

# Financial Transaction Taxes: International Experiences, Issues and Feasibility

---

*Anna Pomeranets, Financial Markets Department*

- The financial transaction tax (FTT) is a policy idea with a long history that, in the wake of the global financial crisis, has attracted renewed interest in some quarters.
- Historically, there have been two motivating factors for the introduction of the tax. The first is its potential to raise substantial revenues, and the second is its perceived potential to discourage speculative trading and reduce volatility.
- There is, however, little empirical evidence that an FTT reduces volatility. Numerous studies suggest that an FTT harms market quality and is associated with an increase in volatility and a decrease in both market liquidity and trading volume. When the cost of acquiring a security rises, its required rate of return and cost of capital also increase. As a result, an FTT may reduce the flow of profitable projects, decreasing levels of real production, expansion, capital investment and even employment.
- There are many unanswered questions regarding the design of FTTs and their ability to raise significant revenues.

Robust financial markets are crucial to a well-functioning financial system, and several proposals designed to improve the operation of financial markets have been motivated, at least in part, by the recent financial crisis. One of these proposals is to tax financial transactions, and several jurisdictions, notably in Europe, are currently studying the idea. In 2011, the European Union (EU) proposed an EU-wide financial transaction tax (FTT) on the exchange of shares and bonds at a rate of 0.1 per cent and on derivatives contracts at a rate of 0.01 per cent.<sup>1</sup> While there has been significant resistance from some EU member states, FTTs are popular and have enthusiastic supporters. France, for example, has introduced a 0.2 per cent transaction tax that took effect on 1 August 2012.<sup>2</sup>

One of the stated goals of an FTT is to raise substantial revenues. The European Commission, for example, has estimated that its proposed FTT could raise €57 billion annually. In addition, proponents of FTTs argue that, unlike most taxes, an FTT would benefit financial markets by curtailing

---

<sup>1</sup> Primary markets for stocks and bonds, as well as financial transactions with central banks, would be excluded from the FTT. See the full proposal at <[http://ec.europa.eu/taxation\\_customs/taxation/other\\_taxes/financial\\_sector/index\\_en.htm](http://ec.europa.eu/taxation_customs/taxation/other_taxes/financial_sector/index_en.htm)>.

<sup>2</sup> The French government doubled the levy to 0.2 per cent from the 0.1 per cent initially advocated. The tax will be paid on the purchase of 109 French stocks with market values of more than €1 billion.

short-term speculative trading and thus reducing volatility. However, empirical studies of situations where transaction taxes have been implemented show that these taxes have generated a number of unintended consequences, such as increased volatility, wider bid-ask spreads, greater price impact<sup>3</sup> and decreased trading volume. Determining whether there are net benefits to an FTT relies on an assessment of its effect on market quality and on its ability to raise the intended revenues. This article examines these two forces and highlights the challenges in implementing an FTT.

◀ *Empirical studies show that transaction taxes have generated a number of unintended consequences, such as increased volatility, wider bid-ask spreads, greater price impact and decreased trading volume*

## The Effect of a Financial Transaction Tax on Market Quality

Since a deterioration of market quality has implications for the stability and robustness of a market, this section examines evidence of the effect of an FTT on four specific measures of market quality: volatility, volume, liquidity and the cost of capital.

### Volatility

Various economists have argued that an increase in the cost of trading will reduce the amount of disruptive speculation, thereby decreasing excess volatility. Keynes (1936), Tobin (1978), Stiglitz (1989), and Summers and Summers (1989) all theorize that certain traders—often labelled “noise traders”—do not make trades based on information about the fundamental value of a security, causing security prices to move away from their intrinsic values. This price movement would, in turn, reduce the quality of the information contained in market prices and create excess volatility in the market. By imposing an FTT and discouraging the activity of noise traders, prices would stabilize and volatility would decline.

The argument that noise traders introduce excess volatility has been criticized on many fronts, since it is unclear what excess volatility is, given the difficulty in defining and measuring an *optimal* level of volatility. In addition, because an FTT applies to all trading activity and not only speculative trading, it may reduce other types of trading activity. Some researchers have suggested that an FTT may have a greater effect on the activities of those traders who stabilize prices and do not introduce noise, such as informed traders and liquidity providers. Amihud and Mendelson (2003), for example, suggest that an FTT would reduce the amount of informed trading, which would widen the gap between an asset’s transaction price and its fundamental value, which, in turn, may increase volatility.

