



WP/11/185

IMF Working Paper

Taxing Financial Transactions: An Assessment of Administrative Feasibility

John D. Brondolo

IMF Working Paper

Fiscal Affairs Department

**Taxing Financial Transactions:
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Prepared by John D. Brondolo¹

Authorized for distribution by Michael Keen and Juan Toro

August 2011

Abstract

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This paper considers how a tax on financial transactions could be applied to three broad and partially overlapping categories of financial instruments: (1) exchange-traded instruments; (2) over-the-counter instruments; and, (3) foreign exchange instruments. For each category, the paper examines the factors that would facilitate or complicate the administration of a financial transactions tax, the options for collecting the tax, the types of compliance risks that are likely to be encountered, and measures for mitigating these risks.

JEL Classification Numbers: G01, G02, G18, G38, H20, H26, H83

Keywords: financial transactions tax, tax administration

Author's E-Mail Address: jbrondolo@imf.org

¹ This paper has benefited greatly from the guidance and comments provided by Roberto Benelli, Vieri Ceriani, Massimo Cirasino, Serge Cools, Carlo Cottarelli, Mark de Brunner, Randall Dodd, Simon English, Michael Gaw, Simon Gray, Miles Harwood, Michael Keen, Andrei Kirilenko, Robert Kramer, Heitor Lima, Antonella Magilocco, Thornton Matheson, Arbind Modi, Victoria Perry, Luc Robin, Christine Sampic, Alessandra Sanelli, Robert Schroeter, Bernd Spahn, Lawrence Sweet, Victor Thuronyi, Franz Tomasek, Juan Toro, and Koenraad van der Heeden. Any errors and omissions, however, should be attributed only to the author.

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I. INTRODUCTION

This paper examines the administrative feasibility of levying a financial transactions tax (FTT) on a broad range of financial instruments. The topic is currently receiving considerable attention from policymakers, civil society organizations, and academics with much of the debate centered on the policy and administration merits of different taxing options for the financial sector. The key policy issues concerning an FTT have been widely discussed elsewhere: IMF (2010a) and Matheson (2011), for instance, argue that alternative tax instruments are better suited to the objectives of revenue-raising and mitigating financial market failures. This paper focuses solely on issues of administrative practicability: whether and how a broad-based FTT could be administered.

An FTT is a tax on transactions in financial instruments. It is intended to apply to purchases and sales of financial instruments as well as other types of financial transactions that may not technically constitute a purchase or sale (e.g., various types of derivatives) but have a similar effect. As such, an FTT can be levied on one, a few, or a broad range of instruments—including stocks, fixed income securities, derivatives, and foreign exchange.² Some countries currently levy an FTT, but usually on a small number of financial instruments—most commonly stocks and bonds.³

FTTs can be structured in a number of ways. The key administrative features of the tax are that it can be:

- Applied to the initial issuance of a financial instrument, subsequent transactions in the instrument, or both.
- Assessed on the basis of the amount of money that changes hands in the transaction, the notional value of the transaction, or a variety of other valuation methods.
- Designed to exempt certain types of transactions or categories of persons.
- Taxed at a single tax rate or multiple rates, either on an ad valorem (percentage) or specific (flat amount) basis.
- Levied on the buyer, the seller, or both.
- Collected by exchanges, clearinghouses, or market participants.

The idea of taxing financial transactions has a long history. In 1936, Keynes posited that a substantial transfer tax on securities transactions could reduce speculation in financial markets.⁴ Four decades later, Tobin proposed a tax on currency trades as a means for reducing currency

² Current account bank transactions could also be subject to the tax although most current proponents of an FTT do not support such an approach.

³ See Table 1 in Matheson (2011) for a list of selected countries that levy an FTT.

⁴ See Keynes (1936), pages 104–5.

market volatility (Tobin, 1978, 1996). Since then, the advantages and disadvantages of an FTT have been widely debated, with the debate continuing today.

The FTT has received renewed interest in recent times. This interest was spurred, in part, by the January 2009 G-20 Summit in Pittsburgh where G-20 leaders requested the IMF to prepare a report, by the time of the leaders' June 2010 Summit in Toronto, on options by which the financial sector could make a *fair and substantial contribution* toward paying for any burden associated with government interventions to repair the banking system. In the lead-up to the June 2010 Summit, academics, civil society organizations, and others opined on various tax measures, including an FTT. In this context, some supporters of an FTT view such a tax as useful tool for raising revenue for various purposes (including global development) and for reducing the risk of financial market failures.

*In its report to the G-20 leaders, the IMF observed that taxing measures other than an FTT are better suited to the issues that it was asked to advise on.*⁵ The report recommended that a “backward-looking” charge on financial institutions, based on past balance sheet items, would be the least distortionary way to recover the fiscal costs of the direct support provided to the financial sector during the recent crisis. The report also proposed two taxes to redress future financial failures: (1) a *Financial Stability Contribution* (FSC), linked to a resolution mechanism, to help reduce excessive risk-taking and meet the direct fiscal cost of future failures; and (2) a *Financial Activities Tax* (FAT) to pay for the wider fiscal and economic costs of future financial crises, help offset tax distortions that may result in the financial sector being too large, and further reduce excessive risk-taking.⁶

Following the Toronto Summit, the FTT has continued to attract interest. For example, the Leading Group on Innovative Financing for Development prepared a report in 2010 recommending adoption of a global currency transactions tax.⁷ In January 2011, the European Commission indicated that by the summer of 2011 it will prepare an impact assessment on financial sector taxation, including assessing the implications of introducing an FTT,⁸ and in February 2011 issued a consultation paper eliciting the views from interested parties on this topic. The European Parliament, in March 2011, adopted a resolution urging the European Union (EU) to introduce an FTT. In this context, the arguments for and against an FTT have largely centered on the policy implications and administrative feasibility of the tax.

⁵ See IMF (2010a).

⁶ The FSC would initially be levied at a flat rate (varying though by type of financial institution)—but refined later to reflect individual institutions' riskiness and their contributions to systemic risk—and applied to a broad balance sheet base on the liabilities side (excluding capital and possibly including off-balance sheet items). It could either be accumulated in a fund to facilitate the resolution of weak financial institutions or paid into general revenue. The FAT would be levied on the sum of the profits and remuneration of financial institutions, and paid to general revenue. For details, see IMF (2010a) and Keen, Krellove, and Norregaard (forthcoming IMF Working Paper).

⁷ See Leading Group (2010).

⁸ See Semeta (2011).

FTTs raise a number of policy concerns. FTTs have been found to be an inefficient instrument for raising revenue because, along with the revenue that they generate, they also reduce the value of securities, increase the cost of capital to users, and lower liquidity in financial markets. Concerns have also been raised about their efficacy in regulating financial markets and preventing bubbles: there is no convincing evidence that FTTs lower short-term price volatility while asset bubbles have been found to be caused more by excessive leverage than excessive numbers of financial transactions. Further, it has been pointed out that the real burden of an FTT may fall largely on final consumers rather than, as often seems to be supposed, earnings in the financial sector.⁹

Countries that plan on introducing an FTT also need to give due consideration to tax administration issues. A number of papers have assessed, at a general level, the feasibility of taxing financial transactions (Griffith-Jones 1996, Schulmeister 2008, Kern 2010, Leading Group 2010). Other papers have provided details on how a transactions tax could be applied to specific types of financial instruments, most notably to foreign exchange transactions (Kenen 1996, Schmidt 1999, Spahn 2002, Hillman, et. al. 2006). However, we are aware of no papers that have assessed in-depth the feasibility and options for administering an FTT on a broad range of financial instruments.

In principle, an FTT is no more difficult and, in some respects easier, to administer than other taxes. The same administrative tasks that apply to other taxes—registering taxpayers, assessing and collecting the tax, and verifying the tax liability—also apply to an FTT. These tasks are aided by certain features of an FTT: the transaction-based nature of the tax makes the tax liability fairly easy to calculate for many financial instruments; the strong recordkeeping capacity of the financial sector simplifies accounting for the tax, and the relatively small number of entities that would be subject to an FTT reduces a tax agency’s workload in administering the tax.

In practice, an FTT faces a number of administrative challenges. Some challenges involve conceptual issues such as defining the territorial scope of the tax, the taxable event, the tax base, and the taxable persons. Other challenges stem from the high degree of mobility and constant innovation in financial instruments, which provide opportunities for tax avoidance by migrating transactions to nontaxing jurisdictions and nontaxed instruments.

Since the time that an FTT was proposed by Keynes and later by Tobin, the feasibility of the tax has been facilitated by some developments and complicated by others. Facilitating factors include the expanding role of clearinghouses in settling financial transactions, the proliferation of automated trading platforms, the conversion of paper securities into electronic book entries, and the recent strengthening in the regulation of over-the-counter (OTC) derivatives in a number of countries. Complicating factors include the creation of new and complex financial

⁹ These and other policy issues are analyzed at length by Matheson (2011), IMF (2010a), and Shome and Stotsky (1996).

instruments, the ever-growing volume of financial transactions, and the increasing globalization of financial markets.

Against this background, this paper assesses the administrative feasibility of a broad-based FTT. In doing so, it considers how such a tax could be applied to three broad and partially overlapping categories of financial instruments: (1) exchange-traded instruments; (2) over-the-counter instruments; and, (3) foreign exchange instruments. Foreign exchange is treated as a distinct category—even though currencies are traded both on exchanges and over-the-counter—because of the large size of the foreign exchange market, the global nature of the trading, and the significant amount of attention that observers have given to taxing these instruments. For each of these three categories, the paper examines the factors that would facilitate or complicate the administration of an FTT, the options for assessing and collecting the tax, the types of compliance risks that are likely to be encountered, and measures for mitigating these risks.¹⁰

II. EXCHANGE-TRADED INSTRUMENTS

It is easier to administer an FTT on exchange-traded financial instruments than on other financial instruments. In both high and low income countries, most equities (in term of trading volume), some bonds, and some derivatives are bought and sold on organized exchanges. The centralized manner in which these instruments are traded, their reliance on clearinghouses to settle transactions, and the high degree of market regulation facilitate the administration of an FTT. As a consequence, where countries have levied an FTT, it is most commonly applied to exchange-traded instruments. For example, China, India, Korea, the United States (US), and the United Kingdom (UK) apply an FTT or similar levy on these types of instruments.

A. Market Organization, Instruments, and Regulatory Environment

Exchanges provide a marketplace for bringing together purchasers and sellers of securities. Almost all countries have one or more exchanges through which various types of financial instruments are bought and sold by registered broker-dealers for their clients or themselves (Table 1). To list a security for trading on an exchange, securities issuers are typically required to first register the security with a regulatory body and then satisfy the listing rules established by the exchange. While only members of an exchange are permitted to execute a trade over the exchange, not all securities must be exchange-traded: in many (but not all) countries, securities (even those listed on an exchange) can also be traded directly between market participants in the OTC market. Yet even these transactions usually have to be reported to a regulatory (or self-regulatory) organization.

In most countries, exchanges are subject to extensive regulation. Various statutes, regulations, and self-regulatory arrangements govern the operations of exchanges, including the instruments

¹⁰ Countries may use explicit taxes on cross-border flows of stock investments, foreign loans, and foreign exchange as a tool for controlling capital flows. Assessing the desirability or efficacy of such taxes for managing capital flows is beyond the scope of this paper.

Table 1. Common Exchange-Traded Instruments

Instrument	Definition
Equities	Equities (i.e., stocks) are financial securities that give the holder an ownership claim to a company. A company may have different types of equities (preferred, common), each with distinctive ownership rules, privileges, or share values. Equities can be private or public: public equities are regulated by government securities regulators and are traded on exchanges; private shares do not require approval by a regulatory body and are traded over-the-counter.
Futures	A future is a contract that obligates the purchaser to buy or sell an underlying asset at a specified price and time. The underlying asset is commonly a single stock or a stock index, a bond, a currency, or a commodity. Futures are traded on an exchange in standardized forms in terms of their contract size and maturity date.
Options	An option is a contract that provides the purchaser (the “holder”) with the right (but not the obligation) to buy (a call) or sell (a put) an underlying asset at a specified price (“strike price”) over a specified period of time in exchange for the payment of a premium to the seller (i.e., the “writer”). The underlying asset is commonly a stock, bond, commodity, or currency. Most options are traded on exchanges in standardized forms in terms of their contract size and maturity date. Some options are negotiated over-the-counter, which allows the contract to be customized to meet the needs of the counter-parties.

that are traded, the persons who can buy and sell securities for the general public, and the trading practices. These arrangements help to create an environment that is conducive to tax administration.

Exchange-based transactions are supported by centralized clearance and settlement systems.

Once a financial instrument has been traded on an exchange (or another trading platform), the transfer in ownership of the instrument and the associated payment take place through the clearance and settlement process.¹¹ Broadly, exchange-traded instruments are cleared and settled through: (1) a clearinghouse which, among other things, confirms the terms of the trade, informs the counterparties of their settlement obligations, and guarantees the completion of a trade;¹² (2) a central securities depository or a custodian that holds securities, often in electronic book-entry form, and registers their transfer of ownership; and, (3) settlement banks that handle the payment or receipt of funds associated with a trade.¹³ Over the years, these operations have become highly automated, centralized, and integrated in many countries: typically, each

¹¹ *Clearing* a security transaction involves confirming the terms of the transaction and the mutual obligations between the counterparties. *Settling* the transaction entails the transfer of the security from the seller to the buyer and transfer of funds from the buyer to the seller.

¹² A clearinghouse, which is also commonly referred to as a central counterparty (CCP), authorizes certain broker-dealers to clear and settle transactions for themselves and for other broker-dealers. The *clearing members* are normally required to maintain a settlement account with one of several banks designated by the clearinghouse. The clearinghouse interposes itself between the counterparties to the transaction and, in effect, becomes the buyer to every seller of a security and the seller to every security buyer of a security. In doing so, the clearinghouse assumes the obligation of its members that are receiving securities to receive and pay for those securities, and the obligation of members that are delivering securities to make the delivery and receive the payment. To reduce settlement risk, the clearinghouse requires the clearing members to post collateral and can impose penalties for failure to complete a trade.

¹³ Depending on the country, these three functions may be centralized in a single entity or split across multiple entities.

country has one or a few clearinghouses and securities depositories, and a small number of settlement banks.¹⁴ Box 1 provides a stylized description of a clearinghouse's operations.

Box. 1 The Operations of a Clearinghouse

A clearinghouse follows five basic steps in settling and clearing a security transaction:

Step 1. On the trade date (T), an investor places an order to buy or sell a stock with a broker-dealer. The broker-dealer sends the order to an exchange or another market for execution, which in turn, sends the information to the clearinghouse. Most of the trades are transmitted as “locked-in”—the details of the trades from the buyer and seller have already been matched by the exchange or another market—which means that the clearinghouse does not perform a trade comparison. For trades that are not locked-in, the market participants have to report the buy and sell data to the clearinghouse and the clearinghouse compares and matches the data.

Step 2. On the day after the trade (T+1), the clearinghouse transmits the trade details to the counterparties for confirmation, at which point the firms become legally bound to complete the transaction.

Step 3. Between T+1 and T+2, the clearinghouse becomes the central counterparty (CCP) by interposing itself between the two counterparties as the buyer to the seller and the seller to the buyer. As such, the clearinghouse assumes responsibility to make the trade whole if either the buying or selling firm is unable to fulfill its end of the transaction.

Step 4. On T+2, the clearinghouse issues a trade summary to the buying and selling firms, indicating net money and net securities owed for settlement. It then sends a report to the central securities depository (if different from the clearinghouse) describing the securities that are changing hands, the amounts that are due, and the brokerage accounts that need to be updated to reflect changes in ownership.

