

# FINANCIAL TRANSACTION TAXES:

---

SUMMER 2019

A tax on investors,  
taxpayers, and  
consumers



CENTER FOR CAPITAL MARKETS  
COMPETITIVENESS®

# FINANCIAL TRANSACTION TAXES:

---

A tax on investors,  
taxpayers, and  
consumers

## James J. Angel, Ph.D., CFA

Associate Professor of Finance  
Georgetown University

angelj@georgetown.edu

McDonough School of Business  
Hariri Building  
Washington, DC 20057

202-687-3765

Twitter: @GUFinProf

*The author gratefully acknowledges financial support for this project from the U.S. Chamber of Commerce.  
All opinions are those of the author and do not necessarily reflect those of the Chamber or Georgetown University.*



CENTER FOR CAPITAL MARKETS  
COMPETITIVENESS®

# Table *of* Contents

Executive Summary .....	<b>4</b>
Introduction.....	<b>6</b>
The direct tax burden.....	<b>7</b>
The indirect tax burden.....	<b>8</b>
The derivatives market and risk management .....	<b>14</b>
Economic impact of an FTT .....	<b>17</b>
The U.S. experience .....	<b>23</b>
International experience with FTTs .....	<b>24</b>
Myths versus facts on FTTs .....	<b>30</b>
Conclusions & Key Findings .....	<b>32</b>
Appendix A .....	<b>35</b>
Appendix B .....	<b>40</b>

# Executive Summary

Proposals for a financial transaction tax (FTT) have surfaced throughout the years in the United States and around the world. Recently, bills have been introduced in Congress that would tax financial transactions at rates of up to 0.5%. Similar bills have been proposed in previous Congresses. Proponents of such a tax contend that it would raise revenue while suppressing allegedly excessive trading activity. This paper examines the economic impact that an FTT would have in the U.S.

## Key Findings:

- **Main Street will pay for the tax, not Wall Street.**

The real burden will be on ordinary investors, such as retirees, pension holders, and those saving for college. They will pay the tax directly when they trade, and pay it again as financial intermediaries pass on the taxes they face as a cost of doing business. FTTs are not actually a tax on financial intermediaries; they are a tax on investors.

- **An FTT will drive up the cost of trading by more than the amount of the tax.**

The cost to a retail investor who buys a round lot of a \$100.00 stock would be \$50.00 in direct costs and even more in indirect costs. This represents a more than tenfold increase in the cost of trading in a world of \$5.00 commissions.

- **Retirement savings will be hit hard.**

Under the version of the tax proposed by Sen. Bernie Sanders (D-VT), a typical retirement investor will end up with 8.5% less in his or her 401(k) or IRA after a lifetime of savings. In dollar terms, the average IRA investor would have \$20,000 less at retirement as a result of this tax.

- **An FTT will drive up the cost of home mortgages.**

The yields on mortgage-backed securities will go up because of both the direct impact of an FTT on the cost of trading them and the impact of an increase in benchmark Treasury rates. Because the rate on home mortgages is related to the yields on these mortgage-backed securities, an FTT will be passed on to homeowners through higher mortgage rates.

- **Mutual fund expenses will go up and reduce mutual fund returns.**

The transaction taxes paid directly and indirectly by mutual funds will increase their costs and decrease returns to investors. This will harm mutual fund investors such as 401(k) participants saving for retirement.

- **Pension fund expenses will go up and pension fund returns will go down.**

Likewise, the transaction taxes paid by pension funds will reduce their returns, worsening existing problems with underfunded pensions and making it more costly for governments and corporations to provide pensions.

- **Taxpayers will pay more because government financing costs will go up.**

An FTT on municipal and U.S. Treasury securities will lead to higher interest rates on those securities. This will increase government borrowing costs, which will be borne by all taxpayers, not just investors. This will also increase the cost of capital for public projects, such as infrastructure improvements.

- Corporate financing costs will go up.**

While the proposed FTTs do exempt new issues of equity and debt, they would apply to secondary market transactions. Investors will expect higher returns to offset the reduced cash inflows caused by an FTT, which will raise the costs of corporate financing.
- Hedging costs for producers will go up, and consumers will pay for it.**

Producers such as farmers, oil companies, and airlines use derivatives such as options and futures to manage their risk. Taxes such as FTTs are part of their cost of doing business that gets passed on to the consumer in the form of higher prices for groceries, gasoline, and travel.
- GDP will be reduced by more than the net revenue raised.**

An FTT will depress economic activity in several ways. The higher cost of capital will result in less investment and thus less economic growth, fewer jobs, and less income tax revenue. At the same time an FTT will depress trading activity and send it offshore, resulting in a loss in jobs and tax revenue, consistent with what has occurred in other countries that have experimented with FTTs. European Union economists have estimated that a proposed EU FTT, similar to the ones proposed in the U.S., would actually reduce GDP by more than the revenue raised.
- FTTs will not raise the revenue that proponents expect.**

By suppressing economic and trading activity and driving more trading offshore, the amount of revenue raised will be far less than estimated. The experience in other countries is that FTTs collect far less than forecast.
- An FTT will cause stock prices to fall.**

Stock prices are a function of after-tax cash flows received by investors. By decreasing the after-tax cash flows investors receive, an increase in taxes will cause the value of stocks to fall. This will hurt retirement savers and impose additional stress on already underfunded state and local pension funds. It will also result in less capital gains tax revenue to the government.
- FTTs may increase market volatility.**

In many cases around the world, the experience has been that volatility actually increased after FTTs were enacted due to trading activity shifting and liquidity decreasing, making markets less able to withstand future market stress events.
- FTTs have consistently failed throughout history.**

FTTs around the world have generated less revenue than forecast due to trading activity shifting to other jurisdictions. They ended up being scaled back due to their deleterious impact on the economy. Indeed, a Democratic Congress and president wisely scrapped the previous FTT in the United States.
- The proposed FTTs are more onerous than FTTs in foreign countries.**

Most countries with FTTs exempt liquidity providers such as market makers from FTTs because of their important role in smoothing market operations. The lack of such an exemption in the proposed FTTs would exacerbate their negative impacts.

# Introduction

Taxes are necessary to pay for essential government services. Yet different types of taxes have very different effects on taxpayers and the economy. Economists since the 1700s have examined tax policy extensively and developed rubrics for examining what makes a good or a bad tax.

In the *Wealth of Nations*, Adam Smith cites four basic principles of taxation:<sup>1</sup>

- **Fairness**  
"The subject of every state ought to contribute towards the support of the government, as nearly as possible, in proportion to their respective abilities."
- **Certainty**  
"The tax which each individual is bound to pay ought to be certain, and not arbitrary."
- **Convenience**  
"Every tax ought to be levied at the time, or in the manner, in which it is most likely to be convenient for the contributor to pay it."
- **Efficiency**  
"Every tax ought to be contrived as both to take out and keep out of the pockets of the people as little as possible over and above what it brings into the public treasury of the state."

