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FOREIGN EXCHANGE MARKETS AND THE TOBIN TAX

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GLOSSARY

Covering is the practice of protecting payments or receivable amounts against currency fluctuations. If, in the future, a firm is committed to paying in a foreign currency, it might want to buy the currency on the spot or forward market. Conversely, if the firm expects to receive a future payment in the foreign currency, it could cover itself by selling the foreign currency forward.

Derivative instruments are leveraged contracts related to securities, commodities, interest rates or foreign exchange rates. Many variations and combinations are possible.

A forward contract is an agreement between two parties to the exchange of a particular combination of currencies at a specific future time. It is said that one party *buys forward*, while the other party *sells forward*.

Fundamentalists believe that the economic fundamentals of a country's currency are the prime determinants of its exchange rate.

The fundamentals are economic factors affecting the country's ability to repay the bearer of its currency on demand, the purchasing power of the money and its rate of interest.

Futures are obligations to buy or sell a quantity of the underlying asset at a date in the future. They are traded on margin. The main advantage of *futures* over *forward contracts* is that *futures* are exchange-traded, and thus very liquid (i.e., the owner can always sell them).

Hedging follows the same logic as covering, although it is used for operations related to existing assets (securities, real estate, industrial buildings or plant), rather than expected payments.

A long position is an investment in which a security is bought in advance at an agreed price for future delivery.

A net short position is a net investment position in a security that has been sold in advance at an agreed price for future delivery.

Options, which carry the right, but not the obligation, to buy or sell a quantity of the underlying asset at or before a date in the future, may be bought by the payment of a single premium. Foreign exchange derivative instruments are usually traded over-the-counter.

Speculation refers to capital flows that are made not to cover or hedge positions, but essentially in the hope of financial gain.

A swap is a transaction involving the actual exchange of two currencies, and a reverse exchange of the same two currencies at a future date at a rate agreed to at the time of the contract. Thus, it is the combination of a spot transaction and a forward contract.

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INTRODUCTION

In recent years, currency crises in Brazil (1999), Russia (1998), Asia (1997), and Mexico (1995) have destabilised world financial markets, while movements in exchange rates for a high number of currencies reached levels beyond normal. Much of the turmoil was attributed to large speculative portfolios in foreign exchange markets. Nowadays, banks and institutional investors hold a larger share of their total financial assets in vulnerable emerging and illiquid markets, and thereby face more exposure to currency risk.

In order to thwart speculation, a tax on foreign exchange transactions (the "Tobin Tax") has been proposed. The name refers to Professor Tobin, who first suggested this measure in his 1972 Janeway Lectures at Princeton. The original idea was for a tax to be applied to all currency spot transactions in order to reduce the volatility of exchange rates and enhance the efficacy of macroeconomic policy. The economics community of the time accorded a cool reception to the proposal, however.

The recent financial crises have revived economists' interest in a Tobin tax. In France, the idea has been embraced by the socialist party and Mr. Laurent Fabius, president of the French Assemblée nationale, recently gave some support to it, though he sees it only as a "second-best" in the absence of other interesting proposals. Whereas the primary function of the levy would be to contain speculative activity and the volatility of foreign exchange markets, the tax also has an enormous potential for international fund raising. The tax base, estimated at $1,500 billion daily in April 1998, is so large that even a very small levy would raise a great deal of revenue. Not surprisingly, politicians and activists interested in public financing of international development have re-introduced the tax proposal into political debate.

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* Financial terms underlined on their first appearance in the text are defined in Glossary.

The tax base, however, is very vulnerable to changes in transaction costs. Even a very small tax would make such transactions unprofitable, especially those that were not speculative in nature. This vulnerability would substantially erode the tax base.

In the current era of globalisation, national autonomy over monetary and budgetary policies is decreasing. The growing divergence between economic and political boundaries has led governments to redefine the scope of their interventions. The increase in the free international trade of goods and services is leading to more integrated national economies. This internationalisation has led to the expansion of foreign exchange markets and forced governments to accept a certain loss of control.

The traditional role of global financial flows was to finance international trade in goods and services and foreign direct investment. But today the motivation behind most international financial transactions goes far beyond this concept. The liberalisation of capital flows opened the door to new portfolio possibilities and increased diversification of assets. In the last 10 years, global turnovers in foreign exchange markets have expanded by 150%. This increased activity reflects the changing attitude of financial investors to new investment possibilities.

Among international capital flows, the share of portfolio investment has grown at an accelerating pace since the 1980s (see Table 1). The early growth reflects the breakdown of the Bretton Woods regime of fixed exchange rates. The richer economies switched to a regime of floating exchange rates and relaxed restrictions on foreign capital flows. By the mid-1980s, most of the developing world had also renounced capital restrictions. This opened the door to foreign investors and contributed to increased international investment activity, some of which is speculative.

Table 1: International Capital Flows, $ Billion, Annual Average

	1976-1980	1981-1985	1986-1990	1991	1992	1993
Direct Investment	39.5	43.0	162.8	184.5	173.5	173.4
Portfolio Investment	26.2	76.6	215.4	339.7	325.9	620.5

Source: Bank for International Settlements.

By 1993 and 1994, the notion that international portfolio diversification would enhance investment performance was widely accepted in the financial world. Investors, attracted

by high returns in the emerging markets, invested aggressively in the developing world. The stock markets of Argentina, Chile, and Malaysia in particular registered annualised returns in excess of 30% between 1976 and 1993. Returns in Mexico, Taiwan, Thailand, and India exceeded 20% per year during the same period. These returns looked very appealing, compared to the annualised return of 14% achieved by the U.S. market during the same period.

WHAT CAUSES FOREIGN EXCHANGE INSTABILITY AND CRISES?

A. Currency Risk and Exchange Rate Regimes

In addition to the conventional market risk of any investment, investments denominated in a foreign currency also face a foreign exchange risk due to currency fluctuations. Thus, there are two components related to a foreign investment: the market and the currency return. Whereas international investment offers the possibility of greater financial returns, the net effect on the overall risk faced by investors depends on diversification and hedging). As a result, we have seen additional hedging activity in foreign exchange markets.

Currency risk is perceived differently by investors according to the type of exchange rate regime within which they operate. Under a floating exchange rate, the rate of exchange is freely determined by the market on the basis of private transactions. If the market is efficient, the exchange rate is said to reflect its fundamental value as determined by the country's basic economic conditions. In practice, the floating exchange rates of some currencies are managed by the monetary authorities; the central bank does not announce any target that must be maintained, but may make sizeable exchange rate interventions in order to stabilise its currency. In Canada, the Bank of Canada does not intervene on foreign exchange markets in order to influence the longer-term value of the dollar.

In East Asia, many countries, apart from Japan, had a pegged exchange rate regime, whereby the national monetary authorities committed themselves to maintaining the value of their currency within a narrow band. Investors under this system who have confidence in the peg have a different attitude to currency fluctuation. By not covering their foreign position, such investors would face a greater risk. Covering or hedging activity uses derivative products such as options, futures, and forward contracts to lock future costs or revenue to an existing parity.

