

# On the Feasibility of a Tax on Foreign Exchange Transactions

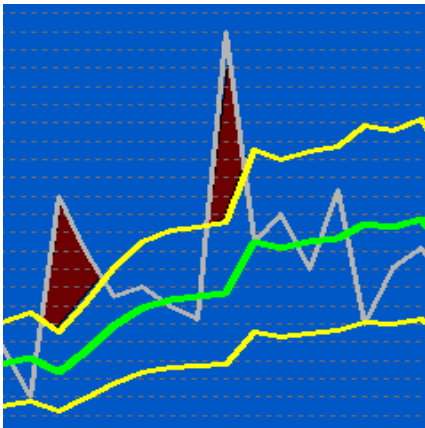
REPORT

To the Federal Ministry  
for Economic Cooperation  
and Development, Bonn

by Paul Bernd Spahn

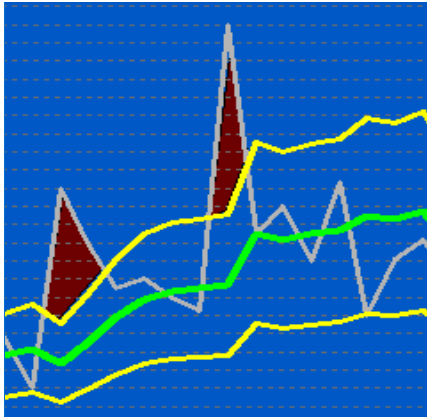
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Frankfurt am Main  
February 2002



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# *On the feasibility of a tax on foreign exchange transactions*

## Summary

A tax on foreign exchange transactions is expected to realize different objectives:

1. The stabilization of exchange rates,
2. the exploitation of new revenue sources
3. the redistribution of resources, in particular between financial and producing sectors, and between nations (in particular between the North and the South) , and
4. aspects directed toward transforming the world economic order, in particular with the aim of controlling the process of globalization.

Systemic change is not pursued in this report. On the contrary: The proposals of a tax on foreign exchange transactions are contingent on avoiding a negative systemic impact. Aspects relating to distributional issues are discussed in an ancillary manner only. They fall ultimately in the realm of politics.

The present study focuses mainly on the feasibility of a tax on foreign exchange transactions with emphasis on the objectives of exchange-rate stabilization and fiscal revenue.

The scope for political decisions on a tax on foreign exchange transactions is constrained by the fact that the tax has to be introduced and accounted for by existing political decision bodies, in particular national and supranational parliaments. The tax will therefore have to be unilateral and partial, not multilateral and universal. Moreover, tax revenue will fall to the jurisdiction that is accountable for legislating the tax, not to international organizations. Multilateral international bodies may however be given some or all of the revenue in a second step—via budgetary grants.

The analysis has brought to the fore the following results:

### **Political restrictions**

1. As to „politically feasible“ instruments to curb foreign exchange speculation, the discussion focuses on non-remunerated reserve requirements of foreign currency transactions and/or deposits. There is also a proposal by Zee to use an asymmetrical cross-border capital tax on imports of foreign capital (albeit not on exports). Both instruments are interesting as parts of an arsenal devoted to coping with currency speculation.

2. In particular non-remunerated reserve requirements are likely to form part of the future global financial architecture.

3. The proposal of an asymmetrical tax on cross-border capital flows appears to be laden with severe and complex administrative problems however. This renders its realization highly unlikely.

4. Both instruments are essentially distinct from a tax on foreign exchange transactions as examined in this report.

### **Concepts**

5. To reconcile the objectives of exchange-rate stabilization and revenue generation, a unilateral and „politically feasible“ Tobin tax (PFTT) on foreign exchange transactions with a small rate, combined with a high-rate surcharge on externalities resulting from speculation, the „Exchange Rate Normalization Duty“ appears to be most promising. Both taxes would be technically intertwined.

6. The Tobin tax proper can be implemented unilaterally by member states of the OECD, individually or (preferably) as a group. It could also be implemented by the European Union in cooperation with

Switzerland.

7. The exchange-rate normalization duty should be applied unilaterally, but only by transition, developing and emerging economies, and by those industrialized countries that aim at pegging their currency to one of the larger currency areas (or a basket of currencies).

8. The combination of two taxes in the form of a *Tobin-cum-Circuit-Breaker* Tax possesses significant allocative and distributive advantages over the prevailing orthodox policies to stabilize exchange rates.

### **Market structure and economic restrictions**

9. The analysis of the structure of foreign exchange markets reveals further elements that restrict the scope for a Tobin tax. Such restrictions are mainly economical and relate to issues such as the level of taxation (tax rate, tax base), and to the distribution of tax revenue.

#### *Tax rate*

10. If the purpose of the tax is to be borne by traders/banks, the bid-ask spread will limit the margin for the rate. With the bid/ask being roughly one basis point for more liquid markets, the tax rate should not exceed half or one basis point.

11. If one assumes the tax to be shifted, it entails that it be borne substantially by non-banks. However non-banks represent only 13.3 percent of total turnover. It implies a leverage effect that could multiply the tax burden on non-financial agents by a factor of up to 7.5.

12. If the bid-ask is accepted to limit the scope of taxation, the uniform tax rate of a PFTT should then be derived from the conditions prevailing in the more liquid

markets. This confers a relative advantage to less liquid markets where the spread is higher. But this should be conceded because it favors the lesser industrialized countries. The tax rate should then fall in the range of one half to one basis point. The financial sector then likely bears part of the tax.

13. At this level of taxation, there is no need to relieve exporters, importers or direct investors from tax.

#### *Tax base*

14. The tax base could consist of all spot transactions, and outright forwards and swaps up to one month. Options and other financial derivatives will not attract the tax directly, but they are taxed indirectly through the spot and forward transactions they trigger.

#### *Partitioning tax revenue*

15. The PFTT is inappropriate as a national revenue raising instrument. This results from the fact that foreign exchange transactions are carried out by time zone. Moreover there is a clear-cut trend toward centralizing these transactions at one center within the zone. This implies the tax to be implemented *for the EU as a whole*, including of course its main trading place, London, but also Switzerland as a potential rival within the zone, but outside the EU.

16. Tax revenue is collected by central banks, but it falls to the region as a whole, not to national authorities. It could be redistributed to national governments via formula-based transfers, but it should preferably go into a European Fund for Economic Development to be managed at the level of the EU. It is of course conceivable the revenue to be used for other „global public goods“ as well.

### **Operations**

17. There is a number of positive factors that prevent foreign exchange transactions from migrating off shore into tax havens. These are the concentration of business onto one main financial center as a „natural monopoly“ within the time zone, complexities relating to foreign exchange transactions and their derivatives, as well as significant network externalities. However this is contingent on a tax policy that respects the specific features of liquidity trading and recognizes the effective margins of trading as a constraint on tax rates.

### **Implementation**

18. The problems relating to the implementation of a PFTT are rather complex. First of all, there must be clear principles to guide tax policy. They concern the definition of the tax base and the taxpayer. A reasonable approach will be to base the tax on a “market principle”, whereby all traders accredited in European financial centers, centrally operating automated broker systems and clearing/settlement systems will be taxable. The same is true for foreign exchange trading by non-banks (such as Volkswagen or Daimler-Chrysler).

19. Generally speaking there are two options to define tax liability: at the trading desks, or at the time of settlement. Both procedures appear to be feasible, although they both have advantages and disadvantages.

20. If the tax is levied at the trading desks, there may be a cumbersome reporting necessity, which is inappropriate in view of the electronic platforms that characterize the market. This could be avoided by an automated,

centralized tax collection at the stage of clearing or settlement. The latter still poses problems as the available information is not passed on to the settlement stage now. Moreover, only spot transactions would be recognizable when settling claims.

21 However the further concentration and automatization of foreign exchange trading, in particular the introduction of a continuous link gross settlement system will significantly improve the conditions for levying the tax at settlement stage. This is why I prefer this latter approach. It requires a different principle of taxation though, which I have dubbed the “access principle”. It defined tax liability from the access to official national gross settlement systems, with contractual „backward chaining“ by which operations prior to settlement are included.

22. It seems obvious that this procedure will also require some reporting at the desk for those institutions that do not participate in official and centralized clearing and settlement. It could be waived however if those institutions would join such systems and/or convey relevant information into the centralized clearing and settlement machinery.

23. The ominous literature on tax avoidance strategies related to the introduction of a PFTT is by far overstating the risks. The high degree of concentration of foreign exchange operations tends to work against it. Developments in foreign exchange markets will further enhance compliance with the tax.

24. I consider a PFTT to be feasible in technical terms—provided that the nature of liquidity trading is respected and taken into account. There are even

two options to implement such a tax, one starting from the trading desk, the other operating at the level of settlement. Both appear to be promising.

25. The knotty problems are not at all technical. They are related to political will, to international cooperation, and to legal enforcement.

### **Reactions**

26. The introduction of a PFTT will entail a number of very different reactions among actors on foreign exchange markets. It is to be expected generally that trading volumes will decline, and that the bid-ask spread will widen. This raises the question of who will bear the burden of the tax. This question is largely open and controversial.

27. Most affected by the tax are those engaging in covered interest rate arbitrage. However, given the extremely thin margins of this business, it is likely that the higher risk will be largely shifted forward though higher premia. It implies the tax to be borne also by the production sector and by households (both private and public).

28. The proper speculators in the market, for instance hedge funds, will be hurt *comparably less* because they operate with significantly higher margins than liquidity traders. The tax adds only a relatively smaller charge onto their business. However they will have to fear the anti-speculative surcharge, which will not play a significant role in the trading decisions of all other groups.

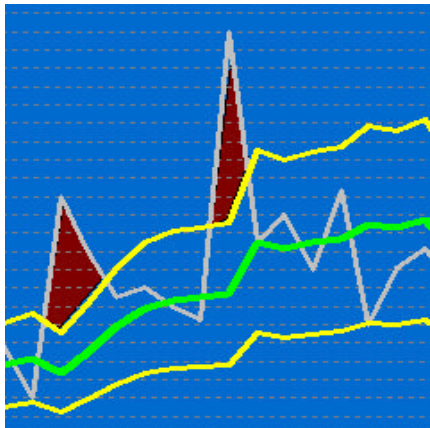
29 Among the institutional investors, insurance companies will bear a comparably higher tax burden because of their longer-term investment strategies and the consequent lower rotation of turnover relative to assets. This is

different for the group of investment funds, for instance, where trading is comparably more intensive. Within this latter group of investors, it is most likely that those institutions can more easily shun the tax that specialize in financial assets of industrialized

countries.

***Revenue***

30. Revenue estimates of a PFTT of one basis point result in an amount of 17 to 20 bill. Euro for the EU plus Switzerland.



# Chapter 1: Motivation

## *What is the purpose of a tax on foreign exchange transactions?*

The proposal of a tax on foreign exchange transactions goes back to Tobin (1972).<sup>1</sup> It has repeatedly being discussed, but realization is still pending.<sup>2</sup> The discussion of the Tobin tax is however motivated by extremely different objectives. The more important ones are the following:

- ▶ The reduction of exchange-rate volatility through „throwing sand into the gears“ (*Tobin*) of world financial markets. This includes two sub-elements<sup>3</sup>:
  - ✓ A greater reorientation onto economic fundamentals, and
  - ✓ the freedom of central banks from being compelled to intervene in foreign exchange markets in order to stabilize their currency.
- ▶ Fiscal motives. These may be divided into two:
  - ✓ The mere exploitation of new revenue sources, and
  - ✓ an indirect approach to taxing globalized capital income in view of difficulties to tax them under a national income tax.
- ▶ The redistribution of resources, in particular among the North and the South, as well as the symbolic association of the tax with principles of social justice.
- ▶ Expectations of controlling or altering the process of globalization through constraints imposed onto the international financial system.

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<sup>1</sup> Tobin presented his proposal initially in 1972 in his Janeway Lecture at the University of Princeton; it was published in 1974 as *The New Economics One Decade Older*, pp. 88-92. Tobin has repeated his proposal several times such as in Tobin (1978, 1984, 1991, 1996) and Eichengreen, Tobin, and Wyplosz (1995). In recent discussions with the author, Tobin has retained his proposal although he distances himself from groups that usurp his concept as a mean to combat globalization.

<sup>2</sup> However the French Parliament has enacted a Tobin tax in 2001 (Loi de finances pour 2002 - n° 3262, Art. 986. I), though it hinges on all other member states of the European Union adopting such a tax.

<sup>3</sup> Tobin (1996, pp. xii-xiii)



One cannot expect that only one policy instrument—such as the Tobin tax—could realize all these objectives at the same time. First it is to be discussed, which objectives are at all realistic, and in which form a tax on foreign exchange transactions could achieve their realization.

#### ► Stabilization of exchange rates.

The reduction of exchange rate volatility was Tobin's original intention of the tax. He argued before the background of a collapsing fixed-exchange-rate regime (Bretton Woods) that had repeatedly led to speculations against the US dollar. At the time the dollar was the almost exclusive world currency. There were only three motives to exchange dollars as the international mean of payment against national currencies, two of them „honorable“ (for financing exports/imports of goods and services, and of direct investment) and one questionable: for speculation.

The idea to reduce speculation in financial markets through taxation goes back to Keynes (1936). Keynes compared speculative activities to casino operations and argued that "...casinos should, in the public interest, be inaccessible and expensive" (p. 159). Tobin transposes this idea onto foreign exchange markets where he wants to throw "sand in the wheels" in the form of financial transactions taxes. More specifically Tobin suggests an international and multilateral tax on all spot transactions from one currency into another, which is proportional to the size of the transaction (Tobin 1978, p. 490). Initially he thought that a uniform tax rate of one percent would be appropriate, but more recently he changed his proposal by reducing the rate to about 0.25 to 0.1 percent (Tobin 1996, p. xvii).

The tax would be due every time a currency is exchanged against an-

other. This increases the tax burden on frequent short-term currency trading compared to longer-term investments in foreign currencies. According to Tobin this would reduce an erratic volatility of the exchange rate because traders would again be forced to focus on fundamental data instead of being seduced by transient market sentiments (Tobin (1991), p. 16). The idea is to limit short-term capital movements without hindering international trade in goods and services, and direct investments.

**Table 1:**  
Foreign interest (in percent) required to match a domestic investment with a 5-percent return (for different tax rates)

Holding period	Required foreign interest rate in percent	
Tax rate	0.5 pc	0.1 pc
One day	541.3	50.7
Three days	92.6	18.5
One week	37.0	10.7
One month	12.1	6.4
Three months	7.7	5.5
One year	6.1	5.2
Five years	5.6	5.1

The main advantage of the tax is indeed that it can target short-term currency transactions very effectively. The differential impact of the tax on short- and long-term transactions can be expressed arithmetically and is shown in Appendix 2. The formula allows calculating the interest rate on foreign investments required to match a domestic investment in spite of the tax. For instance, if the interest rate is 5 percent for a domestic investment and the tax rate on currency transactions is 0.5 percent (0.1 percent), the foreign interest rates required for ef-

fective arbitrage between two currency areas for different holding periods is exhibited in Table 1.

It is clearly shown that the required foreign interest rate must be the higher, the shorter the holding period of the foreign investment becomes. This is the essence of Tobin's argument: the tax would encumber short-term speculative transactions more heavily than longer-term foreign investment that would essentially be determined by fundamental data.

Ideally financial transactions associated with direct foreign investments and the trade of goods and services would be exonerated from the tax.<sup>4</sup> However this requires substantial administrative "red tape", which would certainly favor evasive practices and avoidance strategies, especially in developing countries, whereby speculative financial transactions would be declared to represent the financial corollary of real economic transactions.<sup>5</sup> This is why Tobin accepts the tax to apply to *all* financial transactions without any discretion as a second best solution.

Tobin's argumentation has a number of weaknesses, which I have discussed more extensively elsewhere (Spahn 1995, in particular Chapter 5 „The four dilemmas of the Tobin tax“). The main problems are the following:

- ▶ International financial markets have remarkably changed since the end of the Bretton-Woods sys-

tem. Today the predominant part of currency transactions consists of liquidity trading among financial institutions. This serves primarily for hedging against exchange-rate risks, which is essentially stabilizing. It is extremely rare that liquidity is also used for speculative purposes.<sup>6</sup> A tax on currency transactions would primarily hurt liquidity trading and thus jeopardize the functioning of the world financial system.

- ▶ A comparison of net interest rates between currency areas—as shown in Table 1—does not fully describe the impact of taxation on speculation. Speculators act with a very short-term perspective. For instance, if an investor expects a depreciation of only 5 percent in a discernible short period (say, a week or a month), he or she will not refrain from speculating if a tax of 0.1 or 0.5 percent is levied. As the foreign-exchange crises of the 1990s in Latin America, in South-East Asia, in transition countries and within the European Monetary System have demonstrated, the repercussions of speculation can cause exchange-rate changes that go well beyond the 5 percent mark.<sup>7</sup>

It is for these and other considerations<sup>8</sup> that I have come to the conclu-

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<sup>4</sup> In fact the French parliament took provisions to exonerate such transactions. However it ignores or underestimates (in spite of earlier negative experiences with capital controls) the administrative intricacies of such exemptions and the potential for evasion strategies.

<sup>5</sup> Especially in developing and emerging economies the distinction between financial transactions of dissimilar kinds is extremely difficult to make. Insistence on such a distinction would only encourage corruption, as official documentation is often cheap to obtain.

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<sup>6</sup> Even the term „speculation“ is vague and often abused ideologically. I use the term in a technical, intentionally value-free, connotation. Some reflections on „speculation“ are found in Appendix 3.

<sup>7</sup> Some examples of currency crises with a dramatic impact on the exchange rate can be found in Appendix 3.

<sup>8</sup> These „other considerations“ include doubts that a reduction of liquidity would contribute to stabilizing exchange rates. Theory and practice commend that less liquid markets are exposed to higher and more abrupt price volatility than more liquid markets. I shall come back to this point later in this Chapter when discussing systemic aspects.

sion that a tax on foreign exchange transactions, as originally conceived by Tobin, is an inappropriate instrument for mitigating exchange-rate volatility. The higher the tax rate, the more aggravating the repercussions on the world financial system will become; the smaller the rate, the less suitable it will be to deter speculation.

However this does not imply the conclusion that the objective of stabilizing exchange rates cannot be achieved through a tax on foreign exchange transactions. Such a tax must only be designed in a different way as proposed by Tobin. Theoretical considerations by Tornell (1988, 1990) have encouraged me to ponder on ways to use taxation as a mean to achieve exchange rate stabilization. It led me to a “two-tier” tax, whereby a proper Tobin tax (albeit with a very small tax rate) is combined with an exchange-rate normalization duty (ERND). The former is apposite primarily as an income-generating device while the latter takes up the function of stabilizing exchange rates. The proposal is further explained in Chapter 2.

► **The exploitation of new revenue sources.** Fiscal aspects are not in the forefront of Tobin’s proposal.<sup>9</sup> However he also realizes that a tax on foreign exchange transactions could raise substantial revenue. This results from the enormous amounts of foreign exchange transactions that have evolved over the last decades.

According to a tri-annual survey on the developments of foreign exchange markets published by the Bank for International Settlement (BIS) in Basel, the following transaction volumes are obtained as depicted in Table 2<sup>10</sup>:

<sup>9</sup> „Raising revenue has never been my main motivation.“ (Tobin 1996, p. xvi).

<sup>10</sup> See BIS, Quarterly Review, December 2001, p. 39.

**Table 2:**  
Development of transaction volumes  
on international foreign exchange markets

Year (April)	Daily average in bill. US Dollars at constant \$-rates (of April 2001)	In- crease in percent
1989	570	–
1992	750	31.6
1995	990	32.0
1998	1,400	41.4
2001	1,210	–13.6

Purely arithmetically, the multiplication of such transaction volumes with even smallest tax rates produces significant amounts of revenue. For instance, with roughly 250 business days per year, a tax base of \$300 trillion could be calculated for 2001, and a tax rate of only 0.1 percent would then produce a yearly revenue of about \$300 billion.<sup>11</sup>

I consider such calculations dubious for several reasons.

- First they do not account for the structure of the market and its possible alterations that could result from introducing the tax.
- Furthermore, total transaction volumes contain distinctive financial instruments: spot transactions and outright forwards, foreign exchange swaps, options and fu-

<sup>11</sup> The French parliament, in its legislation of last year, proceeded in a similar fashion. It based its estimate on the daily transaction volume of its financial center Paris (56.5 bill. euros), accounting for a yearly deduction of 1,017.75 bill. euros (or 4.1 bill. per day), which corresponds to transactions of the trade balance and direct foreign investment that are exonerated by law, and thus calculated a tax base of about 50 bill. euros per day. At the maximum rate provided by the law of 0.1 percent, this was expected to generate revenue of 50 million euros per day (or 12.5 bill. per year).

tures. It is unclear in which way such different instruments would bear on such revenue estimates.