Proposals for an FTT have surfaced throughout the years in the United States and around the world. Recently, Senator Schatz proposed the Wall Street Tax Act of 2019.<sup>2</sup> Under this legislation, bonds, stocks, and derivatives transactions would be taxed at a rate of 0.1%. This is a 4,731% increase over the existing 0.00207% Section 31 fee.<sup>3</sup> Senator Sanders' so-called Inclusive Prosperity Act goes further with a proposed 0.50% tax on stock trading, a 24,055% increase.<sup>4</sup> Similar bills have been proposed in previous Congresses. Proponents of such taxes contend that it would raise revenue while suppressing allegedly excessive trading activity.

As we shall see, FTTs clearly flunk the four principles of taxation outlined above. Rather than being a tax on Wall Street, the burden of the tax will boomerang onto retail investors in mutual funds and pension plans, consumers at the grocery store and the gas pump, and all citizens, even those who are not investors. Investors will pay both directly through higher transaction costs

---

<sup>1</sup> See Smith, Adam, *The Wealth of Nations*, pages 641 et seq. for his discussion of taxation. Meta Libri Digital edition, available at [https://www.ibiblio.org/ml/libri/s/SmithA\\_WealthNations\\_p.pdf](https://www.ibiblio.org/ml/libri/s/SmithA_WealthNations_p.pdf). A more recent and more extensive treatment of these principles of taxation can be found at <https://www.journalofaccountancy.com/issues/2002/feb/guidingprinciplesofgoodtaxpolicy.html>.

<sup>2</sup> *The Wall Street Tax Act of 2019* S. 647 and HR 1516, respectively

<sup>3</sup> Section 31 of the Securities Exchange Act of 1934 levies a small assessment on stock trades to fund the Securities and Exchange Commission. The rate is adjusted periodically so that it collects only the amount authorized by Congress to fund the SEC. See <https://www.sec.gov/fast-answers/answerssec31htm.html>.

<sup>4</sup> The Inclusive Prosperity Act, S. 1587 and HR 2923, would impose a 0.50% tax on stock trades, 0.10% tax on bond trades, and 0.005% for derivatives.

and indirectly through trading at inferior prices in less liquid markets. Furthermore, the damage to the economy will be large relative to the net amount of taxes collected. The increase in transaction costs will push up borrowing rates for state and local governments as well as businesses. This will make infrastructure projects more expensive and stymie job growth.

An FTT won't do what many of its proponents wish for. It won't raise nearly as much revenue as predicted. It won't punish bad actors or prevent the next financial crisis, or even tame market volatility. Instead, it will punish all Americans through depressed asset values, making saving enough for retirement harder. It will result in higher consumer prices and fewer jobs. It could actually exacerbate the next market stress event by reducing liquidity in the market.

# The Direct Tax Burden

The proposed FTTs have been pitched as a painless way to raise vast sums of money from the financial industry. However, any major tax will have major impacts on the economy. It is important to determine who actually bears the burden of such taxation. It turns out that the burden of an FTT will fall mostly on investors, not financial intermediaries. An FTT is really a tax on pension plans, mutual funds, and 401(k) plans. Investors are harmed by an FTT directly when they buy and sell, indirectly through trading at inferior prices, and indirectly through the impact on the economy.

*“An FTT is really a tax on pension plans, mutual funds, and 401(k) plans.”*

The direct impact is obvious. At the 0.50% rate in Sen. Sanders' proposed FTT, an investor would pay \$50.00 to buy 100 shares of a \$100.00 stock. This is almost 10 times the typical commission currently paid for such a trade.

For institutional trades by mutual funds and pension funds, the ITG unit of Virtu Financial estimates institutional commission at 0.035% for U.S. stocks, the lowest in the world.<sup>5</sup> The 0.50% proposed by Sen. Sanders is more than 10 times the commissions paid by institutional investors.

These taxes hit not only retail investors who trade directly but also the millions of Americans with pension plans, 401(k) plans, or who invest through mutual funds. This will rob American workers of a substantial portion of their retirement savings. Consider the case of a worker who starts saving each year at the age of 21, who seeks to retire at 67, and who invests in the average mutual fund with a turnover of 63%.<sup>6</sup> Sen. Sanders' proposed FTT would reduce the annual return on the mutual fund by  $0.63 * 0.50 = 0.31\%$  per year. That doesn't sound like much, but it is large relative to the average equity mutual fund expense ratio of 0.55%. It would result in a 56% increase in the effective cost of running a mutual fund.

<sup>5</sup> See <https://www.virtu.com/uploads/2019/02/ITG-Global-Cost-Review-4Q18.pdf>

<sup>6</sup> The average turnover rate of a domestic stock fund is 63% according to Morningstar. <https://www.investopedia.com/articles/mutualfund/09/mutual-fund-turnover-rate.asp>

Over a lifetime of savings, an FTT will create a serious dent in a worker's retirement portfolio. If that worker saved \$1,500 each year for 46 years and earned 5.0% annually in a fund, the worker would accumulate \$239,550 by age 67. But if the return were reduced to 4.69% (5.00% - 0.31%) because of Sen. Sanders' FTT, the accumulation drops to \$219,277, a drop of \$20,273 or 8.5%. Fidelity reports an average individual retirement account (IRA) balance of approximately \$225,000 for people in their sixties.<sup>7</sup> It is thus fair to say that Sen. Sanders' FTT would reduce the average lifetime retirement savings accumulation by approximately \$20,000.<sup>8</sup>

# The Indirect Tax Burden

The direct cost to investors is just the tip of the iceberg of the costs to investors, taxpayers, and the whole economy. To see why this is the case, it is important to understand how and why securities are traded. Long-term investors often benefit from the services of market participants with shorter time horizons, such as market makers and arbitrageurs. Any taxes paid by these service providers will be passed on to long-term investors, making the real cost of an FTT even higher than the stated rate. Indeed, many jurisdictions that have an FTT, such as the United Kingdom, France, and Italy, explicitly exempt market makers because of the valuable role they play in making markets work smoothly.

## Market makers provide valuable services to investors.

When investors want to buy, they need to find sellers, and vice versa. Contrary to textbook examples, offsetting natural buyers and sellers rarely want to trade the same security at the same time at the same price. Their buy and sell orders do not arrive in the market at exactly the same moment. Long-term investors, by definition, do not trade very often. Thus, there are very few orders from long-term investors in the market at any one time. What then? An investor may choose to wait and let an order sit until a counterparty arrives. However, there is a cost to waiting. The investor must spend time monitoring the market. There is also risk. Market conditions may change suddenly, hurting the investor. The investor may have high opportunity costs. Many investors would benefit from an immediate execution to reduce this risk.

This is where market makers come in. Market makers are willing to take on the holding costs and short-term price risk that other investors don't want to take. They are willing to buy when others want to sell and sell when others want to buy. They do this throughout the trading day.

---

<sup>7</sup> See <https://www.bankrate.com/retirement/average-401k-balance-by-age/>

<sup>8</sup> A similar calculation for the Schatz FTT shows a lifetime accumulation reduction of 2.8%, or \$6,655.48, a still substantial reduction in retirement savings.