◀ *The argument that noise traders introduce excess volatility has been criticized on many fronts, since it is unclear what excess volatility is, given the difficulty in defining and measuring an optimal level of volatility*

Given the lack of consensus in the theoretical literature on an FTT’s impact on volatility, there have been numerous attempts to resolve the debate empirically.<sup>4</sup> The findings of these studies can be grouped according to three divergent results: a positive relationship, an inverse relationship and no effect.<sup>5</sup>

The first group of studies finds a positive relationship between an FTT and volatility (Umlauf 1993; Jones and Seguin 1997; Baltagi, Li and Li 2006; Pomeranets and Weaver 2011). Pomeranets and Weaver (2011), for example, examine nine changes in the level of an FTT levied on equity transactions in the state of New York and conclude that an increase in the FTT is related

<sup>3</sup> Price impact is the degree to which a price moves in response to a given trading volume.

<sup>4</sup> Generally, the volatility discussed in this article is measured as the standard deviation of returns.

<sup>5</sup> Empirical studies face three challenges. It is difficult to: (i) differentiate between the impact of an FTT and changes to market structure and policy changes; (ii) separate volume into stabilizing and destabilizing components; and (iii) distinguish between the various ways that FTTs can affect the prices of securities. For these reasons, the results in the empirical literature are mixed.

to a statistically significant increase in volatility (**Box 1**). This relationship is illustrated in **Chart 1**. Similarly, Umlauf (1993) concludes that an increase in an FTT in the Swedish stock market in the 1980s yielded greater volatility (**Box 2**). Baltagi, Li and Li (2006) also observe a significant rise in volatility following an increase in the FTT in the Chinese stock market.

Studies in the second group find an inverse relationship between FTTs and volatility. Liu and Zhu (2009) conclude that a reduction in commission rates at the Tokyo stock exchange, which is analogous to a one-time decline in an FTT, results in increased volatility. Notwithstanding this finding, empirical evidence demonstrating this relationship is limited.

The third group of studies finds that volatility is not affected following a change in the level of an FTT. Roll (1989), for example, examines the volatility of stock returns in 23 countries and finds no evidence that volatility is related to transaction taxes. Other studies that examine transaction taxes in the United Kingdom, Hong Kong, Japan, Korea, Taiwan and India also find no relationship between an FTT and volatility (Saporta and Kan 1997; Hu 1998; Phylaktis and Aristidou 2007; Sahu 2008).

On balance, the literature suggests that an FTT is unlikely to reduce volatility and may instead increase it, which is consistent with arguments made by opponents of the tax.

◀ *A financial transaction tax is unlikely to reduce volatility and may instead increase it*

#### Box 1

### New York State's Financial Transaction Tax: A Case Study

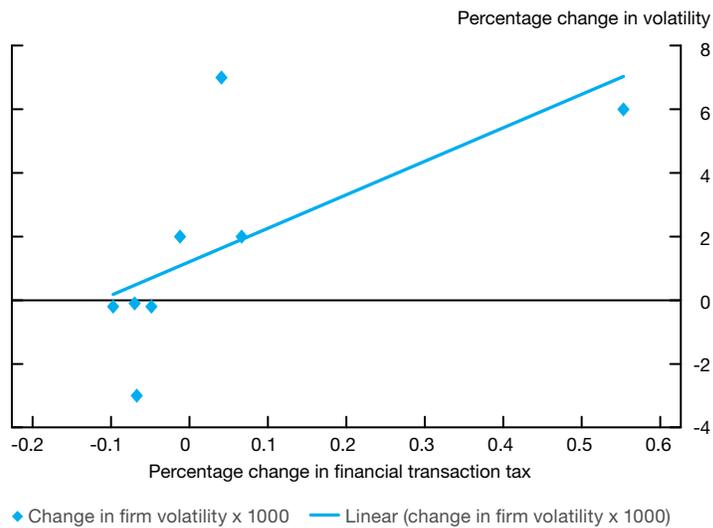
Pomeranets and Weaver (2011) examine how nine changes in the level of a financial transaction tax (FTT) on equity transactions in New York State between 1932 and 1981 affected volatility, liquidity and volume on the New York Stock Exchange (NYSE) and the American Stock Exchange. New York imposed an FTT in 1905 based on the par value of stocks. In 1932, during the Great Depression, the state doubled the tax to raise additional revenues. By 1933, a number of companies had lowered their par values to reduce the effect of the FTT, and New York had changed the tax schedule to one based on stock prices rather than par values. After 1933, the state adjusted the tax three times. The NYSE suffered from this tax burden and often lobbied against the transaction tax, arguing that the tax put it at a competitive disadvantage relative to regional exchanges

that are located outside of New York. Over the years, the NYSE threatened to move out of the state to avoid the tax. Finally, in 1978, a four-year phase-out period began and the state FTT was eliminated in 1981.