Step 5. T+3 is the settlement day for trades that began on T when securities are *delivered versus payment* (referred to as DVP). The central securities depository transfers securities electronically from the selling firm's securities account at the depository to the clearinghouse's account and then from the clearinghouse's account to the buying firm's account. To complete the transaction, the buying firm instructs its settlement bank to send funds to the clearinghouse's settlement bank which, in turn, pays the funds to the selling firm's settlement bank.

Buying and selling firms may be members of the clearinghouse (which entails membership fees) or may access the clearinghouse through other members (clearing members).

The above-mentioned features of an exchange facilitate the administration of an FTT. An exchange's trade reporting system provides a convenient audit trail for determining when a transaction has taken place. The small number of broker-dealers and clearinghouses—relative to the much larger number of financial market participants—provides a handy mechanism for collecting the tax. The strong commercial interest of broker-dealers in settling their transactions creates incentives for them to accurately report their trades to clearinghouses. And the tight regulatory regime that governs exchanges provides an environment that is conducive to tax compliance. A tax agency can leverage these features to administer an FTT as will be seen in the example from the UK below.

¹⁴ In the United States, the Depository Trust & Clearing Corporation (DTCC) and its subsidiaries in 2008 settled US\$1.88 quadrillion in transactions of corporate and municipal bonds, US Treasury issues, stocks, exchange traded funds, and mutual funds. In Europe, substantial amounts of European government securities are settled in either Belgium or Luxembourg through the international central securities depositories, Euroclear and Clearstream. Centralized clearance and settlements systems have also emerged in various countries for complex financial instruments. For example, a partnership between the DTCC's Deriv/SERV system and the CLS Bank provides centralized trade processing and settlement for credit default swaps.

B. Administrative Options and Their Feasibility

Countries have followed two broad approaches in administering an FTT on exchange-traded instruments by collecting the tax through either: (1) the exchange or its clearinghouse or (2) the broker-dealers. The UK and Belgium provide examples of these two approaches, respectively.

The UK's Stamp Duty and Stamp Duty Reserve Tax (SDRT) apply to a number of exchange-traded instruments. The standard charge of 0.5 percent (i.e., 50 basis points) is paid by the purchaser of the security and calculated by reference to the *consideration* (i.e., amount of money or other payment) paid by residents and nonresidents when transferring UK securities, including stocks, exercised equity options, futures contracts on shares, and shares in investment and unit trusts.¹⁵ UK securities include shares in UK incorporated companies and foreign companies that keep a share register in the UK.¹⁶ The tax is generally not chargeable to shares issued by companies incorporated overseas which are not kept or maintained on a UK company share register.¹⁷ The tax provides for a number of reliefs, most notably for securities transactions by broker-dealers who purchase shares for trading rather than as an investment. The purpose of this relief is to help create liquidity on exchanges.

*In administering the stamp duty, the UK's tax agency leverages existing market institutions, infrastructure, and technologies.*¹⁸ The stamp tax duty is administered by Her Majesty's Revenue and Customs (HMRC). The vast majority of stamp tax revenue is assessed and collected automatically from broker-dealers through the UK's electronic securities settlement system: CREST. In the UK, the majority of stock transactions are cleared and settled in CREST, which holds the securities and arranges their transfer and payment among counterparties. As with similar systems in other countries, CREST settles trades by simultaneously transferring between the counterparties the ownership and payment of the securities. Based on the information that broker-dealers enter into the system, CREST electronically assesses the tax and transfers the revenue directly to the government on a transaction-by-transaction basis (Appendix 1). Collecting tax through a clearinghouse like CREST offers important advantages for tax administration by lowering compliance costs for taxpayers, lowering administrative costs for the tax agency, and reducing the scope for underreporting tax compared to the case if broker-dealers were required to self-assess the tax liability.

¹⁵ The tax base for equity options (if exercised) is the strike price (and excludes the premium paid by the options holder). The tax base for equity-based forward contracts is the delivery price.

¹⁶ A share register is list of active owners of a company's shares, which is updated on an ongoing basis. In many countries, companies are required by law to maintain such a register.

¹⁷ The creation, issuance, and subscription of new shares by a UK company is outside the scope of the stamp tax as there is no 'transfer on sale.'

¹⁸ The administrative arrangements for this tax vary depending on whether the share transfers take place using a paper instrument (in which case the stamp duty applies) or by electronic ("dematerialized") means (in which case the stamp duty reserve tax applies). The same tax rate applies in both cases. The discussion in this paper focuses on the stamp duty reserve tax, which accounts for almost 90 percent of collections and nearly 100 percent of transactions volumes. For brevity, the SDRT is referred to as the *stamp tax* in the text.

The stamp duty's administrative and taxpayer compliance costs are low. In 2008 and 2009 the combined stamp duty reserve tax and stamp duty generated £ 3.6 billion and £ 2.9 billion, respectively. This was equivalent to 0.8 percent and 0.7 percent of total HMRC collections, and 0.3 percent and 0.2 percent of gross domestic product, for those years.¹⁹ The cost of administering the stamp duty is reported to be about 0.1 percent of the revenue collected. This compares favorably to other major taxes (income tax, VAT), whose administrative costs commonly range between 0.5 percent and 1.5 percent of collections in many OECD countries. Compliance costs to taxpayers were estimated to be £50 million in 2008.²⁰

A number of other countries leverage their stock exchanges or clearinghouses to collect an FTT. The US Securities and Exchange Commission collects a fee mainly through the stock exchanges based on transactions' information provided by their clearinghouse.²¹ India also collects a tax through its stock exchange while Korea collects it mainly through the stock exchange's clearinghouse. In each of these cases, the exchange or clearinghouse assesses, collects, and remits the tax *periodically* unlike in the UK where CREST collects and remits the tax on each individual transaction as it is settled.

Belgium levies a tax on a range of financial instruments. The stock transactions tax is imposed on most exchange-traded securities and their derivatives (e.g., options and futures) at a rate of 0.17 percent (17 basis points) of the amount received or paid and on some OTC instruments (e.g., corporate bonds) at a rate of 0.07 percent (7 basis points). The tax applies only to those secondary market transactions²² that are intermediated by a financial institution and carried out or concluded in Belgium. Transactions between financial institutions (both for their trading and investment accounts) are exempt from the tax as are transactions between two natural or legal persons (who are not themselves financial intermediaries) and transactions with nonresidents.²³ Both sides of the transaction (buy and sell) are charged the tax, which is split evenly between the two parties. The amount of the tax may not exceed €500 per transaction.

In contrast with the UK system, where the stamp tax is collected mainly by a clearinghouse, the Belgian tax is collected through major market participants. Under the Belgian system, financial intermediaries²⁴ are required to maintain records of their transactions that are subject to the tax,

¹⁹ Tax collection data was provided by HMRC. Gross domestic product was £ 1, 445 billion and £ 1,392 billion in 2008 and 2009, respectively (Source: HM Treasury).

²⁰ Source: HMRC.

²¹ Under the U.S. system, an exchange's clearinghouse is required to report to the exchange the volume and value of transactions that have taken place on a monthly basis. The exchanges, in turn, report this information to the Securities and Exchange Commission who issues an assessment for the levy. The exchanges are required to pay the monthly assessment two times each year.

²² The original placement of a security is exempt from the tax.

²³ Exemptions also apply to transactions made on their own account by insurance companies, occupational retirement institutions, and collective investment firms.

²⁴ Under the Law on the Surveillance of the Financial Sector and Financial Services (August 2, 2002), financial intermediaries are considered to be persons who are legally admitted to execute transactions in financial instruments

declare these transactions in a monthly tax return, and pay the self-assessed tax at the same time when the tax return is filed. The tax agency processes the tax returns and selectively audits those that are judged to have a high risk of noncompliance. The system does not use exchanges or clearinghouses to collect the tax nor are these institutions required to report to the tax agency any information that could be used to verify the accuracy of the tax liabilities self-assessed by financial intermediaries.

Although there are no precise estimates of administrative and compliance costs of the Belgian tax, these are thought to be low compared to other taxes. The cost of administration is believed to be low because only some 100 financial institutions are required to file the monthly tax return, which represents a small processing workload for the tax agency. Compliance costs are also seen to be low because most transactions are carried out via computer and the tax liability is calculated automatically by banks' accounting systems as a byproduct of computing brokerage fees and other transactions costs for each trade. The tax generated €236.3 million and €140.8 million in 2008 and 2009, respectively, which was equivalent to about 0.27 percent and 0.17 percent of federal government receipts and 0.07 percent and 0.04 percent of GDP for those years.²⁵

The UK and Belgium examples point to a number of issues that need to be considered in assessing the technical feasibility of applying an FTT to exchange-traded instruments. For any tax to be technically feasible, the tax agency must be able to carry out the following administrative functions in a workable manner: (1) establish the territorial scope of the tax; (2) define the taxable event; (3) determine the tax base; (4) identify the taxable persons; and (5) assess and collect the tax. These functions are considered below:

Establishing the territorial coverage of the tax. A fundamental issue for the operation of an FTT concerns the territory where the tax will apply. Because the FTT is a tax that focuses on the transaction rather than on the economic operator, the primary determination of the territorial scope of the charge to the FTT should be by reference to the location of a transaction. If the transaction occurs within the state, then it is within the charge to FTT.²⁶ This definition can be applied in a straight forward manner to transactions that take place over an exchange since exchanges are physical entities located in a specific country. Accordingly, an FTT on exchange-based transactions would be levied by the country whose exchange the transaction is executed on. If applied by all countries, this approach would eliminate the possibility that the same transaction could be taxed twice by two countries (or not taxed at all by a single country).

(Articles, 2, 9, and 10). This means that banks, stock brokers, saving banks, issuing banks, fund managers, central banks of Belgium and other EU countries, the European Central Bank, are all considered to be intermediaries.

²⁵ For 2008 and 2009, federal government revenue was € 87,654 million and €81,285 million, general government revenue was €150,679 and €145,359 million, and gross domestic product (at market prices) was € 350,100 and €342,261 million, respectively. Sources: National Bank of Belgium and Ministry of Finance.

²⁶ This is the same general approach that is commonly applied to the value-added tax. See Williams in Thuronyi (1996).

Defining the taxable event. A broad-based FTT is a tax on *financial transactions*, which can generally be defined to include the purchase or sale of a financial instrument, an agreement that establishes a right or obligation to purchase or sell a financial instrument, or an exchange of payments based on a financial instrument, rate, index, or an event.²⁷ This definition makes clear that a broad-based FTT is not limited to transactions that involve a transfer in ownership of a financial instrument but also applies to other types of transactions in financial instruments that may not involve an ownership transfer but have a similar effect (e.g., unexercised options, cash-settled futures, non-deliverable forwards, swaps).

Timing of the taxable event. The time that a taxable event occurs is important to the operation of an FTT because it establishes the time when the tax liability arises and must be charged.

Three alternative rules could be considered for determining the timing of a taxable event:

(i) when a taxable transaction is settled (i.e., cash rule); (ii) when a person enters into a taxable transaction (i.e., accrual rule); or (iii) a combination of the two rules (i.e., hybrid rule):

- *The cash rule*, which by linking the timing of the tax liability to the settlement (payment) of the transaction, has the advantage of allowing the tax to be charged on the actual amount of money (or other consideration) that changes hands—making for a reasonable tax liability. The main problem with the cash rule is that taxpayers could postpone the tax liability by arranging to delay payment for the transaction. This shortcoming, however, should not pose a major problem for exchange-traded instruments since such transactions are settled through a clearinghouse which establishes strict rules for determining the timing of payment.
- *The accrual rule*, under which the tax liability would arise when counterparties enter into a taxable transaction. This rule reduces the risk that taxpayers can postpone their tax payments since the liability for the tax arises when a contract is issued regardless of when the transaction is settled (paid). It also has the administrative advantage of allowing the tax to be charged and collected at one time, even if the transaction involves multiple payments over time (e.g., swaps and other types of derivatives). On the downside, the accrual rule faces problems in calculating the tax liability for those exchange-based transactions where the actual amount of money that changes hands is not known until after the contract has been issued (e.g., options, cash settled futures²⁸). For these types of transactions, the accrual rule would require charging the tax liability on some notional price (e.g., strike price for

²⁷ The national accounts systems used by the European Union, IMF, and United Nations have adopted similar language in defining a financial transaction as the creation, liquidation, change in ownership, or assumption of a liability involving a financial instrument. A change in ownership is said to occur through the sale, transfer, or other discharge of all rights, obligations, and risks associated with a financial instrument (See Eurostat (1995), Chapter 5; IMF (2000), Chapter V; and UN (2008), Chapter 11).

²⁸ Most futures contracts are not settled by exchanging the underlying asset for cash (i.e., physical settlement), but instead through a net cash payment from one counterparty to the other based on the difference between the futures delivery price and the spot price prevailing at the maturity of the contract (i.e., cash settlement). For example: Company A enters into a cash settled futures contract to buy 1 million barrels of oil at US\$70/barrel from Company B on a future date. If on the settlement date the spot price of oil was US\$80 per barrel, Company A would receive from Company B US\$10 million and receive no oil instead of paying Company B US\$70 million and receiving 1 million barrels of oil (as would be the case for physical settlement).

options, delivery price for futures) that may never be received (in the case of an unexercised option) or may differ from the actual price when the contract is settled (in the case of a cash settled futures contract)—resulting in an arbitrary and unreasonable tax liability.

- *Hybrid rule.* Although administrative simplicity would favor adopting a single rule for determining the timing of a taxable event for all transactions (i.e., either the cash or accrual rule), this would seem to be impractical given the differences among financial instruments. As mentioned above, the cash rule provides opportunities for postponing tax payments while the accrual rule could lead to arbitrary and uneven tax liabilities. To avoid these problems, a hybrid approach would be needed where the rule varies depending on the instrument. The accrual rule would be appropriate for those instruments where the transaction price is agreed to (or is required to be agreed to) when the counterparties enter into a contract while the cash rule would be appropriate where the transaction price is not known until some time after the contract has been entered into.

Measuring the tax base. An FTT is intended to be imposed on transactions in financial instruments and not on the income gained or lost from the transaction. Accordingly, an appropriate measure of the tax base could be the amount of *consideration* (i.e., money or other form of payment) that is exchanged (or to be exchanged) by the counterparties to a taxable transaction. For exchange-based instruments, this definition can be easily applied to determine the tax base: (1) for spot trades where the tax base would be the spot price; (2) for options contracts where the tax base would be the premium paid when the contract is issued and the strike price if option is exercised (no tax would be charged, other than on the premium, for unexercised options); and (3) for futures contracts where the tax base would be the strike price for physically settled contracts.²⁹

Identifying the taxable persons. The definition of taxable persons is important to any tax because it establishes the party who is legally liable for paying the tax. From an economics perspective, it makes no difference if an FTT is charged to the buyer or seller (or shared by both) since, as is well established in the public finance literature, the incidence of a tax ultimately depends on how buyers adjust their demand for a product and suppliers adjust their output in response to the tax (i.e., the demand and supply elasticities).³⁰ From an administrative standpoint, however, there may be advantages for splitting the tax between the two counterparties since this would allow the tax agency to cross-check the tax payment between

²⁹ Conceptual problems arise for those transactions that are settled by a net cash payment instead of the physical delivery of the underlying assets (e.g., cash settled futures contracts). To the extent that these two types of transactions are viewed as equivalent then an argument could be made that cash settled futures should use the same tax base (i.e., the strike price) as physically settled futures even though the strike price does not change hands. On the other hand, it could be argued that cash and physically settled transactions are not equivalent—since for the former the transaction does not result in a change in ownership of the underlying asset—and, therefore, the net cash payment would make for the appropriate tax base for cash settled futures. Such problems would need to be worked out in the FTT legislation and regulations.