Market makers are service providers, not long-term investors. They provide the services of risk transfer and immediacy to other investors. In doing so, they also reduce the spread between bid and ask prices and thus reduce transactions costs for investors.<sup>9</sup> This is a win-win situation: Long-term investors enjoy lower transactions costs and experience faster executions, while market makers hope to profit from their trading activity. Appendix A contains a detailed example of how the addition of market makers to the market reduces costs for long-term investors.

Market makers are sometimes called high-frequency traders (HFTs) because they trade very frequently. As their basic business model is a simple one (buy at the bid price and sell at the offer), there is intense competition. Market makers compete with each other by posting the most competitive bid and offer prices. This competition keeps the gap between the bid and the offer price (and hence transaction costs) extremely low, benefiting long-term investors when they do come to the market to trade. Indeed, transaction costs represented by the bid-ask spread have fallen dramatically in recent years, coinciding with the rise of automated market making and so-called high-frequency trading. Angel, Harris, and Spatt (2015) documented that average effective bid-ask spreads fell by more than half between 2001 and 2013.<sup>10</sup> Likewise, institutional trading costs also fell by comparable amounts.

Market making is an intensely competitive business. Anyone can compete with market makers by placing his or her own resting orders to buy or sell a stock at a given bid or offer price. This intense competition lowers trading costs and is one of the reasons why the U.S. market has the lowest trading costs in the world.<sup>11</sup> Clearly, anything that increases the costs to market makers will affect the prices at which they are willing to trade. If faced with an FTT, they will pass this tax directly on to investors in their pricing by lowering their bid quotes to buy and increasing their offer quotes to sell, resulting in a wider bid-ask spread.

It should be noted that the profit margins for many of these short-term traders are less than a penny per share. For example, Virtu Financial, one of the largest market making firms, traded over 33 billion shares in the Americas in the fourth quarter of 2018 and reported adjusted net trading income in equities of \$205 million, which works out to \$0.0061 per share.<sup>12</sup> Sen. Schatz's proposed 0.10% FTT is \$0.01 per share on a \$10.00 stock and \$0.10 per share on a \$100 stock—far larger than the profit margin for market makers. Sen. Sanders' proposed FTT is \$0.05 per share on \$10.00 stock and \$0.50 per share on a \$100.00 stock.

In proposing the Wall Street Tax Act of 2019, Sen. Schatz stated, "High-frequency trading is a real risk to the system, and it screws regular people; that's the main reason to do this. If in the process of solving that problem we happen to generate revenue for public services, that's an important benefit, but that's not the main reason to pass this into law."<sup>13</sup> This reveals the flawed logic behind the FTT, as it is designed to solve a problem that does not exist. HFTs such as market makers are not "screwing regular people"; rather, they are providing beneficial services to investors when they want to buy or sell stocks. Unfortunately, an FTT would indiscriminately suppress beneficial trading such as market making and pass along the costs to ordinary investors.

---

<sup>9</sup> The ask (or offer) price is the price at which an investor can buy right now. The lower bid price is the price at which an investor can sell right now. The spread between the bid and ask/offer prices is the cost of immediacy to investors. Market makers hope to earn the bid-ask spread by buying at the bid and selling at the offer. However, they typically earn less than the spread because the market price can and does move against them. Market maker costs include the cost of holding inventory, the cost of executing trades, and the risk of getting picked off by traders with more information, as well as the fixed costs of running a trading desk.

<sup>10</sup> See Angel, James J., Harris, Lawrence E., and Spatt, Chester S. 2015. "Equity trading in the 21st century: An update." *The Quarterly Journal of Finance* 5(01).

<sup>11</sup> For a global comparison of trading costs around the world, see Virtu Inc. Global Cost Review, Q4/2018. Available at <https://www.virtu.com/uploads/2019/02/ITG-Global-Cost-Review-4Q18.pdf>

<sup>12</sup> Virtu Financial 10-Q, 2018 Fourth Quarter.

<sup>13</sup> <https://www.vox.com/policy-and-politics/2019/2/28/18235067/brian-schatz-financial-transaction-tax-stock-market>

*Then*

# Market

In the first markets, people traded their valuable goods in a barter system - another party needed to have something you wanted, and you needed to have something they wanted, and at the right quantity.

This was neither common nor guaranteed. Enter market makers, who were willing to trade with anyone, for anything.

Traders would move vast quantities of goods and act as a central hub for both buyers and sellers while taking only a very small cut of each transaction, thus keeping prices stabilized and consistent.

**Market Makers ensure that either everybody wins, or the market doesn't exist.**



# Makers

*Now*

Markets have changed a lot since then, but market makers still play a pivotal role in our economy to this day - helping trade operate faster and more efficiently.

Like their historical counterparts, today's market makers help facilitate a massive number of transactions, each with razor-thin margins, allowing buyers and sellers to engage in the market with ease.

Any tax on transactions will all but eliminate those margins, resulting in dramatically increased costs for buyers and consumers, or even the elimination of market makers entirely.

**If a Federal Transaction Tax was implemented, Main Street would see a 300% increase in the cost to buy and sell in the marketplace.**

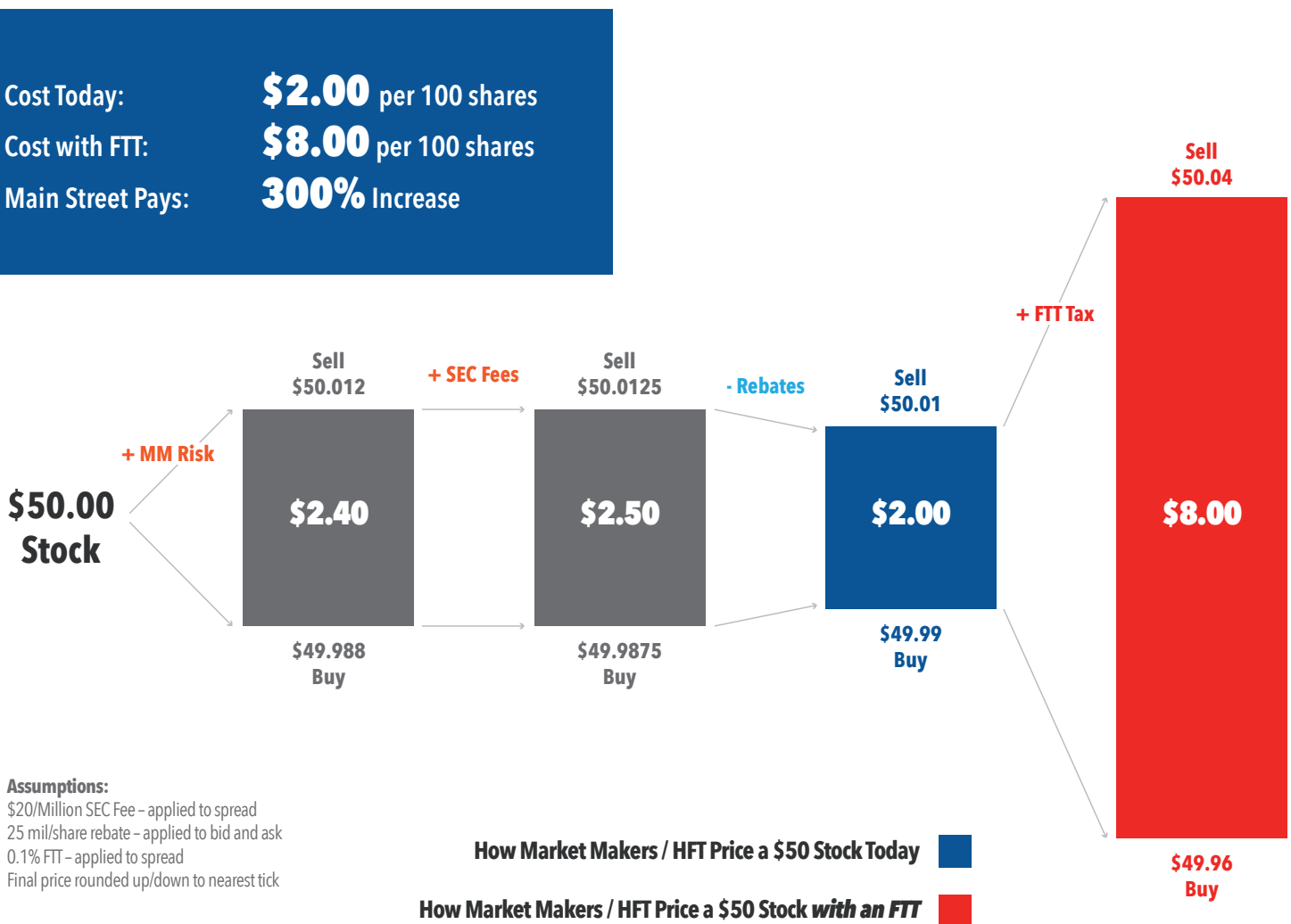
# A transaction tax will drive up the cost of trading by more than the amount of the tax.