Before the financial storm of summer 1997, many Asian companies did not cover or hedge their foreign exchange positions because most Asian currencies were pegged to the U.S. dollar and currency risk seemed negligible. In a survey of 110 CFOs conducted at the CFO Forum in Manila in November 1997, 55% of the respondents said they did not use hedging instruments. Following the depreciation of national currencies in Indonesia, Malaysia, Thailand and South-Korea, however, many Asian companies suffered extensive losses while others went bankrupt. Multinationals from the United States or Europe generally experienced less serious damage because they had long relied on hedging and covering practices to protect themselves.

B. Destabilising Capital Flows, Pegged Regimes and Speculative Attacks

Pegged exchange rate regimes are regarded with suspicion for another reason: any signal that a currency is weakening can lead to large, uncontrolled, short-term, destabilising outflows of capital. Historically, the likely direction of any change in the peg has been devaluation. When a currency is weak but pegged, even a small possibility of devaluation could provoke large destabilising movements. In theory, such a situation can arise whenever the probability of an exchange rate readjustment is such that the expected return exceeds the cost of moving the funds. Given the very low transaction costs in the international monetary system, this situation has been called a “ticking bomb” by the monetary economist Milton Friedman.

Covering, hedging, and speculation are the main instruments of disequilibrating capital movements. Suppose there is strong suspicion that a foreign currency may be devaluated; a firm operating in the home country but committed to paying abroad in the foreign currency would stop covering its payments but would continue to cover the foreign receipts. Conversely, a firm normally operating in the weak currency but expecting to receive inward payments in the home currency would stop covering the future receipts but would continue to cover its foreign payments. Therefore, the prospect of a devaluation may cause large uncovered movements. Moreover, if all positions were not normally covered, firms that did not usually cover their international positions might choose to do so, thereby causing excess covering. Movements of both additional uncovering and covering work against the weak currency. Moreover, investors might want to hedge their foreign positions by selling forward, and speculators might seek

excessive returns by selling the foreign currency short. These movements of funds are all destabilising and can cause foreign exchange crises.

History is filled with examples of foreign exchange crises that came about under a pegged exchange rate regime. When the countries had a current account deficit, they could draw on their reserve or borrow foreign currencies to maintain the parity. They could also increase interest rates, provided the banking system was strong enough to support the raise (if not, bankruptcy and bank runs could ensue). Such policies were effective for a time, but if problems persisted, investors began to anticipate devaluation and set the destabilising practices described above in motion. If the peg was maintained, investors and firms would at worst lose the transaction costs, commissions and interest on their capital. But when this cost was less than the potential loss of a devaluation, the weak currencies were subjected to intense pressures. In Mexico, Indonesia, Malaysia, Thailand and South Korea, this situation resulted in a foreign exchange crisis and the collapse of the pegged regime.

Under a floating rate, variation in the rate of exchange absorbs the foreign exchange pressures. In case of a devaluation, the gradual downward movement provides the central bank with greater room to manoeuvre. Furthermore, once the initial fall is completed, confidence in the fundamental value of the currency can return. In this case, positive speculation on the currency would help stabilise it. Generally, investors must speculate against the market; that is, they believe the market valuation of a floating currency is temporarily wrong. Foreign exchange crises are unlikely to come about under a floating rate, though there may be internal crises, as in Japan. With a fixed exchange rate, investors speculate against governments and central banks, both of which are more prone to try to maintain unrealistic exchange rates.

When large destabilising movements arise, it is difficult to determine which plays the greatest role — speculation, covering, or hedging. Following the expansion of international portfolio investments (see Table 1), however, one should expect that there will be more hedging and speculative activity than covering. The objective of the Tobin tax is to axe destabilising speculative activity, but without discouraging precautionary movements like covering and hedging. For this to come about, the relative importance of disequilibrating capital flows resulting from speculation must be high.

It is worth mentioning here that the volume of global turnover is not necessarily related to the instability of prices in foreign exchange markets. Stabilising short-term

movements of funds also exist. If there is confidence in the stability of the fundamental value of the currency, a small drop in the rate of exchange — due to seasonal, cyclical or other temporary factors — might prompt investors to buy the weak currency immediately and profit from the expected rise. Likewise, appropriate open-market interventions by the monetary authorities may cause short-term interest rates to rise. Higher rates of interest increase the demand for the weak currency, and raise the cost of short sales. Such mechanisms for regulating short-term capital flows have a stabilising impact on foreign exchange.

Instability is caused when the market suspects that there is to be a change in the fundamental value of a currency. Such prospects are amplified by investors' short-term horizons and asymmetric information. In current financial markets, some investors rely on very short-term horizons. The competition among portfolio operators is high. Large-scale investors want their capital to perform above the normal market returns. Using short-term investment methods, it is sometimes possible to achieve excess returns; however, in the long run only normal market returns can be expected. In other words, no one beats the market systematically or forever.

Clearly, however, financial markets do not always get it right. They have to deal with numerous and confusing signals. Some are better informed than others. This asymmetry of information leads to distortion in the markets, and speculative bubbles appear in which the price goes up (or down) in each period because the traders expect it to do so. They are usually right in their predictions for a time (until the bubble bursts); thus, it is possible to beat the market temporarily. In a bubble, the variations in the prices are not justified by a change (realised or expected) in the fundamentals.

It is questionable, however, whether all exchange rate deviations from the fundamental value are a result of speculative bubbles. Such divergences in the currency prices are sometimes justified by the expectations of what will happen to the fundamentals. Suppose there is new information that could affect the real economy – a rare event – that has a low probability of affecting the fundamental value of a currency. In a context where investors are very sensitive to the short-run and where the cost of moving funds is low, even such a very small probability is likely to be exploited. Investors buy or sell according to a value that can be very different from the initial fundamental value. Moreover, the greater the potential gain, or loss, the less sure the results have to be in order for destabilising flows to take place. Large fluctuations are often incorrectly attributed, after the event, to speculative bubbles when the reason is rather

that a very unlikely, but just possible, development did not take place. In fact, the market was only reflecting modifications in the expected fundamental value, according to new information.

The general view among fundamentalists is that market perceptions of inconsistencies in countries' fiscal or monetary policies, or weaknesses in financial structures, help precipitate speculation. Recent research conducted by the IMF on the underlying factors of speculative attacks suggests that these are more likely in countries struggling with a highly overvalued exchange rate, an uncontrolled expansion of credit and real estate growth, a weak financial system, a weak fiscal position, an external debt mainly denominated in short-term maturities, or limited international reserves.

In a speculative attack, the speculator needs to establish a net short position in the domestic currency under suspicion. Historically, the monetary authorities have generally used three methods of defence to counter large destabilising speculation on the exchange rate.