³⁰ So while one party may be legally required to pay the tax, its incidence could be borne by either or both the buyer (who pays a higher after-tax price) and the supplier (who receives a lower after-tax price).

the counterparties, thereby, leaving the revenue less vulnerable than if the tax were to be paid by only one party to the transaction. This advantage is less important for exchange-traded instruments where the tax is charged and remitted by a third-party (i.e., the exchange or clearinghouse) than for many types of OTC instruments where the tax would have to be self-assessed and paid by the market participants themselves as described in Section III.

Assessing and collecting the tax. There are strong reasons for assessing and collecting an FTT on exchange-traded instruments through the exchange itself or its clearinghouse instead of the counterparties to the trade. This approach reduces compliance costs for broker-dealers and other market participants by obviating the need for them to register for the tax, maintain records on their transactions, and charge and remit the tax.³¹ It also reduces collection costs for the tax agency which would only need to process information from and ensure the compliance of one or a few persons (the exchange or clearinghouse) instead of from a larger number of broker-dealers. Perhaps most importantly, collecting tax through third parties, like exchanges and clearinghouses, reduces the scope for evasion to the extent that the third party has a higher compliance rate than market participants, as is usually the case.³²

Creating the administrative mechanisms. For countries that do not already impose an FTT, the introduction of such a tax would involve a number of implementation tasks. Legislation and regulations would need to be enacted, administrative processes and computer systems created, tax officers recruited and trained, and taxpayers educated on their obligations. The costs associated with these activities would comprise both initial investment costs (the largest of which is likely to involve information systems) and ongoing operational costs (mainly staff salaries).³³ These costs are likely to be lower for exchange-traded instruments than for OTC instruments since clearinghouses can be leveraged to administer the FTT for exchange-traded transactions whereas for those OTC transactions that are not centrally cleared the tax would need to be collected directly from market participants, implying a substantially larger workload for the tax agency.

The viability of a tax requires more than just putting in place an effective and efficient collection apparatus. The above discussion indicates that workable rules and procedures can be designed to determine how a FTT would be charged and collected on exchange-based transactions. Yet for a tax to be administratively feasible, the tax agency must also be able to ensure that taxpayers comply with and cannot easily avoid the rules and procedures, as is discussed next.

³¹ Broker-dealers would be required to register for off-exchange transactions as described in Section III.

³² This is the reason why many countries arrange for employers to withhold personal income tax from the salaries they pay to their employees.

³³ The UK and Belgium examples cited earlier indicate that the operational costs for an FTT are relatively low compared to that for other taxes. No information is available on the investment costs.

C. Compliance Risks and Risk Mitigation

As with all taxes, a transactions tax on exchange-traded instruments may create incentives for taxable persons to adjust their behavior in an effort to avoid paying the tax. In this regard, an FTT faces three main compliance risks: (1) underreporting of taxable transactions; (2) migration of transactions to non-taxing jurisdictions; and (3) substitution of nontaxed for taxed assets.

Underreporting risks

Some market participants may seek to avoid the FTT by underreporting their taxable transactions. The scope for this type of avoidance is reduced considerably when an exchange or clearinghouse collects the tax, as in the case of the UK stamp duty, since the tax is automatically withheld by a third party and is not dependent on market participants to self-assess their tax liability. While it is possible that the exchange or its clearinghouse may fail to fully and accurately charge and remit the tax, it is easier for the tax agency to monitor one or a few exchanges and clearinghouses than it is to control the much larger number of broker-dealers and other market participants.

Underreporting risks are exacerbated by exemptions, which create opportunities for taxpayers to claim reliefs that they are not entitled to receive. The best solution to this problem is to minimize the number of exemptions in the FTT legislation. However, where exemptions are deemed necessary, it is essential for the legislation to require taxpayers to maintain documentation and accounting records that substantiate the validity of the relief claimed. Where the FTT is collected by a clearinghouse, the clearinghouse should be required to record and report to the tax authorities the exemptions claimed by broker-dealers so that tax auditors can reconcile these claims with the accounts maintained by the broker-dealers.

Off-exchange transactions present additional opportunities for underreporting. Although a security may be listed on an exchange, there are various situations where listed securities may also be traded off-exchange or the transaction settled outside of the exchange's clearing agency.³⁴ A common example involves the case where securities are registered in the name of a nominee (e.g., a broker-dealer) and the beneficial interest is sold to a person using the same nominee so that the legal title to the security remains unchanged and, hence, does not need to be traded on an exchange or centrally cleared.³⁵ To mitigate this risk, it is important to provide legislation that requires broker-dealers to charge and remit the tax for off-exchange transactions

³⁴ This is less of a problem in those countries like China where listed securities are not permitted to be traded off-exchange.

³⁵ This applies when a share is traded between two clients of the same broker-dealer and the share is registered in the name of the broker-dealer (on behalf of one of its clients). In such circumstances, the transaction can be completed off-exchange without being centrally cleared, thereby, avoiding the assessment and collection of the tax by the clearinghouse.

or report these transactions to some other entity that is responsible for collecting the tax or reporting the transactions to the tax agency.³⁶

Controlling underreporting requires a dedicated audit program backed by an appropriate sanctions regime. The UK provides a good example of such a program, which includes both assurance visits and office enquiry work by a full-time team of staff who monitor the activities of CREST (the clearinghouse that collects most of the tax) and CREST's members.³⁷ These visits and enquiries aim at ensuring that all trades have been accurately reported via CREST and, where an exemption has been claimed, relevant documentation has been retained to support the claim. To have teeth, the audit program needs to be backed by an appropriate sanctions regime for underreporting and other violations of an FTT law. While international practice varies, it is generally considered appropriate to link the level of the penalty to the degree of culpability with lower penalties where the violation was merely the result of negligence, higher penalties where there is gross negligence, and very high penalties where the violation involves fraud or deliberate evasion.

Incentives for compliance can also help to reduce the risk of underreporting. For example, the UK's stamp tax achieves a degree of self-enforcement because the legislation establishes that the title change of share ownership will not be recognized legally or cannot be relied upon for any purpose whatsoever (except as evidence in a criminal case) unless the stamp tax has been duly paid. Since market participants have a strong interest in documenting their title to securities, purchasers are effectively required to pay the tax if they want anyone, including a court, to take notice of the change in ownership of the share. This incentive to pay the tax applies equally to both exchange-traded and off-exchange transactions.

Cross-border migration risks

To avoid tax, market participants may also shift their investments from instruments that are traded on taxable domestic exchanges to nontaxable overseas exchanges. Sweden's experience with an FTT during the 1980s provides a well-documented case study of this form of avoidance.³⁸ As summarized in Box 2, the Swedish tax was levied at high rates on a range of financial instruments, which resulted in widespread avoidance and poor revenue performance compared to the high rates. Some foreign investors avoided the tax on stocks by eliminating the use of Swedish brokerage firms when trading in Sweden or by trading Swedish shares in London or New York. Some domestic investors got around the tax by first establishing off-shore accounts and then using foreign brokers to purchase Swedish shares in Sweden.

³⁶ For example, the United States requires brokers to report all over-the-counter transactions to a self-regulatory body (FINRA) that is responsible for collecting tax on these transactions.

³⁷ Within the UK's tax agency (HMRC), the stamp tax is administered by a dedicated department—HMRC Stamp Tax.

³⁸ The description of the Swedish experience draws on studies by Campbell and Froot (1993), Umlauf (1993), and Habermeier and Kirilenko (2001).

Belgium and, possibly, other EU countries face another avoidance problem involving certain types of cross-border transactions. EU legislation permits EU-domiciled firms to provide services, including financial brokerages services, throughout the EU without requiring a physical presence or a fiscal agent in the countries where the services are provided. In this situation, some foreign brokerages, who are registered with the Belgian financial authorities but have no seat or office in Belgium, conduct financial transactions on the Belgian market but are not required to charge or remit the stock exchange transactions tax to the Belgian tax agency. It is thought that some Belgian nationals may be able to evade the tax by executing their transactions through these foreign financial institutions. The Belgian tax authorities lack the legal power and administrative capacity to redress this form of noncompliance, and there are no conventions or EU-directives on mutual assistance and recovery of FTTs for the tax authorities to draw on.

Box 2. Sweden's Experience with an FTT during the 1980s

In January 1984, Sweden enacted a tax on both the purchase and sale of domestic equities at a rate of 0.5 percent, resulting in a 1 percent tax per round-trip. Round-trip transactions in stock options were taxed at 2 percent. In addition, the exercise of an option was treated as a transaction in the underlying stock and, thus, was subject to an additional 1 percent round-trip charge. These rates were doubled in 1986 and, then in 1989, the levy was extended to fixed-income securities (including on government debt and corresponding derivatives) which were taxed at a maximum rate of 0.15 percent of the underlying notional or cash amount.

The taxes were applied directly on registered Swedish brokerages for transactions between domestic residents as well as those between domestic and foreign residents. Trades between two foreign principals, however, were taxed only if they involved a security registered in Sweden.

Revenue performance from the securities tax was disappointing relative to the high tax rates, partly as a result of tax avoidance. The tax generated little revenue³⁹—even after the rates were doubled—but led to a massive migration of stock trading volume from Stockholm to other financial centers. The tax also resulted in a sharp drop in trading volume for Swedish government bills and bonds as investors shifted to nontaxed domestic substitutes. Taxes on fixed-income instruments were abolished in 1990 and on other instruments in 1991.

Countries may consider enacting certain legislative provisions, such as those used by the UK, to dampen potential revenue loss from offshore migration of transactions. In principle, the UK stamp tax is a global tax that is chargeable on a transaction that is carried out either in the UK or overseas. Recognizing the practical difficulties of collecting the tax on overseas transactions, the UK imposes a higher rate (1.5 percent) when shares enter a depositary receipt issuer arrangement⁴⁰ or a clearance service system. The 1.5 percent charge or “season ticket,” as it is commonly called, ensures that the government will collect some revenue from subsequent stamp-free transactions overseas when shares are onward traded between members of the clearance service/depositary receipt issuer but legal title to the shares remain in the name of the clearance service/depositary receipt issuer.

³⁹ The tax accounted for 0.96 percent of government revenue in 1986 and rose to only 1.17 percent of collections in 1988 after the rates had been doubled in July 1986 and the coverage broadened in 1987. Thus, a 100 percent increase in the tax rate resulted in only a 22 percent increase in the tax's share of revenue.

⁴⁰ Depositary receipts are a common way of investing in a company listed on an overseas stock market. An intermediary (usually a bank) purchases the ordinary shares in the overseas market and then issues the depositary receipts, against the shares, to investors in the domestic market. The holder of a depositary receipt receives the same dividends as an ordinary shareholder and can also trade the shares on overseas exchanges.

In addition, Sweden's experience points to the importance of keeping tax rates low. Clearly, the incentives for transactions to migrate overseas increases with increases in a country's FTT rate relative to those that may exist in other countries, particularly in countries with deep capital markets and are easy to trade foreign shares on. Similarly, countries would have greater degrees of freedom to introduce a FTT to the extent that major financial center countries were also to introduce the tax.

Asset substitution risks

Shareholders may also seek to avoid the tax by trading in derivatives instead of the underlying share, but here too some limitations and controls can be introduced. For example, some countries permit trading in contracts for differences (CFDs) which allow market participants to speculate on price movements of a stock (or other assets) without the need for taking ownership of the underlying shares. CFDs were first developed in London during the 1990s where they had the advantage of being exempt from the stamp duty as the legislation did not recognize them as "chargeable securities." The potential tax loss in the UK is offset, to some degree, by Financial Services Authority (FSA) regulations that exclude derivatives from the classes of assets admissible for the solvency test for life insurance companies and pension funds, thereby raising the cost of investing in derivatives (Hawkins and McCrae, 2002). Moreover, countries could consider expanding the tax base of the FTT to eliminate any loopholes that may be available to derivatives, such as CFDs. While it will never be possible to close every loophole, the rules could be framed to ensure that the closest substitutes to taxable instruments are also subject to the tax.

D. Summary Assessment

Exchange-traded instruments offer a number of advantages in introducing an FTT. The high degree of market regulation and the requirement that transactions must take place through registered intermediaries (broker-dealers), the ease of establishing the timing of a taxable event and calculating the tax base, and the possibility of collecting the tax through clearinghouses all facilitate administration and reduce the scope for evasion. Even so, a comprehensive audit program—backed by a penalty regime—is needed to control noncompliance. Noncompliance could be further reduced through a supportive policy regime that: (a) conditions the legal standing of a transaction on the payment of an FTT; (b) imposes a higher tax rate when financial instruments exit the domestic market; (c) applies the FTT at a low tax rate; and, (d) ensures that near-substitutes for exchange-traded instruments are also subject to the tax. Despite the relative ease of administering an FTT on exchange-traded instruments, governments will still need to invest resources in developing their tax agencies' capacity to collect the new tax.

III. OVER-THE-COUNTER INSTRUMENTS

In most countries, a broad range of financial instruments are bought and sold in OTC markets. These instruments include some equities, most bonds, most money market instruments, and many types of derivatives (including swaps). In general, OTC instruments present greater

challenges to levying an FTT than exchange-traded ones because of, among other things, the greater variety of instruments and persons who can execute OTC trades, the decentralized nature of trading, and the absence of a centralized clearinghouse for clearing and settling some of these instruments. Nevertheless, a number of countries impose a transactions tax on certain types of OTC instruments: the Swiss stamp transfer tax, as described in this section, provides an example of how to apply an FTT to these instruments.

A. Market Organization, Instruments, and Regulatory Environment

OTC markets differ in important ways from exchanges. Unlike exchanges, the markets for OTC instruments are not “places” but instead tend to be less formal, although often well-organized, networks of trading relationships centered on one or more dealers (Dodd, 2008).⁴¹ In OTC markets, financial instruments are negotiated privately by two parties, one of whom is usually a dealer (mainly large banks and securities houses), without the intermediation of an exchange. In general, OTC markets are less transparent and operate with fewer rules than exchanges. They also involve larger number of products with more varied characteristics (Table 2). These features provide traders with greater flexibility in tailoring their transactions compared to exchange-traded instruments, but they also make for a more challenging taxing environment.

OTC markets also have significant differences among themselves in terms of the formality of the market, the degree of regulation, and the complexity of the instruments. These differences have implications for applying a transactions tax on OTC instruments.

At one end of the spectrum, bonds are traded in well-structured markets. A bond is a long-term, fixed income security in which an investor agrees to lend money to the issuer in exchange for an interest payment. These instruments are issued in the primary market and subsequently traded in the secondary market. Market participants include issuers (usually governments and corporations), broker-dealers (typically banks and security houses), and investors (mainly institutional investors—such as pension funds, life insurance companies, mutual funds, hedge funds and, to a much less extent, individuals). Investors may purchase bonds either directly from issuers or indirectly through dealers (who maintain inventories of bonds for which they quote buy and sell prices) and brokers (who do not maintain inventories of bonds but, for a commission, match buyers and sellers). Similarly, dealers may trade directly with investors or among themselves through the use of interdealer brokers.

Several features of the bond market facilitate the administration of a transactions tax. First, bond markets tend to be closely regulated: in most countries, bonds must be registered with a regulatory body before they can be issued and are traded through licensed broker-dealers. Second, trading takes place through automated networks of telephone and electronic trading platforms, and, in some countries, individual trades must be reported to a regulatory body.