- ▶ Moreover the number and structure of participants in foreign exchange markets has changed dramatically in recent years. This has had a lasting impact on the tax base.<sup>12</sup> These developments will be discussed further in Chapter 3.
- ▶ In addition, the development of foreign exchange markets is characterized by dramatic technological changes, for instance the introduction and further development of automated brokerage systems, net clearing and settlement (e.g., „front-loaded“ and „continuous settlement“). Such developments had a significant impact on the structure of markets and they are likely to prevail in the future. Their repercussion on the base of a tax on foreign exchange transactions deserves further scrutiny (see also Chapter 3).
- ▶ Finally—and not the least—a tax on foreign exchange transactions (as any other tax) will entail evasive strategies, which would necessarily curtail the tax base. These reactions are essentially of four types:

1. *The simple refraining from executing a taxable transaction.* This entails an often-overlooked dead-weight loss, which can also find its expression in higher economic risks. Such effects may possibly correspond to the objectives of the critics of globalization, but it could have fatal consequences for the stability of international financial

markets and the world economy.<sup>13</sup>

2. *Legal avoidance by using non-taxable money substitutes and financial innovations.* This includes a possible retreat into a single world currency for handling liquidity trading (the US dollar), with corresponding differential compensations via financial derivatives.

3. *An increase in the effectiveness of currency trading.* This is achieved through net clearing systems, the institutional consolidation of the financial sector, the outsourcing of financial transactions into non-financial institutions etc.

4. *The legal and illegal relocation of financial operations into tax havens.*

Further considerations as to possible evasive strategies under a tax on foreign exchange transactions can be found in Chapter 4.

Apart from the immediate goal of achieving fiscal revenue with a tax on foreign exchange transactions, the tax is occasionally also considered to work as a presumptive tax on capital income. The argument is that under globalization it will become more and more difficult to capture capital income from international investments with a national income tax. Such income frequently escapes the income tax by dislocating into tax havens whose governments are known to be uncooperative on source taxation. To the extent that the Tobin tax would reduce the net return on foreign capital investments, a sort of presumptive income tax would become feasible, whereby the transactions tax would generate some form of compensation, albeit crude.

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<sup>12</sup> For instance, the reduction in the volume of transactions in 2001, compared to 1998, is chiefly explained by changes in the market structure (Galati 2001).

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<sup>13</sup> This reaction also limits the scope for the rate of the Tobin tax. I shall come back to this in Chapter 3.

## ► Aspects of social justice and redistribution.

The tax on currency transactions possesses a politically strong symbolic force, which was hardly recognized by Tobin. This is why it is potentially acclaimed both by the public and by politicians. Behind this symbolism there are rudimentary prejudices against “easily earned money” through financial trading as opposed to “hard-earned money” through labor. Adding the notion of „speculation“ as a shortcut for „fraud“ plays this antagonism further up.

The political muscle of the Tobin tax is strengthened even more by the fact that foreign exchange markets are (rightly so) considered to represent a colossal exclusive undertaking of industrialized countries. The currencies of the OECD countries are involved in 89 percent of all transactions. The remainder falls almost exclusively to emerging economies (including the currencies of Hong Kong and of Singapore). The currencies of developing countries play practically no role. This is why a tax on foreign exchange transactions can be seen to burden mainly the richer industrialized nations. Its revenue could be reserved for foreign aid to developing countries implying a more equitable distribution of opportunities within a globalizing world economy.

Thus the Tobin tax is hailed as a “righteous tax” in a double sense:

- On the one hand as a compensation between the financial industry, often depicted to be non-productive (Karl Marx), and the producing sectors of the economy *within* industrialized countries; and
- On the other hand as compensation between developed and less-developed economies (in short: between North and South), whereby the degree of economic development is regarded to be

tied, not without reason, to the access to international exchange markets.

Whenever distributional aspects are in the game, the potential costs of redistribution have to be expressed in terms of efficiency losses. If the introduction of a Tobin tax would result, for instance, in heavy costs of foreign exchange trading and international capital markets, this would undoubtedly have a negative impact on real economic variables such as investment, jobs, and incomes. The explanation of such complex relationships is not easy however, and the inter-linkages are more difficult to convey than simplistic clichés of social justice, in particular as the financing of such redistribution programs is expected to be carried by others (the “speculators”). Moreover the liberalization of international capital markets is often seen to deprive the Third World anyway.

But even though there would be no negative impact on the world economy, the achievement of the goals of international justice through a Tobin tax with corresponding transfers is not necessarily assured:

- On the one hand it is possible—and even probable—that the financial industry would shift the tax on currency transactions onto producers and consumers, and not carry it itself<sup>14</sup> (see Chapter 5).
- On the other hand it is questionable whether development policy is only a question of money and can be accommodated merely by financial transfers to the Third World.

In particular this latter point would deserve a more comprehensive treatment, which is of course not within the terms of reference for this study. Nevertheless it has to be mentioned

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<sup>14</sup> This would even be intended if the Tobin tax were to serve as a presumptive income tax.



that development aid is often deflected toward military spending, ostentatious public consumption, non-sustainable or unsuitable investment projects, and even into private accounts of local oligarchies, which fails to realize the proper goals of development policies.

I consider structural reforms—within recipient and donor countries—to be basically more important for economic development and an equitable and fair distribution of opportunities than the mere extension of international financial transfers. In Third World countries this includes, for instance, the recognition of human rights, reforms of education and health policies, of public administration (“good governance”), the struggle against corruption and the dismantlement of state monopoly power and price controls that convey benefits to a small minority at the expense of the broader population. In donor countries the main problems are, for instance, the collusion with local potentates, the transfer of inappropriate technologies, or an inefficient policy of price subsidies, which renders it difficult for developing countries to overcome their dependency from primary production. To this compounds the protection of import markets—for instance for agricultural and textile products—, which is inefficient and intricate from an equity point of view.

Structural reforms in these areas are often independent from financial aspects. Conversely, specific financing models may contribute to preserve inefficient and unfair arrangements. Where this is the case, development aid would even jeopardize the realization of the very objectives of development policy.

### ► Redistribution of national wealth.

An important aspect of regional justice in a globalizing world has to be emphasized in the context of a proposal

for a tax on currency transactions however:

Exchange rate volatility is not only a problem *per se*, it also affects the distribution of wealth between industrialized and developing economies, and it can thus thwart an aid policy that relies essentially on budget policies. This point is often ignored because development policy all too often looks toward financial flows, and hardly ever toward stocks and their changes in valuation.<sup>15</sup>

Tobin himself has repeatedly argued that the reduction of exchange rate volatility aims not only at the reorientation toward fundamental flows (such as foreign trade, direct investments), but also at the independence of the central banks from the vagaries of foreign exchange markets. In the absence of such independence, a devaluation of its currency will compel central banks to either offer high interest rates on overnight deposits (e.g., the strategy of the Swedish National Bank at the beginning of the 1990s), or to sacrifice foreign exchange reserves in order to take out their own currencies from the market (or both).

This indicates one of the most important asymmetries between industrialized and developing countries in the era of globalization: While the leading industrialized economies were able to ascertain the independence of their central banks from exchange rate volatility (obvious in the statutes of the ECB, but also apparent during phases of „benign neglect“ of American monetary policy), the international consensus of economic actors and politicians expects from developing and emerg-

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<sup>15</sup> This statement has to be taken *cum grano salis* however. Responsible politicians will recognize both aspects and have acted accordingly—for instance through debt relief for the highly indebted poor countries (HIPC). Nevertheless I have reasons to stress that point again—in view of more recent discussions with politicians in the realm of development policy.

ing economies to defend, in the case of speculation, their currencies by surrendering their arduously conquered foreign exchange reserves. Once these reserve have been exhausted, the countries are all too often pushed into debt in foreign currencies.<sup>16</sup>

Whenever the central bank of a country has to surrender foreign exchange that does not correspond to real capital formation, this is tantamount to an international transfer of net wealth, whose magnitude can easily dwarf the flow of development aid. Arduously earned wealth can fade away within a short period of time due to currency speculation. A tax on foreign exchange transactions could not only protect the freedom to act of these countries' central banks; it could also generate some additional income in the case of speculative attacks.

I think it is important to stress in particular the connectivity between the potential loss of net wealth of developing countries, and budgeted development aid. Stable exchange rates thus become a *precondition for effective development policies*, which ought not be overlooked.

As to aspects of *distributional justice* it must at last be emphasized that financing development may not be the only objective of a tax on foreign exchange transactions. In this context other global policy goals have been mentioned that could also be addressed by using the proceeds from a Tobin tax. The tax yield could equally be spent for achieving general policy objectives (such as the war against terrorism, the trafficking of humans, arms, and drugs), ecological goals (such as the protection of tropical for-

ests, global warming, the loss of biodiversity), addressing global health problems (HIV/AIDS), malaria), research (to address basic questions of global significance), and other goals of overarching interest ("global public goods").

The use of the attainable proceeds from a Tobin tax is ultimately a political question that cannot be answered in this study. However it is important to discuss who (i.e. which institutions, national or supranational) would collect the Tobin tax eventually, because this will also limit the possibilities of its use (see Chapter 3).

► **Systemic transformation.** The tax on currency transactions is finally called for by political groupings whose aims are not always lucid, but are undoubtedly motivated by the desire to transform "the system". This is comprehensible to the point of controlling the process of globalization more generally (its "humanization"). Why should we forsake to impose onto international financial markets some rules as they have been adopted for long in the realm of national politics for banks, stock exchanges and other financial institutions? In this context, the Tobin tax can yet be only *one* element of a more comprehensive regulatory concept for global financial markets. It would be wrong to expect the tax to solve all pending problems of the global financial architecture at once.

Systemic aspects of globalization are indeed most prominent in international financial markets. It is there that rational boundaries have come to play almost no role. Financial information is available to all market participants simultaneously, in real time, and ubiquitously. Prices of financial products have melted down under extreme competition that leaves minute residual markups in the order of basis points (hundredths of a percent). If

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<sup>16</sup> The recent experiences of Argentina with its fixed-exchange rate regime—particularly vulnerable to speculation (see Appendix 3)—render it obvious that the orthodoxy is prepared to push a whole economy into insolvency.

this model of global financial markets is transposed onto the markets for goods and services, in particular the labor market, it becomes understandable that an unfettered globalization is easily experienced as a threat, which would provoke political resistance.

How these concerns of citizens are to be addressed will again be a task for politicians. Scientific analysis can offer only limited assistance here. In particular distributional issues are prone to escape scientific analysis. It is however hardly contentious among economists that market forces are in a better position to unfold economic and social welfare than administrative interventions by national and supranational governments. In this vein the process of globalization is seen to be inescapable and irreversible—unless one is prepared to bear the immense cost burden that socialist countries had been willing to assume for decades. This can certainly not be expected for all nations, which implies that countries opting out from globalization must fall behind economically in relative terms.

According to my view, the yearning to turn back the wheels of history by means of a Tobin tax either comes from an ideologically-based position of structural conservatism. It deems the financial industry, once again, to be the “spearhead” of capitalism or globalization, which one hopes to domesticate by a Tobin tax. Or it is (at best) based on a misunderstanding of the functioning of such markets, and of international liquidity trading in particular.

It is interesting to note that the volume of international financial transactions has been regarded to be excessive by authors of very different political trademark. For instance Summers and Summers (1990), p. 881) expect a tax on foreign exchange transactions to eliminate „wasteful trading” and „excessive financial engineering“, which

would lead to a more efficient allocation of resources.<sup>17</sup>

Others start from the intuitive—but misleading—equation “commodity = money = commodity” of Marx’s theory—namely a one-to-one relationship between transactions of goods and money. They point to the fact that the volume of trading in international currency markets has reached a multiple of the value of foreign trade and foreign direct investment, and has lost any direct relationship with transactions of the real economy.<sup>18</sup>

Such argumentation is misleading because it pays no heed to the nature of liquidity. According to my view a request to limit the volume of financial transactions to the financial equivalent of activities in the real economy is tantamount to asking for a reduction of oxygen in the air to the bare minimum necessary for life.

Liquidity is based on the fact that so-called “market makers” are willing to set prices everywhere at any time for typically large sums of foreign currency, and to carry out conforming transactions. In a similar way as we would normally not think about the availability of oxygen in the air, liquidity thus creates freedom of action for exporters, importers, and direct inves-

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<sup>17</sup> Also Tobin mentions that “vast resources of intelligence and enterprise are wasted in financial speculation, essentially in playing zero-sum games” (Tobin 1991, p. 18), which reflects unawareness as to the character of liquidity trading.

<sup>18</sup> As an example the Intergroup „Capital Tax, Fiscal Systems and Globalisation” of the European Parliament notes that „as a means of comparison, the total yearly exchange of goods and services is evaluated at 4,500 billion dollars, equivalent to less than a week on the currency market. Today, most of the transactions on the currency market have no link with exchange of goods and services or investment *and are purely speculative*” (Declaration in preparation of the International Conference „Financing for Development” in Monterrey; emphasis added).



tors.

Liquidity does not only trim down price and settlement risks, and it reduces the costs of hedging; it also prevents destabilizing insolvencies.

This implies however that the market maker is able to close his/her open position in a foreign currency immediately in order to eliminate risks and to remain solvent. Open foreign exchange positions are thus handed on like "hot potatoes" until they finally reach a market participant who is willing to hold a corresponding counterposition. In this way *one* transaction initiated in the real economy can trigger *a whole chain* of subsequent financial transactions. The demand to limit financial transactions to the "necessary scale" overlooks that this scale cannot be based on the value of economic transactions.

It is unquestionable that a Tobin tax would reduce the volume of foreign exchange transactions. The disadvantage is however that the tax cannot distinguish between liquidity trading and speculation. It would particularly hit the stabilizing liquidity trade between wholesalers. This would lead to "thinner" markets with less liquidity. Stabilizing arbitrageurs would withdraw from currency trading and only resume their activities if the actual exchange rate deviates from its "intrinsic" value (respectively, its value assumed to be realistic) by more than the tax rate.<sup>19</sup> This would increase the volatility of exchange rates because the price-discovery process will be interrupted and prices can no longer reflect all information available on the market. Prices will then adjust abruptly whenever the deviation from a presumed equilibrium rate has become too great—as gradually accruing geo-

logical tensions will be discharged in an earthquake. The introduction of a Tobin tax could even provoke a severe liquidity shock at a global scale if it is effected thoughtlessly and disregards the structure of markets.<sup>20</sup>

Some prominent authors have argued however that a financial transactions tax with a very small rate would affect liquidity trading only negligibly but eliminate a behavior that is characterized as destabilizing "noise trading" (Summers and Summers 1990). This behavior is described in a new brand of the financial literature "that questions more generally the efficiency of financial markets".<sup>21</sup> Noise traders act, unlike informed "rational" traders, on the basis of misinformation such as technical investment analyses (charting techniques), or rumors. Their behavior can drive prices off their fundamental equilibrium value, which renders markets more risky and volatile (Shliefer and Summers 1990). Informed traders cannot counter these destabilizing tendencies (DeLong, Shliefer, Summers, and Waldmann 1988, Summers and Summers 1989). This is because arbitrageurs usually operate without reference to fundamental data by optimizing their decisions exclusively in view of a given price, and by realizing only a local optimum. This actual price can deviate significantly from its fundamental value and thus create "speculative bubbles". To the extent that the Tobin tax could reduce such noise trading it would contribute to stabilizing foreign

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<sup>19</sup> "With the tax in place, arbitrage investors would wait for larger price discrepancies before entering the market" (Kiefer (1990), p. 891).

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<sup>20</sup> This argues in favor of a low tax rate when introducing the tax. I even imagine starting with an algorithm for calculating the tax that contains a zero tax rate initially. This would not produce any tax revenue but allow to identify the potential tax base on a recurrent basis and to monitor its reactions to a modest increase of the rate in a heuristic fashion.

<sup>21</sup> This literature "has developed the perspective that the financial markets may not be as efficient as previously thought" (Kiefer (1990), p. 889).

exchange market even at very low rates.

This thesis is important because it would resolve the apparent contradiction between exchange rate stabilization and revenue raising at low tax rates. I am however not convinced that the thesis is necessarily correct. Liquidity traders would usually not use chart techniques in making their decisions, although they are of course not immune against exploiting rumors. Chartists are mainly found among the customers of foreign exchange traders outside liquidity trading (for instance institutional investors such as investment funds or hedge funds). Their potentially speculative actions are prone to affect the exchange rate more heavily than the more neutral behavior of arbitrageurs. But the presence of the latter group is much more pronounced than the former. It means that the tax would still affect liquidity operations more heavily than noise trading.

As to the exploitation of rumors and its effect on the exchange rate, it is questionable whether a Tobin tax could counter the destabilizing effects that this may trigger. In this respect it is true what has been said before: the tax is ineffective whenever the expected variation of the exchange rate is higher than the tax rate even by a small amount. The worst would be if the tax would reduce noise trading only partially or not at all, but lessen or even eliminate stabilizing liquidity operations. This must lead to greater volatility in world financial markets.<sup>22</sup>

Systemic objectives will not be considered in this study. On the contrary I believe that developments in world financial markets have to be appraised *positively*. It is all the more important to control systemic effects in order to

avoid a negative impact of a Tobin tax on the functioning of world financial markets.

► **Summary.** Taxes on currency transactions pursue very different objectives. The more important ones relate to stabilizing exchange rates, producing fiscal revenue, and redistributing resources between the financial and producing industries, and between countries (in particular between North and South). The tax is also expected to aim at systemic changes that are directed against the process of globalization.

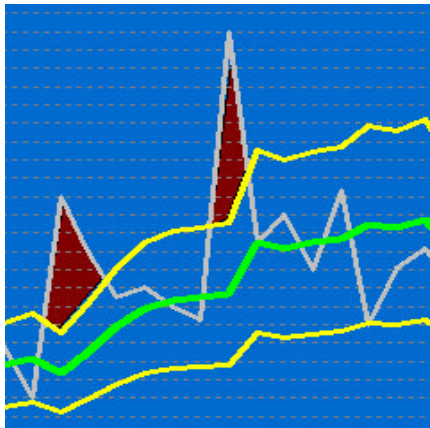
Systemic changes are not considered in this report. On the contrary: the proposals for a tax on foreign exchange transactions are subject to avoiding systemic effects as much as possible.

Distributional objectives are also not pursued in this study because they remain the privilege of politicians.

The centerpiece of the study on the feasibility of a tax on foreign exchange transactions is formed by the two objectives *stabilization of exchange rates* and *fiscal revenues*.

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<sup>22</sup> Moreover the entailing contraction of the tax base is hardly in the interest of those who expect revenue from the tax.



## Chapter 2: Instrumentation

### *What concept to choose for a tax on foreign exchange transactions?*

Before posing the question of the feasibility of a tax on foreign exchange transactions it is necessary to clarify how the concept of the tax to be realized should look like. The Tobin tax as originally conceived is not the only option of a tax on foreign exchange transactions. Alternative proposals have been developed starting from points where the Tobin tax exhibits clear conceptual weaknesses.

It is therefore necessary to clarify the question of the concept and its instrumentalization before posing the question of its operationalization and implementation. The purpose of this Chapter is to develop a basically functioning and politically feasible concept of a tax on foreign exchange transactions. This requires to first reduce the complexity that goes with the original proposal by Tobin.

#### ► Reduction of complexity.

The alledged non-feasibility of the Tobin tax is often explicated by a number of economic, legal, administrative and political complexities.

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<sup>1</sup> For an analysis of these weaknesses see in particular Spahn (1995), Shome and Stotsky (1996), Nadal-De Simone (1997), or (in German) Buch, Heinrich and Pierdzioch (2001).

- Under economic aspects, it is criticized that the Tobin tax would

1. produce similar inefficiencies as the multi-phase tax on gross transactions of commodities that applied in the Federal Republic of Germany before 1968. It was censured to entail a cascading effect, which led to a varying tax burden on final products in accordance with the number of transactions. This must provoke organizational reactions (such as the vertical integration of processes), which undoubtedly distorts economic decision making;

2. produce particularly heavy distortions of this kind as long as it is impossible to introduce the tax universally, since this would dislocate parts of foreign exchange markets to non-cooperating tax havens. Moreover the tax could be avoided by moving into trading with other instruments such as short-term foreign securities (treasury bills etc.) or through forward and derivative trading.