Pomeranets and Weaver (2011) find that the New York FTT:

- increased volatility,
- increased the bid-ask spread,
- increased price impact, and
- decreased volume on the NYSE.

Since bid-ask spreads are directly related to a firm's cost of capital, imposing an FTT may hinder economic growth by reducing the present value of projected profits. Based on the evidence presented, the authors conclude that an FTT hinders market quality.

**Chart 1: Volatility and the New York financial transaction tax, 1932–81**

Note: The last observation is in 1981 because the New York FTT was eliminated at that time.

Source: Pomeranets and Weaver (2011)

Last observation: October 1981

## Box 2

### The Financial Transaction Tax in Sweden: A Case Study

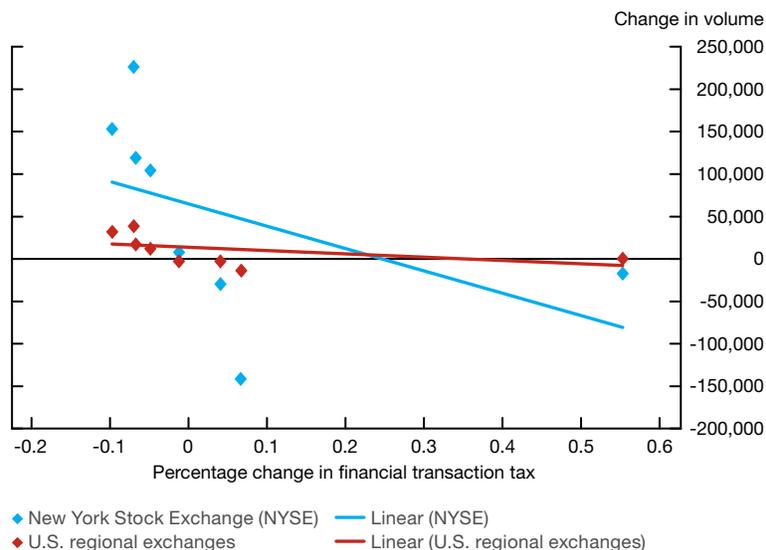
Umlauf (1993) examines how financial transaction taxes (FTTs) affect stock market behaviour in Sweden. In 1984, Sweden introduced a 1 per cent tax on equity transactions, which was doubled to 2 per cent in 1986. Umlauf studies the impact of these changes on volatility and finds that volatility did not decline following the increase to the 2 per cent tax rate, but equity prices, on average, did decline.

Furthermore, Umlauf concludes that 60 per cent of the trading volume of the 11 most actively traded Swedish share classes migrated to London to avoid the tax. After the migration, the volatilities of London-traded shares fell relative to their Stockholm-traded counterparts. As trading volumes fell in Stockholm, so did revenues from capital gains taxes, completely offsetting the 4 billion Swedish kronor that the tax had raised in 1988.

## Volume

Opponents of the FTT, such as Grundfest and Shoven (1991) and Schwert and Seguin (1993), suggest that an FTT could lower market volume or market share in several ways: traders could carry out fewer trades or stop trading entirely in response to higher trading costs, or they could either migrate trading to an untaxed trading venue or substitute taxed assets for a different asset class altogether.<sup>6</sup> Proponents of the tax, such as Summers and Summers (1989), recognize that migration is a risk, but suggest that this risk can be eliminated with an international, uniform transaction tax.

<sup>6</sup> Migration refers to the movement of trading activities from a taxed location to an untaxed location. Substitution refers to the transfer of trading activities from taxed financial instruments to untaxed ones.

**Chart 2: Trading volume at the NYSE and regional stock exchanges after a change in the New York financial transaction tax, 1932–81**

Note: The last observation is in 1981 because the New York FTT was eliminated at that time.