⁴¹A broker is an agent who buys and sells securities on behalf of clients for a commission and, as such, is not a party to the transaction. A dealer, on the other hand, acts as a principal to a transaction and trades on its own account (to other broker-dealers or end-users) for a mark-up (i.e., a spread between its bid and offer prices). Because most brokerages act as both brokers and dealers, the term broker-dealer is commonly used to describe them.

Table 2. Common Over-the-Counter Instruments

Instrument	Definition
Bonds	A bond is a contract under which the purchaser pays the issuer the face value (principal) of the bond and the issuer pays the purchaser interest and repays the principal according to an agreed schedule. Bonds are issued by governmental or corporate entities, either on a medium-term (notes) or long-term (bonds) basis.
Forward contracts	A forward contract is a contract that establishes an obligation to buy or sell a specified quantity of an item at a specified price or rate at a specified time in the future. Under a forward contract, money changes hands when the contract reaches its maturity date or is sold before maturity. No money changes hands when the contract is first issued. Whereas a futures contract (Table 1) is traded in standardized form on an exchange, forwards are traded over-the-counter and can be customized in terms of amounts and maturity dates to suit the counterparties' preferences.
Contract for difference	A contract for difference (CFD) is a contract where one counterparty will pay the other the difference between the current value of an underlying asset and its value when the contract is entered into, without the need for exchanging ownership of the underlying assets.
Asset-backed securities	An asset-backed security (ABS) is a security whose value and income payments are derived from and collateralized (or "backed") by a specified pool of underlying assets. The underlying assets commonly include payments from mortgage loans, credit cards, and auto loans. More esoteric cash flows involve aircraft leases, royalty payments and movie revenues. Under an ABS transaction, the investor pays the issuer of the ABS (normally an investment bank) the face value of the security and is then entitled to receive the future income generated by the underlying assets generate.
Money market instruments	
Bankers' acceptances	A bankers' acceptance (BA) is a bill of exchange (normally tied to the sale or storage of goods such as an export order) that a nonfinancial firm issues to a bank in exchange for a loan. The bank resells the note in the secondary market at a discount and guarantees its payment. BA's do not bear interest; instead, the investor purchases the BA at a discount and then redeems it for face value at maturity.
Certificates of deposits	A certificate of deposit (CD) is a short-term promissory note issued by a bank for a fixed period during which time the investor cannot withdraw the funds without penalty. When issued, the investor deposits the nominal amount of the CD (principal) with the bank and then receives from the bank periodic interest payments and the principal at maturity.
Commercial paper	Commercial paper (CP) is a short-term promissory note that is usually issued by corporations with high credit ratings. CP can be issued either at discount (in which case investor purchases the paper for less than its face value and receives the full face value at maturity) or interest bearing (the investor purchases the paper at face value and receives periodic interest payments and the face value at maturity).
Inter-bank loans of central bank funds	Referred to as federal funds in the US, these are bank balances that private depository institutions (mostly banks) maintain at the central bank and can be loaned to other depository institutions, usually overnight, for an interest charge.
Repurchase agreements	A repurchase agreement or "repo" is a contract in which a seller agrees both to sell a security to the buyer and to repurchase the security at a specific date and price in the future. The largest part of the market is the overnight market, but longer-term repos are also common.
Treasury bills	A Treasury bill is a short-term security issued by a government. The investor will either pay the government the nominal value (face value) of the bill and receive periodic interest payments plus repayment of principal at maturity or will purchase the bill at a discount from its nominal (face) value and receive the full face value at maturity without periodic interest payments.
Swaps	
Commodity swaps	A commodity swap is a contract between two parties to exchange cash flows based on the price of an underlying commodity (usually an oil price index). Under this type of contract, one counterparty agrees to make a series of fixed payments at specified dates and receive from the other counterparty on the same dates a payment based on either the commodity's spot price at that time or an average price over a period of time.
Credit default swaps	A credit default swap is a contract in which one party (the protection buyer) pays a periodic fee to another party (the protection seller) in return for compensation in the event of a default on a bond or loan by a reference entity (a government or corporation), which itself is not a party to the contract
Interest rate swaps	An interest-rate swap is a contract between two parties to exchange two streams of interest payments denominated in the same currency. Most commonly, these swaps involve an exchange of fixed-rate for floating rate obligations. Under an interest rate swap, the principal (notional) does not change hands, only the interest payments. Interest rate swaps account for the overwhelmingly largest portion of swaps.

Third, the purchase of a bond commonly involves only a single payment at the outset of the transaction. Finally, bond transactions (both government and corporate) are often settled in a centralized manner: either through a government's treasury, a small number of settlement banks (for primary transactions), or via a clearinghouse (for secondary transactions).⁴² These features facilitate the introduction of an FTT by making it easier to identify taxable persons, determine when a transaction has taken place, and calculate and collect the tax.

At the other end of the spectrum, OTC derivatives—while traded in similarly structured markets as other OTC instruments—pose particular difficulties for levying a transactions tax. OTC derivatives are financial instruments whose value depends on one or more underlying asset such as a commodity, financial security, rate, or index, or the occurrence or magnitude of an event. They include options (Table 1), forwards, swaps, and various other instruments (Table 2). Like other OTC instruments, the markets for OTC derivatives are almost exclusively “dealer-intermediated”: that is, one of a small number of major dealers (typically, large banks and security houses) is a party to almost all transactions, whether as a buyer or a seller. The counterparties to these trades include other banks and securities firms, large corporations, insurance companies, mutual funds, and hedge funds. Trading takes place across an informal network of bilateral relationships through direct phone lines, electronic bulletin boards, electronic trading platforms, and other systems.⁴³

Among OTC derivatives, swaps have several features that complicate an FTT. Swaps are contracts under which the counterparties agree to exchange (swap) two different types of payments at pre-defined intervals over the life of the contract.⁴⁴ Levying an FTT on these instruments faces a number of challenges. First, until recently, swaps have been lightly regulated in most countries: swap dealers have not been required to be licensed (although they may be licensed for other financial activities), the products have not been subject to regulatory approval, and transactions have not had to be reported to a regulatory body. Second, swap contracts can be designed for an almost infinite number (and combination) of underlying assets and events. Third, some swaps use a notional value, which does not change hands in the transaction, to determine the payments that are exchanged between the counterparties over the life of the contract. Finally, a large portion of trading occurs across borders and the trades are often settled bilaterally between the counterparties instead of through a clearinghouse.⁴⁵ Taken

⁴² In the United State, virtually all broker-to-broker trades in corporate debt securities are cleared and settled through the National Securities Clearing Corporation (see DTC, 2009).

⁴³ Telephone networks connect dealers to other dealers as well as to their major customers. Electronic bulletin boards are systems that allow dealers or other market participants to post bids and offers, but they are not matched or executed. Electronic trading platforms allow dealers and market participants to post quotes and execute trades. For details see Dodd (2002).

⁴⁴ Over the last two decades, the OTC swap market has grown rapidly to become a major part of the global financial system. According to the BIS, the swap market grew from US\$ 72 trillion in 1998 to US\$ 583 trillion in June 2010, as measured in notional amounts outstanding (BIS, 2010b). As of June 2010, the largest categories were interest rate swaps (US\$348 trillion), credit default swaps (US\$30 trillion), and foreign exchange forwards and swaps (US\$ 26 trillion).

⁴⁵ At year-end 2009, about 45 percent of OTC interest rate derivatives were centrally cleared by UK-based LCH.Clearnet while almost all other OTC derivatives were bilaterally cleared (IMF, April 2010).

together, these features complicate an FTT by making it more difficult to establish the transactions that would be subject to the tax, define the tax base and calculate the tax, and determine when a transaction has taken place.

Recent regulatory reforms facilitate the taxation of OTC swaps. In the midst of the global financial crisis, a number of countries have taken (or are in the process of taking) steps to tighten the regulation of swaps. For example, the US enacted legislation in July 2010 that: (i) provides a comprehensive definition of OTC swaps; (ii) introduces registration requirements for OTC swap dealers and “major swap participants”; (iii) mandates the reporting of individual centralized clearing and/or to trading on an exchange or swap execution facility.⁴⁶ These types of provisions would facilitate taxation by providing workable definitions of the persons and products that are subject to the tax as well as by establishing clearinghouses and trade repositories that could be leveraged to collect the tax.

In addition to bonds and OTC derivatives, a range of other financial instruments are traded over-the-counter. For example, the OTC market also includes various money market instruments such as treasury bills, bankers’ acceptances, repurchase agreements (repos), interbank loans, and certificates of deposits. These fixed-income securities typically have maturities of one year or less. Market participants include banks, money market funds (both retail funds for individual investors and institutional funds for large investors), businesses, and governments who are searching either for a quick cash injection at the lowest interest rate (issuers) or to invest excess cash balances as profitably and safely as possible (investors). As in the case of other OTC markets, money markets do not exist in a particular place or operate according to a single set of rules but instead are webs of borrowers and lenders linked by telephone and computers. The connections between them are established by broker-dealers—typically banks and securities firms—that trade securities as a regular part of their business activities. Transactions may be cleared and settled either bilaterally between counterparties or, increasingly, through a clearinghouse.

B. Administrative Options and Their Feasibility

A transactions tax on OTC instruments could be collected by either clearinghouses or market participants. Where an OTC transaction is cleared and settled through a clearinghouse, the tax could be collected (withheld) by the clearinghouse following the same approach used by the UK in collecting its stamp duty reserve tax as described in Section II.⁴⁷ For those OTC

⁴⁶ See Title VII and Title VIII of the Dodd-Frank Wall Street Reform and Consumer Protection Act. On September 15, 2010, the European Union published a formal legislative proposal for a regulation covering over-the-counter-derivatives, central counterparties, and trade repositories. On May 2010, Japan amended the Financial Instruments and Exchange Act to mandate centralized clearing of large derivatives transactions and storing and reporting of trade information data for OTC derivatives.

⁴⁷ For example, it is not uncommon for two counterparties to trade corporate bonds (i.e., negotiate the terms and conditions of the transaction) over-the-counter between themselves (instead of through an exchange) and settle the trade *centrally* through a clearinghouse which holds the securities (in physical or electronic form) and which arranges for the securities and payments to be exchanged between the counterparties. This arrangement is also common for many other types of instruments that are traded over-the-counter.

instruments that are not centrally cleared, the traders themselves would need to assess and pay the tax. Switzerland provides a good example of how a tax agency can leverage dealers and other large traders to charge and collect an FTT on OTC transactions.

*Switzerland levies a Stamp Transfer Tax on various financial instruments, some of which are traded over-the-counter.*⁴⁸ The tax applies to transactions in certain types of domestic and foreign securities, including: stocks, corporate and government bonds, investment fund units, and some derivatives (e.g., exercised options, forwards, and equity swaps). It is levied at a rate of 0.15 percent (15 basis points) for domestic securities and 0.30 percent (30 basis points) for foreign securities. Both residents and nonresidents are subject to tax, but there are a broad range of exemptions.

The Swiss tax is collected through securities dealers. Dealers are defined more broadly in the stamp tax law than in the law on stock exchanges and securities to include not only traditional broker-dealers and banks but also Swiss companies with more than CHF 10 million in taxable securities on their balance sheet, and foreign members of a Swiss stock exchange. These persons are required to charge and collect the stamp tax from their counterparties—on both OTC and exchange-based transactions—and remit the revenue to the government.

The liability for charging the stamp tax arises when the transfer of ownership of a security has been completed, provided that one of the parties to the transaction or one of the intermediaries is a Swiss securities dealer. When a transaction is conditional (such as in the case of an option), the liability is incurred when the condition is met: for options, for example, the tax is charged on the strike price when the option has been exercised. Depending on the types of counterparties and the nature of the transaction, the tax may be split half-and-half by the two counterparties, paid by only one counterparty, or exempted for both counterparties (Box 3).

Exemptions apply to various persons and transactions. Most importantly, dealers are exempt from paying the tax when buying and selling securities for/from their trading portfolio⁴⁹ or when acting as a broker for two other counterparties. Swiss investment funds, foreign banks and brokers, foreign social security institutions, foreign pension institutions, foreign life insurers, and foreign companies whose shares are listed on a recognized stock exchange are also exempt. These reliefs aim at adding liquidity to and enhancing the attractiveness of the Swiss capital market.⁵⁰ They also reflect a concern that the imposition of an FTT, albeit small, could cause institutional investors (both domestic and foreign) to shift their investments to nontaxing jurisdictions.

⁴⁸ A separate stamp tax applies to the initial issuance of some securities.

⁴⁹ They are subject to the tax when trading for their investment portfolio.

⁵⁰ The exemptions are also intended to prevent Swiss banks from being put at a disadvantage relative to their foreign competitors when trading on a foreign stock exchange.

Box 3. Assessment Methods for the Swiss Stamp Transfer Tax

In assessing the Swiss Stamp Transfer Tax, dealers are required to consider several factors, including whether the counterparties identify themselves as registered securities dealers or as tax-exempt investors, whether the dealer itself is acting in the capacity of a contracting party or simply as a broker, whether the dealer is purchasing or selling for its own trading portfolio, the domicile of the dealer's counterparty, and the instrument that is being traded. Specifically:

When a securities dealer is a contractual party to a transaction it will be liable either for paying one-half of the tax itself (if the transaction is for its own *investment* portfolio) or no tax (if the transaction is for its own *trading* portfolio). The dealer is also required to charge one-half of the tax to its Swiss client (for both Swiss and foreign securities) or a foreign client (for Swiss securities, foreign investment fund units, and foreign shares, but not foreign bonds), as the case may be.

When a dealer acts as a broker between two counterparties, the dealer itself is not required to pay the tax but may be required to charge it to the counterparties depending on who the two counterparties are:

- Where one counterparty is another securities dealer and the other counterparty is either a Swiss or foreign client, no tax is charged to the other dealer and one-half the tax is charged to a Swiss client (for both Swiss and foreign securities) or a foreign client (for Swiss securities, foreign investment fund units, and foreign shares, but not foreign bonds).
- Where one counterparty is a foreign bank or foreign broker and the other counterparty is either a Swiss or foreign client, no tax is charged to the bank or broker and one-half the tax is charged to a Swiss client (for both Swiss and foreign securities) or a foreign client (for Swiss securities, foreign investment fund units, and foreign shares, but not foreign bonds).
- Where one counterparty is a Swiss client and the other counterparty is a Swiss or foreign client, one half of the tax is charged to the Swiss client and one-half is charged to the other Swiss client (for both Swiss and foreign securities) or a foreign client (for Swiss securities, foreign investment fund units, and foreign shares, but not foreign bonds).
- Where the two counterparties are foreign clients, one-half the tax is charged to one foreign client (for Swiss securities, foreign investment fund units and foreign shares, but not for foreign bonds) and one-half to the other foreign client.

Filing and payment are performed on a self-assessment basis. The dealer must file the tax return and remit the revenue within 30 days after the end of each quarter. This is in contrast to the UK approach to taxing exchange-traded instruments under which the tax is withheld on each individual transaction, obviating the need for market participants to charge the tax and file a tax return. To reduce compliance costs, the Swiss tax may be paid and tax return filed on an annual basis for those taxpayers whose stamp transfer tax liabilities are less than CHF 5,000 (about US\$4,700).