When market makers facilitate trading, at least two trades occur between the final buyer and seller. The first is between the seller and the market maker and the second is between the market maker and the final owner. Indeed, even more trades may occur if the market maker sells to another market maker. Sometimes market makers find themselves with too much inventory, so they sell their excess inventory to other market makers who are willing to hold it.

As currently proposed, a transaction tax would affect both transactions. Investors end up paying the tax twice, first when they trade and second through the pass-through of the tax from market makers. This will drive up transaction costs by more than the amount of the tax. Appendix A provides a detailed example of the mechanism involved. Because the proposed tax is even larger than typical bid-ask spreads, the proposed tax represents more than a doubling of transaction costs to investors. This is one of the reasons why many jurisdictions, including the U.K., France, and Italy, that have some form of an FTT, exempt market makers. Some jurisdictions also exempt short-term intraday trades that are closed out before settlement.

**Figure 1:**

The Direct Impact of a Financial Transaction Tax on the Cost to Main Street to Buy & Sell Stocks in the Market



# Arbitrageurs provide valuable services to investors.

Market makers are not the only active traders whose trading benefits long-term investors. Arbitrageurs seek to identify the relative mispricing of related securities and profit from their trading activities that push prices back into proper alignment. This activity, in turn, protects consumers from mispriced securities.

For example, exchange-traded funds (ETFs) are popular investment vehicles for retail investors as well as institutions. ETFs provide efficient ways for investors to invest in an entire market index or in a particular slice of it. For example, an investor can buy an ETF that holds all 500 companies in the S&P 500 index with a single click. Likewise, an investor can buy a portfolio of biotech companies. These ETFs trade on exchanges just like a stock, and their prices are set just like the price of a stock: by the interaction of customer buy and sell orders.

ETF shares can be exchanged for the underlying securities or vice versa. This permits arbitrage activity that keeps the price of the ETF locked onto the value of the underlying portfolio. If the underlying portfolio is cheaper than the ETF, arbitrageurs can buy the underlying portfolio and sell the ETF. They can exchange the underlying portfolio for ETF shares in order to deliver the ETF shares that they have sold. Likewise, if the ETF is cheaper than the underlying portfolio, then the arbitrageur can buy the ETF and sell the underlying portfolio. They can exchange the ETF shares for the underlying portfolio in order to deliver the shares they have sold.<sup>14</sup>

ETF arbitrageurs perform this activity and thus are doing a service to the rest of the market. Without this arbitrage activity, ETF prices will deviate substantially from the value of the underlying portfolio and retail investors could end up purchasing ETFs at fundamentally inaccurate prices. When the SEC considers whether to approve a new ETF product, the ability of market makers to readily and efficiently perform this type of arbitrage is among the most important factors. Since arbitrage requires the constant buying and selling of an ETF and its underlying components, anything that increases the cost of trading directly impacts the ability of market makers to perform beneficial arbitrage. An FTT would drive up the cost of doing this arbitrage, making ETF prices deviate more from the fundamental values of their underlying portfolios, resulting in higher prices for investors wishing to buy an ETF and lower prices for investors wishing to sell their ETF.

Similar to market makers, arbitrageurs are not long-term investors, yet their activities benefit long-term investors in ETFs by keeping ETF prices pegged to the value of the underlying portfolio.

Arbitrageurs are also sometimes called high-frequency traders. Again, because their business model is so straightforward (observe two related securities, and when they are mispriced relative to each other, buy the underpriced one and sell the overpriced one), there is intense competition. This competition means that arbitrageurs aim to be the first one to capture a mispricing opportunity when it arises. Consequently, arbitrage opportunities (relatively mispriced securities) tend to disappear quickly to the benefit of other investors who are less likely to suffer from trading a mispriced security.

Transaction taxes will hurt ETF investors in several ways: ETF investors will pay directly when they trade and then pay again through wider bid-ask spreads as market makers pass through their costs. They will pay yet again through wider deviations between ETF prices and the underlying shares as arbitrageurs are impaired from ensuring that ETFs are trading at their fair market value.

---

<sup>14</sup> The parties that deal directly with the ETF distributor are known as authorized participants.

Arbitrageurs do more than trade ETFs. For example, they are also essential for making sure that the prices of American Depositary Receipts (ADRs) reflect the value of the underlying foreign ordinary shares.<sup>15</sup> An FTT would similarly harm investors both directly when they trade ADRs and indirectly by interfering with the arbitrage that keeps ADR prices in line with the prices of the foreign ordinary shares they represent.

# The Derivatives Market and Risk Management

Just like equity and fixed-income investors, participants in the derivatives market will be hurt directly by the tax when they trade and again indirectly by trading at worse prices.<sup>16</sup> These costs will be passed on to consumers of vital products from food to fuel because an FTT will push up the costs of the risk management tools that producers use to insure against price risks.

Derivatives are very important risk management tools to producers. The ability to reduce price risk makes it possible for companies to provide stable prices to consumers. For example, farmers can hedge the price risk of their corn crops by selling their corn in advance through corn futures contracts. A farmer may consider planting a particular field in corn, which would be profitable at the current price. However, corn prices, like most commodity prices, can and do fluctuate. A drop in the price of corn could bankrupt the farmer. The ability to lock in the price of corn even before planting gives the farmer the assurance needed to produce the crop. Without that ability, the farmer may not be willing to take the risk and plant the field. An FTT will raise the costs of producers' necessary risk management activities. These costs will, in turn, be passed on to consumers in the form of higher prices for goods and services.