Typically, commercial banks holding the opposite side (the long positions) of speculators' forward sales will first seek to balance their position by selling the domestic currency on the spot market. The banks then face a currency mismatch — a lack of domestic liquidity — which they can overcome by initiating a swap operation with the central bank; this entails a forward sale contract of the domestic currency. By taking the long position on these short sales, the central bank implicitly supplies domestic credit to the speculators. The central bank can also be active on the money market through purchasing government securities. In either case, the central bank interventions sterilise the adverse affect of massive sales of foreign exchange by strengthening the monetary base. These offsetting actions are constrained, however, by the quantity of foreign exchange reserves, the borrowing capacity of the central bank on international markets, and the financial aid of other official institutions.

When sterilisation actions fail, the central bank has historically raised the cost of credit for short sellers by increasing short-term money market rates.[1] In theory, short sales are discouraged when the financing cost for speculators is raised above their anticipated capital gains. The recent Asian crisis provides numerous examples where interest rates were raised as a means of defence: interbank interest rates rose overnight from 14% to 16% in Indonesia, from 7% to 19% in Malaysia, and from 11% to 20% in the Philippines. In Eastern Europe, rates on

(1) Non-resident speculators borrow domestic currency in anticipation of a devaluation and in order to deliver domestic currency when the forward contracts for sales of domestic currency come due.

the Czech koruna reached 200% five days before the peg was abolished. However, the increase in the money market rates usually spilled over to other interest rates in the economy. Therefore, such a line of defence can be sustained only over a short period if the domestic financial system is to survive the crisis. In the last resort, higher rates can be imposed only on speculators (usually non-residents), in order to avoid negative impacts on the domestic market. The market for domestic currency is thus split into two branches: an onshore and offshore market. In the depth of the crisis in Thailand, overnight offshore rates reached an annual 1,300% or over 0.7% a day. These high rates are telling us that the exchange rate is artificially maintained well off its fundamental value, and as a result the expected return of speculation is very high.

The inescapable conclusion is that the existing defence mechanisms are not sufficient to handle large speculative attacks. Another line of defence needs to be developed in order to cope with the possibility of large one-sided capital flows.

C. Active Participants in Foreign Exchange Markets: Who's to Blame?

Active participants in foreign exchange markets are mainly institutional investors (life insurance companies, pension funds and investment funds), banks (commercial banks, investment banks and central banks) and multinational firms. Institutions within these three classes generate the vast majority of all international capital flows. However, their investment practices and purposes vary from one to another. Multinationals generally engage in foreign exchange markets to cover future payments, receivables and assets, and to finance foreign direct investments. Banks and institutional investors engage in foreign exchange markets for reasons that fall into two main categories: risk management and speculation.

Of these three classes of participants, institutional investors have been often blamed for much of the turmoil in foreign exchange markets. Total institutional assets in the OECD area rose by 89% from 1990 to 1996. In 1996, total OECD institutional financial assets were estimated at $26,001.2 billion, with more than half of this in the United States alone (see Table 2). The number of institutional investors has developed tremendously over the past decade (see Table 3).

Table 2: Size of Institutional Financial Assets and Country Repartition in 1996

Country	Total Financial Assets ($ billion)	Share of Total (%)
OECD	26,001.2	100
United States	13,382.1	51
Japan	3,563.6	14
United Kingdom	2,226.9	9
Canada	560.5	2
Other OECD	6,268.1	24

Source: OECD.

Table 3: Institutional Financial Assets

Type of Investor	Share of OECD Total in 1996 (%)	Average Annual Growth Rate for 1990-1996 (%)
Investment Companies	25	16
Pension Funds	26	10
Insurance Companies	34	10
Other	15	7
Total	100	9

Source: OECD.

In 1993, 10% of the institutional portfolio was invested in foreign securities. Following the recent strong increase in international transactions by all classes of investors, the present world proportion is likely to be in the vicinity of 12% to 20% (in 1997 in Canada, 13% of all institutional savings were invested in foreign securities), representing approximately $3 trillion of institutional foreign portfolio investment. A large part of this is invested in money markets, foreign bonds and government treasuries. Institutional investors have also exerted strong demand for emerging market securities. Therefore, considering the size of the world institutional foreign portfolio investment and its high degree of liquidity, movements from one currency to another can exert considerable pressure on exchange rates.

Institutional investors are mainly pension funds, insurance companies and investment companies (mutual funds, hedge funds and other managed funds). In 1996, insurance companies held the biggest portfolio of securities (see Table 3), although between 1990 and 1996, investment companies registered the highest growth in financial assets (16% annually on average).

It is often claimed that hedge funds, nowadays popular among investment companies, help precipitate large price movements in foreign exchange markets. There is no formal definition of hedge funds. They are managed on a fee-for-performance basis; typically, management receives 20% of the profits and a 1% management fee. Investment strategies are left to the discretion of the fund manager, and may be altered at any time. Hedge funds can engage in almost any activity, and are far less constrained by the regulations governing traditional mutual funds. Hedge funds are often prepared to bear significant risk in order to deliver the promised "above-the-market" performance to their investors. Whereas conventional hedge funds mix long and short positions — the idea is to be profitable even when the market is down — it is now more common for funds to take on large directional (unhedged) positions on one side of the market. Too often, their trading practices have nothing to do with the precautionary practices their name would suggest.

Because hedge funds face minimal regulation, are often resident off-shore, and put few restrictions on their trading practices, they are fundamentally different from other sophisticated financial institutions. However, their trading practices do not fundamentally differ from the market activities of the proprietary trading desks of commercial or investment banks. They all take positions in the derivative markets, buy and sell stocks and alter their portfolio in the same manner. They also have the same active trading strategies, which emphasise short-term investment horizons in order to take advantage of day-to-day volatility. A significant number of other institutional investors also engage in the same trading practices. Some university endowment funds, pension funds, mutual funds and banks have a stake in some of the largest hedge funds.

In relation to other institutional investors, the estimated size of hedge funds is fairly limited. In 1997, the number of hedge funds world wide was estimated at 5,500 with $295 billion in assets under management.[(2)] On the other hand, in 1996, the total number of mutual funds for the United States, European Union and Japan was approximately 25,673 with $4,900 billion in net assets. Clearly, the relative volume of hedge funds assets pales in comparison with the size of other financial market sectors (commercial banks, investment banks, pension funds, insurance companies, mutual funds, etc.).

(2) Van Hedge Fund Advisors, in *OECD Financial Market Trends*, No.73.

Nowadays, most financial investors leverage their invested capital in order to multiply the gains. The Long Term Capital Management (LCTM) fund (a hedge fund that collapsed) is probably the most spectacular example. In 1996 the fund had a ratio of $30 in balance-sheet debt for every $1 in capital. At the beginning of 1998, this ratio was down to $25 to $1. Such high leverage ratio can produce more than 20% return on capital with less than 1% of annual returns on each dollar at risk. However, not all hedge funds use such high leverage; according to Van Hedge Fund Advisors, a United States private consulting group, only 15.6% of the total number of hedge funds have a leverage ratio greater than 2:1.

As a general rule, leverage ratios should go up as the riskiness of the portfolios goes down. A case in point is the high leverage ratios observed in other financial sectors where the underlying financial assets are much less at risk. The trading arms of internationally active commercial banks and proprietary desks of investment banks have net assets-to-equity ratios around 20:1. And the gross leverage ratios are much higher (example: Merrill Lynch, 31.9:1 or Morgan Stanley Dean Witter, 33.7:1). Moreover, active trading of derivative instruments indirectly enhances the leverage of portfolios, and these transactions are not accounted for in the calculations of leverage ratios.

