derivatives markets, it would be useful for an international organization to perform a similar function, with a specific focus on international legal inconsistencies.

In addition to contributing to the debate on the direction of an internationally coordinated and consistent approach to the overall supervision of financial institutions, a nonbank supervisors' forum could also provide the impetus for discussions regarding the compatibility of international legal and accounting systems, at least with respect to their impacts on international capital movements and the activities of international financial service providers. A forum could stimulate research, collate its results and develop an international consensus with respect to the appropriate legal and accounting standards to ensure an efficient financial services market based on a predictable set of rules.

What Would a Nonbank Forum Mean for Market Volatility?

There is no reason to believe that financial market volatility is caused directly by international inconsistencies in the way that markets or participant firms are supervised. Thus, it would be unrealistic to expect an international forum for nonbank supervisors to be the primary means of directly reducing financial market volatility. However, the forum could provide some indirect benefits with respect to volatility. For example, to the extent that internationally consistent accounting rules and legal interpretations increase transparency and confidence in the financial system, and, in turn, indirectly enhance liquidity via an increase in financial market activities, there could be a link drawn between the work of the forum and a reduction in volatility.

Although there may be a link between a nonbank supervisory forum and financial market volatility, it should not be overstated. The forum should be considered a means of deepening the understanding of financial markets and the interactions of different commercial institutions involved therein, and a means of promoting an even more internationally integrated financial system.

²¹ A netting agreement between two counterparties provides for the exchange of a single closeout amount for all covered transactions if one party defaults on its contracts. It effectively amalgamates all payment obligations into a single net amount.

A degree of volatility is always going to be a part of financial markets. The recent decline of the U.S. dollar would not have been prevented by a nonbank supervisory forum, nor would the Mexican economic crisis have been averted. There is simply no substitute for sound, consistent domestic macroeconomic management practices, including a fiscal policy aimed at maintaining sustainable public expenditure and debt levels and a monetary policy focused on price stability.

What Would a Nonbank Forum Mean for Systemic Risk?

Just as volatility will always be present in financial markets, so too will a certain level of systemic risk. Whereas it is generally agreed that the growing market for derivatives has strengthened the ties between firms and markets, and increased systemic risk, it is not concluded that the use of derivatives should be limited through further regulations or that the firms engaged in the provision of derivatives should be subject to special restrictions on their activities.

If a nonbank forum could clear up some of the accounting and legal ambiguities surrounding derivatives, there would be a corresponding increase in the transparency of derivatives markets. That increase in transparency would indirectly reduce systemic risk by reducing counterparty credit risk, although neither risk would be entirely eliminated.

The Basle Committee is continuing to work on guidelines for banks to monitor the risks they face in trading on their own accounts (known as market risk).²² As a bank increases its trading activities, it needs to ensure its capital base is protected. A nonbank forum could perform a similar function in assisting nonbanks to manage market risk better. Again, the reduction in systemic risk is indirect and centres on helping to prevent nonbanks from entering into (or entering into without the full knowledge and understanding of) risky transactions that jeopardize their financial stability.

It should be emphasized that while there is a role for supervisors and guidelines, one of the most important factors in reducing counterparty credit risk and ultimately systemic risk is improved internal risk management programs for participants in derivatives markets. Accountability in the decision-making process of firms and institutions can be supervised best internally. With memories of Barings Bank and the

²² See "Work Ahead for Quality Controllers", in *Financial Times*, London, 12 April 1995, p. 15.

losses of Orange County still fresh, the development of improved internal risk management programs is already underway.²³

* * * * *

In summary, there is evidence to suggest that derivatives can increase financial market volatility in some cases, and reduce financial market volatility in others. Accordingly, suggested reforms to reduce derivatives trading in order to reduce volatility (such as the introduction of a Tobin Tax) should be abandoned, at least until it can be proved that they do not interfere with the efficient functioning of markets.

The creation of a forum for nonbank supervisors to exchange views, work closely with the Basle Committee and develop a more consistent international supervisory framework will not directly address concerns over financial market volatility or systemic risk. However, there are a number of indirect means by which a nonbank forum can modestly contribute to a reduction in systemic risk. Given the pressures on the G-7 leaders to provide a "solution" to the "disorder" in the world financial system, an initiative to establish a nonbank forum could be a useful step forward.

²³ See "Danger -- Kids at Play", in *Euromoney*, March 1995, pp. 43-6.

LIBRARY E / BIBLIOTHEQUE A E



3 5036 20041063 0

DOCS

CA1 EA534 95C11 ENG

McCormack, James

Traders in tennis shoes :
derivatives, volatility, risk and
supervisory issues

43272387