3. put a one-sided burden onto the competitiveness of the respective financial centers and squeeze worldwide liquidity trading, which would trigger unsolicited systemic changes.

- Under legal aspects it is often asserted (without further examination) that the tax would disagree with the idea of capital liberalization in accordance with the *Liberalization of Capital Movements Code* of the OECD or, in the case of the EU, the Maastricht Treaty.

- Under administrative aspects it is reckoned that the international community of important financial centers is unlikely to cede sovereignty in the area of taxation and consent to the creation of a world tax organization, which would be reasonable for operating a universal and multilateral tax on foreign exchange transactions. It is

equally to expect that there is corresponding interjurisdictional cooperation in this matter. Most of the governments of OECD countries (in particular the United States) reject the idea of a Tobin tax at present.

- Under political aspects it is a totally open question who would be entitled to collect the tax revenue. Tobin himself thought of international organization (IMF, Worldbank, United Nations). But there could also be supranational organizations to be newly created, international public foundations and non-government organizations (NGO). In principle it would also be possible to distribute the tax revenue onto national tax authorities, however the distribution formula is likely to be highly controversial.

Even if those questions would have been resolved it is still open for which purpose such revenue should be used, who would be the recipient, who would administer it, and how a legitimate democratic and administrative mechanism for controlling such institutions should look like.<sup>2</sup> If one thinks in particular of a transfer of resources toward developing countries, it is open in which way these countries could participate in the decision process.<sup>3</sup>

As to legal questions, these do not fall into the terms of reference of this study. It has to be emphasized however that the freedom of capital movements is not abolished or put in

<sup>2</sup> Patomäki (2001) argues that a global tax on foreign exchange transactions would also strengthen national sovereignties, and he conceptualizes an institutional framework for its administration that aims at the democratization of the process of globalization.

<sup>3</sup> This question is unsatisfactory even now as to the development of international financial markets. See for instance Griffith-Jones (2001).

jeopardy just because a tax is levied on such transactions. Taxes are levied on various transactions of goods and services and are typically regarded by economists as conforming with the market. In most respects they are superior and to be preferred to other types of government intervention such as capital controls, or monetary policy involvement of the orthodox type. The key question under legal aspects is whether taxes are neutral with regard to the competitiveness of different actors in the market.

In the following I shall assume that legal problems would not emerge within the framework of the European Union as long as certain preconditions are fulfilled. This point of view is supported by a study for the Parliamentary Working Group "Tobin tax" of the European Parliament.<sup>4</sup>

This study asks in particular for a small rate of the tax on foreign exchange transactions, which „à la lumière de ses objectifs, n'entrave pas les mouvements de paiements de manière déraisonnable ou disproportionnée.“ This must have repercussions on the fiscal objectives of the tax. They will be addressed later on.

► **Limitations.** In view of a multiplicity of unresolved political questions that relate to the universal and multilateral character of the Tobin tax, this report will confine itself to *limited scenarios*. In order to be realistic these scenarios will have to acknowledge the following:

- The tax on foreign exchange transactions cannot be introduced universally. It is required that the tax be planned by an existing authority, a government or a coordinating body such as the European Council, and be introduced by le-

gitimate parliamentary institutions. The tax would therefore work *unilaterally* and *partially*, not multilaterally and universally.

- The same legislature that is accountable for the tax will also decide on the apportionment and use of the tax proceeds. It implies the revenue to fall to a national government (respectively jointly to all governments that engage in a coordinated effort), but under no circumstances would it go to international organizations.<sup>5</sup> A tax on foreign exchange transactions to be introduced unilaterally by the European Union would be subject to decisions of the European Council and the European Parliament as well as national parliaments that would have to ratify the law.

All proposals that go beyond such limitations must be considered unrealistic, and be excluded as politically "unfeasible" for the time being.

In the following I shall call this limited decision space "politically feasible". In order to account for eventual legal scruples, I shall also posit a much lower tax rate than was considered by Tobin and his supporters.<sup>6</sup>

While I have been using the terms „tax on foreign exchange transactions" and "Tobin tax" synonymously so far, I shall speak of a „politically feasible Tobin tax (PFTT)" from now on, which shuns the critical objections against a multilateral and universal tax.

Before entering into examining economic and technical aspects that are important for the realization of a PFTT, I shall first discuss a few variants of taxes on foreign exchange

<sup>4</sup> The study has been prepared by Lieven A. Denys, professor for European tax law at the *Faculté de Droit* of the Vrije Universiteit Brussels. It dates of April 18, 2001.

<sup>5</sup> This could eventually be achieved in a second round via the explicit earmarking of tax proceeds or through budgetary decisions of (the) parliament(s).

<sup>6</sup> See also Clunies-Ross (2000).



transactions that are politically feasible and are relevant in the context of a PFTT.

► **Relevant variants of taxes on foreign exchange transactions.** The following concepts are related to taxes on foreign exchange transactions:<sup>7</sup>

1. “Non-remunerated reserve requirements (NRR)” on short-term foreign exchange deposits.
2. The taxation of cross-border capital transactions with a „cross-border capital tax (CBCT)“.
3. A two-tiers „Tobin-cum-Circuit-Breaker Tax (TCCBT)“. It consists of a PFTT as a base and an „exchange-rate normalization duty (ERND)“ that responds to exchange rate volatility.

► **„Non-remunerated reserve requirements“ (NRR)**—NRR have been used in various forms as unilateral policy instruments, even in the Federal Republic of Germany (introduction of a „*Bardepot*“ for foreign deposits in 1971). Spain has employed the instrument in 1992 during the peseta crisis. The best-studied case appears to be the one of Chile during the 1990s<sup>8</sup>, but also Colombia<sup>9</sup> and Slovenia have used the instrument. Since a part of the inflow of currencies has to be kept in the form of mandatory non-interest bearing deposits, lost opportunity costs act like a tax. This is why the measure is often discussed in the context of a

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<sup>7</sup> For further variants, that are interesting basically under theoretical aspects, see Spahn (1995, Appendix 2).

<sup>8</sup> See for instance Nadal-De Simone and Sorsa (1999). The reserve rate in Chile was at first 20 percent, then 20 percent, but it has been reduced intermittently to 0 percent, whereby the system has however been maintained in principle.

<sup>9</sup> The experiences with capital controls in Latin America have been discussed, inter alia, in Agosin and French-Davis (1996).

PFTT.

Chile has used NNR to fend off short-term capital inflows and to avoid artificial short-term appreciations of its currency. At the same time the device was expected to secure solvability in the case of a reversal of foreign capital flows, and to deal with the pressure of depreciation.

It is debatable whether this strategy was successful, because nobody is in a position to say whether speculative capital inflows have been successfully suppressed by the measure. The mere indication that capital inflows have endured and the Chilean peso has appreciated in spite of the measure is not sufficient for proof. The fundamental data of the Chilean economy were extraordinarily positive during that period, and the country was therefore highly attractive for non-speculative foreign capital regardless of the NNR. Under fiscal aspects the Chilean NNR were quite successful however, and this in spite of the fact that market participants were developing successful strategies to evade the loss of interest payments. This had repeatedly forced the central bank to adopt new measures in order to close loopholes of the system.

This is not the place to discuss the experiences with NNR further. It is however conceptually helpful to stress the following points with regard to a PFTT:

- NNR concern primarily the holding of stocks, not transactions (flows), whereby stock will of course vary in response to transactions. The comparison with a tax on foreign exchange transactions is therefore strictly not fitting.
- Compared to the volume of foreign exchange transactions, the parts of the capital balance that are subject to the tax are significantly smaller. This finds its reflection in a much higher “tax rate” compared to feasible rates of a PFTT. Assuming that the rate of interest for

foreign capital is 10 percent p.a. and the required NRR 30 percent, this would give a “tax” burden of 3 percent, a significantly higher rate than the rates discussed in the context of a PFTT.

- More important is the fact that the „tax burden“ (contrary to the Tobin tax) is directly (and *not inversely*) proportional to the holding period of the asset. For instance a short-term investment for one week would carry a charge of 3/52 percent, while the charge would be 3 percent for an investment over a year. This proportionality of the charge runs counter Tobin’s conceptual idea. This is why NNR are accompanied (also in Chile) with a host of exceptions aimed at exonerating exporters and importers as well as long-term investors. These exceptions engender substantial administrative costs, they generate “loopholes”, and they are still incapable of eliminating the systemic bias of tax-burden proportionality for short-term investors. The speculator with an extremely short-term commitment is affected the least, while other investors would bear the brunt of the charge.

► **The „cross-border capital tax“ (CBCT)**—The proposal of Zee (2000) to tax cross-border capital flows with a CBCT has not yet been tried—contrary to the NNR. However it fulfills the requisites of “political feasibility” and is therefore an interesting alternative. The objective of the tax is—similarly to the NNR—to fend off capital imports that could become an exchange rate risks because of their short-term nature. The CBCT avoids the systemic bias of the NNR. It is therefore a proper transactions tax.

The proposal consists of two parts:

1. At first all private capital inflows into the country a fraught with a withholding tax. Assuming again

an interest rate of 10 percent p.a., a tax rate of one percent would be equal to 10 percent of the income from an investment of one year, but put a confiscatory 125 percent charge on income from an investment of one month.<sup>10</sup> This renders the approach similar to the Tobin tax.

2. Moreover Zee wants the CBCT withholding tax to be credited against transactions that are not related to capital imports. Exporters receive the tax credit through the value-added tax<sup>11</sup>; this is a simple administrative procedure. Recipients of interest payments, dividends, repatriated profits etc. would receive a reimbursement when filing for the income tax; this is of course more complicated in administrative terms than in the case of VAT credits for exporters.

I shall refrain from a more comprehensive analysis of the proposed instrument. In comparison to a PFTT however, the following points seem be worth emphasizing:

- Transnational capital movements are not necessarily identical with foreign exchange transactions. They could also be settled exclusively in foreign currencies (e.g. the US dollar).<sup>12</sup> This renders the CBCT similar to NNR. It is not the transaction as such that is subject to the tax, but ultimately only the (positive) variations of the net capital balance, adjusted for certain positions of the current balance.

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<sup>10</sup> See Appendix 2 for the calculation (formula (4)).

<sup>11</sup> The tax rate for exports would thus be –1 percent rather than 0 percent under VAT that applies the destination principle.

<sup>12</sup> Within the EMU there are even transnational capital movements that are carried out in “domestic currency” (the euro). In developing and emerging economies it is not unusual to employ the US dollar as a mean of transaction.

- D The CBCT covers only capital imports, not capital exports. It works thus asymmetrically. The objective is to limit capital inflows, not to establish a “mouse trap” for foreign investors. By emphasizing the destabilizing effects of *capital imports* (and by refraining from checking capital flight altogether), Zee takes up an important aspect that also motivated my earlier proposal of 1995 (see below).<sup>13</sup>
- D The settlement of payments (and payments backed by borrowing) can be effected entirely outside a currency area. They may appear as changes of assets and liabilities in the books of accounts of economic agents, but never trigger any cross-border transactions.<sup>14</sup>
- D Movements of the capital balance are significantly smaller in volume than the transactions (payments) that are targeted by the PFTT. This is explained partially by the fact that there may be many (liquidity) transactions behind net capital movements. A CBCT will only target the result in economic terms. It is also explained by the asymmetrical construction of the tax (there are no charges on capital exports as a result of imports of goods and services, or of income transfers abroad). And finally it hinges on the various exemptions entitling economic agents to a tax credit under the CBCT.

In particular the tax credits render the scheme extremely complex. For instance foreign investors would not

have to pay a tax when repatriating their profits, but the initial import of capital may have been subject to the tax. But the foreigner had of course no possibility to credit the tax against his or her income tax.<sup>15</sup>

Summarizing it can be said that the proposal of a CBCT has a number of advantages compared to NRR, in particular because it respects the inverse relationship between the holding period and the tax burden. In administrative terms the CBCT is however likely to exhibit similar complexities as the NRR, perhaps even more as regards the integration of the tax with the personal income tax.

**D The Tobin-cum-Circuit-Breaker Tax (TCCBT).** My own proposal (Spahn 1995, 1996) can be understood to solve the basic conflict between the two objectives of a PFTT:

✓ *Either the tax rate is too high:* This may fend off speculators, but it exhibits significant negative consequences for the allocation of resources by reducing (and even possibly eliminating) international liquidity trading. It is doubtful whether the tax would achieve the goal of exchange rate stability under these circumstances, because hedging operations would become more costly and pricing information is taken out of the market.

✓ *Or the tax rate is very low:* In this case international liquidity trading could continue to operate fairly unperturbed, but the tax is unlikely to deter speculation.

<sup>13</sup> My own proposal also aims at checking very short-term capital inflows through the normalization duty, while longer-term investments go untaxed with almost 100 percent probability. Contrary to Zee's proposal however, my own approach is symmetrical in that it covers both capital imports and exports.

<sup>14</sup> Such books of account can of course be kept „unofficially“ if this allows avoiding the tax (in particular in emerging and developing countries).

<sup>15</sup> This statement is correct only in principle, but is more complicated in practice. Undoubtedly a tax on capital imports will not be creditable against foreign income tax according to double-taxation treaties. But one may expect the financial industry to develop products whereby the capital import tax is initially swapped onto a domestic agent (who credits the tax against income tax), and re-swapped thereafter. Foreigners are thus exonerated via the pricing of such swap instruments.



There are also fiscal objectives associated with my proposal. The idea is to avoid a contraction of the tax base following the introduction of a TCCBT, and to bolster the revenue potential of the tax in periods of speculation.

The TCCBT consists of two integrated parts that relate to the same tax basis, namely „relevant foreign exchange operations (RFXO)“, which I shall have to specify more precisely later on.

1. The first tier is a classical Tobin tax (PFTT), however with a tiny rate. This tax rate is uniform for each currency pair, but it could eventually vary for different markets in accordance with the size of the bid-ask spread.<sup>16</sup> It is decisive that the tax rate be comparably neutral on liquidity trading. This tier of the TCCBT has mainly fiscal functions, but it can also contribute to stabilizing exchange rates to the extent that it eliminated destabilizing noise trading.<sup>17</sup>
2. The other tier consists of an additional charge that is specifically tailored to discourage speculation. Under normal circumstances this tax is dormant, but it is triggered automatically whenever there is speculation on foreign exchange markets.<sup>18</sup> Thereby speculation is valued to represent a negative externality (such as a “pollution” of

foreign exchange markets), and this externality is charged with a tax of the Pigou-type. The aim is to reduce the externality—similar to approaches of environmental policy. The tax rate of the additional charge on the negative externality may be very high. The additional charge has only a regulatory function and no fiscal objective. On the contrary: If it achieves its goal and holds back speculation, the charge *cannot* yield any revenue.

The additional charge, which I have dubbed „exchange-rate normalization duty (ERND)“ on another occasion (Spahn 1996), deserves some further reflections on its specific features:

#### ► Which is the tax base of the ERND? “Negative externality” has to

be rendered operational for taxation, and to be standardized for legal purposes. To this effect I was inspired by the EMS (European Monetary System) that was operational in the EU from 1979 until the introduction of the euro. In order to guide monetary policies, it worked with a

1. target rate, the ECU reference rate,<sup>19</sup> and
2. a target zone (or „corridor“).<sup>20</sup>

Once the exchange rate would deviate from the target zone, the central banks of the respective countries were compelled to bring the rate back into the corridor by means of monetary policies.<sup>21</sup>

<sup>16</sup> I shall come back to the question of the tax rate, but I shall finally accept a uniform tax rate in spite of varying spreads for different currency pairs.

<sup>17</sup> See Chapter 1 and in particular the contribution by Summers and Summers (1989).

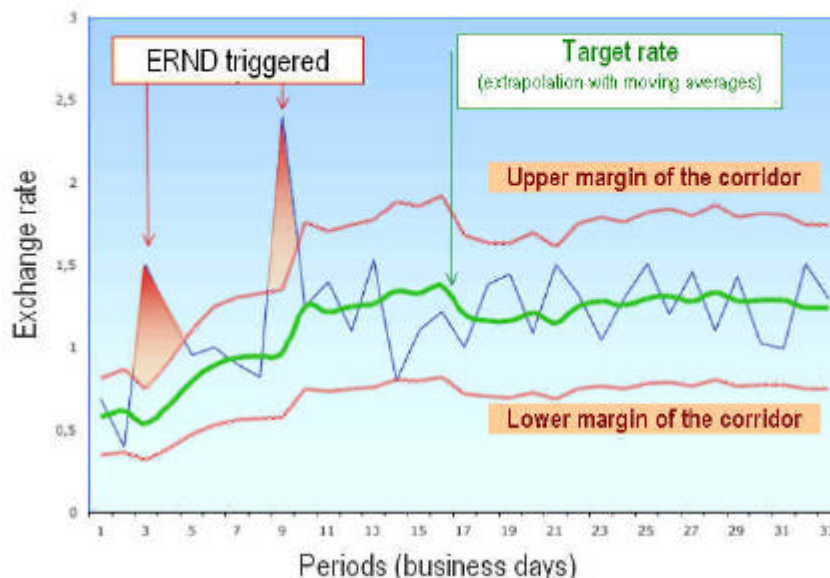
<sup>18</sup> This process is controlled through an algorithm within the settlement system for foreign exchange, i.e. the formula pre-exists in the form of a computer program and is recognized by all market participants *a priori*. So the pricing conditions are always *known in advance*. An advantage of the tax is the fact that there is no need for discretionary decisions—neither on the side of legislators, nor on the side of the actors in foreign exchange markets.

<sup>19</sup> This rate corresponded to a weighted arithmetical average of 12 European currencies.

<sup>20</sup> This corridor was defined relative to the target rate, and was initially 2.25 percent (for some currencies 6 percent), and later 15 percent.

<sup>21</sup> The system is sketched in a simplistic way here. In fact there was an obligation for infomarginal interventions whenever the exchange rate would tend towards an intervention point, although it was still in the corridor. Moreover

**Chart 1: The workings of the ERND**



I chose a similar approach to defining negative externalities that result from speculation on foreign exchange markets. It requires standardizing “speculation” in a technical sense.

Speculation usually finds its expression in an abrupt change of the exchange rate (see the examples in Appendix 3). If there is a well-defined official target for the exchange rate and an equally well-defined corridor, it is possible to distinguish “normal transactions” as those that are carried out within the price corridor. These transactions are considered non-speculative and are exempt from the surcharge. However if there are deviations from the corridor, this is considered to represent a negative externality (i.e. “pollution”) and will be charged with a Pigou tax.<sup>22</sup>

the instruments of monetary policy and their coordination were regulated in a more detailed fashion.

<sup>22</sup> This procedure could be considered to represent the „dual solution“ of the EMS that operated with monetary instruments. Instead of reacting to speculation by means of a subsidy (for instance high interest rates for overnight deposits), the dual scheme would use a tax policy instrument. Instead of using foreign

Different from the EMS, the target rate of the ERND is an adjustable moving average of daily official exchange rates relative to a reference or anchor currency (such as the US dollar or the euro). The workings of the ERND are sketched in Chart 1.

#### ► How to define the corridor, the anchor currency and the tax rate?

The EMS had defined the upper and lower boundaries of the corridor in an *ad hoc* fashion, i.e. pragmatically. The same should apply to the ERND. However the width of the corridor could be determined with regard to empirical data on the daily fluctuations of the exchange rate relative to the target rate under normal circumstances, perhaps with some safety margin in order to trigger the duty not too often. These daily fluctuations could vary for different pairs of cur-

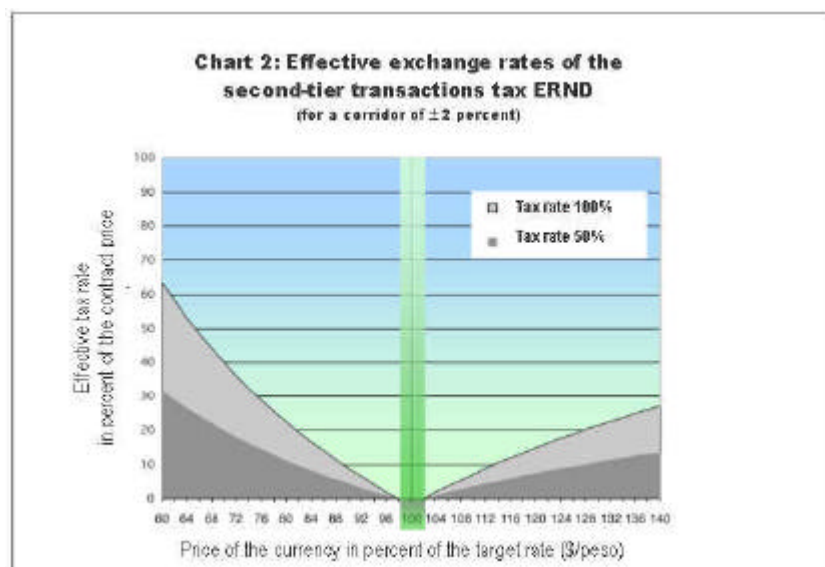
exchange reserves to support the exchange rate, the country under speculative attack would achieve revenues with the dual scheme. We know from environmental policies that taxes and subsidies can be equivalent instruments to cope with correcting externalities and a misallocation of resources.

rencies, which could lead to the conclusion to use different bandwidths for different currency pairs. Since the scheme operates unilaterally, this can be determined individually by each country. The same is true for the respective anchor currency (respectively currency basket) and the tax rate to be chosen.