The law includes a number of provisions that strengthen administration. Using dealers to collect the tax simplifies administration by eliminating the need for individual end-users to register for the tax, maintain records, and file tax returns. To ensure proper control, the Swiss legislation requires all securities dealers to register with the tax agency irrespective of whether they are a licensed bank or have been licensed by another regulatory agency. At the time of registration, dealers are issued an identification number and card which they must present to other dealers in order to claim an exemption for purchases intended for their trading portfolio. Dealers are also required to maintain a *transactions register* into which they must record the details of each transaction, including the name, domicile, and securities dealer number (if any) of the purchaser and seller as well as the type, number, and value of the securities traded. Taken together, these arrangements facilitate the dealer's task of assessing the tax and the tax agency's task of verifying the assessment.

The Swiss tax authorities have worked in close cooperation with market participants in designing the stamp tax's administrative arrangements. For example, the authorities sought the views of the Swiss banking association in preparing guidance circulars that set out the practical details on how the tax was to be administered. Both sides appear to have benefited from this cooperation: the banks have gained in that the administrative procedures have been built around banks' internal systems and procedures; the tax agency has gained by reducing taxpayers' errors and, more generally, by creating a trusting relationship with taxpayers. The lesson here is that in designing the administrative processes for an FTT, tax agencies are well advised to consult with the private sector stakeholders who will eventually be expected to implement the tax.

At the same time, some aspects of the Swiss law complicate administration. The web of exemptions and differential treatments adds complexity to the stamp tax. Such complexities require additional effort from taxpayers to comply with the tax and further work for tax agencies to ensure compliance. While exemptions and special treatments may be directed at legitimate policy objectives—such as promoting the domestic capital market—it should be recognized that they also raise the cost of administration and broaden the scope for noncompliance. Further, collecting the tax through dealers instead of the clearinghouse(s) raises compliance costs for market participants and administrative costs for the government.

The tax provides some scope for avoidance, but the amount of foregone revenue is believed to be small. The stamp transfer tax can be legally avoided in two main ways: (1) Swiss nationals (individuals) can conduct tax-free transactions directly with foreign banks instead of using a Swiss dealer and (2) two Swiss end-users (individuals or businesses) can trade securities between themselves tax-free, provided they own less than CHF 10 million in such securities (otherwise, they would be required to register and charge the tax). The Swiss Federal Tax Administration acknowledges these avoidance possibilities but believes that such noncompliance, and the associated revenue loss, is very small and feel that traders are not likely to incur the inconvenience and additional costs to avoid a small tax.

The Swiss tax agency relies on an audit program to mitigate noncompliance. The tax agency operates a dedicated audit program for banks and other securities dealers, which examines the stamp duty and other bank-specific taxes. The audit program examines each dealer's stamp tax obligations at least once before the expiration of the five-year statute of limitations. Although the tax office is not permitted to access transactions information from clearinghouses, tax auditors are authorized to review dealers' books and records and, when discrepancies are found, assess additional tax and apply penalties.

The stamp tax is thought to have low compliance and administrative costs, and high compliance rates, although no precise estimates are available. In 2010, the tax accounted for 4.7 percent of central government revenue and was equivalent to 0.4 percent of GDP.⁵¹ Administrative costs are

⁵¹ In 2010, stamp tax revenue (for the issuance of new shares and the transfer of existing shares) was CHF 2,96.2 million, total central government revenue was CHF 46,347 million, and GDP was CHF 546,245 million (Source: Confederation Suisse, 2011).

believed to be low, in part, because the small number of registered dealers (about 400) requires only a small number of tax officers (about 10) to administer the tax. Compliance costs are also said to be low because dealers' integrate the calculation of the tax into their internal accounting systems. Swiss tax officials attribute the high compliance rates to the focused audit program and the banks' confidence that the system is being administered efficiently.

Stepping back from the Swiss example, applying a transactions tax to OTC instruments is more challenging than to exchange-traded instruments. Though not insurmountable, the challenges reflect the difficulties that some OTC instruments present in: (1) establishing the territorial coverage of the tax; (2) defining the taxable event; (3) measuring the tax base; (4) identifying the taxable persons; and, (5) assessing and collecting the tax, as described below.

Establishing the territorial coverage of the tax. It is more difficult to determine the territorial scope of the FTT for OTC transactions than for exchange-based ones. This is because, unlike a transaction on an exchange, OTC transactions are not executed at a single physical location but instead some element of the transaction can occur across borders, making it possible for two states to have jurisdiction over the same transaction. One solution would be for states to adopt a common approach in defining the taxable person to be either the "buyer" or "seller" of a financial transaction. However, this approach still faces problems for those OTC transactions (e.g., swaps) that do not entail a purchase and sale but instead provide for an "exchange" of payments where the two counterparties are both buyers and sellers. Another solution to conflicts in territorial coverage would be for countries that impose an FTT to require its residents to pay only half the tax rate on transactions with non-residents in countries that also impose an FTT.⁵²

Defining the taxable event. The taxable event for OTC transactions can be defined using the same definition for exchange-based transactions described in Section II: broadly, a taxable transaction would involve the purchase or sale of a financial instrument, or the right to purchase or sell a financial instrument, or an exchange of payments based on a financial instrument, rate, index, or an event. While this definition can be easily applied to many OTC instruments, conceptual problems arise with some other instruments. For repurchase agreements, for example, the question arises as to whether the two legs of the transaction constitute separate taxable events or only a single taxable event. The answer would seem to depend on whether a country's tax laws and accounting practices treat a repurchase agreement as a *sale* (which would make a case for taxing both legs) or a financing arrangement (which would make a case for taxing only the first leg).⁵³

⁵² This issue is discussed further under *taxable persons* below.

⁵³ A repurchase agreement is treated as a financing arrangement under both the United States Generally Accepted Accounting Principles (see FASB, Financial Accounting Standards number 140) and International Financial Reporting Standards (see International Accounting Standard number 39). Accordingly, it could be argued that the tax should be levied only once. Although conceptually sound, this treatment could create major compliance risks since tax agencies would find it difficult to distinguish those forwards that are the second leg of a repurchase agreement (not taxable) from outright forwards (taxable).

Timing of the taxable event. In principle, the liability to pay the FTT on over-the counter transactions could be defined to arise either at the time when the counterparties enter into a taxable transaction (accrual rule) or at the time of payment (cash rule). These two approaches have the same advantages and disadvantages for OTC instruments as for the exchange-traded instruments described earlier. In general, the accrual rule would be the preferred approach since this would prevent taxpayers from postponing the tax liability by delaying the payment of the transaction. However, this method would encounter problems when applied to certain types of OTC instruments such as swaps. For many swap contracts, the amount of money that actually changes hands during the life of the contract is not known when the counterparties enter into the transaction. Consequently, the accrual rule would require imposing the FTT on the notional value (or some other constructed value) of the swap. This would result in an arbitrary tax liability since the notional amount is often not exchanged by the counterparties but instead is used only as a reference for calculating their mutual payment obligations.⁵⁴ This suggests that each of the two rules—the cash and accrual rules—is better suited for some OTC instruments than others and, consequently, that the hybrid approach would be needed as described in Section II.

Measuring the tax base. As with exchange-traded instruments, the amount of *consideration* (money or other form of payment) that changes hands between the counterparties to an OTC transaction would make an appropriate tax base for the FTT since this amount provides a reasonable measure of the value of the transaction. This definition, though workable for many OTC instruments, is not without problems. For example, some types of OTC transactions provide for the counterparties to net out their mutual gross obligations.⁵⁵ For these transactions, the amount of money that actually changes hands (i.e., the net payment) would not accurately reflect the value of the transaction; instead, the gross payments (though not exchanged) would make for a more appropriate tax base. Such issues would need to be clearly defined in the FTT law and its detailed rules.

An additional problem in determining the taxable event and the tax base for OTC instruments involves their constant innovation. Changes to existing products and the introduction of new ones complicate administration by making it difficult to formulate an all encompassing definition of the instruments that are subject to the FTT. In addressing this issue, some guidance may be found in the approach taken by the US Dodd-Frank Act which defines swaps by *both* enumerating the specific instruments (e.g., interest rate swap, a credit swap, a weather swap, etc.) and by describing their general features (i.e., any contract that provides for a

⁵⁴ For example, consider a fixed-variable interest rate swap with a US\$1million notional value. Under this type of transaction, the counterparties do not exchange the US\$1million notional value but instead use the notional to calculate the streams of interest payments that they are obligated to pay to each other.

⁵⁵ For example, under an interest rate swap the counterparties are obligated to exchange streams of gross interest payments with each other (i.e., typically one counterparty pays a fixed interest payment stream and the other pays a flexible interest rate payment stream). In practice, however, the two counterparties net out their gross payment obligations with a result that the counterparty owing the larger amount pays the net difference to the other party in each payment period under the contract.

purchase, sale, payment or delivery that is dependent on the occurrence, nonoccurrence, or extent of the occurrence of an event or contingency associated with a potential financial, economic, or commercial consequence).⁵⁶

Identifying the taxable persons for OTC transactions is more complicated than for exchange-traded instruments because businesses other than registered broker-dealers can trade OTC instruments and because some OTC instruments are not centrally cleared. Consequently, larger numbers of market participants, including those end-users who do not trade financial instruments as a regular part of their business, would be required to maintain records of their transactions, charge and collect the tax, and remit the revenue to government along with a tax return. To reduce compliance and administrative costs, the FTT law could restrict the taxable persons (i.e., the persons liable for the tax) to broker-dealers and other major market participants each of whom would be liable for paying half the tax rate when trading with each other. Small end-users and other nonregistered persons would be relieved from registering and accounting for the FTT, but broker-dealers and major market participants who trade with them would be liable for paying half the FTT rate themselves and charging nonregistered persons half the rate.⁵⁷ In this way, exempting some (small) end-users could be expected to result in only minimal revenue loss since these persons almost always transact with broker-dealers and other major market participants, who would be within the charge of the FTT.⁵⁸

Assessing and collecting the tax. In contrast to exchange-traded instruments, a more varied and complex approach would be required to collect an FTT on over-the-counter transactions. This is the case because some OTC transactions are cleared and settled by a clearinghouse which could conveniently collect the tax, while other OTC transactions are cleared and settled by the traders themselves. This situation would require three collection variants:

- For those OTC transactions that are settled through a clearinghouse, the clearinghouse would charge the tax to the two counterparties (half-half) and remit the revenue to the government. This variant would be exactly the same as that used to collect the FTT from exchange-traded instruments as described in Section I.
- For those OTC transactions that are settled outside of a clearinghouse *and* where the counterparties are broker-dealers and/or other major market participants, the two counterparties would be charged the FTT half-and-half. While it might appear easier for the tax to be charged fully to just one counterparty—either the buyer or seller—this is less

⁵⁶ See the Dodd-Frank Act, Title VII, Section 721.

⁵⁷ This approach could also provide a solution for taxing non-residents to the extent that it is deemed desirable to do so. That is, a country that imposes an FTT could require its resident (registered) taxpayers to pay half the FTT themselves and charge half the FTT rate to nonresidents in countries that do not also impose an FTT. For transactions with non-residents in countries that also impose an FTT, residents would be required to pay half the tax rate themselves but not charge the other half to these non-residents. This approach would increase compliance costs for taxpayers who would have to know whether their counterparty is a resident of a country that imposes an FTT.

⁵⁸ It is possible that two exempt end-users could conduct a large trade between themselves that would result in a large amount of foregone tax revenue. To prevent this from happening, the FTT legislation could include a provision that provides for mandatory registration for all transactions that exceed a certain level.

straightforward than it seems since for some OTC instruments (like swaps) both counterparties could be considered the “buyer” and “seller.” Moreover, splitting the tax between the two counterparties has an important administrative advantage by allowing the tax agency to cross-check the two sides of the transaction and, thereby, reduce the vulnerability of the revenue if it were to be collected by just one of the counterparties.

- For OTC transactions that are not settled through a clearinghouse *and* where the counterparties are on the one hand, either a broker-dealer or a major market participant, and, on the other hand, an end-user who is exempted from charging the tax⁵⁹ then the former would pay half the FTT themselves and charge the other half of the tax to their exempt counterparty. This would ensure that the full amount of the tax is charged while at the same time relieving small end-users from the responsibility of registering for, charging, and accounting for the tax.⁶⁰

Creating the administrative mechanisms. To an extent, the same administrative machinery for collecting a transactions tax on exchange-based instruments can be used to collect the tax on OTC transactions. However, OTC transactions are likely to require more effort to collect because the tax liability will need to be self-assessed directly by the market participants for those transactions that are not settled through a clearinghouse. Consequently, the tax agency would be required to register, process tax returns and payments, maintain accounts, and audit the tax returns for a larger number of taxpayers. This would add not only to the tax agency’s collection costs but also to taxpayers’ compliance burdens.

The foregoing discussion suggests that it is more difficult to assess and collect a transactions tax on OTC instruments than on exchange-traded instruments, but that solutions are available for resolving these difficulties. The greater challenge beyond establishing the mechanics of assessing and collecting the tax, however, is ensuring that persons who transact in OTC instruments comply with their FTT obligations.

C. Compliance Risks and Risk Mitigation

OTC instruments are more vulnerable to compliance risks than exchange-traded instruments. Consequently, greater administrative effort is needed to control the risks.

Underreporting risks

OTC transactions present greater risks that taxpayers will underreport their tax liabilities than exchange-based transactions. This is the case for three reasons. First, some OTC instruments are not subject to mandatory reporting to a regulatory body or trade repository. Second, various OTC instruments are often settled directly by the counterparties instead of through a clearinghouse. Third, different collection methods may be required for different OTC instruments. These factors provide greater scope for taxpayers to underreport their tax liability,

⁵⁹ Nonresidents (regardless of their size) could also be included under this category.

⁶⁰ Transactions between two small end-users would be fully exempt from the tax but this could be expected to result in a minimal amount of foregone revenue.

either intentionally (because the absence of trade reporting and centralized clearing reduces the tax agency's capacity to detect underreporting) or unintentionally (because the different collection methods complicate the accounting for the tax).

Greater administrative resources will be required to mitigate the underreporting risks posed by OTC transactions. International experience has shown that achieving high rates of voluntary compliance by taxpayers requires effective taxpayer services programs to facilitate compliance and strong enforcement programs to discourage noncompliance. Although these programs are also required to administer exchange-traded instruments, the resource requirements will certainly be higher for those OTC transactions where the tax must be collected directly from the market participants than for exchanged-based transactions where the tax can be collected by one or a few clearinghouses.

Providing incentives for compliance is also essential to mitigating underreporting risks. Traders in financial instruments attach great importance to ensuring the certainty of their transactions. OTC instruments present problems in this regard because many of these instruments are traded and settled bilaterally between counterparties, making them more susceptible to legal disputes than if they were traded over an exchange and settled by a clearinghouse. This is particularly the case for OTC swaps where over the years a number of high-profile court cases have arisen (Schinasi et.al., 2000). These cases have often involved such issues as the fiduciary responsibility of swap dealers to their counterparties, the definition of credit events, the valuation of swaps against a defaulting counterparty, and contract terms governing collateral. In this context, linking the legal standing of an OTC transaction to the payment of the FTT could provide a very powerful inducement for taxpayers to comply with their tax obligations in relation to OTC transactions. This could be accomplished if the law imposing the FTT were to provide for their *unenforceability* in the court of contract rights relating to OTC instruments in the event that the required tax in respect of the instrument has not been paid.

Cross-border migration risks

OTC instruments could be just as, and possibly more, vulnerable to cross-border migration than exchange-traded instruments. Germany's experience during the late 1980s is a case in point. At that time, transactions taxes on German financial instruments were reported to have contributed to the high proportion of trades in German corporate bonds taking place in London.⁶¹ The risk of offshore migration could be even greater for other types of OTC instruments, such as swaps, since these instruments trade in a highly globalized market⁶² and are less territorially tied than other instruments. As a result, a swap contract can, in principle, be

⁶¹ See Bank of England (1989) and White, Kupic, and Duffee (1993).