These high leverage ratios expose the banking system to more lending risk. A serious examination of weakness in the international banking supervisory system is currently at the centre of the policy debate in international finance. In the past, some banks failed to assess accurately the risk of granting international (and domestic) loans to other financial and non-financial institutions and thereby endangered the stability of international financial markets.

At the outset, it should be made clear that foreign exchange markets are dealing with a number of players of different sizes that often have similar active trading practices. Although it is often said that hedge funds lead other participants in their market activities, they are also sources of liquidity and stabilising speculation after a crisis in which a depreciated currency is undervalued. The general view is that an imbalance in countries' fundamentals or unsustainable pegs leads to instability and currency crises, with all the participants sharing responsibility for the "excess volatility" observed in foreign exchange markets. Nowadays, the growth in the size of private portfolio capital and the high degree of capital mobility make it more difficult for monetary authorities to counter speculative attacks, which may become longer and deeper.

THE NATURE AND FUNCTIONING OF FOREIGN EXCHANGE MARKETS

A. Size and Growth of Global Turnover

The latest figures on global foreign exchange turnover are for April 1998, the month for which the BIS conducted its survey on foreign exchange activity whose results were published in May 1999. The survey estimated daily turnover in global exchange markets in spot, outright forward and foreign exchange swap contracts at $1,500 billion, compared to $1,190 billion in April 1995.

Using April 1998 exchange rates, the survey shows that global turnover grew considerably in the most recent period. The 1992-1995 period shows a 9% annualised increase, compared with one of 14% in the period 1995-1998. According to the BIS, while the globalisation of investment was an underlying source of activity, the rapid build-up of leverage positions until mid-1998 was undoubtedly an important supportive factor.

The largest foreign exchange market is in London, which accounts for 32% of total global turnover, followed by the United States (18%), Japan (8%), Singapore (7%), and Germany (5%). The United States foreign exchange turnover rose by 44% over the period 1995-1998, compared to 37% in the United Kingdom. Global turnover declined in Japan (8%) and Hong Kong (13%), allowing the United States and United Kingdom to strengthen their respective share of total activity (50% of all foreign exchange trading took place in these two locations combined).

B. Structure

The foreign exchange market as a whole is not centralised in a single location: it is the sum of all exchange that takes place in the many dealing sites around the world. However, these different markets are all linked, to form the global set of exchanges. Foreign exchange markets function differently from organised stock markets such as the New York or Toronto Stock Exchange; they are dealer-driven, over-the-counter (OTC) and non-transparent.

Dealers (mainly commercial banks, investment banks, and securities houses) compose the so-called wholesale market (or “interbank market”). Their role is to ensure the supply of foreign exchange to customers in the retail market. They quote “bid” and “ask” exchange rates for various currencies, and stand ready to trade at these prices. For most sizeable

trades, the spreads are well below 10 basis points, which indicates that even a very low tax rate might have a drastic influence on transaction costs. Furthermore, the trading is decentralised; i.e., when a transaction is concluded, the price (exchange rate) and the quantity are private information. Often, traders' profits depend on their ability to hide such information from other traders. They are specialists, and they set prices (exchange rates) according to their expectations. In this respect, exchange rates are very sensitive to the arrival of new information — news from monetary authorities, rare events like natural catastrophes, rumours, etc. — which helps explain time-varying volatility patterns according to some recent studies.(3)

In April 1998, the wholesale market alone generated 63% of total foreign exchange turnover (see Table 4). One interpretation of this is that dealers' trading decisions are based on constantly changing information and different perceptions of news on monetary fundamentals and other data affecting the valuation of exchange rates.(4)

An alternative interpretation is that dealers are not fundamentally willing to take on risky positions; i.e., they are not speculating. They exchange currencies according to their customers' wishes. However, they generally seek to equilibrate their positions after large transactions with their customers. For instance, a dealer might sell a large amount of U.S. dollars to a big customer for an equivalent amount of Japanese yen, but only in order to accommodate the customer. Thereafter, the dealer might choose to diversify its currency holdings, rather than retaining its yen position.

The dealer might first sell the yen in exchange for Mexican pesos, which it could then sell to another dealer in exchange for dollars. In this simple example, one dollar traded in the retail market accounts for twice as much trading in the wholesale market. It illustrates the general idea that dealers pass the currencies around many times in order to balance their positions after responding to customers' needs. They do this not because they are speculators but precisely because they do not want to be speculators. In fact, in 1998, $1 of foreign exchange with customers generated an average of $1.7 of foreign exchange turnover in the interbank market.

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(3) For further details on this, see Dirk Eddelbüttel and Thomas H. McCurdy, "The Impact of News on Foreign Exchange Rates: Evidence from High Frequency Data," Discussion Paper, Rotman School of Management and Institute for Policy Analysis, University of Toronto, 1998.

(4) See Jeffrey Frankel, "How Well Do Foreign Exchange Markets Work: Might a Tobin Tax Help?," in Isabelle Grunberg *et al.*, *The Tobin Tax: Coping with Financial Volability*, Oxford University Press, New York, 1996.

Table 4: Share of Total Foreign Exchange Turnover by Participant and Type of Transaction (in Percent), April 1998

Participant	Total	Spot	Outright Forward	Swap
Dealers (Banks)	63	60.2	37.8	69.7
Institutional Investors and Other Financial Institutions	19.4	20.9	26.6	16.9
Multinationals' Treasuries and Other Non-Financial Customers	17.6	18.9	35.6	13.4

Source: Bank for International Settlements

The dealers meet the customers' needs on the retail market. The customers are other financial institutions (mainly institutional investors) and non-financial firms, such as multinationals engaged in foreign trade and investment. In April 1998, only 37% of trades took place on the retail market (see Table 4); of these, 19.4% were with other financial institutions and 17.6% with non-financial customers. The relatively low share of trading volume for non-financial customers has been a feature of the global foreign exchange market for many years. In 1992 this proportion was 12%, up from 5% in previous surveys.

The growth in the share of trading volume for non-financial customers reflects the increase in the size and importance of multinational firms in financial markets. The accelerated growth in the internationalisation of production, combined with foreign exchange instability, boosted the level of trading multinationals needed in order to maximise revenues from their international activities. For each goods and services transaction, there is a sequence of financial operations aimed at managing interest and currency risks. The extensive use of financial operations is now an important determinant of multinationals' turnover, which can exceed the GNP of some developed countries. Multinationals frequently have the use of their own trading rooms, if not integrated financial services through corporate banks.

Most of the swap and spot transactions are made by banks and other financial institutions, while most of the forward contracts are traded in the retail market and involve a larger proportion of non-financial customers. Indeed, multinationals are more inclined than other categories of institutions to use outright forward contracts. This tendency reflects the

precautionary nature (covering activities) of their presence on foreign exchange markets. However, on a global scale, outright forward transactions represent only 9% of the total turnover; foreign exchange swaps lead the way with 51%, followed by spot transactions at 40%.