The statutory tax rates of the ERND should be high, within a range of 50 to 100 percent.

### ► Isn't a tax rate of 100 percent confiscatory?

It is important to realize that the tax rate is *not applied* to the value of the transaction as such (as for the PFTT), but only on the externality, i.e. that part of the price that lies outside the corridor. It means that the effective tax burden is variable—with a burden of 0 percent within the corridor and at its margin, and an effective tax burden that increases with the degree of deviation from the target zone. The effective tax burden for statutory ERND rates of 50 and 100 percent are depicted in Chart 2.



The variable effective burden on a transaction that is carried out at prices outside the corridor also conforms to the conditions for a neutral (respectively allocation-enhancing) Tobin tax (Tornell 1988, 1990).

### ► Must the ERND not fend off potential capital investors?

The contention that the ERND would deter potential investors—in particular because of its high statutory rates—seems to be totally unwarranted.

- ✓ On the one hand the effective tax burden is significantly lower than the statutory rates (see previous paragraph), although it could indeed increase with the degree of deviation from the target zone.
- ✓ On the other hand will the ERND be activated only in those instances when the exchange rate wreaks havoc. This is an eventuality whose probability is extremely low and uncertain as to its timing. In relation to a future trading hour, the probability of an activated ERND is practically (and mathematically) zero.

If there are investors to fear the ERND, they are exclusively those with a short time horizon who are betting on speculative rents. It is exactly this group of investors that schemes such as NRR and the CBCT aim at deterring from investing in a country. The

ERND appears to be much more effective in this respect as well as more targeted, because it will be activated immediately and automatically (via a previously installed software). It thus works in the form of an automatic “circuit breaker” against foreign exchange speculation.

Long-term investors are likely to disregard the tax altogether however, because its activation is improbable over a longer period of time.

On the contrary: One may even expect long-term investors to be encouraged to invest in a country that employs an ERND. This is because the surcharge acts as a sort of insurance. It guarantees practically that the exchange rate will never vary more than the set bandwidth in one day. In comparison to the potential alternative without the tax (a possible “free fall” of the rate) this must be considered a considerable advantage. The same is true for importers and exporters. They should be prepared to pay even a premium for this exchange-rate guarantee either in the form of (an occasional) ERND, or in the form of a currency option.<sup>23</sup>

#### ► Wouldn't the ERND lead to deviations from the equilibrium exchange rate?

Given the design of the ERND, variations of the target rate are perfectly possible. For instance, if the period for the moving average consists of 20 business days, it is possible to incorporate in the exchange rate all fundamental data that become available over a month. Therefore the ERND does not permit a “leaning against the wind” policy because it allows the adjustment of the exchange rate to fundamentals in a continuous fashion. Appreciations and depreciations of the currency are possible and accepted. It is only in the case of abrupt exchange rate changes—typical for periods of speculation—that the ERND works as a circuit-breaker.

This defuses equally the argument that governments could hide behind the scheme to carry out irresponsible policies at the expense of investors.

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<sup>23</sup> It can be expected that the financial industry will assume the ERND risk for exporters and importers, who are often more dependent on short-term payment requirements than long-term investors, in the form of currency options net of tax. In this way the implicit insurance premium would become an explicit cost of the insurance scheme.

#### ► Which countries could benefit from an ERND and what is its relationship with the orthodoxy?

The concept of an ERND is primarily suitable for transition, emerging and developing economies that aim at accessing free international capital markets. For industrialized countries the concept is only apposite for those that do not belong to one of the larger currency areas (US dollar, euro), but seek to peg their money to an anchor currency. The ERND does not appear to be reasonable for the USA or Euro-land. Exchange rate volatility between the dollar and the euro could perfectly be controlled through the coordination between the ECB and the Fed.

The advantage of the ERND as a *unilateral* measure consist in particular in that national Legislatures can determine the conditions for their own scheme at their discretion, without having to coordinate with other authorities. The period for the moving average, the calculation of the target rate, the width of the corridor, and the tax rate could all vary from currency to currency.

Whatever the advantages or disadvantages of an ERND, it is always appropriate to evaluate it against the benchmark of current alternatives—in particular against the practices of the orthodoxy. Orthodox politicians prefer monetary interventions by central banks rather than tax policies.<sup>24</sup> This calls for the following annotations (Spahn 2001):

1. Tax policy is an instrument conforming to the market. This is true for monetary policy only if it is long-term oriented, but not for the short run when it may be compelled to hectic reactions under speculative pressure. An advantage of the tax policy approach is notably that the rules have to be

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<sup>24</sup> There are of course also „harder“ interventions such as capital controls, which I shall not use as a benchmark for that matter.



established *a priori*. They are known to all participants and are therefore predictable. This does not apply to an extemporizing monetary policy.

2. The unpredictability of monetary policy in times of speculation has a number of severe drawbacks that even *encourage* speculation:

- ✓ At first will hectic interventions signal *policy distress* to market participants. Tax policy is a procedurally neutral measure that acts automatically as a built-in stabilizer.

- ✓ Then will monetary intervention encourage speculative behavior if market participants can reasonably expect the central bank to be politically compelled to bail out. The ERND will procure the necessary room for monetary abstinence by the central bank and allow it to focus mainly on domestic policy objectives.<sup>25</sup>

- ✓ Moreover it is not negligible that the ERND will produce revenue during periods of exchange rate turbulences, whereas monetary policy intervention is tantamount to subsidizing foreign exchange trade—as mentioned before. This is true for its interest rate policy, which aims at rendering domestic assets more attractive, and for its direct interventions in foreign exchange markets, whereby valuable reserves are sacrificed just to stabilize the exchange rate. Monetary policy interventions—preferred by the orthodoxy—also entail a negative impact onto the real economy of countries under speculative pres-

sure.<sup>26</sup>

- ✓ Finally, the greater independence of the central bank from exchange rate turbulences will also render the country less dependent from foreign capital investors and the support by international organizations such as the IMF. If there is need to intervene in currency markets beyond the loss of currency reserves, it tends to increase the foreign indebtedness of the country, which renders its currency all the more vulnerable to speculation because the confidence in the economy is dwindling. Moreover the country is burdened with debt service, and—if devaluation is ultimately unavoidable—it loses additional net wealth because its foreign indebtedness, measured in domestic currency, will increase in proportion to the rate of devaluation.

Given these considerations and against the background of reoccurring currency crises, which are tackled in vain with orthodox instruments over and over again, it is incomprehensible why tax policy interventions in foreign exchange markets should have such a bad reputation.

The TCCBT possesses significant allocative and distributive advantages compared to orthodox instruments as long as negative repercussions on international liquidity trading can be avoided. How this could be achieved will be discussed in the following Chapter.

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<sup>25</sup> This was one of the most important goals of Tobin with his tax on foreign exchange transactions. Monetary policy abstinence during periods of an activated ERND is even mandatory for its effectiveness, because traders would otherwise attempt to shift the burden of the tax onto the central bank.

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<sup>26</sup> This is true in particular for interest-rate policies "... as with simply raising interest rates to defend a weak currency, it is virtually impossible to burn the speculators without simultaneously affecting other sectors of the economy" (Garber and Taylor (1995), p. 178). As has been argued previously, monetary policy interventions may also lead to a transfer of net wealth at the expense of the countries concerned.

► **Summary.** This Chapter has discussed the basic conditions for a politically feasible tax on foreign exchange transactions, and developed an effective set of instruments.

The scope for decisions is politically constrained in that the tax has to be introduced and be accounted for by existing decision-making bodies such as national and supranational parliaments. The tax works therefore *unilaterally* and *partially*, not multilaterally and universally. Moreover the tax yield will fall to whoever will be responsible for legislating the tax, not to international institutions. They could get hold of the tax revenue only in a second step—via budgetary transfers.

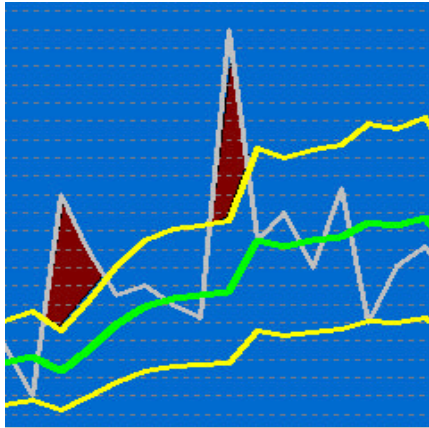
Among the measures that are “politically feasible” in this sense range the going practice of mandatory non-interest bearing deposits on foreign exchange transactions (respectively foreign exchange positions) and a proposal by Zee, who would levy an asymmetrical tax on capital imports. Both instruments are interesting as parts of an arsenal aimed at combating currency speculation. In particular mandatory deposits are likely to constitute an important element within a future global financial architecture. The proposal of a tax on capital imports appears to be laden with com-

plex administrative problems however, which will render its realization less likely. Both instruments are however significantly different from a tax on foreign exchange transactions and will no longer be examined in the remainder of the report.

“Politically feasible” appears to be a combination of a unilaterally acting Tobin tax with a low rate as a “true” tax on foreign exchange transactions, in combination with a surcharge that reacts on speculative variations of the exchange rate. Both are technically intertwined.

The proper Tobin tax could be used by groups of OECD countries, for instance by the EU. The surcharge should be used unilaterally only by transition, emerging, and developing countries as well as those industrialized countries that remain outside the major currency areas, but aim at pegging their currencies to an anchor currency (or a basket of currencies).

The combination of two taxes in the form of a Tobin-cum-circuit-breaker tax has significant allocative and distributive advantages over an exchange rate policy that is based on orthodox monetary policy.



## Chapter 3: Organization

### What can be said about the structure of foreign exchange markets and its development?

In order to discuss the problems of implementing a PFTT (and implicitly of the ERND) it is necessary to understand the structure and function of international foreign exchange markets and its developments.

#### ► Characteristics of the foreign exchange market.

After the breakdown of the fixed-exchange-rate regime of Bretton Woods, a global and highly differentiated international foreign exchange market has emerged. The more important currencies can now be exchanged every time, from any place, in substantial amounts, and at little costs. In April 2001 the daily turnover of foreign exchange was in the order of 1.2 bill. US dollars, three years before it had still been roughly 1.5 bill. US dollars.<sup>1</sup> The reduction in volume during these three years was 19 percent in current, and 14 percent in constant dollar exchange rates (base: April 2001).

The amounts traded on foreign exchange markets are impressive: single transactions of 200 to 500 million US dollars are not abnormal, i.e., it is essentially a market for wholesalers. Price setting often occurs 20 times per minute; and the exchange rate can alter several thousand times a day, albeit usually in very small steps, which expresses the smoothing and risk-reducing effects of liquidity.<sup>2</sup>

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<sup>1</sup> See BIS (2001) and Galati (2001).

<sup>2</sup> See also the exemplary „snapshots“ of an electronic trading desk in Appendix 4.

The seven most important currencies and their market shares are depicted in the following Table 3 (standardized at 100 percent).<sup>3</sup> The share of these currencies of total transactions was roughly 90 percent in 2001.

**Table 3:**  
Volumes of daily foreign exchange transactions according to currencies in bill. US dollars (for the months of April)

	1998	2001
US dollar	43,7	45,2
Euro	*)	18,8
Yen	10,1	11,4
Pound sterling	5,5	6,6
Swiss franc	3,6	3,0
Canadian dollar	1,8	2,3
Australian dollar	1,6	2,1

\*) Before the introduction of the euro, the national currencies of Euroland were recorded individually. The more important ones were the Deutsche Mark (15.1 percent) and the French Franc (2.6 percent). The other EMS currencies and the ECU represented 8.7 percent in 1998. Adding up these figures to compare them with the share of the euro would be incorrect.

The geographical distribution of the global foreign exchange market has hardly changed during the last three years: After all, the trading place Great Britain (London) dominates the market, with one third of the volume. It is followed by the USA (New York) with 16 percent, and Japan (Tokyo) with 9 percent. The Federal Republic of Germany, with roughly 5 percent of the market, holds the fifth place be-

hind Singapore. The partition of the market according to trading locations is found in Chart 3 for the year 2001.

The comparison of the distribution by traded currencies and trading locations renders it obvious that activities on foreign exchange markets have to be seen as totally detached from the currencies of respective market places. The globally leading trading place London controls roughly one third of the market, although the pound sterling was involved only in 6.6 percent of all transactions. The city-state Singapore, with a currency that is involved in only 1.1 percent of all trades, achieves a trading volume higher than the Federal Republic of Germany, although the Deutsche Mark was involved in 15 percent of all transactions in 1998. This characterizes the foreign exchange market as a truly global market, in which national boundaries and the emission of currencies play practically no role any longer. Against this background, all measures equivalent to capital controls (limitation of currency imports and exports, split exchange rates, mandatory deposits on capital imports, or Zee's capital import tax) must have to be considered as highly unpromising, because the respective currency area will tend to detach itself from international capital markets, which undoubtedly entails more disadvantages than advantages in the long run.

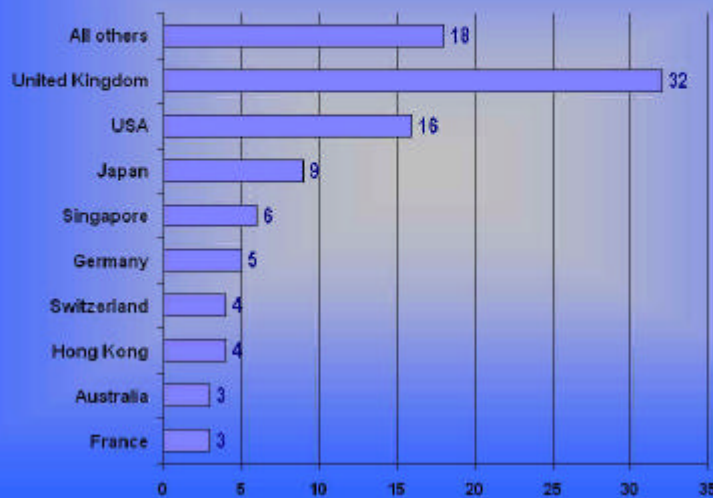
The strong concentration of foreign exchange trading is explained by the following factors:

1. A currency (traded on the spot market, for instance) is a homogeneous good, also in standardized variants such as outright forwards, and in swaps and options that combine spot and forward trade. Therefore the financial center of a currency area does not possess any particular advantage in the form of specific information that would be relevant for the trading location alone. Data on foreign ex-

<sup>3</sup> Since foreign exchange trades always trigger two transactions—one in the base currency, the other in the target currency—the BIS adds up transactions to 200 percent. In this report, the usual standardization is adopted for reasons of comparability.



**Chart 3: Distribution of forex trade according to location in percent (April 2001)**



change markets are always available globally.

2. The concentration onto a small number of financial centers is mainly explained by technological factors. The trading technology is characterized by falling average costs for increasing volumes of transactions. This leads to a "natural monopoly" with a consequential concentration of the market worldwide. London, New York and Tokyo have particular locational advantages for historic reasons. London has the additional plus that its time zone overlaps not only with one, but also with two other time zones. Singapore and Hong Kong have benefited from the traditional linkage with the British financial center.<sup>4</sup>
3. Given the global 24-hours real-time trade<sup>5</sup>, it is almost natural to

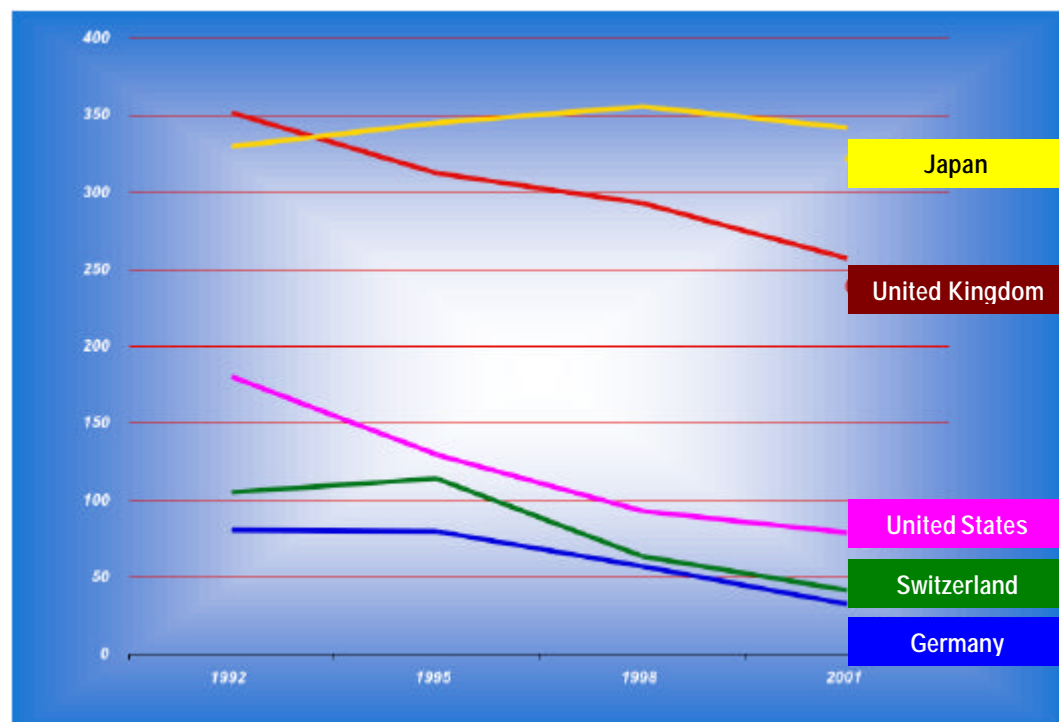
distribute trading onto three trading zones. Each trading zone will develop its financial center for foreign exchange transactions. In Europe the center is London, in the United States New York has acquired this role. In the Asia-Pacific rim, Tokyo dominates, but Singapore has achieved a comparably strong position as a secondary financial center.<sup>6</sup> Secondary trading locations in Europe are Frankfurt, Zurich, and Paris. They are likely to cede their business to the time-specific financial center London in the longer run, because of its cost advantages as a "natural monopoly" in wholesale currency trading. Currency transactions with non-banks will continue to be effected locally, but they are, and will be more and more, settled through correspondence banks that are located at the central trading place.

<sup>4</sup> This is not meant to diminish the political success of these financial centers' governments, since the relationship with Great Britain alone may not have been sufficient for development (compare for instance India as a counterexample).

<sup>5</sup> Trading is however interrupted by weekends/holidays.

<sup>6</sup> The consolidation in Asia is far from being as advanced like in the US and in Europe. Nevertheless one may expect similar tendencies to prevail there in the longer run.

Chart 4:  
The development of the number of financial institution  
reporting to the BIS  
for selected countries (1992-2001)



4. The concentration tendencies are not only perceptible geographically; they can also be identified by the number of dedicated financial institutions. In this regard there equally exists a concentration that can be illustrated by the number of institutions reporting to the statistics of the BIS. This is depicted in Chart 4. Only Tokyo exhibits a diverging tendency until 1998, which seems to have been broken since, however.
5. Finally there is also an increasing concentration *within* the banking system. In the year 1998, for instance, 75 percent of the trading volume in the US fell on 20 banks; in the year 2001 there were only 13 actors. The corresponding figures for the United Kingdom are 24 and 17. In Frankfurt only domestic banks carry out foreign exchange transactions; foreign banks have all transferred their foreign exchange operations to London. The number of market

makers, who will continuously differ bids and asks for the main currency pairs is said to be only 20 worldwide (Galati 2001, p. 42).