Not only will derivatives end-users be hurt directly by the tax, but they will be hurt again by the impact on the market makers with whom they trade. By driving up the cost of market making, an FTT will push up the cost of trading. Additionally, there will be fewer market makers in U.S. markets altogether, given that many of these traders will move their business to jurisdictions that do not impose an FTT. Fewer market makers will mean less liquid and more volatile markets, which will increase transaction costs for all end-users. Thus, a farmer would be hit twice—first by paying the FTT and second by receiving a worse price in the market because of the wider bid-ask spread and less liquidity. The farmer will also see a higher tax burden as an FTT pushes up government borrowing costs. Those costs, in turn, would be passed on to consumers through higher food prices.

---

<sup>15</sup> ADRs permit investors in the United States to trade a U.S.-listed security, the ADR, which can be turned into the ordinary share in the foreign country upon demand. Likewise, a holder of the ordinary share in the foreign country can exchange an ordinary share in the foreign country for an ADR that can be traded in the U.S. ADRs make it easier for U.S. investors to diversify globally because ADRs trade through U.S. brokerages on U.S. markets in U.S. dollars during U.S. trading hours.

<sup>16</sup> Derivatives are financial instruments whose value is derived from an underlying asset. These include futures, options, and swaps.

# Financial Transaction Tax

## Who really pays?

Futures trading helps businesses and individuals around the world navigate risk and uncertainty. Because they can plan for predictable prices, they are better equipped to take on new opportunities, grow their businesses and reduce costs for consumers. Any tax on using futures markets (often called a transaction tax or FTT) would drive up the cost of consumer goods including food, fuel and finances.

### Food



Farmers and ranchers use futures markets to hedge against the risk of crop price swings. A financial transaction tax would drive up the cost for farmers to manage their risk; which in turn eventually gets passed along to consumers in the form of higher food prices at the grocery store. Or as a result of the added FTT cost, farmers may decide to plant less, reducing food supply and pushing food prices even higher.



**Higher costs  
for farmers  
and ranchers**



**Higher food  
prices**



**Lower  
food supply**

### Fuel



Energy and transportation companies (like airlines), who use futures markets to hedge against their exposure to volatile price swings in oil and natural gas around the world, experience an increase in the cost of managing their risks. This eventually gets passed along to consumers in the form of higher gas prices, higher heating and cooling bills for homes and apartments, and more expensive airline tickets.



**Higher gas  
prices**



**Higher travel and  
transportation  
costs**



**Higher  
heating and  
cooling bill**

### Finance



Asset managers and financial institutions who use derivatives markets to offset global interest rate risk experience an increase in the cost of doing business. They pass it along to retirement funds like 401ks in the form of higher fees, which means less income for retirees. Higher costs for banks mean mortgages become more expensive, and there is less capital available for small business lending.



**Higher  
mortgages**



**Less income  
for retirees**



**Harder for  
small businesses  
to grow**

# An FTT will drive up the cost of options.

Many producers use options in their risk management activities. For example, fuel costs are one of the biggest expenses to an airline. Suppose an airline wants to protect against the risk that oil prices may go back above \$75.00 per barrel. This could be disastrous to an airline that priced tickets assuming that oil would remain at \$60.00. So the airline could buy a call option that gives it the right but not the obligation to buy oil at \$75.00. If oil rose above \$75.00, the airline could buy the oil at \$75.00 no matter how expensive oil got. If oil stayed below \$75.00, the airline would not exercise the option. The call option acts like an insurance policy protecting the airline against the risk of oil going over \$75.00. Since options like these are designed for the long-term protection of uncertain business expenses, durations are typically measured in *years*.

Option users get hit with the FTT directly when they trade options, then again because of the impact of the FTT on the pricing of options. Options are available with a wide variety of expiration dates and exercise prices. This makes it possible for users to fine-tune their risk management strategies. The large number of possibilities makes it even more unlikely that a natural buyer will meet a natural seller, even on an exchange. Consequently, market makers typically take the other side of most options trades on the exchanges. Because it is somewhat rare to find a counterparty who wants to take the exact other side of a particular position, the option market maker may hold the option position all the way to its expiration and hedge the risks it faces from holding the position.

However, market makers do not want to hold the risk of the option based on the underlying asset. The market makers hedge their exposure to the underlying price risk in various ways, including by trading in the underlying asset or related derivatives. They thus pay the FTT when they trade the option and also when they hedge in the underlying asset, doubling the impact of the FTT.

For example, the market maker who sold the call option on oil to the airline may hedge the price risk by buying some oil futures. As the price of the underlying asset changes and the option gets closer to its expiration date, the option market maker needs to constantly update the hedge. In other words, in order to provide a business with multiyear protection against changes in the price of oil, the option market maker may need to trade the underlying asset many times *each day* before the option expires. Thus, an FTT on every market maker transaction will cause a very large increase in the cost of hedging options. These cost increases, from the tax itself, the impact of the tax on the option bid-ask spreads, and the impact of the tax on the hedging activities of option market makers, will be passed on to the users of options through even wider spreads. For long-term options this price increase may be so large that it makes the option itself uneconomical for the business. Thus, producers such as farmers, airlines, and manufacturers will incur much higher costs in hedging their business risks, which will lead to higher costs to consumers for food, travel, and household items.

*“Producers such as farmers, airlines, and manufacturers will incur much higher costs in hedging their business risks, which will lead to higher costs to consumers for food, travel, and household items.”*



# Economic Impact of an FTT

An FTT will have many deleterious economic impacts. Some of them are straightforward, and some more insidious. An FTT inherently drives up transaction costs through the imposition of the tax itself. As shown above, this impact will be amplified as intermediaries such as market makers pass on the taxes they pay to investors. Furthermore, these costs will ripple through the economy in a number of damaging ways.

## **An FTT will cause trading volume to fall.**

If something becomes more expensive, the quantity demanded falls. Trading by market makers and arbitrageurs with very thin profit margins will either stop or move to other jurisdictions that do not impose the tax. This has been the experience in every country that has imposed an FTT. Indeed, this fall in “excess” trading volume is one of the hoped for objectives voiced by some proponents of FTTs. Proponents do not understand, however, that many short-term trades are critical for long-term investors.

The exact amount of such a fall in trading volume is uncertain but likely to be large, based on the projections of FTT supporters. FTT proponents such as Pollin et al. (2018), for example, assume a 50% drop in trading volume.<sup>17</sup>

However, a reduction in trading volume is not necessarily a good thing. Market making reduces the transaction costs faced by long-term investors such as pension funds. Arbitrage keeps prices in their proper relative alignment, ensuring that retail investors can trade ETFs at prices that truly reflect their underlying portfolio values.