The average deal for spot and forward transactions in the U.S. market hardly changed between 1992 and 1998, at approximately $4 million. By contrast, the average size of foreign exchange swaps, which were previously about $15 million, jumped to $31 million in the period. About 80% of all transactions involved a round trip of seven days or less, and about 40% involved a round trip of two days or less. This may explain the general view that most foreign exchange deals are made on the basis of very short-term expectations.

Finally one should note that in April 1998 the U.S. dollar was by far the most actively traded currency, fulfilling its role as a "vehicle currency." The dollar was involved in 87% of all transactions world wide, up from 83% in 1995. The Deutsche mark and the Japanese yen occupied respectively the second and third rank.

C. Volatility

It is often implied that exchange rates are highly volatile, although it is almost impossible to establish the extent of volatility. It is certainly true that since the adoption of floating regimes (from fixed exchange rates) by most economies in the 1970s, rates of exchange are naturally more volatile, to a greater extent than had been expected.

Exchange rates are also more volatile than are prices of goods and services — according to economic theory, exchange rates should maintain the parity between prices world wide — and are clearly more volatile than the monetary fundamentals, although less so than equity prices. It has been argued that a very small change in the fundamentals is likely to provoke a bigger change in the variability of foreign exchange — thus overshooting the equilibrium value — though there will be a gradual move back to its fundamental value. Therefore, markets tend to overreact in anticipation of changes, but find the equilibrium value in the longer term.

In Table 5 below, the variability of the effective exchange rate of the largest seven OECD countries (weighted average) is estimated for different time periods. The table shows that

the average volatility of exchange rates has been constant in the last 20 years, and was not noticeably lower in the first decade (1970-79) when exchange rates were mostly fixed.

Table 5: Foreign Exchange Volatility in the Largest Seven OECD Countries (Weighted Average)

	1970-79	1980-85	1986-89	1990-94
Effective Exchange Rates*	1.3	1.7	1.7	1.6

* Standard Deviation for monthly variations in percentage.
Source: OECD.

Even though foreign exchange markets underwent rapid changes in the volume of global turnover, and in the composition and importance of market participants, it does not appear at first sight that this led to similar changes in the volatility of exchange rates. Some observers believe that the rise of speculative activity (institutional investors are often cited here) on foreign exchange markets resulted in more unstable exchange rates. But there is no convincing evidence that there has been a parallel increase in the size and the instability of foreign exchange markets. However, this is not to say that foreign exchange markets are always efficient and always fully reflect fundamental economic conditions; this is still a highly debated question among economists.

Ultimately, the important question is whether exchange rates are more volatile than necessary and whether we can effectively and efficiently do something about it. In fact, ought we to worry about volatility when international trade is accelerating and foreign direct investment is going up, while new information and communication technologies are expected to lead to even greater internationalisation of financial markets? One should not confuse volatility with a foreign exchange crisis.

The world has come to realise that foreign exchange crises can be limited by improving financial market transparency and ensuring prudential banking supervision, while governments should avoid maintaining unsustainable pegs that are far off their fundamental value. Theoretically, in a completely free and transparent market, volatility is not necessarily bad. The proponents of the Tobin tax argue that foreign exchange markets lack transparency and efficiency; thus, they believe that volatility is damaging and restrictions on capital flows are justified. However, it is difficult to show empirically that imposing restrictions would

effectively reduce the variability of exchange rates. For this and other reasons (see Section D. below), many opponents of the Tobin tax would favour improving market conditions rather than restricting flows of capitals.

THE TOBIN TAX

A. The Original Proposal by Professor Tobin

Professor James Tobin proposed the idea of a tax on international spot currency transactions after the demise of Bretton Woods. Many expressed worries about the upsurge in the variability of foreign exchange resulting from the newly floating regimes. Others were concerned about restoring fading national autonomy over monetary and macroeconomic policy.

These were the two main reasons behind the Tobin tax: reducing volatility in foreign exchange markets and restoring an independent domestic policy. Originally, a 1% tax was proposed; this would have highly penalized those initiating numerous round trip transactions with short time horizons, while generally leaving unaffected those involved in productive investments with longer horizons.

The tax's efficacy would rely on two factors: the first being that short-term capital movements are the main cause of instability in foreign exchange markets and the second that short-term trades are mostly initiated by speculators, with fundamentalists tending to rely on long-run investments. This has been nicely summarised as follows:

> The hope that transactions taxes will diminish excess volatility depends on the likelihood that Keynes's speculators have shorter time horizons and holding periods than market participants engaged in long-term foreign investment and otherwise oriented towards fundamentals. If so, it is speculators who are the more deterred by the tax. (p. 165)[5]

Because the tax would limit speculative activity in foreign exchange markets, fundamental trading would emerge as the dominant strategy. Professor Tobin referred to this as "throwing sand in the wheels of speculators." James Tobin was inspired by John M. Keynes, who 50 years before had argued that speculation is more likely to dominate productive economic

(5) Barry Eichengreen, James Tobin and Charles Wyplosz, "Two Cases for Sand in the Wheels of International Finance," *Economic Journal*, 105, 1995, p. 162-72. Also in Michael P. Dooley, "The Tobin Tax: Good Theory, Weak Evidence, Questionable Policy," in Isabelle Grunberg *et al*. (1996), p. 83-106.

activity as the investment markets grow. Keynes added that the situation becomes threatening when the regular activities of a firm become less important than a larger flow of speculative activity. The problem with this conception, however, is that it tends to reject diversification, arbitrage and covering as legitimate activities.

A country can have any two of the following three conditions: (1) a fixed rate of exchange between its currency and other currencies; (2) unregulated convertibility of its currency and foreign currencies; (3) a national monetary policy capable of achieving domestic macroeconomic objectives.(6)

Because Canada maintains full convertibility of its currency, it can only choose between either condition (1) or (3). Canada sacrificed condition (1) to achieve some independence with respect to domestic monetary policy. However, if the variations in the rate of exchange do not reflect changes in the fundamental value of the currency (the country's ability to repay the bearer on demand, the purchasing power of the money and its rate of interest), the efficacy of the monetary policy is diminished. The objective of the Tobin tax is to restore some compatibility among the three conditions.

B. The Latest Developments

The experts now agree that the tax would have to be lower than Professor Tobin originally expected. A tax as low as 0.1% and 0.05% has been proposed, so as not to exceed the very low spreads in the wholesale market. However, it should be noted that even a tax rate as low as 0.1% would double transaction costs. Peter B. Kenen first elaborated a feasible plan for collection of the tax:

- The tax would have to be assessed at the dealing sites (trading rooms). Banks would keep records of their transactions at their dealing sites, and the governments would collect the tax revenue. This would limit the risk of migration to a tax-free location. Because trading

(6) See James Tobin, "Financial Re-Globalization," *Policy Options*, July-August 1999, p. 19-22. Also in Jeffrey Frankel, "How Well Do Foreign Exchange Markets Work: Might a Tobin Tax Help?," in Isabelle Grunberg *et al.*, *The Tobin Tax: Coping with Financial Volatility*, Oxford University Press, New York, 1996, p. 41-81.

rooms are expensive, they would be more costly to relocate than booking sites. Also, the incentive to move trading rooms to tax-free jurisdictions could be considerably reduced by imposing a punitive tax (for example, 5%) on transactions settled from a tax-free dealing site. In that case, international cooperation between a much smaller number of countries would be needed (European Union, the United States, Japan, Singapore, Switzerland, Hong Kong, Australia, Canada and, perhaps, some other countries).