Table 4:  
The most active banks in foreign exchange  
markets, and their market shares in percent  
(April 2001)

Citygroup	9.74
Deutsche Bank	9.08
Goldman Sachs	7.09
JP Morgan	5.22
Chase Manhattan Bank	4.69
Credit Suisse First Boston	4.10
UBS Warburg	3.55
State Street Bank & Trust	2.99
Bank of America	2.99
Morgan Stanley Dean Witter	2.87

6. The ten most important banks and their respective market shares in foreign exchange trading are shown in Table 4 (according to *Euromoney*, May, 2001).

The consolidation within the banking industry has led to a significant reduction in the number of trading desks. It can be expected that this trend will continue in the future. Trading will then further concentrate on the main financial centers of each time zone.

7. It is characteristic of foreign exchange markets that they are predominantly used by banks/traders. In 2001 their transactions were 86.8 percent of the total. Trading with non-banks (such as importers/exporters, direct investors, investment funds, life insurers etc.) was comparably small. The structure of the market in accordance with market partners is represented in Table 5.

**Table 5:**  
The structure of the  
foreign exchange market in accordance  
with groups of trading partners (April 2001)

Party	Bill. US \$	Share in percent
Reporting traders	689	58.7
Other reporting financial institutions	329	28.0
Non-financial institutions	156	13.3

Of this total, 42.5 percent were local, and 57.5 percent cross-boarder transactions.

One has to realize that an initial transaction from outside liquidity trading will trigger a large number of subsequent transactions. For instance if an exporter transfers his dollar proceeds to a German bank in exchange for euros, this

bank will accept the amount, but immediately close the ensuing open positions by plowing the currency back into the market. This "hot-potato trading" continues until a partner is found who is willing to hold the position definitely.

8. Currency trading is not uniformly distributed over the day. Activities vary substantially in relation to trading of the respective time zones. This can be illustrated by the number of electronic contacts that result in a 24-hours rhythm. The daily cycle for foreign exchange activities expressed by the number of electronic contacts is shown in Chart 5 (according to Reuters; see next page).
9. Concentration tendencies are reinforced by synergies that exist between various segments of the market. They will be discussed in the following section.

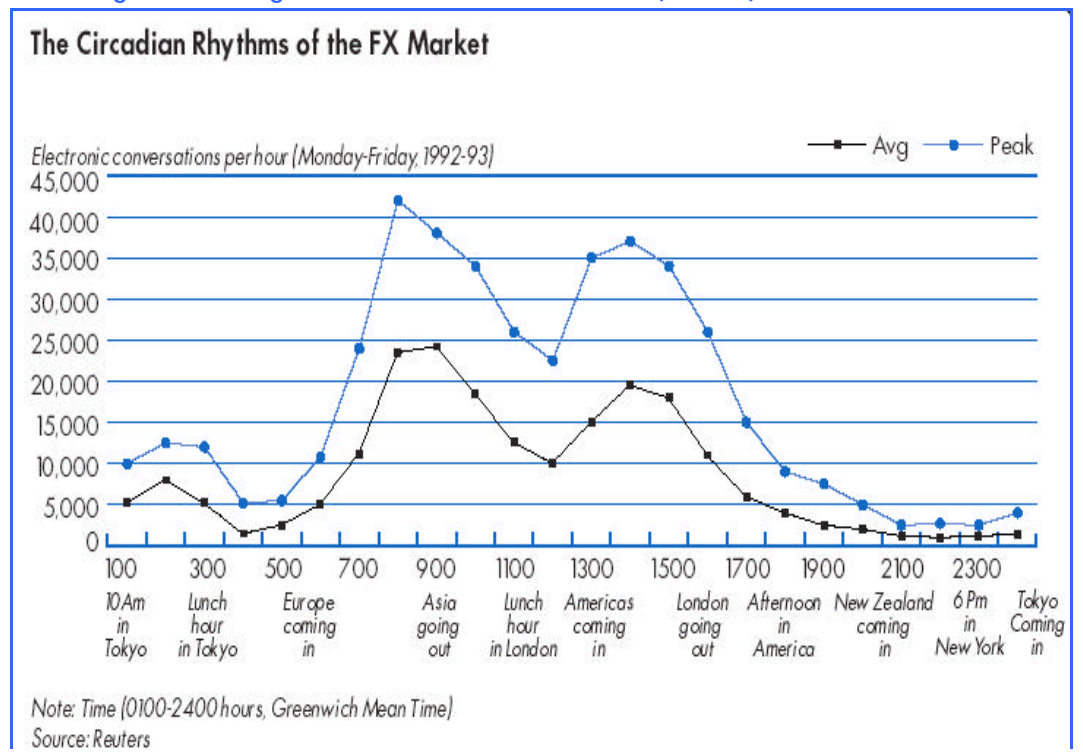
#### ► Instruments of foreign exchange markets.

Transactions in foreign exchange markets are carried out by using various instruments. While spot transactions were predominant only 12 years ago (they represented 54 percent of the total in 1989), they play only a much smaller (and diminishing) role today (32 percent in the year 2001). The more important instruments are foreign exchange swaps and outright forwards. In addition there is a smaller part of foreign exchange and interest rate derivatives that are traded OTC („over the counter“), i.e. on the basis of bilateral contracts.

The relationship of the different segments of foreign exchange markets is represented in the following Table 6.<sup>7</sup>

<sup>7</sup> The data are daily averages for the months of April according to the statistics of the BIS (BIS 2001).

**Chart 5:**  
The daily cycle of activities in foreign exchange markets  
according to the average number of electronic contacts (1992-93)



**Table 6:**  
The structure of foreign exchange markets  
in accordance with the main instruments  
(for the months of April)

	Bill. US dollars		Percentage shares	
	1998	2001	1998	2001
Spot	568	387	38.1	32.0
Forward	128	131	8.5	10.8
Swaps	734	656	49.3	54.2
Total	1,490	1,210	100	100
Total <sup>*)</sup>	1,400	1,210		

<sup>\*)</sup> At fixed exchange rates (April 2001). Percentages do not add up to 100 percent due to unreported other financial instruments.

one for the purchase, another for the sale (bid/ask). For instance the bid/ask for euros against US dollars in interbank trading was 1.12108 / 1.12120 on the 14th of January 2002 (opening of the market in Tokyo).<sup>8</sup> If, on this day, a bank A in Tokyo has sold an amount of \$100 million to a bank B in Frankfurt in exchange for euros, the bank B had to pay an amount of 112.108 million euros to bank A on the 16<sup>th</sup> of January. Had bank A bought an amount of \$100 million from bank B on this day, it would have had to pay an amount of 112.120 million euros.

Spot transactions are largely standardized<sup>9</sup> and therefore extremely

As to specific market segments, the following has to be noted:

- On spot markets, two currencies are exchanged directly. There are always two prices for the currency,

<sup>8</sup> One may note that the spread was only 12 „pips“ (or about one basis point) in this case.

<sup>9</sup> There are however variants such as the „pre-spot“ or „ante-spot“, and even „cash“, whereby settlement is anticipated, and the trade is effected retroactively. Such transactions are however insignificant as to their trading vol-

liquid. The US dollar/euro exchange market is by far the most liquid financial market of the world.

- The liquidity of specific, more rarely traded currency pairs is significantly lower than for standard currency pairs. This finds its expression in a wider spread of the bid/ask (see Appendix 4). There are also cases in which the transaction is carried out through a “vehicle currency” in order to benefit from the higher liquidity of these markets and to reduce transactions cost despite of this double currency conversion. This „cross-rate trading“ will cause a duplication of the number of trades, which will compound the spreads accordingly. Accordingly the PFTT would apply several times in this case.
- As is clear from this example, spot trades will normally have to be settled two days after the trade.<sup>10</sup> There are always two national settlement systems required. In the previous example, settlement is likely to have been effected through Fedwire in the USA, and RTGS<sup>Plus</sup> in Germany.
- The settlement of the foreign exchange trade has to be made simultaneously in both currencies if a settlement risk (“Herstatt risk”) is to be avoided. Since payment is made in different time zones, settlement will first occur in Asia, then in Europe, and finally in the USA. This entails the risk that, for instance, euros are paid out in Frankfurt before the corresponding amount of US dollars has been credited to an account in New

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umes. For the pricing of such products, market participants will take the spot rate as a reference point (with conforming surcharges or rebates).

<sup>10</sup> This time is (still) required to confirm the contract and to settle payments. The time is likely to be reduced further through technological developments.

York. This can result in significant risks for the buyer of US dollars.

- For „outright forwards“<sup>11</sup> the object of the trade is the promise to deliver/buy foreign exchange at a particular date that is agreed upon in advance. This date can be three or more business days after the conclusion of the trade. For each maturity date there exists another exchange rate, which will normally deviate from the rate of spot transactions. Outright forwards are settled only at maturity, i.e. no payment is made when concluding the contract.<sup>12</sup>
- Forwards are used, by non-financial customers, for the hedging of exchange rate risks that relate to future financial operations associated with real economic transactions. They can also be used for speculation however. These trades have to be customized to the particular needs of a client as to amount, currency, and maturity of the payment (“customization”). The less typical and standardized the maturity date and/or the currency pair are, the more expensive the transaction will become, because the product has to be generated on less liquid markets.

Financial institutions adjust their activities in the forward market to standardized markets as regards maturity and currency pairs. For the more important currencies there are standardized markets for one-, two-, three-, six- and twelve-month monies. Such standardized markets are again more liquid than for customized products, which entails a smaller spread (lower costs of intermediation).

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<sup>11</sup> Traders use the term „outright“ in order to clarify that it is a simple transactions and not one that is part of a foreign exchange swap.

<sup>12</sup> It is possible however that there is a transfer of securities as collateral before payment.



- There is a close relationship between the spot rate of a currency and its forward rate, which is effected through the so-called “covered interest parity”. If there is a possibility for arbitrage, any larger spread between the spot and the forward rate must, for a given interest differential, immediately trigger transactions that would reduce the spread to normality. Such arbitrage operations cannot be held to represent speculation.

If, for instance, the interest rate on three-months deposits in euros is 5 percent p.a., but for three-months deposits in yen only 2 percent p.a., and if there were no premium nor discount for three-months monies in the euro/yen forward market, this would trigger a risk-free arbitrage transaction. In this case, actors would borrow yen at 2 percent, convert it into euros, and realize 5 percent interest for 3 months, after which time the trade can be reversed risk-free. In this case the arbitrage benefit would consist in a quarter of the difference between the yearly interest rates of the two currencies. This is the reason why interest-rate differentials are skimmed off, in forward markets, by a premium or discount relative to the spot rate. There may only be minute differences caused by transactions costs. In order to limit these costs, forward transactions are typically effected “off shore” on Eurocurrency markets.

- For later reflections it has to be emphasized that—for a given interest differential—any speculation, for instance on forward markets, will trigger arbitrage transactions that affect also the spot market. It is equally important for these considerations that forward contracts for important currency pairs are often arranged “off shore”, i.e. outside the respective currency areas. It implies that

there is no need to use a specific market for trading directly.<sup>13</sup>

- In foreign exchange swaps, a currency is swapped against another for a certain time, after which the trade will be reversed. A swap consists therefore of two parts that result from one operation, but, each on its own, are executed at two different dates although being recorded as one single transaction. Often swaps consist of a spot and a forward trade (but also of a combination of two forwards with different maturities) that go in opposite directions. For roughly two thirds of all swaps based on the spot rate, the second part of the trade is executed within a week. The foreign exchange swap is a standard instrument in OTC trading that consists of an exchange and its reversal, whereby it does *not* constitute two converse payments. For reasons of taxation this operation must however be considered one single transaction.
- The swap is equivalent to a short-term borrowing arrangement combined with a simultaneous loan on a collateralized basis. This renders swaps an appropriate instrument for liquidity management and for hedging against exchange rate risks, but also for speculation. The attractiveness of the swap lies in the fact that trader find it often necessary to go into another currency temporarily without having to bear the risk of an open position in the currency *that is held temporarily*. This is different in spot and forward markets. In these markets, trading one currency position against another changes the risk.
- The pricing of swaps is based on the rates of the two combined in-

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<sup>13</sup> This aspect also poses a problem for the capital import tax of Zee (200). It cannot be maintained, as Zee argues, that the CBCT is largely immune against tax evasion.

struments. Interest rate differentials of both instruments are simply exchanged. This is effected through so-called “swap points” on the basis of interests on assets and liabilities on offshore markets, which allows a transformation into a spread based on the exchange rate.

- As in the case of forwards, swaps will not trigger immediate transactions. There is only a so-called compensation of the differential that has to be secured by capital or collateral. As in the case of forwards it has to be reckoned that swaps (via borrowing in forward markets, and the spot sale of currencies) will also trigger compensating arbitrage transactions in the spot market.
- In the case of currency options, the buyer obtains the right, but not the obligation, to purchase or sell a particular currency at a particular date<sup>14</sup> at a price that has been previously agreed upon. An option is executed only if it is in the interest of the holder of such a right. In this respect the option differs from a forward transactions. The currency option will always involve two currencies also. A “put” option, for instance of euros against yen, is equivalent to “call” option, in this case: of yen against euros.
- The bulk of currency options is traded OTC, i.e. through bilateral contracting between two partners.<sup>15</sup> The overwhelming part consists of generic „*plain vanilla* contracts“, which are standardized for the major currencies, amounts and maturities. The instrument works as a sort of truncated insurance against exchange rate vola-

tilities, and it is typically employed for hedging purposes. However options can also be used for speculation, but only if there are conforming speculative operations in both the spot and forward markets at the same time. The latter aim at driving the option “in the money”. It is only then that the holder of the option can benefit from the operation. If an option is not executed, it has to be assumed that it was bought for hedging purposes only (or that a speculation has not worked out!)

- The pricing of an option is rather complex, but this need not be discussed here. It is based on the empirical volatility of a currency, i.e. options for currencies with high fluctuations of the exchange rate are more expensive than those for currencies whose exchange rate is comparably stable. Prices of options reflect therefore the costs of exchange rate volatility in an explicit and observable form.
- As regards the significance of options for a PFTT, it has to be noted that there are no direct transactions associated with the contract, unless the option is executed later on. However, as in the case of forwards and swaps, there are indirect transactions that are triggered by the trade on the trader's side who will aim at closing open commitments. For instance, if a trader has sold a call option in euros against US dollars (= put option in US dollars against euros) of a notional amount of \$20 million at a strike price that lies at the current forward rate („at-the-money forward“), the probability that the value of the option will increase or fall is 50 percent. In order to eliminate the risk, the trader will immediately sell 50 percent of the notional value in dollars on the spot market (i.e. \$10 million) and buy a corresponding amount of euros in the market to be solvent in the

<sup>14</sup> In a few cases the option can also be executed before maturity.

<sup>15</sup> A limited number of standardized options is also traded on the stock market, which is not considered here.

case of the option being executed. However the risk that the option is struck will change continuously over time. If the euro appreciates against the dollar, the probability of the option being executed will increase. The trader will have to purchase more euros on the spot market. Other factors affecting his risk are changes in interest rates and exchange rate volatility. These must also be considered when hedging against the risk of the option being executed.<sup>16</sup>

### ► The structure of foreign exchange markets and the development of exchange rates.

As regards the influence of the market structure on the exchange rate, the following has to be noted:

- First it has to be reemphasized that it would not be reasonable to peg the volume of currency trading to the value of real economic activities. The bulk of foreign exchange transactions is effected to procure liquidity. This is not equivalent to speculation. On the contrary: Liquidity renders a specific and positive contribution to stabilizing exchange rates, because it creates opportunities for ubiquitous real-time access to foreign exchange markets at a limited price risk. Liquidity is primarily used for hedging purposes, whereby various instruments can be used.
- Traders/banks do not engage in speculation on foreign exchange markets, because they typically close their "open positions" immediately. For liquidity trading they are guided by market makers for

pricing, whereby they indirectly act as arbitrageurs by responding to small changes of the exchange rate.

- Pricing of liquidity is always based on information that is based on the actual rate. Traders/banks typically ignore fundamental data or charts when trading, because this would drive them into open positions. On the contrary: They are usually "blind" *vis-à-vis* noise trading, and they react exclusively to changes in the last digits after the comma, the so-called "pips". This entails the focusing on extremely short trading periods. Traders/banks may however not be immune against rumors in the market, which could eventually trigger speculative activities, albeit not necessarily.
- The daily liquidity cycles are highly important for the development of the exchange rate. If there were strong fluctuations during phases of diminished liquidity (for instance because of speculation), actors would generally react barely, waiting until the markets in London and New York will open. The greater liquidity then improves the conditions for the price discovery process, and markets usually calm down rapidly. This behavior of actors illustrates the importance of liquidity for the stabilization of exchange rates. If a tax on foreign exchange transactions would reduce liquidity more generally, this would lead to greater uncertainty and ultimately greater exchange rate volatility.
- Contrary to liquidity traders, actors outside the financial industry will typically base their decisions on other criteria. This may well lead to speculative behavior and noise trading.
- As to pure speculation, i.e. the deliberate acceptance risky of open positions, which are often re-

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<sup>16</sup> This is effected through a parameter „delta“ in the Black-Scholes formula, which is used for pricing an option. The delta measures those price changes of an option that result from small changes of the underlying exchange rate. This is also called a "delta hedge".



inforced through leveraging *via* implicit lending (for instance a foreign exchange swap), the so-called hedge funds have a particularly bad press. These funds often take significant risks through open positions, by contrast to their misleading label. The result of such speculations can of course go in both directions. These funds may however reckon to be on the safe side if they can expect governments to intervene in the market (see also the reflections on speculation in Appendix 3). Fortunately the presence of these funds on international foreign exchange markets has recently been declining according to the BIS.<sup>17</sup>

- ▶ The behavior of these and other actors in foreign exchange markets is more decisive on the development of exchange rates than the activities of traders/banks. Interestingly, two different kinds of reactions can be observed:

1. On the one hand, institutions that follow a longer-term strategy (such as investment funds or life insurers) would orient their behavior on a fixed grid for their portfolio structure, the so-called “gatekeepers”. For instance a fund decides that its assets (say, in Brazilian reais) should represent  $x$  percent of its portfolio. If there is a devaluation of the real, the corresponding share will fall below the mark, to the effect that assets in real will be *increased*. This contributed to a strengthening of the real and countervails the tendency of devaluation, although—theoretically—one could classify such behavior as “speculative”.<sup>18</sup>

2. On the other hand, there may be an abrupt restructuring of portfolios whenever investors loose confidence in a particular currency and reduce the share  $x$  radically (even to 0). One might also call this speculation. I personally regard it as an attempt to protect, in the interest of investors, the value of the portfolio against expected losses. The repercussions of such behavior on the exchange rate may of course hardly be distinguishable from speculative trading.

- ▶ As to the assessment of commitments by longer-term investors in particular currencies, we have to realize that these employ very different methods in trading. Generally they will adjust their behavior to economic fundamentals and political risk factors, but when trading shorter-term they would also employ mechanical extrapolation methods such as chart techniques. This can lead to noise trading and provoke a systematic drifting off from equilibrium of the exchange rate. It increases the volatility in foreign exchange markets because sooner or later larger corrections of the rate become unavoidable.<sup>19</sup>

▶ **Summary and consequences.** The presentation of the market structure and of instruments used in currency exchange markets was determined by two objectives:

- 1. On the one hand, the analysis leads to further, economically mo-

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buyer, while he/she would sell reais whenever their share will go beyond the fixed mark following an evaluation.

<sup>19</sup> Insofar as the PFTT charges exactly this type of transactions, it can contribute, at small tax rates, to stabilize exchange rates even without the ERND. The latter would assume an auxiliary role as a circuit breaker against very short-term speculative attacks that the PFTT alone cannot cope with.

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<sup>17</sup> Galati (2001, p. 45) argues that this is likely to be a consequence of the LTCM debacle of fall 1998.

<sup>18</sup> The „speculative character“ of this stabilizing operation could be seen in the fact that the portfolio manager expects a reevaluation of the real and therefore enters the market as a

tivated limitations of a PFTT. These will be discussed in the remainder of this Chapter.

2. On the other hand, there are consequences for the technical implementation of a PFTT, which will be addressed in the following Chapter.

Which are these further, economically motivated limitations of a PFTT?

If the significance of liquidity trading for a globalizing economy is recognized, in particular its stabilizing—because risk-diminishing and cost-reducing—functions, the potentially damaging effects of a PFTT on international financial markets cannot be ignored. This has significance for the level of taxation. Furthermore it points toward some consequences for the distribution of tax revenue.