## **An FTT will increase risk management costs to end-users, which will be passed along to consumers in the form of higher prices for food and other consumer staples.**

Airlines, farmers, manufacturers, and others routinely use the derivatives markets to hedge their exposures to commodity prices. Futures allow them to lock in a price, and options provide insurance against adverse price movements. By reducing their price risk, producers can focus on producing goods and services that they might not have been willing to produce because of the risk. Increasing the cost of trading derivatives with an FTT will increase their cost of doing business. Anything that drives up the cost of doing business will inevitably be passed on to consumers in the form of higher prices. This will affect all businesses that use derivatives to price risk. Energy companies, airlines, and food producers are but a few of the industries that use derivatives to hedge their price risk. They will pass on any FTT they pay to their customers.

---

<sup>17</sup> See Pollin, R., Heintz, J., and Herndon, T. 2018. “The revenue potential of a financial transaction tax for U.S. financial markets.” *International Review of Applied Economics* 32(6), pp.772-806.

# An FTT will drive up the cost of home mortgages.

Today, most homeowners get mortgages from banks or mortgage brokers that then sell them into the secondary market. Fannie Mae, Freddie Mac, and others typically purchase these mortgages and then bundle them into mortgage-backed securities that are sold to investors around the world. As shown above, investors consider their total return after tax and after transactions costs. Global investors have many other investment opportunities, and they will expect higher interest rates on the securities they purchase in order to offset the tax. Again, the yields investors require on mortgage-backed securities will go up because of both the direct impact of an FTT on the cost of trading them and the impact of an increase in benchmark Treasury rates.

Because the rate on home mortgages is related to the yields on these mortgage-backed securities, an FTT will be passed on to homeowners through higher mortgage rates. This means would-be homeowners will face higher mortgage payments when they go to buy a house, making home ownership even less affordable.

*“Would-be homeowners will face higher mortgage payments when they go to buy a house.”*

Investors focus on the net cash flows they receive when they are pricing assets, meaning the amount of money they receive after all transactions costs are taken into effect. It is well known in finance that increases in transaction costs such as the bid-ask spread decrease the value of a security.<sup>18</sup> If the cost of both buying and later selling an asset goes up, investors are not as willing to pay for it and the price drops. With bonds, this means the yield on the bond goes up, meaning that when an issuer sells new bonds, the issuer has to pay a higher rate of interest.<sup>19</sup>

U.S. Treasury securities are widely held around the world, and foreign countries hold approximately 40% of the U.S. public debt.<sup>20</sup> Global investors have many choices on how to invest. Because an FTT would reduce the return to holding U.S. Treasuries, investors would naturally switch to other securities. This will push the price of U.S. Treasuries down, and thus the yields up. This increase in yield means U.S. taxpayers will bear the burden of paying these higher interest rates.

The net result is that a large part of any FTT collected on the trading of U.S. Treasuries will be quickly offset by the higher interest rate the government will have to pay on those Treasuries. In short, the government will be collecting the FTT on Treasuries and then passing through most of that money to investors in the form of higher interest payments on those Treasuries.

---

<sup>18</sup> See Amihud, Yakov, and Mendelson, Haim. 1986. “Asset pricing and the bid-ask spread.” *Journal of Financial Economics* 17.2: 223-249.

<sup>19</sup> There is an inverse relationship between bond prices and bond yields. When bond prices go up, bond yields go down, and vice versa.

<sup>20</sup> Over \$6 trillion of the \$16 trillion in total U.S. government public debt outstanding is held by foreign countries. See <https://www.treasurydirect.gov/govt/reports/pd/mspd/2019/opds042019.pdf> and <https://ticdata.treasury.gov/Publish/mfh.txt>.

*“Every state, city, town, school, and water and sewer district is affected. Indeed, every person in the United States is affected.”*

State and local borrowing costs will be affected as well. Rates on more than \$3 trillion in state and local borrowing will increase just like those for Treasury securities. The FTTs collected on the trading of the over one million outstanding municipal issues will be offset by the higher rates that municipal issuers will have to pay to access the credit markets. Every state, city, town, school, and water and sewer district is affected. Indeed, every person in the United States is affected.

U.S. Treasury rates set the benchmark for state and local borrowing, so the increase in Treasury rates will increase the benchmark rates that determine the costs for state and local borrowers. State and local borrowing costs are thus increased both by the direct impact of an FTT on the trading costs for state and local debt and by the impact on the U.S. Treasury rates that are used as a basis for setting other interest rates. This means the cost of public infrastructure projects, including roads, bridges, and schools, will go up, adding further strain to government finances. Even if state and local bonds are exempted from the tax, the over 7,000 municipal issuers will still have to pay more when they borrow because of the indirect impact on the Treasury yield curve, which sets the benchmark for all borrowing in the U.S. <sup>21</sup>

The direct burden of an FTT on state and local securities will fall mostly on individuals, not the financial industry. According to the Municipal Securities Rulemaking Board, individuals hold nearly two-thirds of municipal securities, either directly or through mutual funds. <sup>22</sup>

*“The cost of public infrastructure projects, including roads, bridges, and schools, will go up, adding further strain to government finances.”*

---

<sup>21</sup> The Sanders version of the tax attempts to exclude tax-exempt bonds, an admission of how destructive the tax would be to state and local governments.

<sup>22</sup> See <http://www.msrb.org/msrb1/pdfs/MSRB-Muni-Facts.pdf>.

# An FTT will cause a drop in the value of corporate stocks.

The value of a stock is directly related to the net after-tax cash flows that investors expect to receive by owning the stock. Higher taxes on investment lead to lower after-tax returns and thus a lower value. As the announcement effect of a 1% FTT in Sweden was associated with a 5.3% drop in the Swedish market, a rough calculation would imply that the 0.5% FTT proposed by Sen. Sanders would cause a 2.65% drop in the U.S. market.<sup>23</sup> With a \$32 trillion market capitalization, that amounts to a 2.65% or approximately \$850 billion in the U.S. market. This is more than \$2,500 for every woman, man, and child in the United States.

This drop in asset prices is far more than the purported annual revenue that would be obtained from the tax. Indeed, the nonpartisan Congressional Budget Office (CBO) forecasts a first-year net loss of tax revenues of \$43.9 billion from the imposition of an FTT because an FTT “would immediately lower the value of financial assets.”<sup>24</sup>

# An FTT will increase the cost of capital, decreasing investment and thus jobs.

Lower stock prices make it harder for growing businesses to sell stock to raise the capital they need to grow their businesses. At the same time, business borrowing costs through the corporate bond market will go up for the same reason. Lenders will require a higher pre-tax return in order to retain the same after-tax return. Similar to the increase in interest costs to governments, an FTT will increase interest costs to businesses as well. The CBO estimates that a decrease of 1% in the cost of capital leads to a 0.7% increase in investment.<sup>25</sup> This increase in the cost of capital due to higher interest rates means that businesses will have to spend more in order to raise capital, resulting in less capital investment and fewer jobs. Thus, even people with no direct investments will be harmed by an FTT.

For example, economists for the European Union conducted a 1,223-page study on the impact of a proposed 0.10% transaction tax under consideration, the same tax rate as that proposed by Sen. Schatz. They found that such a tax would lower GDP by 1.76% while raising revenue of only 0.08% of GDP.<sup>26</sup> In other words, the cost to the economy is far more than the revenue raised.