- There would be two ways for governments to collect the tax. Either banks could pay the proceeds of the tax (from all their dealing sites) to their home country, where they had their headquarters, or the tax could be collected on a market basis, by the government hosting the dealing site. The first option would make international cooperation more difficult since banks could easily move their headquarters to another country. Therefore, the second option emerged as the logical alternative; i.e., the government hosting the foreign exchange dealing site would collect the tax from the banks (dealers).
- All the participants should be taxed; however, the tax rate for transactions taking place between dealers in the wholesale market should be split in two with each dealer paying off a levy of 2.5 basis points. Otherwise, wholesale transactions would be taxed twice as heavily as retail transactions.(7)

More recently, Rodney Schmidt proposed another way of taxing foreign exchange transactions. The Tobin tax could be levied on interbank payments made to settle the trades that defined them.(8) Recent evolution in the interbank settlement infrastructure and the future advent of a centralised interbank payment system help make Schmidt's proposal feasible. The levy would be collected in the following way:

- Today, interbank foreign exchange deals are mostly settled through domestic payment systems, offshore netting systems or a combination of both. In the near future it will be possible to tax individual payments and to enforce participation in both systems.

(7) Peter B. Kenen, "The Feasibility of Taxing Foreign Exchange Transactions," in Isabelle Grunberg *et al*. (1996), p. 109-128.

(8) Rodney Schmidt, "A Feasible Foreign Exchange Transaction Tax," Discussion Paper, The North-South Institute, March 1999.

According to Schmidt, three features of the current settlement infrastructure in the wholesale market make this a possibility:

1. Domestic payment systems can identify and tax foreign exchange payments because they process payments individually. This means that they can trace domestic financial payments back to the originating trade. If a payment is not traced to a domestic financial transaction, it is because it is a foreign exchange payment, which may therefore be taxed. By mid-2000, domestic payment systems will also be able to directly identify foreign exchange payments by tracing them to the originating trade.
2. Offshore netting systems also individually process payments submitted for netting and trace them back to the originating foreign exchange trade before netting. Hence, they can also identify and tax foreign exchange payments.
3. Central banks or their supervisory bodies regulate offshore netting activity and enforce regulations. The same mechanisms could be used to enforce a foreign exchange payments tax.(9)

- Only wholesale transactions could be taxed under this scheme, but all types of transactions in that market would be taxed (outright forward, spot, swap, options, futures, etc.).
- Because the domestic payment systems are controlled by their respective central banks, which in turn regulate the offshore netting systems, the international collaboration of central banks would be needed to enforce the tax. According to the numbers for April 1998, 85% of all transactions would have been covered by the tax with the agreement of only a few central banks: the European Monetary Union, United States, United Kingdom, Japan, Canada and Australia.

As was said in the previous section, most currency transactions are made in the wholesale market (63% of global turnover in April 1998). This segment is composed of dealers who are market-makers. Their role is to provide foreign exchange to customers; thus, they need to constantly re-balance their position in the currencies that have been traded with customers on the retail market. Such trading does not affect exchange rates, so they could well be exempt from the tax. In 1996, Tobin proposed that dealers should be taxed on their daily net position only, and not on the basis of their numerous daily transactions.

Although taxing only the net positions of the dealers would be more efficient, because it would create less distortion, in practice it would be more difficult to implement. The

(9) *Ibid.*

problem is that banks tend to avoid taking open overnight positions, as trading is continuing in other time zones. Each bank can easily operate in different markets located in selective time zones and thus can virtually trade all around the clock. In such a continuous environment, it is difficult to correctly assess the nature of "daily" trading, and what constitutes a daily net position.

Another problem arises from taxing wholesale transactions individually: only a few currency pairs are bilaterally exchanged in one transaction. Many other currencies are exchanged through a third currency (sometimes called "vehicle currency"), which is often the U.S. dollar or the Deutsche mark in Europe. Therefore, each time such a currency was traded, the tax would be paid twice, to the disadvantage of these currencies, which are often attached to developing countries. To overcome this problem, Kenen suggested exempting currencies of developing countries from the tax.[10] On the other hand, this problem would be naturally eliminated in a system where only daily net positions in the wholesale market were taxed.

The original proposal by Professor Tobin stipulated the tax would only apply to spot transactions. Nowadays, foreign exchange markets have developed into a larger range of instruments, endowed with a certain degree of substitutability. For example, a spot transaction is due delivery in two days, while an outright forward purchase can be contracted for delivery in three days. Both can closely be substituted for another. Thus, it follows that the tax should also be levied on forward transactions. And because a swap transaction combines both a spot and a forward contact, it is sensible to tax it only once, to avoid double taxation.

The question of whether futures and options should be taxed is, however, a difficult one. Such derivative instruments are not always settled by delivery of the currencies involved. Moreover, a futures or a call option is a close substitute to a forward contract only if the customer actually obtains the currency at the due date. The logic for applying the tax to futures and options depends on the current motives of users of forward contracts. If most are speculating, not taxing options and futures would erode the tax base.

Finally, it is often claimed that low value transactions should be exempt from taxation to minimise the nuisance value of the tax. Kenen proposed exempting all trades lower

(10) Kenen (1996).

than $1 million[11] (the minimum amount for a wholesale — or interbank — transaction is $1 million), while others opted for a much smaller limit, such as $10,000. The idea is to prevent small-scale customers from being affected by the levy. A five basis points tax is not likely to affect small-scale transactions, which anyway face much greater spreads, generally varying from 1% to 8%.

For large-scale traders involved in many round-trips, a tax rate even as low as five basis points could be costly at the end of the year. For example, the annual cost for a customer involved in monthly round-trips would be 1.2% of the amount traded; for weekly round-trips it would be 5%; and for daily round-trips it would be 24% (these numbers would be twice as much for a 10 basis points tax, etc.). Frankel argued that the tax would successfully deter short-term trading while it would leave trades with longer holding periods, or otherwise oriented towards fundamentals, virtually unaffected.[12]

It is often claimed that a tax on interbank trading would widen the retail margin by the exact amount of the tax, so that the tax burden for dealers would be fully transferred to customers.[13] But this supposes that there is an exact correspondence between retail and wholesale trading (i.e., the dealer trades $1 in the wholesale market to provide $1 to its customer). The reality, however (see Table 4 above), is that $63 traded in the wholesale market provides $37 to customers. So the margins would widen by more than five basis points, to probably something in the neighbourhood of eight basis points. The total tax rate paid by customers would thus average 13 basis points. A tax on the wholesale market (which would mean higher transaction costs for dealers) is likely to reduce volume and thus incur more risk to market-makers. In this scenario, trading in both the wholesale and retail market would inevitably be decreased by a greater proportion than if only the daily net positions of dealers were taxed.