Source: Pomeranets and Weaver (2011)

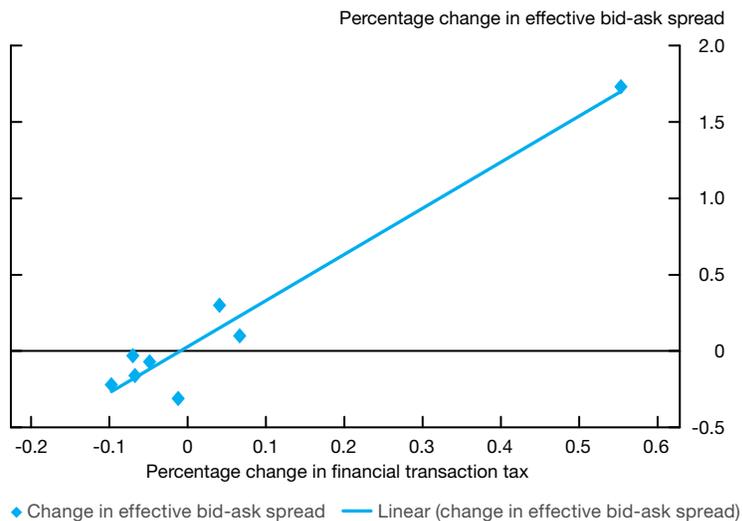
Last observation: October 1981

The consensus in the empirical literature is that a transaction tax is associated with declining trading volume. Pomeranets and Weaver (2011) conclude that, after an increase (decrease) in the FTT in New York, volume on the New York Stock Exchange (NYSE) experienced a statistically significant decline (rise) (Chart 2). An increase in the level of the state-imposed tax is also associated with a migration of volume from the NYSE to regional exchanges in the United States. Similarly, Jones and Seguin (1997) conclude that the deregulation of fixed commissions (which results in a one-time decline in transaction costs) is accompanied by an increase in total trading volume.

These results are consistent with the theoretical literature, which suggests an inverse relationship between volume and the transaction tax. When an FTT is imposed, traders are discouraged from trading on affected exchanges and look to trade on exchanges with lower costs. As a result, an FTT drives volume from the taxed exchange to an untaxed venue. Campbell and Froot (1994) examine the effects of an FTT in 20 countries and conclude that an increase in the tax results in a loss of market share domestically and an increase in market share abroad. Similarly, Umlauf (1993); Baltagi, Li and Li (2006); and Bloomfield, O'Hara and Saar (2009) conclude that an increase in an FTT results in a decline in market share in the home country.

## Liquidity

Some advocates of FTTs contend that even though the transaction tax might result in “thinner” markets by discouraging sellers and buyers, it would not increase the bid-ask spread. Stiglitz (1989) recognizes that, although it may take more time for a buyer and seller to match in a thinner market, the extra seconds or minutes would not have a significant effect on liquidity. This argument may have been valid in 1989; today, however, trades are measured in fractions of a second and the extra time that buyers and sellers take to enter the market will be felt by many market participants and could affect liquidity.

**Chart 3: Effective bid-ask spread and the New York financial transaction tax, 1932–81**

Note: The last observation is in 1981 because the New York FTT was eliminated at that time.

Source: Pomeranets and Weaver (2011)

Last observation: October 1981

Critics of the FTT argue that it reduces market liquidity by making each trade more costly, simply because it is a tax and also because market forces react to it by offering fewer and lower-quality trading opportunities. The cost impact is evident in the way the FTT widens the bid-ask spread. Bid-ask spreads compensate traders for three things—order-processing costs, inventory risk and information risk—often called the three components of the bid-ask spread. The FTT will increase the costs of these three components in the following ways:

- (i) The order-processing component compensates liquidity providers for the fixed costs of trading. An FTT will increase the cost of this component because the decline in volume reduces the number of trades from which traders can recover the fixed costs.
- (ii) The inventory-risk component compensates liquidity providers for holding inventory in order to match present buyers with future sellers and vice versa. Since equity traders may use derivatives to hedge their risky inventory positions, an FTT on derivatives will raise the cost of hedging, increasing the inventory-risk component of the bid-ask spread.
- (iii) The information-risk component compensates liquidity providers for the risk that they may be dealing with a trader with more information on the fundamental value of the asset. If an FTT reduces the amount of noise trading, as proponents suggest, then there is a greater possibility that the liquidity provider will face an informed trader, increasing the information-risk component of the bid-ask spread (Schwert and Seguin 1993).