⁶² 43 percent of the turnover in OTC derivatives takes place in the UK., 24 percent in the US, and somewhat less than 15 percent in France, Germany, and Japan combined. Of the UK share, about three-quarters of the transactions take place across borders (International Financial Services London, 2007).

entered into just as easily in a country other than the one where the underlying asset was issued and is most actively traded.

A number of measures could be considered to address cross-border risks. Countries could try to limit migration risks by restricting the legal standing for OTC contracts to those where the transaction tax has been paid (as mentioned earlier). In addition, a country could consider levying an FTT not only on OTC contracts that are entered into within its jurisdiction but also on those transactions that its residents enter into in other jurisdictions.⁶³ Finally, the capacity of any country to effectively administer an FTT on OTC instruments would be enhanced if the major financial center countries introduced a similar tax on these instruments.

Asset substitution risks

OTC instruments may also pose greater asset substitution risks than exchange-traded instruments. In the Swedish example described in Section II, the introduction of a transactions tax had an even greater impact on the local trading of OTC instruments than on exchange-traded stocks.⁶⁴ During the tax's first week of operation in January 1989, bond trading volume fell by about 85 percent from its average during the summer of 1987. Similar sharp drops in trading were recorded for futures on bonds and bills as well as options. The reason for this sharp decline appears to have been the relative ease with which untaxed domestic substitutes could be created for taxed bonds. For example, the market for Swedish debentures (which were not subject to the tax) became more active after the tax was imposed and forward-rate agreements (also untaxed) quickly took the place of futures markets for bills and bonds. Given that OTC instruments are generally more flexible to design and trade than exchange-based ones, the asset substitution risks for the former could be expected to be greater for the former than the latter.

Various approaches could be explored to reduce asset substitution risks. One approach would be to ensure that the FTT applies to all close substitutes for taxed OTC instruments. Given the ease in which OTC instruments can be modified and new ones created, however, it is important to craft the definition of taxable instruments in a sufficiently broad manner to bring into the tax net as many potential substitutes as possible. Yet since even the most deftly drafted legislation cannot cover all eventualities, the tax law could include anti-avoidance provisions that would allow the tax agency to re-characterize as taxable those instruments and transactions that it deems as having been designed or entered into mainly to avoid tax.

⁶³ Double taxation could be avoided if countries were to adopt the practice of exempting from domestic FTT their residents' transactions in countries that also impose the tax or allowing residents to claim a credit for FTT paid in other countries.

⁶⁴ The tax rates on these instruments varied, but were considerably lower than those on equities, reaching a maximum of only 15 basis points of the underlying notional or cash amount.

D. Summary Assessment

Applying an FTT to OTC instruments, though more challenging than for exchange-traded instruments, is nevertheless practicable. The challenges stem mainly from the greater variety of instruments and persons who can execute transactions, the constant innovations in the OTC market, the reliance on market participants to assess and collect the tax, and the absence of centralized settlement and reporting arrangements for many instruments. To an extent, these difficulties can be offset by restricting the persons who must register and be liable for the FTT to broker-dealers and other large market participants, harnessing central clearinghouses and trade reporting bodies (where they exist) to help collect the tax, and leveraging the trend towards greater regulation of OTC swaps. Still, it can be expected that applying a transactions tax to OTC instruments will require greater effort and resources from the tax agency, and make even more important the need for a supportive tax policy regime (that provides for low rates and the taxation of near-substitutes), positive inducements for compliance (by linking the legal standing in ownership of OTC instruments to the payment of tax), and a strong enforcement program.

IV. FOREIGN EXCHANGE INSTRUMENTS

The foreign exchange market is particularly challenging for levying an FTT. The largely over-the-counter nature of the trading and the limited regulatory environment in many countries complicate a tax agency's task of identifying taxable transactions and taxable persons. Moreover, the global scope of currency trading—with large banks maintaining worldwide networks of trading desks—provides particularly ready opportunities for tax avoidance by migrating transactions to nontaxing jurisdictions.

Yet some of these challenges may be more tractable now than in the past. A number of institutional developments that have taken place over the last several years offers new possibilities for administering a tax on currency transactions. Among these developments, the most important has been the growing share of foreign exchange (FX) transactions that are settled through a single settlement institution, the CLS Bank, as is discussed in this section.

Few countries impose a transactions tax on foreign exchange transactions. One example is Brazil, which applies a tax on FX transactions (as well as on other financial instruments) mainly as a tool for managing capital flows. While the design of an FTT on currency transaction could vary depending on whether the main objective of the tax is to manage capital flows or raise revenue, the administrative machinery for collecting the tax would be expected to be broadly the same regardless of its policy objective.⁶⁵ From this perspective, the Brazilian example, as described below, provides useful insights into the practical application of an FTT on currency transactions.

⁶⁵ Issues concerning the desirability of and tools for managing capital flows are beyond the scope of this paper. For a discussion of these issues, see IMF (2011) and Ostry et.al. (2011).

A. Market Organization, Instruments, and Regulatory Environment

The foreign exchange market is one of the largest financial markets, with about US\$4.0 trillion in trades taking place worldwide every day, comprising US\$3.7 trillion in traditional foreign exchange products (spot, foreign exchange swaps, and outright forwards) and another US\$0.3 trillion in nontraditional products (currency swaps and options).⁶⁶ The most common types of foreign exchange instruments are defined in Table 3.

Table 3. Common Foreign Exchange Instruments

Instrument	Definition
Foreign exchange spot trades	The purchase or sale of one currency for another with delivery usually taking place with two days after the dealing date.
Foreign exchange options	A contract that gives the buyer the right, but not the obligation, to exchange one currency for another at a pre-agreed rate and maturity date.
Foreign exchange futures	An agreement to exchange two currencies at a pre-agreed date and rate. Similar to outright forwards, but transacted on an exchange instead of OTC.
Outright forwards	A single exchange of one currency for another at a pre-agreed future exchange rate and date. The term “outright” is used to distinguish a forward from a foreign exchange swap, where the former involves a single trade and the latter often comprises both a spot trade and a subsequent forward trade.
Nondeliverable forwards (NDF)	Similar to an outright forward but without the physical delivery of two currencies at maturity. Instead, on the contracted settlement date, a cash settlement is made by one party to the other that is based on the difference between (i) the contracted forward exchange rate and (ii) the spot exchange rate prevailing on the settlement date, on an agreed notional amount. Because an NDF is a cash settled instrument, the notional amount is never exchanged.
Foreign exchange swaps	A contract where two counterparties simultaneously agree to buy and sell an amount of currency, and to repurchase and resell the currencies at a pre-agreed rate and pre-agreed date (normally spot date and forward date).
Currency swaps	A swap where <i>both</i> principal and interest (fixed or floating) in one currency are exchanged for both principal and interest (fixed or floating) in another currency at pre-agreed intervals. At the end of the transaction, the counterparties swap back the principal to each other. Unlike interest rate swaps, the principal in a currency swap can be exchanged while the interest payments in a currency swap are not netted because they are valued in different currencies.

The market has two distinct parts: an interbank market and a customer market. The interbank market is dominated by dealers (usually large banks and securities houses) who trade with each other, both directly and indirectly through foreign exchange brokers.⁶⁷ In the customer market, dealers trade with their customers who may include other financial institutions (such as smaller banks, pension funds, mutual funds, and hedge funds) and nonfinancial firms engaged in foreign trade and investment. The largest portion of trading (87 percent) involves dealers and other financial institutions, with the remainder taking place between dealers and nonfinancial

⁶⁶ Bank for International Settlements (BIS, 2010). Every three years, the BIS conducts a *Triennial Central Bank Survey*, in cooperation with some 50 central banks, to compile information on the size and structure of the foreign exchange and over-the-counter derivatives markets.

⁶⁷ Foreign exchange dealers (also called *market-makers*) purchase and sell foreign exchange on their own account and/or for their customers. In doing so, they act as principals in transactions by quoting bid and ask prices (exchange rates) for various currencies and standing ready to strike deals at those prices. Foreign exchange brokers, on the other hand, do not trade on their own account and do not contact customers. Instead, they profit by charging a fee for the service of bringing dealers together.

institutions.⁶⁸ Both the interbank and customer markets engage in spot, forward and futures, options, and other currency transactions.

Foreign exchange trading is global and highly concentrated. Most trading is conducted over-the-counter with smaller amounts of transactions taking place through centralized exchanges (particularly for foreign currency futures and options). FX trading takes place in a global market where nearly two-thirds of foreign exchange trades occurs cross-border (BIS, 2010). Cross-border trading is facilitated by the homogenous nature of the traded products, which allows the same currencies to be bought and sold almost as easily in one financial center as another. The market has a high degree of concentration: within each country a small number of large financial institutions collectively accounts for a disproportionately large amount of trades.⁶⁹

The regulatory environment varies from country to country, and by the type of market.

Generally, exchange-based currency markets are more tightly regulated than the larger OTC currency markets. In some countries with strict regulatory arrangements, businesses must be licensed to engage in foreign exchange trading, regulations govern the types of instruments that can be traded and the type of information that must be included in a foreign exchange contract, and traders must report transaction-level information to the relevant regulatory body. In other countries with less strict regulatory arrangements, banks and securities firms are not normally required to be licensed to engage in OTC foreign exchange activities (although they may require registration for other purposes) and there are no official rules or regulations on the conditions for OTC trading (but market participants may develop best practice guidelines). In these countries, FX transactions can be carried out on whatever terms and with whatever provisions are acceptable to the two counterparties, subject to the standard commercial law governing business transactions.

B. Administrative Options and Their Feasibility

Observers have proposed a number of ways for administering a tax on foreign exchange transactions. The original proposal put forward by Tobin (1978) called for levying a tax at a uniform rate on spot transactions by, at the least, all key currency countries. Tobin later acknowledged that to limit avoidance the tax should include close substitutes to spot transactions such as short-dated forwards and swaps (Tobin, 1996). Subsequently, other observers have outlined the administrative arrangements for applying an FTT on currency trades. These arrangements differ mainly on whether the tax would be self-assessed by market participants or withheld by settlement institutions.

One approach would be for market participants to self-assess the tax when a foreign exchange contract has been confirmed. Under this approach, which was proposed by Kenen (1996),

⁶⁸ Source: Bank for International Settlements (December 2010).

⁶⁹For example, 75 percent of the foreign exchange turnover in the UK, the US, Switzerland and Japan was accounted for by 12, 10, 3 and 9 banks, respectively (BIS, 2007a). A similar pattern exists in other countries.

banks and other foreign exchange dealers (henceforth, referred to as *banks*) would charge and collect tax on all types of foreign exchange transactions carried out by their trading desks within a taxing jurisdiction. Periodically (e.g. monthly, quarterly, or some other defined period), banks would submit to the tax agency a tax return declaring its tax liability and remitting the tax to the government. National tax agencies would oversee banks' compliance with their tax obligations for those transactions undertaken within their jurisdictions.

Collecting a self-assessed FTT through market participants has advantages and disadvantages.

The main advantage is that the tax would be based on existing administrative methods and, thereby, would avoid the need for introducing new withholding arrangements on settlement institutions. In addition, allowing banks to temporarily retain the tax revenue that they have collected until remitting it to the government when filing a periodic tax return could create a significant financial incentive (i.e., in the form of a float) for banks to support the FTT. The main disadvantage involves the greater effort and compliance risks that a tax agency faces in collecting a tax directly from market participants instead of through a settlement institution. An additional problem involves the burdens that the tax would impose on market participants in terms of the time and cost spent on assessing, accounting for, and collecting the tax.

An alternative approach would be to arrange for settlement institutions to withhold the tax.

Once a bank's trading desk enters into a foreign exchange contract, the transaction is eventually settled when the currencies (typically bank balances) are transferred between the counterparties to the trade. Settlement may take place through various methods (Box 4). In this context, some observers have proposed requiring settlement institutions—such as the CLS Bank and countries' large value payment systems—to charge and collect the tax on each settled transaction.⁷⁰ This approach would operate in a similar manner to the way the UK's clearinghouse (CREST) collects the stamp tax on securities transactions (Section II).

Box 4. Settlement Methods for Foreign Exchange Transactions

There are four main ways that financial institutions settle their foreign exchange transactions:

- *The Continuous Linked Settlement Bank (CLS Bank)* is a specialized settlement institution which ensures that the bought currency is paid out only if the sold currency is received (Appendix 2).
- *Traditional correspondent banking* where each counterparty to a trade transfers to the other counterparty bank deposits in the currency it is selling through its correspondent bank. The transfers often take place through countries' large value payment systems (LVPS).
- *Bilateral netting* where the trades between two counterparties that are due on a certain date are netted and the net amounts then settled by another method, such as traditional correspondent banking.
- *On-us settlement* where both legs of a foreign exchange trade are settled across the books of a single institution. This can arise in various ways, including when a bank trades with one of its own customers, and that customer has an account with the bank in both of the relevant currencies.

⁷⁰ For details, see Schmidt (1996, 2001), Spahn (2002), and Hillman, Kapoor, and Spratt (2006).

*The CLS Bank settles more than 50 percent of the foreign exchange transactions worldwide and could be leveraged to collect tax from these transactions.*⁷¹ CLS is a specialized foreign exchange settlement institution that was created in 2002 by the largest foreign exchange banks to reduce the risk of settlement default on currency trades (see Appendix II for details on the operations of the CLS Bank). Each CLS member has a multicurrency account at the bank (nonmembers may access the bank through members). When a foreign exchange transaction is submitted to CLS for settlement, the accounts of the two relevant members are simultaneously debited by the amount of the currency sold and credited by the amount of the currency purchased. CLS pays out the bought currency only if the sold currency is received. In effect, CLS acts as a trusted third party in the settlement process.

CLS could apportion the revenue it collects in different ways. The CLS bank could charge the tax on a transaction-by-transaction basis and remit the revenue to the country or countries where the counterparties to the transaction are located. Alternatively, the revenue could accrue to the country whose currency was used in the transaction (instead of to the country where the counterparties are located) although this approach could raise major jurisdictional issues such as when banks located in one country trade currencies from other countries (e.g., when two banks in Korea trade euros for yen). Importantly, the CLS Bank has the capacity to distinguish between different types of foreign exchange transactions (e.g., spot, futures, options) and, therefore, could apply a differentiated tax to each instrument, if desired.

Countries' large value payment systems could also be harnessed to collect a foreign exchange transactions tax. Each country operates at least one large value payment system (LVPS), which major financial institutions use to carry out large value or urgent payments through their accounts at the central bank.⁷² Banks often settle their foreign exchange transactions by using a LVPS to transfer balances from their account at the central bank to their counterparty's central bank account (or to the account of their counterparty's correspondent bank). In principle, the LVPS could assess the tax and transfer the revenue to the government's account. According to some observers (Hillman et. al.), this task could leverage the standardized messaging systems that financial institutions currently use for confirming foreign exchange transactions by sending a copy of the confirmation instruction to the relevant LVPS which, in turn, would assess and collect the tax.⁷³

Collecting an FTT on currency trades through settlement institutions has important advantages. The main advantages involve limiting the scope for noncompliance and reducing the record-keeping requirements for banks. Regarding the former, it is well documented that

⁷¹ To give an idea of the scale of CLS' operations, on February 16, 2010, the bank settled a record one-day volume of 1.7 million sides with a total value of US\$ 6.2 trillion. It is understood that CLS's share of settlements may have risen from 50 percent to as much as 70 percent of worldwide foreign exchange transactions since the time of the 2007 BIS survey.