C. Projected Proceeds from the Tax

It is extremely difficult to make accurate tax revenue projections. The proceeds depend on many factors likely to affect the tax base, such as incentives for tax evasion and

(11) *Ibid*.

(12) Frankel (1996).

(13) In basic microeconomic theory, this supposes that the retail demand is completely inelastic.

possible changes in trading behaviour. The tax may even lead to a global shift toward a centralised market structure, similar to what is seen in stock markets around the world.

Almost all experts predict that the tax would cause a fall in the volume of foreign exchange daily trading. Although it is almost impossible to know the extent of the fall, previous studies have measured the sensitivity of the volume of securities trading with respect to transaction taxes. Estimates of the elasticity of turnover with respect to transaction costs range from a low of –0.26, based on data for 1968, to –1 using Swedish data and –1.7 using English data.(14) These effects include the migration of trading offshore, which essentially should not happen in the case of the Tobin tax. Also, the role and operational structure of foreign exchange markets differ from those of security markets. Frankel suggested that an elasticity of –0.32 might be likely.(15) Any estimate is essentially arbitrary, however.

Table 6 shows rough estimates for the likely percentage of fall in overall trading volume for different constant log-elasticity and different tax rates (five and 10 basis points). The calculations are based on the hypothesis that the average spread is 10 basis points for the relatively large transactions that form most of the trading volume. In the previous section, it was argued that dealers engage in the interbank market mostly to balance their position, rather than to take advantage of small exchange rates variations. If so, it is reasonable to suppose that the interbank market is quite inelastic with respect to transaction costs, with an elasticity lower than 1. Estimates of the diminution in trading volume range from 11.5% to 33% for a five basis points tax, and from 19% to 50% for a 10 basis points tax.

Table 6: Estimated Percentage Fall in Trading Volume

Elasticity	0.05% Tax Rate	0.1% Tax Rate
-0.3	11.5%	19%
-0.5	18%	29%
-1	33%	50%

(14) Numbers from Marion G. Wrobel, *Financial Transactions Taxes: Pros, Cons, Design Issues and Revenue Estimates*, BP-418E, Parliamentary Research Branch, Library of Parliament, Ottawa, June 1996.

(15) Frankel (1996).

If, as Schmidt suggested, the tax on foreign exchange transactions was to be assessed at the moment the payment went through (via domestic payment systems or offshore netting systems), only interbank transactions could be taxed. By taking into account the reduction in the tax base calculated in Table 6, this scenario would have yielded between $73 billion to $96 billion in annual gross revenue for a five basis points tax in 1998 and between $109 billion to $175 billion for a 10 basis points tax.

On the other hand, the scenario proposed by Kenen would cover both wholesale and retail transactions because the tax would be assessed at the dealing sites, using the dealers' paper trail. Applying the estimated percentage reductions to this enlarged tax base would yield between $116 billion to $153 billion in annual gross revenue for a five basis points tax, and between $173 billion to $280 billion for a 10 basis points tax. Please note that these are rough estimates.

D. The Case against the Tobin Tax

Economists increasingly acknowledge that prices and general market conditions can create strong incentives to innovate and develop new financial tools. Opponents of the Tobin tax often point out that technological changes in private markets for information and communication, when combined with the ingenuity of developers' financial products, could allow cheaters to get around almost any tax or regulation.

History is filled with examples of how a newly introduced regulation has precipitated organisational changes in the market so as to avoid the inconvenience of government intervention.(16) Market restrictions have often provoked distortions leading to greater inefficiencies, thereby aggravating the situation. This line of reasoning is employed by economists who favour the market rather than governments, which they claim no longer have the power, nor the scope, to deal with and establish macroeconomic conditions.

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(16) Let us consider, for instance, the development of the Euromarket in the late 1950s and the beginning of the 1960s. The growth in this private market for international liquidity, and especially the U.S. dollar, was accelerated by restrictions on the dollar imposed by the U.S. authorities. The abrupt increase in the size of this parallel market finally forced the U.S. dollar to go off the gold standard in 1973, marking the formal end of the Bretton Woods monetary system.

In the same way, taxable assets could be substituted by other existing financial instruments that are not taxed. Possible substitutions include the use of sophisticated derivative instruments. Some foreign options and futures already in use do not involve the actual delivery of the foreign currency; the payoff on the underlying asset — the exchange rate — is settled in the domestic currency. Such trades are essentially considered as domestic, and could be used for tax evasion. It is almost impossible to tax all derivative transactions effectively. It would require a very large and powerful body to track and keep up with the inventiveness of derivative traders.

In today's global financial world, there are constant interactions between open domestic markets. It is very likely that the variations in the value of derivative instruments used to evade the tax would, by arbitrage, affect the price of the underlying assets (exchange rates). The speculation activity would only be transferred to other markets; if exchange rates adjusted to fluctuations in these derivative markets, there would not necessarily be less volatility in the conventional markets.

An additional problem would be how to assess the tax on transactions between two customers on the retail market. For instance, if a web of institutional investors decided to trade currencies and foreign exchange instruments among themselves in a decentralised pattern, it would be extremely difficult for an external body with limited power to track the details of such transactions. Neither of the two tax schemes suggested in this paper would cover such inter-customer transactions, as both focus on the paper trail of the dealers (banks). Efforts to avoid the tax could lead to the formation of a parallel underground market for foreign exchange. Distortions and inefficiencies would result, and other prudential measures would have to be developed.

The aspect presenting the greatest problem, according to most observers, is the need to reach a permanent international agreement if the tax is to be credibly implemented. This has been reviewed by Kenen, who suggested imposing a punitive tax on trades made from non-co-operative dealing sites. On the other hand, Schmidt's proposal would possibly work even if participation is limited to countries with the most traded currency. Both schemes would restrict the number of signatory countries necessary to achieve a workable agreement. Nevertheless, it has proved difficult to reach international agreements, even for a small set of countries.

Dissenting views by governments about the use of tax revenues, cost sharing and other political matters are likely to spring up. Take the case of foreign exchange markets. London is the largest foreign exchange market in the world — the London market currently accounts for 32% of total global turnover. Some locations, like London or New York, have a comparative advantage in financial transactions. Likewise, Canada has a comparative advantage in the cultivation of wheat. If the United Kingdom is to share its Tobin tax revenues with the rest of the world, should Canada do the same with its revenues from a tax on wheat? This example serves to illustrate the difficulties of reaching international tax arrangements.

Proponents of the Tobin tax in the political sphere and development field assume that the proceeds would be redistributed towards international development efforts. Opponents are quick to question this assumption by asking why not more of the existing taxes are employed in this way. For international arrangements to be in place, both the use for profits and the share of profits have to be agreed upon. The high revenue potential of such a large tax base could easily shift the focus from the main economic objectives of the tax — to diminish foreign exchange volatility and to restore national policy autonomy — to generation of the highest profits. It is worth mentioning that higher foreign exchange volatility is generally more profitable for speculation and is associated with an increase in the volume of trading,[(17)] which would of course yield more tax income. Could there be a contradiction between the two purposes of generating more revenues and stabilising the currencies?