---

<sup>23</sup> See Umlauf, Steven R. 1993. “Transaction taxes and the behavior of the Swedish stock market.” *Journal of Financial Economics* 33.2: 227-240.

<sup>24</sup> Congressional Budget Office. 2018, December. “Options for reducing the budget deficit, 2019 to 2018.”

<sup>25</sup> The CBO estimate of the first-year revenue loss was based on a 0.10% FTT. As the Sanders FTT proposal is for a 0.5% FTT, the first-year revenue loss would undoubtedly be far higher. See U.S. Congressional Budget Office. 2018, April. *Key Methods That CBO Used to Estimate the Macroeconomic Effects of the 2017 Tax Act—Supplemental Material for the Budget and Economic Outlook: 2018 to 2028*. p. 3. Available at <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/keymethodsthatcbousedtoestimatethemacroeconomiceffectsofthe2017taxact.pdf>.

<sup>26</sup> See European Commission. *Impact Assessment Accompanying the Document Proposal for a Council Directive on a Common System of Financial Transaction Tax and Amending Directive 2008/7/EC*. Staff working paper, p. 50. Available at [http://ec.europa.eu/smart-regulation/impact/ia\\_carried\\_out/docs/ia\\_2011/sec\\_2011\\_1102\\_en.pdf](http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2011/sec_2011_1102_en.pdf).

*“Businesses will have to spend more in order to raise capital, resulting in less capital investment and fewer jobs ... The cost to the economy is far more than the revenue raised.”*

## **An FTT would push trading to other jurisdictions, drying up liquidity and negatively impacting long-term investors.**

It is clear that the imposition of an FTT, like any tax, will push market participants to relocate their activities to untaxed products and untaxed jurisdictions. The case of Sweden is particularly relevant. Within four years of the imposition of its FTT, 50% of its trading volume had moved offshore to London.<sup>27</sup>

Currently, about half of the trading volume of stocks that are listed in both the U.S. and Canada occurs in the U.S.<sup>28</sup> If an FTT were imposed, the U.S. would quickly lose market share because Canada does not impose a transactions tax. Jurisdictions around the world are trying to make their markets more attractive to outside investors and challenge the prominence of U.S. markets, which would be easier to do with a U.S. FTT.

This threat that trading activity will move offshore is particularly acute in globally traded commodities. U.S. futures markets are used by global investors for risk management in many commodities, including oil, agricultural products, and precious metals. The imposition of a U.S. FTT would drive this business (and the associated U.S. jobs) to other countries.

## **An FTT will not raise the net revenue promised by its proponents.**

Some proponents of an FTT argue that it is a painless way to raise revenue for worthwhile projects. However, FTTs rarely raise the desired net revenue because of their impact on trading volume along with the damage to other tax revenue through decreased capital gains and lower economic activity. The past experience in the United States along with that of other countries shows that FTTs cause distortions in the economy and loss of jobs. This is one of the many reasons that the global trend has been to lower and eliminate such taxes.

---

<sup>27</sup> See Umlauf, op. cit.

<sup>28</sup> In November 2018, 49.0% of the trading in stocks listed in both the U.S. and Canada occurred in the U.S. See Rosenblatt Securities. 2018, December. "Trading talk—Market structure analysis." *Canadian Trading Monthly*.

We can learn from U.S. history how little revenue an FTT would raise. When the last FTT was abolished, the rate was approximately 0.4% with a limit of 8 cents per share. Congress estimated that the tax would raise a mere \$195 million in 1966. This represents 0.0285% of 1966's \$813 billion GDP. Applying the same percentage to today's \$21 trillion GDP yields an annual revenue of less than \$6 billion—less than one-tenth of Sen. Schatz's projections for such a tax today. While today's economy is much different, we can also look at the current U.K. experience. The U.K. 0.5% stamp duty, which rightly exempts market makers, raises gross revenue of about 0.1705% of GDP. When applying this figure to the U.S. GDP of \$21 trillion, Sen. Sanders proposed 0.50% FTT would generate gross revenue of \$36 billion. A 0.10% FTT would produce about one-fifth of that, or about \$7 billion.

This is far below the wildly optimistic figures put forth by the proponents of the FTT. Baker (2016) claims such a tax would raise gross revenue of \$105 billion annually, or 0.6% of GDP. Pollin et al. (2018) claim a 0.5% rate would bring in \$220 billion, or 1.2% of GDP. Proponents typically multiply the proposed tax rate by current trading volume, with an arbitrary haircut for a decline in trading volume. They conveniently leave out depressing effects on the economy of lost jobs, less income tax revenue, and higher interest costs for government financing. The nonpartisan CBO forecasts that a 0.10% FTT would lead to a first-year *loss* in revenue of \$43.9 billion due to the reduced capital gains tax revenue from declining asset prices. Overall, the CBO estimates a five-year average change in revenue of \$48.5 billion.

The recent experience of France and Italy shows how far off revenue projections can be. Coelho (2016) documents that the French FTT raised less than one-half of its expected revenue and the Italian FTT less than one-fifth.<sup>29</sup>

*“CBO forecasts that a 0.10% FTT would lead to a first-year **loss** in revenue.”*

---

<sup>29</sup> Coelho, Maria. 2016, August 26. *Dodging Robin Hood: Responses to France and Italy's Financial Transaction Taxes*. Available at SSRN: <https://ssrn.com/abstract=2389166> or <http://dx.doi.org/10.2139/ssrn.2389166>

# The U.S. Experience

The United States imposed an FTT in 1914, and the rate fluctuated over the years. It was repealed in an overwhelming bipartisan vote by a Democratic Congress in 1965.<sup>30</sup> At the time of its repeal, the tax was 0.4% of the value of a stock trade, but no more than 8 cents per share. Congress realized that excise taxes such as the FTT “were not developed on any systematic basis and are often discriminatory in their application to the taxed industries or to the purchasers of the taxed products.”<sup>31</sup>

In the years following the 1965 repeal of the old FTT, trading volume on U.S. exchanges increased substantially. From 1966 to 1967, daily trading volume on the New York Stock Exchange (NYSE) increased by 33%. Trading volume became so heavy that that NYSE actually closed early on Wednesdays in 1967 in order to catch up on the paperwork in what was then a paper-driven trading environment.<sup>32</sup>

After Congress repealed the tax, New York City attempted to raise its tax.<sup>33</sup> The NYSE threatened to move its trading floor to New Jersey and the city backed down and eventually eliminated the tax in 1977.

New York State also had its own security transactions taxes. Pomeranets and Weaver (2018) examined nine changes in the rate between 1932 and 1981.<sup>34</sup> Increasing the tax resulted in higher transactions costs to investors through wider bid-ask spreads and higher market impact while trading volume declined. They found no consistent impact on volatility. The existence of the tax in the state of New York is one of the reasons why over-the-counter market makers, who could operate from almost anywhere, were generally located across the river from New York City in New Jersey.