⁷² The LVPS may be owned by the central bank or a banking community.

⁷³ The syntax for exchanging financial messages between banks and other financial institutions has become standardized around the SWIFT (Society for Worldwide Interbank Financial Telecommunications) messaging system. SWIFT, which is a cooperative society registered under Belgian law and owned by its member financial institutions, was linked to more than 9,000 financial institutions in 209 countries as of September 2010. Crucially, SWIFT has a dedicated message form—MT300 and its variants—which is used specifically to confirm different types of foreign exchange transactions (spot, derivatives, etc.).

taxpayers' compliance rates tend to be higher when taxes are withheld by third parties (such as when employers withhold personal income tax from employees' salaries) than when they are collected directly from taxpayers (GAO, 2006). Regarding the latter, taxes collected by settlement institutions would be considered final, which would relieve banks from maintaining extensive reporting systems to account for the tax.

Leveraging settlement institutions to collect an FTT also has a number of disadvantages:

- First, settlement institutions' computer systems may require significant technical enhancements to administer an FTT, which would entail additional costs and take time to introduce. On this issue, many countries' large value payment systems do not have the capacity to distinguish foreign exchange payments from other types of payments; creating this capacity could involve a significant effort.
- Second, saddling settlement institutions with the additional responsibility for collecting taxes could divert the payment system from its central objective of promoting financial stability by providing smooth and secure payment services.
- Third, applying an FTT through the CLS Bank, if not also applied to other settlement institutions, would create an incentive for users to clear their transactions through the nontaxed settlement systems. Such an outcome could undermine the important gains that the CLS Bank has made since its inception in reducing settlement risks. These concerns may not be entirely warranted as there is some evidence that, depending on the size of the tax rate, the benefits of using the CLS Bank may exceed the cost of a transactions tax.⁷⁴ Nevertheless, the risk that traders would discontinue their use of CLS could be mitigated, to an extent, by applying higher capital charges to banks in proportion to the share of transactions that they settle outside of the CLS Bank or other settlement institutions that collect the tax.
- Finally, the potential benefits of reducing banks' record-keeping burdens by collecting the tax through settlement institutions may be overstated. Unless settlement institutions can withhold the FTT on all taxable transactions—and there is good reason to believe that this is not be feasible—then banks would still need to put in place reporting systems to account for tax on those transactions that are settled outside the settlement institutions.

The above-mentioned concerns, though possibly amenable to solutions if given sufficient resources and political support, need to be fully and carefully assessed. At the same time, it should be recognized that applying an FTT to foreign exchange transactions would be more difficult and costly if settlement institutions cannot be harnessed to collect the tax or, at a

⁷⁴ For example, Spraat et al. ((2005) compare the aggregate costs that traders would incur from an FTT on sterling transactions to the aggregate benefits that they receive from using CLS to clear sterling transactions. They estimate that a 0.005 percent FTT on sterling transactions would cost traders about US\$1 billion per year. In contrast, the benefits of using CLS to clear sterling transactions are estimated to be amount to US\$ 18 billion comprising efficiency gains (US\$12.5 billion), reductions in net funding requirements (US\$5.4 billion) and reductions in operating cost gains (\$0.1 billion). Additional benefits, which would be foregone if a member left CLS, involve various fixed costs such as those incurred in developing computer systems for accessing CLS (estimated at about US\$ 5 million *per member*).

minimum, report to tax agencies information on the transactions that they settle for specific counterparties. Nevertheless, Brazil provides an example of how such a system could work.

Brazil levies a transactions tax on various types of foreign exchange trades. Brazil's FTT, the Impuesto sobre Operacoes Financeiras (IOF), is imposed on three sets of financial instruments: (1) foreign exchange; (2) securities; and (3) lending operations.⁷⁵

The IOF is levied on foreign exchange transactions that take place in Brazil. The tax applies to both spot transactions and derivatives, and is charged to both capital inflows (purchases of reais by nonresidents) and capital outflows (purchases of foreign currency by residents). For spot transactions, the IOF is charged at a basic rate of 0.38 percent (38 basis points), but higher rates may be added depending on how the local currency from a foreign exchange transaction is subsequently used.⁷⁶ In addition, a range of exemptions is provided to various spot transactions, including interbank transactions and exports. In 2010, the IOF collections (on all financial instruments, not just foreign exchange) accounted for 1.9 percent of federal government revenue and was equivalent to 0.7 percent of GDP.⁷⁷

The tax is administered on a self-assessment basis. The IOF applies only to transactions that occur in Brazil and the tax liability arises when the foreign exchange contract is settled: that is, when national currency is received or paid in exchange for foreign currency. It is collected by those financial institutions that are authorized by the Central Bank of Brazil to trade in foreign currencies. These institutions are required to maintain records of their foreign exchange transactions and register these transactions with the central bank. They must charge the tax on each FX transaction and remit the tax revenue to the government on the third business day following the end of each 10-day cycle and file a monthly tax return.⁷⁸

Brazil maintains a targeted audit program for financial institutions. Brazil's tax agency has two branches in Sao Paulo and Rio de Janeiro that are responsible for administering financial institutions.

⁷⁵ Specifically, the IOF consists of: (1) IOF sobre Cambio (Foreign Exchange Transactions), which applies to spot foreign exchange transactions; (2) IOF sobre Titulos e Valores Mobiliarios (Securities Transactions), which applies to stocks, corporate bonds, securities options, securities futures, and foreign exchange futures, options, and derivatives (forwards, swaps, forward rate agreements; and, (3) the IOF sobre Operacoes de Credito (Loans and other Credit Operations) which applies to loans originated by financial and nonfinancial institutions.

⁷⁶ For example: (1) investors are taxable at 6 and 2 percent when they convert foreign currency into local currency for the purpose of investing in Brazilian stocks and bonds, respectively; (2) investors are taxed at 6 percent when they convert foreign currency into local currency for the purpose of making margin payments on derivatives; (3) foreign bank loans to a Brazilian financial or nonfinancial company, with maturities of 720 days or less, are taxable at 6 percent when the borrower converts the foreign exchange from the loan to reais; and (4) companies that administer international credit cards are taxable at 6.38 percent when they purchase foreign currency to fulfill the obligations from credit card holders related to goods or services purchased overseas.

⁷⁷ In 2010, the IOF collected R\$ 26,601 million, total federal government revenue was R\$ 1,378,609 million, and GDP was R\$ 3,674,964 million (sources: Ministry of Finance and IMF).

⁷⁸ Taxpayers declare all of their monthly Federal tax liabilities, including the IOF on foreign exchange and other financial instruments, on a single consolidated tax return called the DCTF.

These branches have comprehensive audit programs conducted by dedicated teams of auditors who examine all tax types owed by banks, including the IOF on foreign exchange transactions.

While there are no estimates of compliance with the IOF, there are some indications that in the past investors have designed avoidance schemes aimed at circumventing the capital controls and the associated taxes. These have included disguising short-term capital as foreign direct investment, conducting offshore derivatives trading in underlying Brazilian instruments,⁷⁹ and issuing bonds with embedded options clauses (Carvalho and Garcia, 2006).⁸⁰

As with other instruments, the feasibility of levying an FTT on foreign exchange transactions requires clear rules and practicable methods for: (1) establishing the territorial scope of the tax; (2) defining the taxable event and its timing; (3) measuring the tax base; (4) identifying the taxable persons; and, (5) assessing and collecting the tax.

Establishing the territorial coverage of the tax. Given the large volume of foreign exchange transactions that takes place across borders, it is particularly important to put in place a coherent approach for determining the territorial scope of an FTT on these transactions. Since currency transactions take place both on exchanges and over-the-counter, the issues and approaches in this area are much the same as described in previous sections on exchange-based and OTC transactions. For exchange-based FX transactions, a reasonable approach would be to charge the FTT in the state where the exchange is located. For foreign exchange transactions that take place over-the-counter, the situation is more complicated since the counterparties are often located in different states, both of which could legitimately claim taxing authority over the transaction. A possible solution to this problem, as described in the discussion on cross-border OTC transactions, would be for states to require its registered taxpayers to pay half the FTT rate themselves and charge half the rate to their nonresident counterparties in those states that do not impose an FTT (no tax would be charged to nonresidents in states that also impose an FTT).

Defining the taxable event and its timing. Like the other financial instruments described in Sections II and III, the taxable event could be broadly defined to encompass any FX transaction within the scope of the FTT and its timing could arise either when the counterparties enter into an FX transaction (accrual rule) or when the transaction is settled (cash rule). Applying these rules to currency transactions has the same advantages and disadvantages as to other transactions discussed in this paper.⁸¹ While the accrual rule has the advantage of preventing

⁷⁹ Large amounts of derivatives trading with underlying Brazilian instruments takes place outside of Brazil. This allows traders to take positions on the underlying Brazilian assets without the need to acquire these assets and, thereby, avoiding the tax.

⁸⁰ This scheme seeks to avoid the higher tax rates that *used* to apply to shorter-term foreign loans (i.e., loans with a term of 90 days or less used to be subject to a tax of 5.38 percent) by issuing long-term bonds with embedded put options clauses. These clauses allowed foreign investors to shorten the loan term by exercising the option and yet still qualify for the lower tax rate for longer-term loans. The IOF now applies to loans with maturities up to 720 days.

⁸¹ It should be noted that in some cases the two rules could produce very different tax outcomes for the same transaction. For example, consider the case where an exporter and a bank enter into a non-deliverable forward of American dollars (US\$) for Korean won (KWR). Specifically, the exporter contracts with a bank to (1) sell KRW 5.575 billion forward at a rate of KRW 1115/US\$1 for an equivalent of US\$ 5 million and (2) to buy KRW 5.575 billion at the spot price

(continued)

traders from delaying payment of their tax liability, it can result in an arbitrary tax liability for those transactions where the amount of foreign currency exchanged is not known until after the transaction is entered into (e.g., options, futures, forwards, NDFs, and swaps). Therefore, the hybrid, under which both the accrual and cash rules are used depending on the instrument being traded, would seem appropriate for foreign currency transactions.⁸²

Measuring the tax base. The tax base for a foreign exchange transaction should be measured in the same way as that for other financial instruments: the amount of money (or other consideration), in domestic currency terms, that the counterparties exchange. This definition could be applied easily for many types of FX transactions.⁸³ However, conceptual issues are encountered when applying it to instruments like non-deliverable forwards (NDFs) where the counterparties do not actually deliver the two currencies but instead one counterparty makes a net payment to the other counterparty based on the movement of the exchange rate during the life of the contract. For such instruments, applying an FTT to the net cash payment would result in a much lower tax liability than would be the case if the counterparties actually exchanged the two currencies and were charged FTT on the gross amounts exchanged. Deciding on whether the net or gross payments would make for the appropriate tax base boils down, in large part, on whether or not the two transactions are seen to be equivalent. On the one hand, both transactions would result in the same gain and loss for the counterparties, which would suggest they are equivalent and make a case for taxing the gross amounts. On the other hand, the counterparties to an NDF contract do not receive the benefit of actually taking ownership of the currencies when the transaction is concluded, which would support levying the tax on the net amount.

Identifying the taxable persons. An FTT on currency transactions would be charged to the counterparties to the transaction. For the same reasons mentioned earlier, it does not matter from an economics perspective whether the tax is legally charged to one counterparty or the other. However, there are administrative advantages of splitting the tax half-half between the counterparties, particularly if it is not feasible for the tax to be withheld by settlement institutions. Under this arrangement, persons who have been registered to engage in FX trading would be obligated to maintain records of their transactions, charge and remit tax to the government, and file a periodic tax return for transactions other than those where the tax is collected through clearing institutions. While small or infrequent traders could be relieved from registering, they would still be taxed when transacting with registered persons.

prevailing six months later (i.e., the “fixing date”). If the Korean won subsequently depreciates against the dollar to KRW 1130/US\$ at the fixing date such that the KRW 5.575 billion is equivalent to only US\$4,933,628, then the exporter would receive from the bank the difference between US\$5 million and US\$4,933,628: US\$6,372. Under the accrual rule, the FTT tax base would be US\$5 million. Under the cash rule, the tax base would be only US\$66,372.

⁸² Other conceptual problems to the definition of the taxable event include whether an FTT should be imposed on both legs of a currency swap. As with repurchase agreements described in Section III, the answer would seem to depend on whether a swap is treated as a sale (in which case the tax should be applied to both legs) or a financing arrangement (in which case the tax should be applied to only the first leg).

⁸³ For example, the spot price for an FX cash transaction and the strike price plus the premium for an FX options transaction would make for a reasonable and an easy to calculate tax liability for these transactions.

Assessing and collecting the tax. The assessment and collection methods would vary depending on how the transaction is settled and whether an exempted person is a counterparty to the trade:

- For those transactions that are settled through a centralized settlement institution (e.g., CLS Bank), the settlement institution could charge and collect the tax half-and-half from the two counterparties. This would require governments to enter into an agreement with settlement institutions to collect the tax.
- For those transactions that are not centrally cleared and where the transaction involves registered persons (i.e., broker-dealers and other major participants), the two registrants would each pay the tax half-and-half.⁸⁴ This approach has important compliance advantages by allowing the tax agency to cross-check the transaction between the two counterparties. Moreover, it overcomes the conceptual problem of determining how to impose the tax on either the “buyer” or “seller” when in an FX transaction both counterparties are simultaneously a buyer (of one currency) and a seller (of another currency).
- For those transactions that are not centrally cleared and where the transaction involves a registered person and a nonregistered person (e.g., a small trader), the registered person would pay half the tax and charge the other half to the nonregistered person. This approach is needed to ensure the full amount of tax is collected in transactions between registered and nonregistered persons since the latter would be exempt from collecting the tax.⁸⁵

Creating the administrative mechanisms. Establishing the machinery for collecting a transactions tax on FX transactions is likely to be a major undertaking. Significant resources, both political and financial, could be required to leverage the CLS Bank and countries’ large value payment systems to withhold tax on those currency transactions that are cleared through these institutions. For those transactions that are not centrally cleared or where the clearing institutions cannot be leveraged to collect the tax, a substantial effort would be required to collect the tax through market participants given the enormous volume of volume of FX transactions that will need to be assessed, accounted for, and verified.

C. Compliance Risks and Risk Mitigation

Underreporting risks

As with all taxes, some taxpayers will underreport the FTT that they owe on their foreign exchange transactions. While most foreign exchange dealers can be expected to report and pay their FTT liabilities on time and in full, some will not—either in an effort to beat the system or

⁸⁴ Registered persons would charge only half the tax in transactions involving another registered person to avoid taxing inter-bank transactions twice as heavily as transactions with customers. To help tax collecting entities to distinguish between registered and nonregistered persons, the tax agency would provide the entities with lists of registered persons or make the information available on line.

⁸⁵ Transactions between two nonregistered persons would be exempt from tax, but this exemption could be expected to result in minimal amounts of foregone tax revenue.

because of inadvertent errors. For example, Brazil's tax on foreign exchange transactions has been subject to various avoidance schemes as described earlier.

A number of measures should be considered to control underreporting. As a starting point, the methods for calculating the FTT should be kept simple and settlement institutions should be leveraged to collect the tax, where possible. For example, the CLS Bank and a country's large value payment system(s) should be required either to collect the FTT from banks or, alternatively, provide tax agencies with reports on banks' foreign exchange transactions. Such arrangements are consistent with international good practice in tax administration which has clearly demonstrated that compliance tends to be highest for those taxes that are subject to tax withholding or third party reporting. In addition, targeted audit programs—backed by an appropriate penalty regime—are needed to verify the accuracy of the taxes reported by taxpayers and settlement institutions.