Michael Dooley examined what tax regimes are effective. To be feasible, a tax has to be recognised as necessary and productive by all public and private participants. For the most part, the most efficient taxation regimes are "self-enforcing." Dooley writes that: "the private sector must believe at some level that the tax is fair and necessary. … Advocates of the tax sometimes … neglect the problem that enforcement depends on widespread acceptance of the tax's fairness and necessity."[(18)]

The Tobin tax would also indirectly reduce traditional tax income, and possibly affect returns on RRSPs and mutual funds. Revenues from the tax have to come from

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(17) There is empirical evidence that times of very high volatility in market prices are accompanied by a similar increase in trading volume. As derivative markets have developed, trading based on very short-term volatility has proved to be profitable for hedge funds and other classes of investors.

(18) Dooley (1996).

somewhere. Like any other form of taxation, the Tobin tax would effectively only redistribute international wealth. It is sometimes argued that the tax could have a depressing effect on economic activity in some countries, especially because of higher financing costs and lower productivity growth.

Moreover, the tax could have a negative effect on governments' financing. Indeed, it is largely government securities that are traded in foreign exchange markets. Government securities, like U.S. treasury bills, are broadly considered as "cash" by traders because they are highly liquid instruments. If a tax is imposed on these trades, governments would have to offer investors higher returns on their securities in order to compensate for the financial loss induced by the tax. Therefore, the Tobin tax could cause a significant drop in the volume of international government financing, or could effectively increase the cost of government financing.

The Tobin Tax would also have an impact on bond prices. When the Canadian government issues bonds, these are generally priced at the prevailing market price. This market price is in turn equivalent to the present value of the stream of future payments, that is, the coupons and capital discounted at the market interest rate. Foreign investors would have to pay the Tobin tax first when they purchased bonds, and afterwards when the proceeds — received from the coupons, the maturity price when the bonds are redeemed, or simply the market price if the bonds were sold before maturity — are converted back in a foreign currency. This means that if the Tobin tax was in effect, the present value of the stream of future payments on a Canadian bond would be lower for foreign investors, so that the tax will drive the issue price for new bonds down. At the end of 1995, foreign investors held as much as 40% of all Canadian bonds outstanding. Consequently, the cost of financing for the government would most likely increase if a Tobin tax was introduced.(19)

On the other hand, globalisation makes it harder for nations to control and track corporate taxable income. Some sectors of the economy, where the mobility of factors is low, pay more in tax than they would otherwise do. They have to compensate for the loss in other sectors with greater capital mobility. Proponents of the Tobin tax are keen to mention that the

(19) For further details on bond pricing in Canada, see Lucie Laliberté and Réjean Tremblay, "Measurement of Foreign Portfolio Investment in Canadian Bonds," Statistics Canada, Ottawa, 1996.

levy would not necessarily increase the national tax burden — it would enable more equitable sharing of this burden among all segments of society.(20)

Perhaps more important, the Tobin tax would have a negative effect on the short-term liquidity trading of financial institutions, especially in the wholesale market. Dealers rely extensively on a sequence of short-term trades to hedge currency risk and other investment risk. By doing so, they enhance their ability to provide foreign exchange liquidity to consumers. If, as a consequence of the tax, the banks had to deal with a constrained liquidity base, they would face a higher risk in their operations, which would be likely to lead to volatility in the interbank market, thereby neutralising the desired effect of the tax.

Proponents of the tax assume that short-term trading — which they claim mostly results from speculation — is the underlying cause of foreign exchange instability. Consequently, they believe that by targeting short-term investments it is possible to eliminate excess volatility. This is a contested view, however. Technological change in the last 20 years has caused transactions costs to fall. As Table 5 (above) shows, there is no apparent evidence of an overall decrease in the volatility of exchange rates. Studies using data on stock prices also found no compelling evidence of a close relationship between the volatility of stocks and transaction costs. It is thus not clear that short holding periods are associated with speculation or other factors. According to Dooley, the belief that most fundamentalists are long-term investors is based on the incorrect assumption that long-term fixed assets are held to maturity, or that foreign direct investment is irreversible because it involves physical plant.(21) In many ways, direct investors can hedge their exposure; one simple way is to borrow from local credit markets. Other, more sophisticated, methods have been developed on derivative markets.

Many economists argue that short-term speculative trading is not necessarily bad, and that the problem resides in asymmetries of information (see the subsection “Volatility”). There are cases of stabilising short-term movement of capital, and these would be affected by the tax as well. There is a strong recognition of the relationship between currency crises and large one-sided short-term flows of capital; however, most experts today agree that a Tobin tax does

(20) Isabelle Grunberg *et al.*, *The Tobin Tax: Coping with Financial Volatility*, Oxford University Press, New York, 1996.

(21) Dooley (1996).

not have the potential to eliminate such crises. Most important, the implied fundamental link between short-term flows of capital and excess volatility has not so far been empirically demonstrated. On the other hand, the relationship between large destabilising outflows of capital and bad governmental policies is well documented. Ultimately, one could argue that the Tobin tax would effectively only shield governments from market responses to bad policies.

CONCLUSION

The problem of uncontrolled variations in exchange rates dates back to the beginning of the 1960s, with the privatisation of international liquidity. Under the Bretton Woods system, the national monetary authorities were able to peg exchange rates because they were the exclusive possessors of international liquidity in an amount equal to the sum of their official reserves. However, the central banks' stabilisation objective contrasted with the emerging requirements for foreign exchange of international trade, mainly composed of multinationals. Also, the supremacy of the U.S. dollar that emerged from Bretton Woods was contested, reflecting the upsurge of other strong currencies in Japan and Europe. The appearance of a private market for international liquidity, beyond the control of any official body, created an "international space" on top of existing nation-states.(22)

Thus, the challenge for the next century is to put in place a working international system to deal with questions of legislation, not only with respect to money, but also trade, communication and new technology. One should note that international cooperation is a primary requirement for the feasibility of the Tobin tax. On the other hand, even the proponents of the tax admit it is only a second-best solution, in the absence of other options. The question is whether, once the world became capable of achieving this level of international harmonisation of regulation, it would be preferable to opt for solutions that actually enhance international flows of capital, rather than policies that favour segregation of capital control.

At the present pace of technological advance, financial markets are becoming increasingly integrated. Banks are losing their geographical identity as new information

(22) See Élie Bernard, *Le régime monétaire canadien*, Les presses de l'Université de Montréal, Montreal, 1998.

technology, such as the Internet, eliminates borders. As this internationalisation strengthens, the monetary authorities will inevitably lose more autonomy. It is likely that the time when the Tobin tax could have credibly restored national policy autonomy has passed. The answers to foreign exchange volatility will have to deal directly with the international dimension associated with the privatisation of international liquidity.

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