Two studies empirically examine the relationship between an FTT and bid-ask spreads. Pomeranets and Weaver (2011) conclude that changes in FTTs are associated with a positive and statistically significant change in the bid-ask spread (Chart 3). Bloomfield, O'Hara and Saar (2009) use a laboratory setting to study the impact of FTTs on the bid-ask spread. They conclude that bid-ask spreads may increase or decrease with the introduction of an FTT, depending on the strength of countervailing forces associated with the components of the bid-ask spread.

◀ Critics of the financial transaction tax argue that it reduces market liquidity by making each trade more costly, which is evident in the way it widens the bid-ask spread

## Cost of capital

Another measure of market quality examined in the literature is the cost of capital. Amihud and Mendelson (1992) conclude that a 0.5 per cent FTT would lead to a 1.33 per cent increase in the cost of capital. This result is consistent with their previous work that finds a positive relationship between required rates of return and transaction costs (Amihud and Mendelson 1986). When the cost of acquiring a security increases, its required rate of return and cost of capital also increase. As a result, an FTT would increase the cost of capital, which could have several harmful consequences. It could reduce the flow of profitable projects, shrinking levels of real production, expansion, capital investment and even employment.

The evidence presented suggests that FTTs harm market quality. FTTs have been shown to increase volatility, reduce volume and liquidity, and increase the cost of capital. Proponents of FTTs, however, may view these changes as signs of success and thus they propose and support the implementation of these taxes (Table 1 provides a list of G-20 countries that had imposed FTTs by 2010).

◀ *A financial transaction tax would increase the cost of capital, which could reduce the flow of profitable projects, shrinking levels of real production, expansion, capital investment and even employment*

**Table 1: Financial transaction taxes in G-20 countries, up to 2010**

Country	Equity	Bonds/Loans	Foreign exchange transactions	Options	Futures
Argentina	Federal stamp duty on share transfers abolished in 2001	Provincial stamp duty, usually at 1%, may affect bonds and debentures			
Australia	State-level taxes may apply to shares	State-level taxes may apply to loans and bonds			
Brazil	1.5% on equity issued abroad as depository receipts (reduced from 3% in 2008)	1.5% on loans (reduced from 3% in 2008)	0.38% on foreign exchange transactions; 5.28% on short-term transactions (<90 days)		
China	0.1% of principal				
France	15–30-basis-point tax abolished on 1 January 2008				
India	0.25% on stock price; 0.025% on intraday transactions; local stamp duties may also apply	Local stamp duties may apply		0.017% on premium; 0.125% on strike price	0.017% of delivery price
Indonesia	0.1% on value of shares; local stamp duties may also apply	Local stamp duties may apply			
Italy	0.01%–0.14% of shares traded off exchange	0.25%–2% on loan principal			
Russia		Capital duty of 0.2% of value of new issues, but not on initial public offering of company			
South Africa	0.25% of value; new share issues excluded				
South Korea	0.5% on value of shares in corporations or partnerships				
Turkey	Initial charge for obtaining stock market quote: 0.1%; annual maintenance charge: 0.025%	0.6%–0.75% bond issuance charge	0.1% on foreign exchange transactions by financial institutions eliminated in 2008		
United Kingdom	Stamp duty of 0.5% on secondary sales of shares and trust holding shares			50 basis points on strike price, if executed	50 basis points on delivery price

Source: Matheson (2011)

## Tax Revenues and Implementation Challenges

In addition to the effect on market quality, there are many unanswered questions concerning the design and effectiveness of an FTT. It is difficult to design a fair and efficient FTT that would minimize circumvention. The revenue collected through an FTT might therefore be considerably less than simple estimates would suggest, owing to substitution and migration. When designing an FTT, there are a number of questions to address: (i) which financial instruments to tax; (ii) at what rate to tax them; (iii) when and where in the trading process to collect the tax; (iv) at what location to apply the tax; and (v) whether it should be global.

◀ *It is difficult to design a fair and efficient financial transaction tax that would minimize circumvention, and the revenue collected might be considerably less than simple estimates would suggest, owing to substitution and migration*

### Which financial instruments should be taxed?

The EU's recent proposal for an FTT targets stock, bond and derivatives transactions. While taxing stock transactions appears to be relatively straightforward, taxing other asset classes may encounter some obstacles.

Tobin (1978) proposed a tax on spot foreign exchange (FX) transactions. Taxing FX options, however, could be difficult if these options are not exercised in the spot or forward markets. If they are exercised and taxed in the spot or forward markets, substitution with synthetic options and more complex derivatives may occur. Alternatively, if they are exempt from taxation, activity from the forward and futures markets may migrate to the options market to avoid the tax. Since market participants are adept at substituting lower-taxed instruments for higher-taxed ones, an FTT must be applied widely to reduce circumvention and to effectively capture the target market.