As to the tax rate, the following seems to be compelling:

1. If one enters a market that operates with a spread of one to three basis points (see Appendix 3) with a tax whose rate is 10 basis points (as in the French legislation), one risks to smash up (or even eliminate) this market. It is unimaginable that trades with a (gross) profit margin of one basis point would be carried out if this margin were taxed with 900 percent of its gross benefit. If one wants *the tax to be borne by traders*, their profit margin will limit the tax rate. If the actual spread is one basis point, and the tax rate is half a basis point, the presumptive tax on their gross income would still be as high as 50 percent.
2. If one assumes, however, (as the supporters of higher tax rates do) that the tax can be shifted, one overlooks that the counterparts of most of the currency transactions are again currency traders who work with similar profit margins. This implies that the tax can ultimately be shifted only onto final,

non-financial, customers of the real sector of the economy—exporters/importers and direct investors, but also portfolio investors, life insurers, and so on. It is then incompatible to exempt exporters/importers and direct investors from the tax, as is the case for a number of proposals of a Tobin tax (for instance for the legislation of the French parliament).<sup>20</sup>

3. If one further considers that non-financial institutions are responsible for only 13.3 percent of the trading in foreign exchange markets, this would imply a relatively high burden on the real sector due to a leverage effect. For a tax rate of 10 basis points on all transactions, for instance, a burden of 75 basis points is calculated on the non-financial customers of traders/banks ( $= 10 / 0.133$ ). The net capital return of a direct investor must fall accordingly.<sup>21</sup>
4. If one accepts the profit margin as a limitation of the tax rate trying to find a compromise by which the financial industry would be willing to bear at least part of the tax, i.e. at tax rates that do not exceed the margin, there would still be a further dilemma: The most liquid markets display the largest tax base, but they operate with the smallest profit margins. Less liquid markets operate with greater margins, but they realize substantially smaller transactions. If this is taken into account and if one wants to tax the less liquid markets more heavily, it follows that

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<sup>20</sup> The exemption of transactions that are triggered directly by the exporter/importer and the investor is only partial anyway, because it cannot indemnify for charges that are compounded, in a cascading fashion, *in the price* of the trade.

<sup>21</sup> Of course, this may be intended by those who advocate for an indirect presumptive income tax on capital income from international investments in a globalizing world.

the PFTT would have to have *different rates for different currency markets*.

Such differentiation is of course not operational. I therefore plead for a PFTT with a uniform tax rate that focuses on the most liquid market. This may be advantageous for smaller markets, but this should be accepted by design.<sup>22</sup>

Whereas, previously, I had proposed a tax rate of two basis points (Spahn 1996), I now plead for a tax rate of only one half to one basis point. At that order of magnitude there is no need to formally exonerate exporters/importers, for instance through the value-added tax, or *a fortiori* through the income tax as asked for by Zee (2000).<sup>23</sup>

5. Kenen (1996, p. 114/15) has argued that wholesale traders in the market would have to be charged half the standard tax rate since it would be levied on both ends of a trade. Otherwise the burden on wholesales would be twice as high than on the clients of the financial sector. This is correct only formally. It is to be expected that a large part of the burden on wholesalers would be shifted onto the non-financial sector anyway, *via* larger spreads. The statutory rate does not say anything about the effective incidence of the tax. I therefore believe that such a distinction is unnecessary, even more so as this would entail the need to differentiate transactions in accor-

dance with the counterpart of the trade. If the tax were levied only asymmetrically on the “euro leg” of the trade, as in the case of a unilateral introduction of the tax, this would automatically lead to half the charge as long as the other leg of the trade remains untaxed.<sup>24</sup>

6. Moreover there is a discussion on whether, and which, transactions should be exempt from tax (or be taxed at a zero rate). In this context one often declares currency interventions of the central bank, public transfers (for instance to the IMF, but also official public aid to developing countries, etc.) sacrosanct without further elucidation. I think this would complicate the tax unnecessarily, because it would lead to a host of exemptions that are difficult to administer and to control. A transactions tax is by nature inappropriate to pursue public, social, ecological, and other sensible policy objectives. Even if a currency transfer to developing countries would be exonerated from the tax (as requested by Kenen 1996, p. 115/16), this would still not remove the accumulated compound effects of the tax incorporated in the price through tax shifting. And finally: A minute tax of half or one basis points charged at the final stage is hardly perceptible by the customer, and it should also be carried by governments that engage in development aid.

I have argued earlier (1995) that foreign exchange transfers of currency boards should be exempt from the Tobin tax. This argument is still on firm grounds and should

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<sup>22</sup> It would implicitly relieve the tax law from exempting certain transactions, for instance those involving the currencies of developing countries (Kenen 1996). Such transactions play a minor role anyway. Currency transactions of central banks and international organizations would also be taxed for operational reasons, but they could obtain a tax reimbursement *ex post*.

<sup>23</sup> Huffs Schmidt (2000) makes a proposal similar to Zee's as to an exoneration of exporters/importers.

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<sup>24</sup> This translated the proposed tax rate of 0.5 – 1.0 basis point on one side of the transaction into a rate of 1.0 – 2.0 basis points in Kenen's definition (which he would divide by two for wholesalers). This leaves sufficient room for the American legislature in case it would want to introduce a similar unilateral PFTT on the dollar leg of the trade in the future.

be the only essential exception. Such interventions can also easily be identified and therefore the tax is easy to administer.<sup>25</sup>

7. As to the tax base, I think that it should include only spot transactions as well as forwards (and therefore, indirectly, swaps) up to a maturity of one month (or its standardized equivalent<sup>26</sup>). These transactions constitute the “relevant foreign exchange operations (RFXO)” mentioned in the previous Chapter.<sup>27</sup>
8. Because of the concentration of trade in a time-zone specific financial center, the PFTT is inappropriate as a national policy instrument. It means that the calculations of the French parliament, that tie the revenue to the transaction volume of its financial center Paris, do not correspond to the reality of markets. The PFTT can only be realized *within the time zone for the EU in toto*, including

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<sup>25</sup> Simplicity of administration is not the main objective for this restriction (although it should be aimed at also for a PFTT). I think that the feasibility of the tax requires a high degree of transparency, and any exemption, how ever well motivated, is likely to lead to political pressures that aim at obtaining special treatment. This would be highly counter-productive, inefficient and probably unfair because it creates loopholes and opens up the door for corruption.

<sup>26</sup> It could be a market reaction to define standard contract (instead of one month, as now) as one month + one day, for instance, in order to formally escape the tax. This is why I speak of a “standard equivalent to one month”.

<sup>27</sup> It is understood that the transition from spot to forward transactions is continuous, and it would not be sensible to tax spot transactions alone, while outright forwards of three days would be exempt (see also Kenen 1996). Since 75 percent of all transactions are settled within a week however (BIS, 2001), this definition of RFXO would suffice to cover the overwhelming part of all transactions. Financial innovations, such as currency options, would be taxed indirectly through the corresponding hedging activities on spot and forward markets.

of course its main center London (and the non-EU financial center Zurich). This implies that the revenue cannot be assigned to national tax authorities, but it falls to all cooperating countries in the time zone collectively. The tax revenue for Europe must therefore be considered to represent a “pool” whose means are either transferred to the member states through formula-based grants, or go directly into a “European Fund for Economic Cooperation and Development”. Of course there are other possibilities to make use of the funds for “global public goods”. The decisive point is that such funds are *multilateral European*, and not *bilateral national*. Since I do not trust the success of negotiations on formula-based transfers<sup>28</sup>, the only feasible solution is likely to be a European fund.

9. Positive factors for the implementation of the PFTT are the concentration on one financial center as a „natural monopoly“ as well as the complexity of currency trade and the substantial positive network externalities that this entails for the various market segments and foreign exchange instruments. It excludes, for all practical purposes, that trading desks will be moved to other financial centers following the unilateral introduction of the PFTT. London (and its European financial satellites) exhibits such unique advantages as a foreign exchange center of three overlapping time zones that a dislocation of trade *into other time zones* is not to be worried about. To establish a rivaling financial center *within the European time zone*, but *outside the EU and Switzerland*

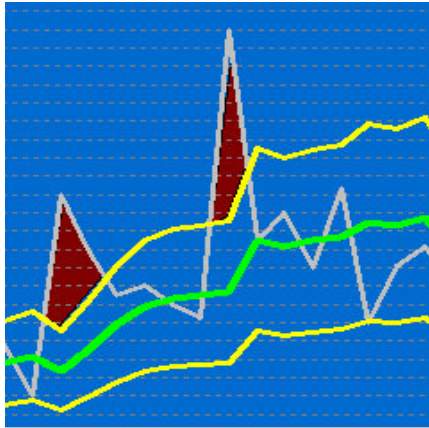
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<sup>28</sup> I simply remind the difficulties of coordinating tax policies in the EU, for instance in the context of a clearing system for the value-added tax in line with the origin principle, or the problems relating to the introduction of a withholding tax on interests.

would entail prohibitive high costs, and is totally absurd. It would mean *to transplant a whole network at once and in one piece*. The dislocation of single terminals is not sufficient (see also Kenen 1996). The very idea that individual actors of foreign exchange markets could break out of the

complex network of foreign exchange trade and move with their computers to exotic places such as the Bahamas is utterly ridiculous and entirely grotesque. But much depends, of course, on how the tax policy is implemented and whether it respects the peculiarities of liquidity trading





## Chapter 4: Implementation

### *How could the PFTT be realized?*

In this Chapter, I shall examine the question how a PFTT could eventually be realized. The focus will be on technical aspects that have to be observed when implementing the tax. This centers around the question, which provisions must be made in order to limit potential evasive reactions to the tax.

► **Principles of taxation.** A consistent approach to taxing foreign exchange transactions requires proper principles of action. For instance one has to decide at which point the tax should be levied—when concluding a contract at the trading desk, when entering the trade into the books of account, or when the trade is finally settled. Moreover it has to be clarified who should be responsible for withholding the tax and to whom the tax is to be paid. These questions require both theoretical and practical considerations. It is also important that the tax be simple to administer, i.e. tax collection should be tailored to the conditions of the market in order to keep the costs of administration as low as possible.

The answer to these questions hinges not only on the transaction technology, but also on the legal possibilities to assess potential taxpayers and to enforce probable sanctions. One must keep in mind that the PFTT is a unilaterally levied tax (for instance by the EU). This could offer options for taxpayers to avoid the tax by a single legal action that transfers his/her activity to a place outside the jurisdiction of the PFTT. It is also illusory to count on the willingness of non-taxing governments to cooperate in this matter as long as they can expect to draw benefits from these evasive actions.

Peter Kenen (1996) has presented a remarkably detailed proposal for the realization of a PFTT. In his paper he discusses a number of important principles of taxation that are relevant in this context.

As to the tax object, Kenen raises the question, at which point the tax should be levied: (i) when the dealing is struck, (ii) when the contract is issued and entered into the books of account at the back office, or (iii) when the trade is settled, i.e. payment is effected. He dismisses the book because he (rightly) deems that this can be kept at any place on earth and the tax could therefore be avoided.<sup>3</sup> However the back office is the place where the contract is usually verified and finally confirmed. It is often also the place where a proper judicial paper (or electronic) trail will start.<sup>4</sup>

Moreover Kenen discounts the possibility to levy the tax at the point of settlement. He mentions two reasons for this:

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<sup>3</sup> Bookkeeping of foreign exchange transactions is of course made electronically and the various trading desks are connected with the back office through networking. There is a trend toward concentrating all bookkeeping onto one platform (for instance Citibank administers all its worldwide foreign exchange trades in London), but this type of concentration does not offer an advantage for levying the tax because bookkeeping could of course equally be effected in New York.

<sup>4</sup> For the OTC business, and in particular for the „open outcry“ by which traders or brokers handle multiple businesses often simultaneously at the telephone, there is a risk of misapprehension that will have to be clarified by the back office through bilateral exchanges of data (and eventually on the basis of telephone tapings). This is the exact point where the tax would have to be levied because auditing is possible only from this point on. Kenen, who opts for the trading desks as the point of taxation, realizes this difficulty and requires that the final contract confirmed by the back office and all pertaining documentation be transferred back to the trading desk. He also mentions the possibility that a trading desks could be located in a country whose legislation forbids this transmission of information, but he overlooks that this could also be true for the back office.

1. First, foreign exchange transactions are always netted before being entered into an official settlement system, i.e. all claims and obligations in the various currencies that materialize over the day will continuously be cleared “in house”. Only the net position at the end of the trading day will be put into an official clearing or settlement system in order to close the open position.
2. And second, the national settlement systems are unable to distinguish transactions in accordance with their underlying business. A payment order to the German settlement system RTGS<sup>Plus</sup> for instance could be one leg of a foreign exchange transaction (say, the settlement of a liability in euros that corresponds to a purchase of yen); yet it could equally correspond to a payment in euro for a commercial transaction *within* the European Monetary Union.

For these reasons, Kenen decides that the point of taxation should be the trading desk.

By contrast, Rodney Schmidt (1999, 2001) has recently argued that the tax could be levied at the point of settlement (more precisely: payment), which would better correspond to the nature of foreign exchange markets and possess the better perspectives in the future. He points to a number of particularities of foreign exchange markets and their developments that aim at discounting Kenen’s arguments.

An examination of the advantages and disadvantages of both approaches, different as they are, requires a deeper analysis of the transactions technology used in foreign exchange markets, which I shall focus on in this Chapter. Before doing so I have to discuss some further taxing principles.

As to the definition of the taxable sub-

ject, i.e. of the persons or companies liable to pay the tax (the taxpayer), Kenen develops two principles:

- ▶ *The national principle.*<sup>5</sup> In this case the head offices of the firms are required to collect all data on foreign exchange transactions that are made by their desks *world-wide*, and the tax would be levied on the global transactions of the firm by the residence country of the head office.
- ▶ *The market principle.*<sup>6</sup> In this case the tax is levied on foreign exchange transactions where they occur, and they are paid to the country in which the trading desk is located.

This would mean concretely that, under the *national principle*, all British traders/banks residing in London would have to pay tax for their worldwide currency operations if the EU would introduce such a tax unilaterally. However American firms would not pay the tax even though their foreign exchange transactions would be effected predominantly in London. Under the *market principle*, all trading in London would be subject to the tax irrespective of the nationality of the trader/bank—whether British, American, or other. However offshore trading by British traders/banks (i.e., trading outside the EU) would remain tax-free.

It is understood that the national principle would lead to significant distortions in the market, by which European traders/banks would suffer a serious competitive disadvantage. This cannot be accepted by the city of London (not by the EU for that matter). It would mean that foreign exchange trading in the EU would exclusively be carried out by non-European

banks. This is why Kenen opts for the market principle of the tax.

There is however a further, quite interesting variant of the so-called *rational principle*. One must not necessarily opt for the legal headquarter of a firm for taxation purpose; one could also opt for the accreditation or licensing of foreign exchange trading at a particular financial center. In this case, American banks would become subject to European tax legislation when taking up a license to carry out foreign exchange transactions, say, in London. It would apply to the totality of their foreign exchange transactions worldwide.<sup>7</sup> I have discussed this option in my paper (Spahn 1995) and still think it could be an interesting model once a decision is made to levy the tax at the trading desk.

Of course the modified form of the national principle entails significant problems of law enforcement (as is the case for the income tax with the citizens' principle) because legal obligations<sup>8</sup>, effective auditing, and the persecution of illegal activities are all difficult outside the realm of the tax. This is an important objection to both variants of the national principle.<sup>9</sup> For this reason, the significance of the market principle in Kenen's terminology is certainly more appropriate, whereby all traders/banks would be liable to pay the tax to the place of their accreditation, but only on their

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<sup>5</sup> In public finance one also speaks of the „residence principle“ (for instance for the income tax).

<sup>6</sup> This principle is called „source principle“ in the case of the income tax.

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<sup>7</sup> This interpretation of the national principle has also a corollary of income taxation: the citizens' principle that used by the USA. It requires all („accredited“) US citizens to pay income tax on their worldwide incomes to the American Revenue Service, independent from the fact whether they reside in the US, or not.

<sup>8</sup> On the question of legal obligations see below.

<sup>9</sup> Kenen mentions further objections against the national principle, for instance that financial institutions would have to carry an undue administrative burden when having to report their worldwide activities. This argument is not convincing. Large corporations (such as Citicorp) record their worldwide foreign exchange operations centrally even now.

local transactions.

Both principles focus on the trading desk however. If one follows the proposition of Rodney Schmidt and levies the tax at the point of settlement, one would probably have to define a further taxing principle, which I would call "rule of access". Under this principle all institutions would become liable that make use of an official settlement system. The obligation to pay the tax follows from access to official systems (such as RTGS<sup>Plus</sup> or TARGET) and will be linked to the netting operations that precede settlement (net clearing, automated brokerage systems) through contractual "chaining". How this could operate will be taken up further below.

If the tax were levied at the desk according to the market principle, financial institutions would have an incentive to migrate to tax havens, according to Kenen, but the governments of these countries would have no incentive to create such havens because refraining from taxing would not represent an option to provide competitive advantages to their own companies.<sup>10</sup> If there were still tendencies of dislocation, Kenen hopes to contain these through certain hindrances (such as a penalty tax on transactions with off-shore financial centers). This point will be taken up later.

Dislocation of desks is not the only strategy to circumvent the PFTT. It may also be achieved through untaxed financial instruments. For instance Garber and Taylor (1995) have pointed out that

„gross trading in these claims“ (*i.e. foreign exchange trading in the spot market*) „will be effectively eliminated in favor of T-bill swaps in currencies with liquid (same-day) T-bill markets. The swapped T-bills will be immediately sold for deposits“ (p. 179).

In concrete terms this would mean that traders would no longer trade in central bank monies, but would start transacting predominantly or exclusively in short-term public securities. Alternatively they could use money market funds and mutual funds.

Trading with short-term treasury bills or money market certificates is indeed common, but such instruments must still be regarded to represent an *aliud* compared to spot transactions of foreign exchange. Securities are not only subject to the exchange-rate volatility of their respective currency, but they also bear a market risk, even a sovereign risk. Central bank money serves exclusively to hedge against immediate exchange-rate risks. As long as this is the case, and the maturities of potential substitutes in the form of securities cannot be fully synchronized with spot trading (which is difficult to imagine), trading in securities must always be more expensive than spot transactions.

This is partly explained by the fact that there could be problems for price setting of such securities, which renders additional hedging transactions necessary.<sup>11</sup> Moreover such swaps always require several consecutive transactions: a money transaction when purchasing the security/money market fund, and another when selling it. Only the intermittent swap of securities would go tax-free. This is why securities may be used as collateral in foreign exchange trading, but not as a primary mean of transactions.

If can be expected that such trading would not survive in view of further

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<sup>10</sup> It should however be mentioned that there are also indirect advantages (e.g., creation of jobs) that could motivate countries to attract such firms through tax competition.

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<sup>11</sup> See also Kenen (1996, p. 119).



developments in the trading technology, if they would ever come to bear. They would simply be too expensive.

Nevertheless the argument of Garber and Taylor has to be taken seriously, in particular with regard to the probably more important money market funds (not mentioned by Garber/Taylor). Should these strategies penetrate the market—contrary to my expectations—, it is always possible to bring them into tax net by a legislation that would qualify such operations to be abusive. This is also possible as to further financial innovations that could surface as surrogates of foreign exchange transactions.<sup>12</sup>

#### ► Measures against potential dislocations of trading desks.

I share Kenen's point of view that the risk of a dislocation of trading desks is small, although I build this on different arguments. As has become clear from Chapter 3 I have come to believe—notably after discussions with representatives from the financial industry—that the dislocation of trading desks entails prohibitively high costs. As discussed before the comparative advantages of London as a financial center and a regional “natural monopoly” for foreign exchange trading are so enormous compared to all other financial centers, including those outside its time zone, that a PFTT with a tiny rate could constitute only a negligible cost factor.<sup>13</sup>

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<sup>12</sup> It may be useful to remind at this point that even the income concept is all but simple. If this tax was conceived in rather simplistic terms initially, it has become one of the most complicated of all taxes today. This results from the fact that the legislature had to implement rules to contain tax avoidance strategies of all sorts over time. It is almost certain that the PFTT will also further tax avoidance strategies, which—according to my perception—would be much easier to cope with than in the case of the comprehensive global income tax.

<sup>13</sup> One may also consider that London dominates as a financial center in spite of high

Kenen illustrates the structural rigidities of networks by referring to a trader who decides—first on his/her own—to dislocate his/her trading desk. He/she would then have to do all dealings with actors of the former trading place, which alone entails significant additional costs. Moreover Kenen proposes to charge all transactions with a penalty rate (also proposed by Spahn 1995), for instance 500 basis points instead of his regular 2.5 basis points. However he argues against the background of a tax that is levied universally at the ten most important foreign exchange centers in the world. These centers could enforce the tax collectively through a penalty rate.