Additional steps are needed to deal with underreporting of cross-border transactions.

Verifying the taxable event for an FX trade is further complicated where subsidiaries and branches of international banks maintain their records at their booking sites (often in their home country or a third country) instead of at their dealing site.⁸⁶ To address this problem, market participants would be required to keep duplicate records at their dealing sites and produce them when audited. They would also be required to recognize their foreign exchange transactions at the dealing sites for FTT purposes.

Migration risks

*Some have argued that a unilateral introduction of an FTT on currency transactions would lead to a massive relocation of foreign exchange trading to nontaxing jurisdictions and, thereby, undermine the tax.*⁸⁷ Others have tended to dismiss such concerns as being overblown. While the introduction of an FTT by one or a few countries is almost certain to result in some migration of transactions, it is difficult to predict with any precision the amount of migration or the resulting revenue loss. What can be safely said, however, is that the revenue leakage would be largely a function of the benefits from relocation (in terms of tax savings and reduction in compliance burdens) and the costs of relocation (including the expenses incurred in moving a bank's trading operations and the disruptions that such a move would cause in servicing local customers). From this perspective, the prospects for the FTT would be enhanced if the tax rate were to be kept low and if the tax were to be jointly introduced by major financial center countries.

⁸⁶ An international bank may conduct its foreign exchange dealings from subsidiaries and branches in many locations (e.g., dealing sites). To reduce costs, it may centralize its accounting for these transactions at one or a few sites (i.e., booking sites).

⁸⁷ Migration could take various forms. One form identified by Garber (1996) would entail parent companies in taxing jurisdictions providing credit to subsidiaries in non-taxing jurisdictions that would carry out foreign exchange transactions and lend back to the parent the foreign currency obtained.

Asset substitution risks

Another compliance risk is the possibility that traders may substitute nontaxable foreign exchange transactions for taxable ones. In this connection, if the tax were to be applied only to spot transactions then traders could avoid the tax by trading in foreign exchange derivatives (futures, forwards, options, swaps) or, more complexly, by swapping two countries' treasury-bills (or other liquid assets) and then immediately selling the treasuries for bank deposits (Garber and Taylor, 1995).

Multinational corporations may also seek to avoid the tax by substituting structured loans for foreign exchange transactions. For example, in the 1970s, the Bank of England required UK companies that conducted FX transactions on the London foreign exchange market to pay a premium over the market rate for U.S. dollars to finance the operations of their foreign subsidiaries. As a result, it was more costly for UK companies to borrow dollars in London than in New York. To avoid this tax on dollar purchases, UK multinational corporations arranged parallel and back-to-back loans with US multi-nationals.⁸⁸ These arrangements avoided the tax because the transaction enabled the US and UK companies to borrow and lend to each other their respective currencies without having to actually acquire the currencies in the foreign exchange market (Schinasi et.al., 2003).

The best solution to asset substitution risk, as suggested by Tobin, would be to extend the FTT to the closest substitutes for spot transactions. These would include futures, forwards, and swaps with short maturities. While this may still leave open some substitution possibilities, the foregone revenue may not be very large to the extent that the cost of using increasingly complex (and less perfect) substitutes may eventually exceed the cost of the tax itself. In addition, tax agencies could introduce reporting requirements for certain types of transactions, like back-to-back loans and other avoidance schemes, and then use the anti-avoidance provisions in the tax laws to re-characterize such transactions as taxable.⁸⁹

D. Summary Assessment

It is more difficult to levy an FTT on foreign exchange transactions than on other financial instruments, but the problems are not insoluble. The difficulties stem from the global nature of the foreign exchange market, the ease in which currency transactions can migrate across borders, and the market's light regulation in many countries. These challenges would be lessened if FX settlement institutions, like the CLS Bank, could be harnessed to either collect the tax or, at a minimum, report to the tax authorities information on banks' foreign currency transactions. If such arrangements are not feasible then the prospects for taxing foreign

⁸⁸ Back-to-back loans are loans between two companies in different countries, each of which makes the other a loan in its respective currency. Parallel loans involve two companies in different countries—both of which have a subsidiary in the other country—with each making a loan to the other company's subsidiary.

⁸⁹ These provisions or legal practices authorize a tax agency, where it has determined that a taxpayer has entered into a non-taxable transaction with no business purpose other than to avoid tax, to re-characterize the transaction as taxable.

exchange transactions are likely to depend even more than for other financial instruments on: (1) cooperation among major financial center countries in jointly introducing the tax in a fairly uniform manner; (2) assessing the tax at a very low rate so as to reduce incentives for avoidance; (3) ensuring that near-substitutes for spot transactions are subject to the tax; and, (4) providing tax agencies with sufficient resources to enforce compliance of the FTT where taxpayers fail to fulfill their obligations voluntarily.

V. CONCLUSIONS

Countries that are considering introducing a broad-based FTT should take into account its policy objectives and administrative feasibility. From a tax policy perspective, recent IMF research has argued that tax instruments other than an FTT are better suited for revenue-raising and mitigating the risk of financial market failures. From a tax administration standpoint, this paper has pointed to several conclusions about an FTT's administrative feasibility:

The ease of implementing an FTT varies across financial instruments. It is generally easier to levy an FTT on instruments that are traded on an organized exchange and/or are centrally cleared than those instruments that are traded over-the-counter and not centrally cleared. However, recent legislative changes in some countries (e.g., the enactment of new financial regulations on OTC derivatives) and ongoing institutional developments (e.g., the predominant role of the CLS Bank in settling foreign exchange transactions) has made it easier to levy an FTT on a wider range of instruments than in the past. At the same time, a thorough assessment should be undertaken of the possible unintended negative effects (and measures for mitigating these effects) from collecting the FTT through settlement institutions like the CLS Bank before harnessing them to collect the tax.

Coherent legislation is essential for the effective administration of an FTT. In particular, the FTT legislation requires clear provisions governing the territorial scope of the tax, the taxable event and its timing, the tax base, and the taxable persons. The diversity of financial transactions and the complexity of some instruments gives rise to conceptual difficulties such as whether the tax liability should arise on a cash or accrual basis (or both), whether the tax base should be an instrument's notional value or the amount of money that changes hands in the transaction, and whether cash settled transactions should be taxed on their net payment or the underlying gross amounts. Workable solutions are needed for such problems to ensure the effective administration of the law.

There are major advantages to collecting an FTT through exchanges or clearinghouses. Leveraging these institutions reduces compliance and administrative costs by obviating the need for market participants to register, collect, and remit the tax. Where exchanges and clearinghouses cannot be harnessed, the costs of collecting an FTT directly from market participants could be reduced by restricting to broker-dealers and other major traders the responsibility of charging and collecting the tax. Though exempt from this responsibility, small and occasional market participants would remain subject to the tax when transacting with broker-dealers and other major traders. Even where exchanges or clearinghouses are not used to

collect the tax, they should still be required to report information on their transactions to the tax agency.

Appropriate mitigation methods are required to address the compliance risks facing an FTT.

The risk that taxpayers will underreport the FTT requires a targeted enforcement program backed by an appropriate penalty regime. Underreporting can also be discouraged by linking the legal standing of a transfer in ownership of a financial instrument to the payment of the tax. The problem that some market participants may seek to avoid an FTT by shifting their transactions from taxable financial instruments to nontaxable instruments could best be addressed by extending the tax to those instruments that are close substitutes for taxable ones. The risk that traders will migrate their transactions to nontaxing jurisdictions can be reduced by ensuring that the tax is charged at a low rate so as to reduce the incentive for migration.

The viability of an FTT would be enhanced by international cooperation. Countries would have greater degrees of freedom to implement an FTT—and less concern over tax arbitrage and the possible dislocation of trading—if major financial center countries were to jointly introduce the tax in a fairly uniform manner.

The implementation of an FTT requires careful preparation and planning. Key implementation tasks include enacting legislation and regulations, developing information systems and administrative procedures, recruiting and training tax officers, registering taxpayers and educating them on their obligations. In carrying out these tasks, it is essential to consult with private and public sector stakeholders so that their needs and concerns can be taken into account in designing the administrative arrangements for collecting the tax. The IMF's experience in helping countries to implement new taxes suggests that a minimum of 18 months would be needed to introduce an FTT (see IMF, 1991). In introducing a new tax, it is generally regarded as good practice to establish within the tax agency a dedicated team to carry out the various design and implementation tasks. Similarly, tax agencies should create a special department to administer an FTT during the initial implementation period before eventually merging the tax into the mainstream of the tax agency's operations as its administration stabilizes. Finally, it is crucial to provide the tax agency with sufficient resources—budgetary, staff, and where needed, technical assistance—to implement an FTT and administer it on an ongoing basis.

Appendix 1. The UK Stamp Tax: Detailed Collection Procedures

As owner and operator of the CREST system, Euroclear UK & Ireland (EUI) is authorized to operate a Central Securities Depository (CSD) called CREST in the UK. EUI is also recognized as a clearing house subject to regulatory supervision by the Financial Services Authority.

In essence, CREST is a UK-based system which permits shares in UK & Irish companies, which are notified to EUI by exchanges as being listed securities on those exchanges, to be effectively settled in electronic form. CREST is not a trading platform that allows dealing in stocks and shares, but a settlement system allowing previously agreed to transactions to be transferred between two CREST members, to be reported into and transferred in the CREST system by means of electronic messages without the need for paper certificates or stock transfer forms.

In order for certificated shares to be electronically settled within CREST (without the execution of paper instruments), the shares have to undergo an initial process called “dematerialization” which involves CRESTCo Nominees Ltd. as the legal regulatory recipient of the shares into the CREST (paperless) system, but, unlike a typical clearance service, all the legal and beneficial rights to the underlying shares remain with the CREST member who deposited the shares into the system.

On a successful application for membership, a CREST participant is provided with two accounts in the system: (1) a stock account by which shares acquired are placed (or shares removed upon a sale) and held indefinitely on behalf of the member and (2) a Cash Memorandum Account (CMA), which the member will use to settle any payment obligations (or receive credits for shares sold) with its settlement bank. The electronic system ensures that the seller of shares receives prompt payment and the purchaser simultaneously receives the shares, as CREST has arrangements with all payment banks guaranteeing delivery of shares against payment. Members of CREST are provided with a secure authenticated computer link in order to communicate with the CREST system.

After a share transaction has been executed (i.e., using a trading platform outside CREST), each party to the transaction will create a settlement instruction and input the details of the trade into the CREST system. CREST compares both settlement instructions and if the details correspond, including the intended settlement date, the transaction is electronically ‘matched’. When inputting details of the trade to be settled, the member purchasing shares will also need to indicate whether he is accountable for the stamp tax by inputting a stamp indicator into the system authorizing CREST to debit his account with tax, or alternatively, input an indicator that an exemption from tax is being claimed. On ‘matching’ a trade, and as part of the securities settlement process, CREST will automatically calculate any stamp tax due as indicated by the member by reference to the consideration amount payable for the shares input by the trading member.

On the intended settlement date, the CREST system will check that the selling member has sufficient shares to move from his account in CREST and that the buying member has

sufficient credit to pay for the shares including any stamp duty to be debited. If the checks are satisfactory, the transaction is settled with shares moving electronically from the sellers account to that of the buyer, and the members' CMAs are debited/credited accordingly. The matching and settlement processing of transactions does not involve or require CREST to act as a central counterparty to selling and buying CREST members in the way that a clearing house would normally operate.

CREST will arrange for the settled trade between the two parties to be notified to the relevant company registrar (also linked into CREST) so that the company's share register can be updated to reflect the transfer of shares. Typically, traded shares which are settled in CREST are held either directly in the name of the purchasing member who is also the beneficial owner, or in the name of a CREST member (i.e. a broker), acting as nominee for, and on behalf of, an underlying beneficial owner client.

At the time of actual settlement and movement of shares, CREST will typically debit the purchasing members account with the stamp tax already calculated as due and, in line with the terms of an agreed arrangement with HMRC, will electronically credit a designated bank account with the tax collected. CREST advises each party to the transaction of the actual settlement performed, along with providing details to the share purchaser of the amount of stamp tax debited from his account.

Under the terms of its agreement with EUI (the owner of CREST), HMRC is provided with a daily data feed of all transactions that have been reported by CREST members to and settled within the CREST system, along with details of the various stamp (or the absence of) indicators input into the system by its members, and the amount of tax assessed and collected. Any CREST member seeking a subsequent partial or whole refund of SDRT paid on a settled transaction in the CREST system, will need to provide HMRC Stamp Taxes with the relevant unique CREST transaction reference so that verification of actual SDRT paid can be cross checked using the CREST data feed provided to HMRC.

When claiming an exemption from SDRT in CREST, a member is required to obtain, before settlement of a transaction in CREST, evidence which satisfies him (and HMRC upon enquiry) that the trade was not subject to SDRT. The member must populate the relevant CREST data field (before the trade is allowed to settle in CREST) with the relevant SDRT exemption indicator; failure to do so, or leaving the stamp data field blank, will mean that CREST functionality by default, will seek to debit his account with SDRT.

Appendix 2. The CLS Bank

The Continuous Linked Settlement (CLS) system is a specialized foreign exchange settlement institution that is owned by the foreign exchange community.

The CLS Bank (CLSB) is chartered by the Federal Reserve and based in New York. The actual processing of transactions is contracted out to CLS Services (CLSS), a company based in London. Both CLSB and CLSS are wholly owned by a UK holding company (CLS UK International Holdings Ltd.) which, in turn, is wholly owned by CLS Group Holdings, a holding company in Switzerland. CLSB is supervised by the Federal Reserve and governed by New York law. CLSS is overseen by the 17 central banks whose currencies are settled in CLS. It is owned by 59 CLS Bank members and has a total of 7,070 participants who use the bank's service. Included in this total are 450 banks, corporations, and nonbank financial institutions, and a further 6,620 investment funds.

Each direct participant ("settlement member") in CLS Bank holds an account at that bank which is divided into subaccounts, with one subaccount for each currency that CLS settles in. Members start and end each day with zero balances in these accounts and subaccounts.

Foreign exchange transactions are settled one by one (gross) on these accounts by simultaneously debiting the subaccount of the currency being sold and crediting the subaccount of the currency being bought. Settlement thus takes place in "CLSB" money, with members accumulating debit balances in the currencies where overall they and their customers are sellers and credit balances in those where overall they are buyers.

CLS draws a key distinction between this gross settlement process and the net funding by members of those subaccounts in which they have debit balances. Where they accumulate debit balances, members have to pay in funds to CLS in order to restore their subaccount to zero by the end of the day. Correspondingly, the CLS Bank makes payouts to members with net long positions. These pay-ins and payouts are made using large-value payment systems or their equivalent to transfer funds to and from accounts CLS Bank holds at the central banks of the currencies concerned. Central bank money is thus used in the funding and defunding process, which is an integral part of the overall CLS settlement process because of the requirement that members start and end each day with zero balances in CLS Bank.

For the Canadian dollar and pound sterling, CLS Bank accesses the central bank and thus the corresponding interbank payment system as a customer of the central bank. In other currencies, CLS Bank is a direct participant in the system used. Since it participates from New York, CLS Bank represents a significant case of remote access for the Australian, dollar, euro, yen, and Swiss franc systems.

Seventeen currencies are currently eligible for CLS settlement: US Dollar, Euro, UK Pound, Japanese Yen, Swiss Franc, Canadian Dollar, Australian Dollar, Swedish Krona, Danish Krone, Norwegian Krone, Singapore Dollar, Hong Kong Dollar, New Zealand Dollar, Korean Won, South African Rand, Israeli Shekel and Mexican Peso.

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