### At what rate should instruments be taxed?

Campbell and Froot (1994) argue that the optimal tax structure should follow two principles:

- (i) transactions that give rise to the same patterns of payoffs should be taxed at the same rate; and
- (ii) transactions that require similar resources should be taxed at the same rate.

The first principle mitigates the possibility of substitution between different instruments with similar payoffs, since, as Campbell and Froot (1994) explain, payoffs on derivatives can be replicated by the underlying asset, and vice versa. Once a transaction tax is in place, however, some payoff patterns will be less costly to achieve with derivatives, and others with the underlying asset. Thus, the first principle is difficult to implement.

The second principle requires applying similar tax rates to securities with similar transaction costs. For example, if purchasing derivatives is a less-expensive way to obtain exposure to a given underlying asset, then derivatives transactions should be taxed at a lower rate than more-expensive transactions in the cash market. This differential tax treatment would, however, widen the gap between transaction costs in the cash and derivatives markets. Moreover, indirect resource costs such as negative externalities in the financial markets (e.g., excess volatility, higher risk premiums and misallocated investment in speculative activities) would ideally need to be accounted for. Since this would present considerable difficulties, this principle would also be difficult to implement.

## When and where should the tax be collected?

Another practical concern with transaction taxes is when and where within the trading process the FTT should be collected. Kenen (1996) argues that the tax should be applied at the dealing sites precisely at the moment the deal occurs between two counterparties. Alternatively, the tax could be charged at the settlement site because that is where transactions are centralized. Spratt (2006) and Schmidt (2008) argue that levying the tax at the settlement phase may reduce concerns about tax avoidance because every transaction is tracked electronically. However, if the tax is collected at the settlement site, there would be incentives for banks and traders to move transactions away from those settlement systems and to establish less-centralized settlement systems, which would create other issues and risks.

## Should a financial transaction tax be applied at the location of the trade or the location of the firm?

An additional concern with imposing an FTT is territoriality. An FTT can be applied to transactions based on the location of the trade, requiring governments to collect the tax from all participants trading within their jurisdiction, or based on the location of the firm, requiring financial institutions to pay the tax on the proceeds of their worldwide trading locations to the country where they are headquartered.

There are drawbacks to both options. If the tax is applied to the location of the trade, it will encourage the creation of tax-free havens and the migration of trading to those locations. This migration will significantly reduce the tax revenues that governments could collect. If the tax is based on firm location, firms headquartered in countries that impose a transaction tax would be at a comparative disadvantage and may consider relocating to jurisdictions without transaction taxes. In addition, firms would have the extra burden of consolidating data from their trading locations.

Great care should be taken in defining policies regarding territoriality, since gaps in definitions could result in tax evasion. Furthermore, coordination across jurisdictions would need to be developed to avoid both double taxation and tax avoidance.

## Should a financial transaction tax be global?

A global FTT that is applied to all asset classes would mitigate concerns of migration and substitution. However, since a number of countries oppose transaction taxes, a global FTT is implausible. To mitigate the potential formation of a shadow market in certain jurisdictions in an attempt to avoid an FTT, co-operation would be required across all countries, which may be particularly challenging since recent technological advances have, in principle, given many countries the opportunity to host financial centres.

Even if a global FTT were implemented, there would likely be certain exemptions. Transactions in the primary markets, for example, would likely be exempt from an FTT to avoid the impact on the financing of companies in the real economy. In addition, a limit on the maximum tax liability for investors, based on either transaction volume or size, may be imposed.

## Conclusion

This article examines the main arguments regarding the costs and benefits of FTTs and explores some of the significant practical issues surrounding the implementation of an FTT. Little evidence is found to suggest that an FTT would reduce speculative trading or volatility. In fact, several studies conclude that an FTT increases volatility and bid-ask spreads and decreases trading volume. Furthermore, a number of challenges associated with the design and effectiveness of an FTT could limit the revenues that FTTs are intended to raise. For these reasons, countries considering the imposition of FTTs should be aware of their negative consequences and the challenges involved in implementation.