The example is not very helpful for a *unilateral imposition* of a PFTT, say, by the EU. It is simply unacceptable that transactions of European trading centers with centers such as New York and Tokyo would be charged with “penalty rates”.<sup>14</sup> This is however totally unnecessary because any dislocation of a trading desk entails significant costs. The costs depend on the target country for an eventual dis-

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office rents, high salaries for financial professionals, and—in another segment of the market—in spite of a tax on the transactions of stocks. This advantage is even more pronounced for foreign exchange transactions.

<sup>14</sup> By contrast Hufschmidt (2001) is in favor of such penalties even in these instance. His argument: The euro does not constitute a mean of payment outside the EMU, so *any* transaction to places outside the EU *must* be considered to be speculative. („Da entweder Steuerhinterziehung oder Finanzspekulation die wesentlichen, wenn nicht die einzigen Gründe für derartige Transaktionen von Euro hier zu Euro im Ausland sind—denn im Ausland sind Euro weder als Recheneinheit noch als Zahlungsmittel noch als Wertaufbewahrungsmittel nützlich—sollte die Steuer bei der Überweisung von Euro in die USA ansetzen, was erfassungstechnisch keine Probleme bereitet.“). He therefore stipulates the Tobin tax to be levied in Europe as an “exit tax” whenever the euro leaves its constituency. This position is totally at odds with the nature of liquidity trading and deserves no further comment.



location. It is of decisive whether the target place lies inside or outside the time zone.

- ▶ If one assumes the dislocation to take place *within the time zone*, namely out of the EU (plus Switzerland)<sup>15</sup> to another European location (such as Andorra or Warsaw), it should be apparent how limited realistic options of dislocation are under this restriction. Moreover many non-EU members in the time zone (such as Poland) are interested in joining the EU in the future and drop therefore out as potential competitors. This form of dislocation can totally be disregarded.
- ▶ If one assumes however that the target place is *outside the time zone* (for instance the Bahamas or, more likely, one of the existing foreign exchange centers), this would of course be feasible in technical terms (and certainly be less onerous than starting up a new trading place from scratch), but it would also mean *to forego all time-zone specific and other advantages* that distinguish London and its European financial satellites. Therefore this option is also likely to play a negligible role in foreign exchange trading, provided however that the PFTT operates with a very moderate rate.

These considerations demonstrate that a trade-off has to be struck maintaining the net advantages of trading foreign exchange in London and its European branches in spite of the PFTT. They also emphasize the necessity of a coordinated fiscal approach of all European financial centers. These can preserve their time-

zone specific monopoly rents only conjointly. If they would try to increase their respective market shares through rivaling with each other via “tax competition”, this would mean the failure of a PFTT for Europe.

#### ▶ The PFTT as a „payments tax“.

The considerations of this Chapter were so far contingent on the PFTT being levied at the trading desk. This requires a sophisticated reporting system, which is further complicated by the fact that the desks have nothing to do with the settlement of the trade and that the proper auditable paper or electronic trail often begins in the back office.

In contrast to this, Rodney Schmidt (1999, 2001) has pointed to the interesting possibility, rejected by Kenen (1996), that the tax could be levied at the “end of the chain”: at the point of payment or settlement. Since payments and settlement systems are highly concentrated —unlike the decentralized trading desks—, this method of assessing foreign exchange transactions would conform much better to the conditions of electronic markets and they would be easier to administer. Tax collection at the point of settlement could be largely made automatic and an extensive and sophisticated reporting system would not be required.

Every country has normally its own payment and settlement systems for financial transactions of all kinds. These systems possess different institutional, legal, and technical components.

In the following I shall focus on cashless payment systems (that dominate foreign exchange markets)<sup>16</sup> and I

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<sup>15</sup> It is important to include Switzerland as an important financial center outside the EU, but within the European time zone, because of potentially unfair competition. If Switzerland would be uncooperative in this matter, the EU could of course consider to use “penalty rates” when trading with Zurich.

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<sup>16</sup> I do not think it to be necessary to tax retail transactions of foreign exchange, for instance currency exchange by tourists. Such transactions are insignificant compared to the transactions in wholesale markets.

define a “payment” as the instruction to transfer a money amount on the basis of a legal obligation, and “settlement” the definitive and irrevocable transfer of the money that is the purpose of this payment. For instance if someone pays with a check for a purchase, payment is effected when the check is handed out. However settlement is effected when the check is cleared and cashed in, or credited to the account of the recipient.<sup>17</sup>

For the settlement of financial transactions of all kinds, there are different

transfers play a particular and increasing role. Whereas electronic trading accounts only for 0.1 percent of the number of all financial transactions in the USA (including domestic settlements)<sup>18</sup>, their share of the total volume is more than 80 percent (Cross 1998). Electronic settlement systems play a decisive role for trades between banks, foreign exchange traders, and institutional investors.

In the USA there are two competing payments and settlement systems: CHIPS (*Clearing House Interbank*

#### BOX 1: CHIPS AS AN EXAMPLE OF A CLEARING SYSTEM

In contrast to Fedwire, settlement on accounts of the central bank system is effected only once a day under CHIPS. During the day, all claims and obligations of the participating financial institutions that result from business activities are administered by CHIPS and continuously cleared through netting. At the end of the day the net balance will be settled collectively for all participants through Fedwire (in the form of central bank money). The central bank accounts of CHIPS participants with net claims will be credited, and the accounts of participants with obligations be debited. If a participating bank with net obligations against CHIPS transfers central bank money to its customer before the end of the day, it assumes a settlement risk, because CHIPS could eventually refuse to settle for some reason. In order to cover this risk, the current deficits of each participant are limited (net debit caps) and the participants are also obliged to participate collectively in covering any possible losses that have to be collateralized with capital or securities.

options: cash, automated clearing, electronic transfers (in particular for interbank trading). Each of these systems has its own rules. Electronic

<sup>17</sup> If cash is used, payment and settlement are of course simultaneous actions.

#### BOX 2: FEDWIRE AS AN EXAMPLE OF AN RTGS-SYSTEMS

If a payment is effected through Fedwire, a regional Federal Reserve Bank will debit the central bank account of the sending bank, and will credit the amount to the recipient bank. In this way it is assured that there is an immediate and simultaneous transfer of central bank money (assets in the central bank system). A Fedwire-payment is settled through the crediting of the amount to the central bank account of the recipient bank. In order to limit risks, the Federal Reserve will charge for overdrafts during the business day if these go beyond a certain predetermined limit.

*Payments System*), a private settlement system of the New York Clearing House; and Fedwire, a service provided by the American central banking system. In the United Kingdom, the pound-sterling leg of a foreign exchange transaction is usually settled through CHAPS (*Clearing House Association Payments System*). The functioning of a clearing system is explained in Box 1.<sup>19</sup>

In the Federal Republic of Germany, the settlement of payments is effected

<sup>18</sup> The larger part consists of cash, checks, and credit card payments.

<sup>19</sup> The exposition of the two Boxes is based on Cross 1998.

mainly through RTGS<sup>Plus</sup>. The shorthand RTGS stands for „real-time gross settlements“. The real-time settlement of each single gross transaction eliminates the settlement risk. The functioning of an RTGS system is described in Box 2 for Fedwire as an example.

The introduction of the euro in 12 countries of the European Monetary Union has not changed the structure of national payments and settlement systems significantly. Every country settles its payments through an individual RTGS system. However the interface between the different RTGS systems has been standardized in order to facilitate cross-border payments between member countries of the monetary union. This interface, the „link“ (but occasionally also the totality of the national systems, including the link) is called TARGET (*Trans-European Automated Real-time Gross settlement Express Transfer system*).

In contrast to RTGS, the clearing systems (such as CHIPS or CHAPS) function as netting systems between the participants of the clearing system before settlement through central banks. All individual positions are cleared (i.e. „netted“), which are then settled through central bank money once a day. This does not exclude the settlement risk, in contrast to the RTGS systems of central banks.

In the case of a foreign exchange transaction, there are two simultaneous transfers in opposite directions. It always implies the use of two settlement systems of two countries. This entails an additional settlement risk if distinct, i.e. non-integrated, payment and settlement systems are used—especially if they operate in different time zones. In this case one also speaks of a „Herstatt risk“—according to a spectacular case of this kind in the 1970s.

Foreign exchange markets have to rely on payment and clearing systems, which ultimately decide on the

success or failure of a particular transaction. Rapid access to central bank money through national RTGS systems is crucial in this context, but also the existing clearing systems help to limit this settlement risk.

In order to facilitate the automated access to central settlement systems, the interface is largely standardized. This does not only apply to TARGET (the link between the national systems in the European Monetary Union), but also to the access through automated private brokerage systems (such as FXNET).

Until the mid-1990s, the private brokerage systems functioned mainly OTC *via* direct broking per telephone („open outcry“). They have since been largely automated and consolidated. One speaks of „automated order-matching systems“. The most important ones are the Electronic Brokerage System EBS<sup>20</sup> and Reuters<sup>21</sup>. Today roughly 50 to 70 percent of all foreign exchange transactions are cleared and settled through these systems. In 1998 the share had been 40 percent, and in 1995 only 10 percent (Galati 2001, p. 43).

These developments have contributed to reducing the volume of foreign exchange trading significantly. This is partly explained by improvements in the price-discovery process. The trader can observe the bid/ask on the screen and react quickly electronically

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<sup>20</sup> EBS was founded in 1993 by 12 of the largest trading companies and it is now the leading provider of electronic brokerage services. At the same time it is licensed to provide bilateral netting through FXNET (see below).

<sup>21</sup> Reuters offers a number of information products and also manages the clearing and settlement of transactions with financial instruments such as foreign exchange, money market funds, stocks, etc. The electronic conversations on foreign exchange markets run through the platform „Dealing 3000-Direct“. Reuters is also a participant of consortia such as ATRIAX (of Citibank) or FXALL, which have developed separate platforms for foreign exchange dealings.

on a mouse click. Misapprehension is significantly reduced compared to the open outcry, and back offices are automatically informed. The automated order-matching systems are therefore extremely reliable and fast.

In addition the expansion of such systems has reduced the possibility of traders/banks to engage in so-called „leveraged trading“ (Galati 2001, p. 44). This entails a reduction of the volume of interbank trading that is triggered by a primary transaction of a final customer of the non-financial sector.<sup>22</sup>

Traders/banks employ a number of typical netting (or clearing) systems before settlement. Foreign exchange accounts

- ▶ are first settled “in house” on a continuous basis, i.e. Deutsche Bank, for instance, would clear all claims that develop on foreign exchange accounts of its customers with corresponding customer obligations („in-house clearing”); and
- ▶ are also cleared bilaterally among trader banks. For instance Deutsche Bank maintains a foreign exchange account with Citigroup (and reciprocally), where mutual claims and obligations are continuously cleared during the day.

These operations avoid settlement risks via „payment *versus* payment (PVP)“ through continuous clearing. Bilateral net clearing is provided for instance by FXNET<sup>23</sup> or SWIFT<sup>24</sup>. On

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<sup>22</sup> Galati (2001, p. 44) develops the following example: Assume that a non-financial customer asks his trader bank to sell \$100 million against yen. If the trader expects the dollar to fall, he would probably sell more than \$100 million hoping to buy back the excess balance as a market maker. This triggers transactions that exceed the original amount of \$100 million. Electronic order-matching systems handle such transactions in a neutral and non-speculative way, which does not entail an extension of the trading volume.

<sup>23</sup> FXNET is a consortium of 13 of the largest trader banks; it started its operations in 1987.

may note however that such systems are primarily service providers of the software industry. They are not traders/banks themselves, and are therefore not subject to public banking supervision.<sup>25</sup>

Apart from bilateral netting, there were also systems specializing in *multilateral* clearing among traders/banks (ECHO or Multinet). These have been acquired (and temporarily deactivated) by a real-time-PVP system that is being developed at present, and is likely to start operating in the fall of this year: CLS (*Continuous Link Settlement*). I shall come back to this path-breaking development on foreign exchange markets later on.

At present the routing from the individual trading desk to the central RTGS<sup>Plus</sup> of the Bundesbank can be schematically described as follows:

Bank A in Germany and bank B in the USA exchange information on a trade through SWIFTNet Services and settle the payment through a standardized SWIFT platform that has direct access to RTGS<sup>Plus</sup>. Both banks maintain accounts with the Deutsche Bundesbank in this case. If this is not true for the foreign bank B, the trade will be settled through a third bank (correspondence bank) that maintains an account with the Bundesbank and

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Today it is part of the EBS Dealing Resources of Citicorp.

<sup>24</sup> SWIFT (*Society for Worldwide Interbank Financial Telecommunication*) is a platform for the electronic exchange of financial data. It started its operations in 1977, and it counts on more than 7,000 customers in 192 countries with some 1.3 bill. messages per year. SWIFT has substantially contributed to the standardization of the clearing and settlement process.

<sup>25</sup> There is a clear-cut trend to engage software firms for complex information processing services. One may mention in this context COGNOTEC (another brokerage technology) or Currenex (an internet-based trading system). There is of course competition among these firms, but recently a clear trend towards cooperation and even consolidation of the sector is noticeable.



can clear a claim she has against bank B (for example through SWIFT *via* bilateral netting).

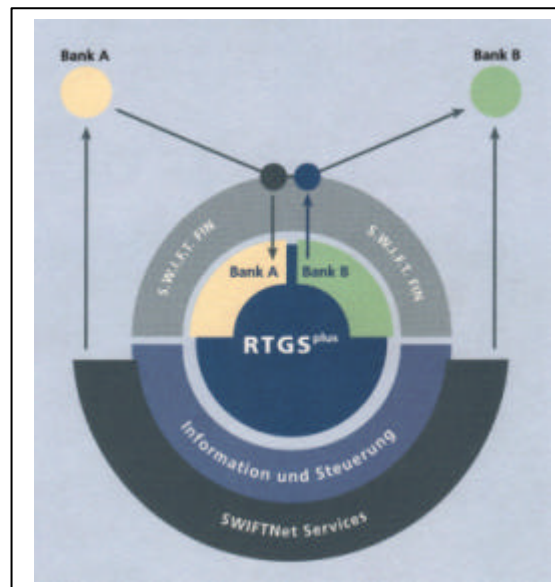
This illustrates that the official national RTGS systems represent something like the “kernel” of a payment system that is based on central bank money. Service providers such as electronic order-matching systems will gather around this core. However RTGS sees only the “tip of the iceberg” in foreign exchange trading because traders will have netted, before entering the settlement system, all possible in-house and bilateral transactions through clearing in order to reduce costs and risks.

Moreover the RTGS even does not „know“ which kind of underlying trade is settled when it accepts and executes a payment instruction. Payments in European currency that result from a foreign exchange trade are settled without distinction together with all other payments.<sup>26</sup>

The latter could of course be easily remedied, for instance through a simple identifier (0 or 1) that indicated whether the purpose is to settle a domestic or a foreign exchange trade. There could also be an obligation to hold two accounts at the central bank and settle in accordance with the nature of the trade.<sup>27</sup>

It is much more difficult to cover the internal and bilateral clearing operations within and among financial institutions. Clearing and net settlement among financial institutions and systems has become a conventional procedure worldwide. In particular in-house clearing is something difficult to monitor.

However these problems will be substantially mitigated by more recent developments in foreign exchange markets, which entail a further concentration of bilateral and multilateral clearing before official settlement. This is because, in spite of a high degree of integration of payment and settlement systems, there is a residual settlement risk for national, but notably for international payments. This has motivated several banks to develop a worldwide real-time gross settlement system as a private initiative: the CLS bank that had been mentioned before. It is



likely to determine future developments on foreign exchange markets, which render it necessary to offer some further explanations.

The CLS Bank is a foundation of a consortium of traders/banks with its headquarters in London.<sup>28</sup> Its objective is to eliminate the settlement risks for bilateral and multilateral clearing operations in foreign exchange mar-

<sup>26</sup> From the standard (MT 202) used for central bank clearing, the purpose of a payment cannot be identified. Not even reference numbers are mandatory, and if they are used they vary among banks.

<sup>27</sup> The consequence would of course be that different kinds of foreign exchange transactions cannot be distinguished at the time of settlement. Only resulting spot transactions

would be settled. This would mean to define the tax base in a narrower sense. I have argued before that this could be accepted insofar as other foreign exchange transactions, such as swaps and options, also trigger spot transactions indirectly through arbitraging.

<sup>28</sup> The bank is subject to American law however.



kets altogether. This will be effected through a continuous and simultaneous crediting of “both legs” of a foreign exchange trade on the foreign exchange accounts of the trading banks. The currency pair is settled gross, i.e. there is no netting within the system. Only the balance will be settled officially for each currency through RTGS systems of central banks.

Moreover each trade is identifiable according to the purpose of the transaction, in particular as to the currencies used, the maturity of the payment, and the kind of trade. This allows a judicial tailoring of the PFTT and the tax collection process to its precise tax base.

The operation of CLS was initially intended to start last year already, but technical problems and problems of project management have delayed the start until the fall of 2002. Representatives of the bank expect the advantages of the system to attract about 80 percent of all foreign exchange transactions in five years. Member banks would be able to make use of the system directly; others would access the system indirectly through correspondence banks.

I believe that the concentration tendency in clearing and settlement as well as in automated order-matching systems will further escalate. This is not only explained by the advantages of real-time gross settlement systems, but also by some other problems of international liquidity management that could eventually be solved through CLS and other centralized systems. For instance CLS provides automatic cost-reducing „self-collateralizing overdrafts“. This requires a sophisticated tracking system. I think further of strategies by which interest-free swing arrangements within mutual daily liquidity trading are now being abused, which has led to a unilateral encumbrance of some (mainly continental-European) financial institutions. CLS is likely to lead to a signifi-

cant shortening of settlement delays, which will allow interest periods below the 24-hours limit, which would eliminate such interest-free swings. Forward transactions could automatically be activated at maturity, etc. These will all be significant advantages of CLS to attract business on a global scale.

Once the consolidation process of international foreign exchange markets will have come to an end, one can again expect a widening of the volume of transactions. This hinges on the cutting of maturities to hourly fractions and on the extended use of gross payments. These trends are promoted by centralized platforms such as CLS.

The centralization of payment and settlement systems as well as electronic order-matching systems will also facilitate the administration of an eventual PFTT: The tax could be determined through appropriate tax modules embedded in the transactions software, and the proceeds could be levied automatically and transferred to central banks through RTGS. The central banks would thus become the collecting agencies for the tax revenue.

Although these trends appear to be compelling, a comprehensive coverage of the tax is still fraught with problems:

- Despite these tendencies there will remain a substantial number of in-house clearing operations that call for a separate reporting system. This is facilitated by the concentration within the banking industry. Only the largest institutions would have to report for taxing purposes. Smaller institutions play almost no role as to their internal clearing potentials. The reporting requirement should hinge on a minimum transactions volume, whereby a large proportion of the small institutions would not have to report, or pay tax, at all. They

would be charged indirectly however when using correspondence banks or centralized settlement systems.

- Bilateral clearing between institutions that do not participate in centralized systems would also have to be subject to reporting. This is more costly than an automated assessment through computerized systems, which creates some incentives to make hook onto centralized systems in spite of the tax.

As has been discussed before in connection with the advantages of a financial center such as London, evasive reactions of centralized settlement or of electronic order-matching and brokerage systems are highly unlikely. The concentration onto a small number of large corporations renders this extremely difficult for them. Deutsche Bank, for instance, is unlikely to fraud on the tax by carrying out illicit foreign exchange transactions intentionally. But there are of course incentives to consider ways to avoid the tax legitimately. This is most prominent for in-house clearing operations, because this could lead to legal constructions by which clearing is sourced out to software firms residing outside the EU. These may not even be banks subject to banking supervision.

If a different method for taxing such transactions is chosen, for instance at the trading desk as proposed by Kenen, one has to ascertain that there is no double taxation due to a mix of assessment methods. I therefore propose to use the same tax object for in-house clearing operations as for all other foreign exchange transactions at settlement, and define those clearing operations legally to be equivalent to settlement.<sup>29</sup>

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<sup>29</sup> I think in particular of the attempt of the American legislature (although highly controversial politically and legally) to oblige American firms through the Helms-Burton Act to extend the trade embargo of Cuba to their

If transactions are not carried out through official or centralized payment systems and are therefore impossible to be taxed at well-defined points at payment/settlement, one has to operate with a reporting system for such transactions. As said before this is more costly and creates an incentive to participate in the less costly (and risk-diminishing) CLS system either directly or through correspondence banks, whereby the “rule of access” would apply for taxation.