---

## Literature Cited

- Amihud, Y. and H. Mendelson. 1986. "Liquidity and Stock Returns." *Financial Analysts Journal* 42 (3): 43–8.
- . 1992. "Transaction Taxes and Stock Values." In *Modernizing U.S. Securities Regulation: Economic and Legal Perspectives*, 477–500. Edited by K. Lehn and R. W. Kamphuis. New York: Irwin Professional Publishing.
- . 2003. "Effects of a New York State Stock Transaction Tax." New York University. Draft.
- Baltagi, B. H., D. Li and Q. Li. 2006. "Transaction Tax and Stock Market Behavior: Evidence from an Emerging Market." *Empirical Economics* 31 (2): 393–408.
- Bloomfield, R., M. O'Hara and G. Saar. 2009. "How Noise Trading Affects Markets: An Experimental Analysis." *Review of Financial Studies* 22 (6): 2275–302.
- Campbell, J. Y. and K. A. Froot. 1994. "International Experiences with Securities Transaction Taxes." In *The Internationalization of Equity Markets*, 277–308. Edited by J. A. Frankel. Chicago: University of Chicago Press.
- Grundfest, J. A. and J. B. Shoven. 1991. "Adverse Implications of a Securities Transactions Excise Tax." *Journal of Accounting, Auditing and Finance* 6 (4): 409–42.
- Hu, S. 1998. "The Effects of the Stock Transaction Tax on the Stock Market—Experiences from Asian Markets." *Pacific-Basin Finance Journal* 6 (3–4): 347–64.
- Jones, C. M. and P. J. Seguin. 1997. "Transaction Costs and Price Volatility: Evidence from Commission Deregulation." *American Economic Review* 87 (4): 728–37.

- Kenen, P. B. 1996. "The Feasibility of Taxing Foreign Exchange Transactions." In *The Tobin Tax: Coping with Financial Volatility*, 109–28. Edited by M. Ul-Haq, I. Kaul and I. Grunberg. New York: Oxford University Press.
- Keynes, J. M. 1936. *The General Theory of Employment, Interest and Money*. New York: Harcourt, Brace and Company.
- Liu, S. and Z. Zhu. 2009. "Transaction Costs and Price Volatility: New Evidence from the Tokyo Stock Exchange." *Journal of Financial Services Research* 36 (1): 65–83.
- Matheson, T. 2011. "Taxing Financial Transactions: Issues and Evidence." International Monetary Fund Working Paper No. WP/11/54.
- Phylaktis, K. and A. Aristidou. 2007. "Security Transaction Taxes and Financial Volatility: Athens Stock Exchange." *Applied Financial Economics* 17 (18): 1455–67.
- Pomeroy, A. and D. G. Weaver. 2011. "Security Transaction Taxes and Market Quality." Bank of Canada Working Paper No. 2011-26.
- Roll, R. 1989. "Price Volatility, International Market Links, and Their Implications for Regulatory Policies." *Journal of Financial Services Research* 3 (2–3): 211–46.
- Sahu, D. 2008. "Does Securities Transaction Tax Distort Market Microstructure? Evidence from Indian Stock Market." Available at <<http://ssrn.com/abstract=1088348>>.
- Saporta, V. and K. Kan. 1997. "The Effects of Stamp Duty on the Level and Volatility of U.K. Equity Prices." Bank of England Working Paper No. 71.
- Schmidt, R. 2008. "The Currency Transaction Tax: Rate and Revenue Estimates." Tokyo: United Nations University Press.
- Schwert, G. W. and P. J. Seguin. 1993. "Securities Transaction Taxes: An Overview of Costs, Benefits and Unresolved Questions." *Financial Analysts Journal* 49 (5): 27–35.
- Spratt, S. 2006. "A Sterling Solution: Implementing a Stamp Duty on Sterling to Finance International Development." London: Stamp Out Poverty.
- Stiglitz, J. E. 1989. "Using Tax Policy to Curb Speculative Short-Term Trading." *Journal of Financial Services Research* 3 (2–3): 101–15.
- Summers, L. H. and V. P. Summers. 1989. "When Financial Markets Work Too Well: A Cautious Case for a Securities Transactions Tax." *Journal of Financial Services Research* 3 (2–3): 261–86.
- Tobin, J. 1978. "A Proposal for International Monetary Reform." *Eastern Economic Journal* 4 (3–4): 153–9.
- Umlauf, S. R. 1993. "Transaction Taxes and the Behavior of the Swedish Stock Market." *Journal of Financial Economics* 33 (2): 227–40.