One should not underestimate foreign exchange transactions within the non-financial sector however.<sup>30</sup> For instance Volkswagen or Daimler-Chrysler maintain important foreign exchange departments for internal clearing. These transactions would also have to fall under the tax law in order to avoid the dislocation of foreign exchange trading into the productive sector.<sup>31</sup>

For production companies—as for financial institutions that do not hook onto centralized RTGS systems—taxation must be based on reporting.<sup>32</sup> However there is a particular problem in that the market principle is more difficult to apply for those companies than for financial institutions (that are licensed at a certain financial center). One could however ask for a similar

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non-American counterparts worldwide through contracting. A recently failed attempt by the German federal government to extend, in the interest of consumers, the information requirements onto suppliers outside its jurisdictions does not augur well for this approach however.

<sup>30</sup> Internal foreign exchange transactions of production firms are not included in the statistics of the BIS. The tax base is therefore likely to be higher in practice than assumed by most authors.

<sup>31</sup> The clarification of this issue is also required in view of the fact that automated brokerage and settlement systems are usually operations of non-banks, i.e. software companies.

<sup>32</sup> This could of course be waived if the firm decides to participate in a generally accessible centralized payment system and be subject to taxation according to the „rule of access“.

accreditation for carrying out foreign exchange transactions by producers as for traders/banks. However production firms could dislocate their foreign exchange transactions into non-taxing jurisdictions. One must realize that it is much more difficult to follow these firms than financial institutions.

### ► Summary.

Questions relating to the implementation of a PFTT are non-trivial. First one has to fix general taxing principles that define the taxable object and the taxpayer. Thereby one can generally rely on the market principle, which would cover all traders/banks accredited at European financial centers (including Switzerland) as well as centralized automated order-matching and settlement systems. The same should apply to producers such as Volkswagen or Daimler-Chrysler.

For tax collection there are in principle two possibilities: At the trading desk, and at the point of settlement. Both procedures are technically feasible, but each has its own advantages and disadvantages.

Assessing the tax at the trading desk entails a reporting requirement that does not conform with the nature of the market. Automatic assessment at centralized clearing and settlement points would be more appropriate, but a differentiated registering of individual taxing purposes (such as swaps, options etc.) would be impossible because the relevant information is not handed down to the settlement stage. It implies that only spot transactions could be taxed at present. This is likely to change in the near future however—through new technologies that are being developed and will lead to continuous gross settlement on a PVP basis.

The further concentration of foreign exchange markets and in particular the introduction of a continuous gross

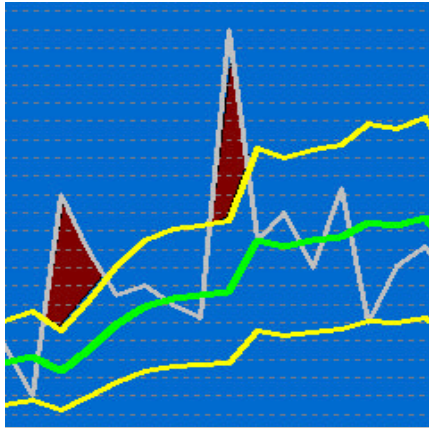
settlement system will facilitate tax assessment and collection at payment/settlement considerably. This is why I prefer the PFTT in the form of a “payments tax”. In this case taxation could be tied to the access to official settlement systems, with a contractual “chaining” of the taxing obligation onto in-house clearing systems. The central banks would collect the tax, which is however to be “pooled” Europe-wide for a common purpose.

One may expect however that a more comprehensive reporting requirement is still needed for those institutions that do not participate in a centralized payments system, nor have voluntarily accepted tax liability through “chaining”. If both assessment and collection techniques are employed simultaneously there could be some double-taxation, which should be accepted however in view of the fact that it provides an incentive to join one of the official payment systems.

The often-emphasized evasion reactions to a PFTT are sternly exaggerated. The high concentration of foreign exchange trading clearly runs counter the possibility to avoid the tax, and this trend will be reinforced even further in the near future. I therefore think the PFTT to be technically feasible—albeit under restrictive preconditions as to the tax rate in order limit economic distortions.

The real problems are not to be found in the area of technology. The true nature of these problems could best be portrayed by a quotation found in a paper by Griffith-Jones (1996, p. 148), even though it is from an earlier paper of mine:

*„Generally speaking, there do not seem to be major administrative problems associated with the operation of a Tobin tax, although specific difficulties may arise in detail, in particular for the derivative markets. The main riddle relates to international cooperation and legal enforcement.”* (Spahn 1995).



## Chapter 5: Reaction

### *How could the PFTT affect market behavior?*

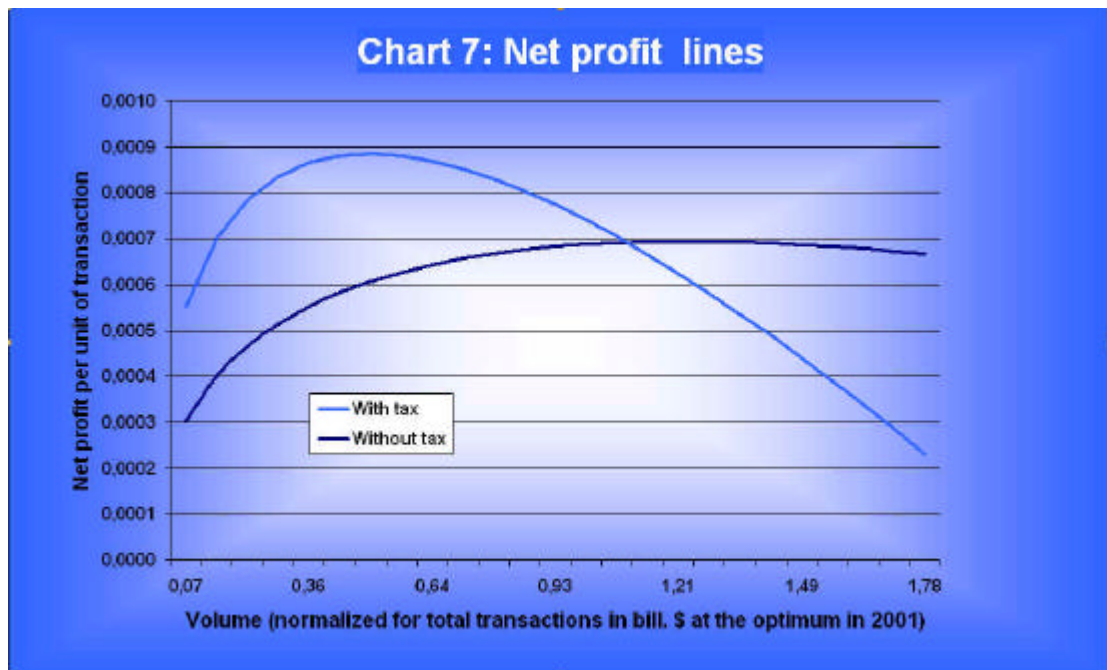
In this concluding Chapter some considerations are given to the possible reactions of actors in foreign exchange markets in response to a PFTT. I shall also venture a rough estimate on the possible revenue of a PFTT.

► **Behavioral reactions.** It can be assumed that a PFTT would affect the various segments of the market in a very different way.

On the one hand there are the wholesalers whose costs have been falling dramatically as a consequence of technological developments, although they remain in fierce competition among each other at a global scale, and they rely on high transactions volumes to remain profitable in view of minute profit margins, despite of cost decreases.<sup>1</sup> A tax on foreign exchange transactions must increase the bid-ask spread of traders and reduce the volume of trading. At the same time the average maturity of foreign exchange transactions would increase in length. This is explained by a relatively strong decline of spot transactions relative to outright forwards. Both effects are intended by the PFTT.

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<sup>1</sup> „A more controversial feature of the new shape of the financial system is that the bulk of its participants now have a vested interest in instability because the advent of high-technology dealing rooms has raised the level of fixed costs. High fixed costs imply that high turnover is needed for profitability. But high turnover tends to occur only when markets are volatile” (Walmsley, Julian (1988) *The New Financial Instruments: An Investor's Guide*. New York: John Wiley & Sons; quoted according to Felix and Sau (1996, p. 231).



The effects of a Tobin tax on net profits and trading volumes of wholesalers can be illustrated by a simple model calculation. This is represented in Chart 7.<sup>2</sup>

But there is also trade with various final customers: exporters and importers, direct investors or portfolio investors (such as hedge funds, investment funds, insurance companies) and other institutional investors. Also the government and central banks will take part as actors on foreign exchange markets. Finally, a small proportion of the trade is executed in re-

tail transactions through commercial banks or credit card companies for tourism or for cross-border transactions of private households.

In the ambit of final customers and in particular in the retail segment of the business traders operate with significant margins. These margins are the higher, the lower the volume of transactions, the lower the liquidity in the particular segment of the market, the less price-elastic local demand, and the higher the degree of information asymmetry that warrants some monopoly rents.

If the effect of the tax will be a widening of the spreads and a reduction of the volume in wholesale trading, as I would expect, this would affect different market participants in the following way (see also Felix and Sau 1996, p. 230ff.):

- At the „shortest end“ of the market, i.e. in particular for *„covered-interest-rate arbitrage“*, transactions costs have always created something like a “neutral zone” within which there are no profits from arbitrage and transactions will therefore not take place at all. This zone would undoubtedly be widened by the transactions tax.

<sup>2</sup> These calculations were made using the Model described in Appendix 2. For the present Chart, the following (not implausible, but freely chosen) parameters were used that do not have any empirical relevance:  $a = 0.5$ ;  $b = 0.95$ ;  $g = 0.0005$ ;  $t = 0.0001$ . The Chart has been normalized in such a way that, for the maximum net profit margin before tax, the transactions volume for the year 2001 is reproduced (in bill. \$ per day). One could use the model to calculate the tax elasticity eventually, i.e. the reduction of the trading volume in response to the tax rate. For this set of parameters it would be 77 per cent for one basis point. I think the tax elasticity to be significantly lower however (see below).



On the dollar-euro market, the neutral zone represents now some 10 to 15 “pips”, or roughly one basis point. A PFTT of one basis point would extend the neutral zone by two thirds to 100 percent. For that reason this type of trade would be hit particularly hard. Foreign currency traders would find it more difficult to pass on their “hot potatoes” onto other traders with a small risk once they have taken them up. If a customer insists on selling/buying foreign currency in spite of these increased costs, the trader will ask for a higher premium in compensation for the higher transaction risk. He/she will (have to) shift the tax burden to a large degree if he/she wants to continue operating profitably.

- D This statement has to be put in perspective however. It must be reminded that transactions costs in foreign exchange trading have been falling significantly over the last years. Today the spreads in the dollar-euro market are in the order of one basis point; at the time of my first study in 1995 the usual margins were about 4-5 basis points. Even though the spread would be widened by 100 percent through a PFTT, it would still be at least 50 percent *below* the margins of six years ago. Then the daily transactions volume was roughly one billion US dollars—only 17 percent below the volume of the year 2001.<sup>3</sup> This is an argument against the contention that even a small PFTT would wreak havoc in world financial markets, and the negative impact of the tax on the volume of liquidity trade appears to be utterly exaggerated.

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<sup>3</sup> The comparison of trading volumes across time is of course problematical in view of continuous structural changes in the market (consolidation, introduction of the euro, etc.).

- D Also risky trading of currencies of developing countries will be affected by the tax. However in this market there are often no mature forward markets that would allow covered-interest parity trading. Therefore the risks are already higher in the primary trade than in the previous case, which is of course expressed through higher spreads. A uniform PFTT whose tax rate is tailored to the most liquid market (for instance one to two basis points) would then be a comparably small additional charge in relation to the already high margins of the primary business. It is unlikely to lead to a significant contraction of trade. The tax burden on developing countries is therefore *relatively small*. Of course the volume of trading in this market segment is almost insignificant in the global context of currency trading, albeit not necessarily for the respective countries themselves.
- D Interestingly, a similar argument also applies to currency trading by the so-called hedge funds that engage in highly speculative and risky businesses. Because the risks of such trading at uncovered interest parity (i.e., the deliberate exposure to risks through “open positions”), typically even leveraged by borrowing, are extremely high, this market segment must operate with large margins. This is why a transactions tax with a relatively small rate adding to an already large neutral zone for trading is unlikely to exhibit deterring effects.

However Felix and Sau point to two side effects in this context that could eventually play a role:

First, a Tobin tax could contribute to lower volatility and therefore limit the scope of action for speculative trading by hedge funds. I personally doubt the validity of this argument because less liquid markets (as emphasized several

times before) are typically characterized by *higher volatility*.

Second, the authors argue that the central bank could use the greater freedom to act under the umbrella of a Tobin tax to *speculate against the hedge funds* and therefore reduce (or even eliminate) their profits. This argument is yet less convincing, even adventurous. Greater freedom to act of the central bank means primarily to be capable of concentrating on domestic policy objectives and to ignore the exchange rate. The more abstinent a central bank, the better it is for the stability of its currency. There are also cases (such as the speculation against the Bank of England in 1992) that demonstrate a central bank to be powerless against speculative hedge funds because an important instrument regularly used by hedge funds is problematical in her hands: the leverage effect through borrowing.

I fear that central banks that engaging in counter-speculation would drive the exchange rate from its intrinsic value over time. They would fall prey to depending on foreign debt more and more deeply, and would ultimately have to give in under market pressure anyway. Unfortunately the empirical evidence lends support to this thesis all too often (see also Appendix 3).

I interpret “freedom of central banks” primarily as having the option to *refrain from intervention* in foreign exchange markets, i.e. *not to act* in response to alien interference. Under no circumstances should it be interpreted as “freedom to counter-speculate”. The neutrality of central banks in foreign exchange trading is even a crucial if a shifting back of the Tobin tax onto the central is to be avoided, which would run counter the objective of the tax.

► **Who bears the tax?** It should be clear from the previous discussions that wholesalers are likely to shift a substantial part of the tax onto their

final customers (in order to secure profitability). As mentioned already before this would leverage the tax burden for this group of participants. Since final customers have only 13.3 percent of the market, a tax of one basis point would quickly be transformed into 7.5 basis points onto final customers (see page 40).

It is an open question to which extent such tax shifting will be successful however.

- Tax shifting is the easiest in retail trading because demand is relatively price-inelastic and locally limited, which allows certain monopoly rents.
- Tax shifting is easier for investors of smaller and medium-sized companies than for multinational firms. The latter possess a much stronger position toward foreign exchange traders given their higher trading volumes. Eventually multinational firms can even run own foreign exchange departments, which would intensify competition.
- Also institutional portfolio investors make a distinction as to their readiness to take on the tax burden.

For instance *insurance companies* take a very long-term perspective and they guide their behavior by institutional rules as to the composition of their portfolios (through “gatekeepers” mentioned above). Moreover the volume of transactions is comparably small in relation to their stock of assets, in contrast to other portfolio investors such as investment funds. This renders insurers more ready to take on the tax burden, especially as they can expect to shift the tax burden onto their clients over a long period of time.

In contrast, investment funds pursue a strategy that is much more short-term oriented because their

relative success is continuously being monitored against certain performance indicators. If an institute falls behind the average performance of the branch, it risks an increase of disbursements, i.e. these institutes have to be continuously solvent. Therefore they concentrate on securities that are short-term market favorites, and they rely on frequent changes in the composition of their portfolio. It also implies a frequent change of currencies.

If the change of securities denominated in different currencies is more costly through the tax than trading securities of one single currency, portfolio investors will focus on the latter and avoid foreign exchange trading as far as possible. It implies that shifting the tax burden onto this group of market participants is more difficult than for longer-term investors such as insurance companies.

But even within the investment fund branch there are significant differences. For instance those funds that specialize in securities of industrialized countries will have no difficulty to change their strategies, because there are deep and liquid markets within the respective currency areas that do not necessitate frequent changes in currency positions. This is less compelling for fund that specialize in securities of developing and emerging economies.

► **What could be the revenue of a PFTT?** It should have become clear from this study that any attempt to estimate the potential revenue of a PFTT is fraught with severe difficulties and risks. The process of consolidation of international foreign exchange trading is far from being completed, and further structural developments can be expected to take place in these markets (for instance the continuous

link settlement). Moreover it is not clear at which point the tax should be levied, at the trading desk or at payment. There are further complications through the recording of netting operations (in house, and bilaterally), and there are problems relating to the inclusion of foreign exchange operations by producer companies. This all renders it difficult to define the tax base.

Finally the possible reactions of market participants are all but clear. These will severely be affected by decisions as to the level of taxation, the tax rate, the tax base, and the dosage of the tariff when introducing the tax.

As I have argued before I plead for a very small tax rate in the range of one half to one basis point at both ends of a currency trade, but only on the “euro leg” that is settled through TARGET and corresponding clearing operations before settlement.<sup>4</sup>

A rough estimate on the basis of information by the BIS is given in Table 7. On the one hand it is likely to be on the safe side as far as the tax base is concerned because foreign exchange transactions by producing firms are not included. One can also expect the tax base to increase over time again once the consolidation of the financial industry has come to an end.

On the other hand it could be questioned whether the corrections necessary to cope with possible reactions of market participants have been assessed appropriately. There is of course no information on the price-

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<sup>4</sup> I have also argued that Switzerland would have to cooperate in collecting the tax. This does not necessarily imply the inclusion of the Swiss franc into tax obligation as long as it is traded against other currencies than euros. This is not without problems since the franc could then play an increasing role as a euro substitute, especially if the Swiss central bank pegs its currency to the euro. The same is true for pound sterling.

course no information on the price-elasticity of foreign exchange trading as a whole, let alone for market segments. It is also unclear whether the tax base is sufficiently protected against loopholes.

As a whole a PFTT with a tax rate of one basis point could eventually yield a yearly tax revenue of 16.6 bill. euros. This assumes that the tax to be paid at both ends of the trade, implying a tax of 2 basis points for whole-

salers. If one follows the method proposed by Kenen according to which the tax rate is 2 basis points for all transactions, and wholesalers would carry only half the rate, the yearly tax revenue could amount to 20.8 bill. euros. In this calculation I only count that part of the trade whose leg is settled in euros. Neither pound sterling nor the Swiss franc is included unless traded against euros.

**Table 7: Rough estimates of the revenue of a PFTT**

<b>Daily values</b> <i>(except for the last two rows)</i>	<b>Total</b> <b>in bill. US \$</b>	<b>Euro leg</b> <b>in bill. US \$</b>	<b>Revenue</b> <b>in mill. US \$</b>
Total turnover (in 2001 US dollars)	1,210.0		
Minus estimates by the BIS	-36.0		
Preliminary basis	1,174.0	440.0	
Non-taxed instruments	-20.0		
Contraction of trading volume	-173.1		
Total taxable trading volume	980.9	367.6	58.34
Trader-trader transactions	575.7	215.8	43.15
With other financial institutions	274.9	103.0	10.30
With non-financial institutions	130.3	48.9	4.89
Yearly amount in mill. US \$		91,907.2	14,585
<b>Yearly amount in mill. euros</b>	(Tax rate 1 basis point)		<b>16,573</b>
<b>Yearly amount (alternative)</b>	(Tax rate 2 basis points with half the rate for wholesalers)		<b>20,800</b>

► **Summary.** The introduction of a PFTT will provoke very different reactions by actors in foreign exchange markets.

Generally one may expect that the trading volume will decline, and the spreads will widen. But at a reasonable rate of one basis point the spreads for liquidity trading would still be lower than several years ago. Nevertheless the question is open as to who would finally carry the additional costs.

The strongest impact will undoubtedly be on arbitrage trading, but in this segment of the market the spreads are so low that the tax *must* be passed on to other sectors, i.e. the tax has to be carried by producing firms and households (private and public). To what extent this will occur is again an open question.

The proper speculators in the market, for instance hedge funds, are held back by the tax only little, because they operate with significantly larger margins than liquidity traders.

Of institutional investors, insurance companies are likely to carry a relatively higher tax burden, because of their lower turnover rotation and their longer-term perspective, than investment funds. Among the latter, those groups that specialize in trading securities of industrialized countries can avoid the tax more easily.

Cautious estimates of the potential revenue of a PFTT indicate that the tax could yield some annual 17 to 20 bill. euros with a tax rate of one basis point for the area of the European Union plus Switzerland. This estimate does not include transactions that are carried out in British pounds or Swiss francs against non-euro currencies.