Even more pernicious was the Interest Equalization Tax, imposed in 1963. The goal of the tax was to protect the U.S. balance of payments by discouraging the purchase of foreign securities.<sup>35</sup> There was a tax of 15% on foreign stocks and taxes ranging from 2.75% to 15% on bonds, although the president could and did alter the rates and change the countries to which the tax applied. The tax clearly made it expensive for U.S. investors to diversify their portfolios with international investments. Even worse, it moved a significant amount of bond market activity out of the U.S. to London and other places. It led to the creation of the Eurobond market, a market for U.S. dollar denominated securities outside the United States. The tax was finally repealed in 1974, but not before the damage was done. The U.S. permanently lost a large chunk of bond market business because it moved offshore, along with the related jobs and income tax revenue.

The United States does fund the Securities and Exchange Commission with a small assessment on securities transactions known as a Section 31 fee. As of April 16, 2019, the rate is \$20.70 per million dollars, or 0.00207%.<sup>36</sup> Sen. Schatz's proposed 0.10% FTT would be nearly 5,000% larger and Sen. Sanders' proposed FTT nearly 25,000% larger.

---

<sup>30</sup> The House vote was 401-6 and the Senate vote 84-3. See Legislative History of HR8371, 89th Congress, The Excise Tax Reduction Act of 1965, PL 89-44.

<sup>31</sup> U.S. Government Printing Office. 1965. *Excise Tax Reduction Act of 1965, Report of the Committee on Ways and Means, House of Representatives, to Accompany H.R. 8371*. p. 1. Washington.

<sup>32</sup> See Wells, Wyatt. 2000. “Certificates and computers: The remaking of Wall Street, 1967 to 1971.” *Business History Review* 74(2): 193-235.

<sup>33</sup> See David, Greg. 2011, January 3. “History of a bad idea: The stock transfer tax.” *Crain's New York Business*. <https://www.craigslist.com/article/20110104/BLOGS01/301049997/history-of-a-bad-idea-the-stock-transfer-tax>.

<sup>34</sup> Pomeranets, Anna, and Weaver, Daniel G. 2018. “Securities transaction taxes and market quality.” *Journal of Financial and Quantitative Analysis* 53.1: 455-484.

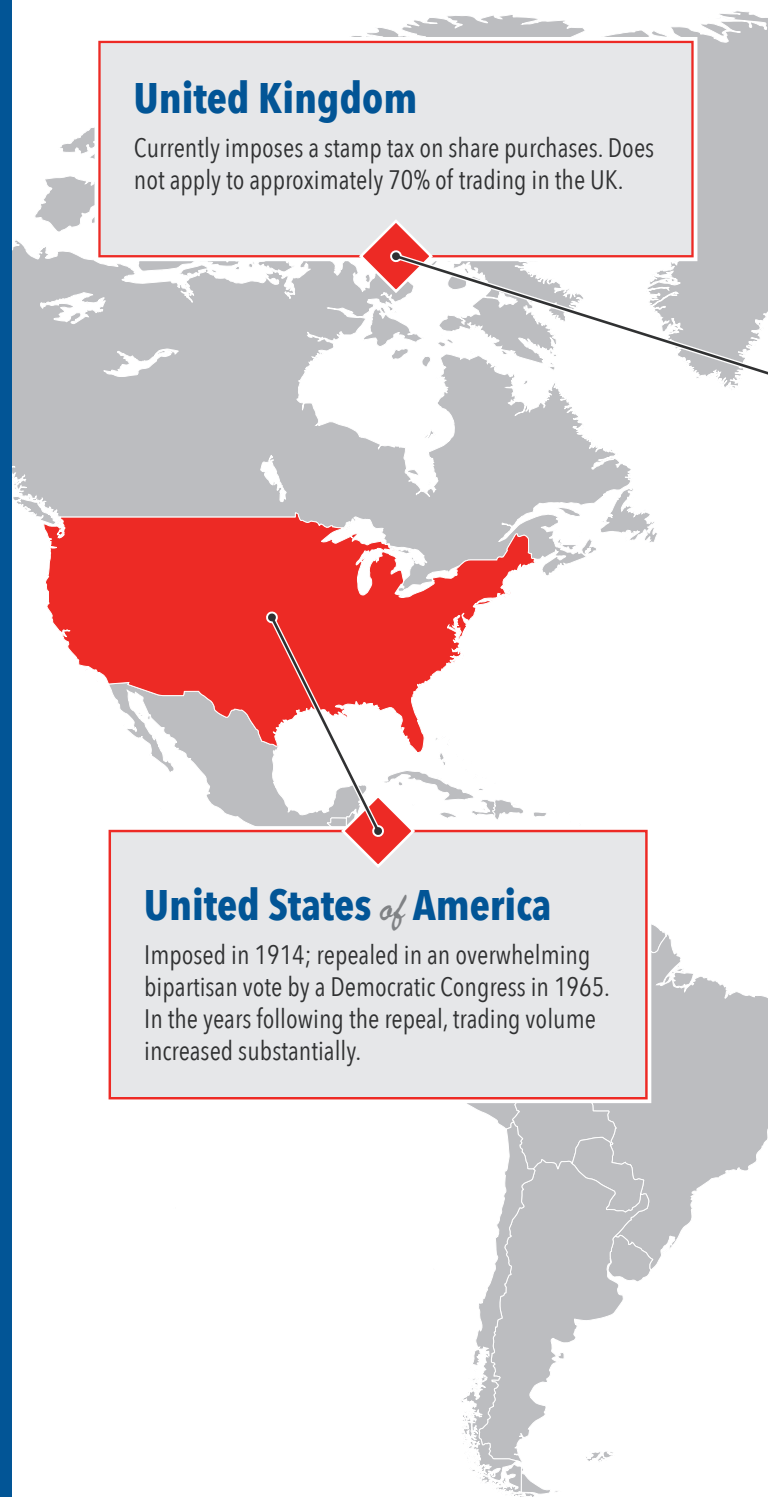
<sup>35</sup> See Mendelson, Morris. 1972. “The Eurobond and capital market integration.” *The Journal of Finance* 27.1: 110-126.

<sup>36</sup> Securities futures transactions are assessed \$0.0042 for each round turn transaction. See U.S. Securities and Exchange Commission. *Fee Rate Advisory #2 for Fiscal Year 2019*. Available at <https://www.sec.gov/news/press-release/2019-30>.

# International Experience with FTTs

In jurisdiction after jurisdiction, the pattern is similar: An FTT is instituted, various tax rates are imposed and then reduced, and the tax is finally eliminated. FTTs have been eliminated in the U.S. (1966), Spain (1988), Netherlands (1990), Germany (1991), Sweden (1991), Norway (1993), Portugal (1996), Italy (1998), Denmark (1999), Japan (1999), Austria (2000), and France (2008).<sup>37</sup> When rates go up, transaction costs go up and market quality goes down. Furthermore, most jurisdictions with FTTs exempt market makers because they are essential for the smooth functioning of capital markets.

<sup>37</sup> See Capelle-Blancard, Gunther. 2017. *Financial Transactions Taxes: A Really Good Idea*. Available at [https://www.amf-france.org/magnoliaPublic/dam/jcr:d9fe690a-fc86-4dc8-827c-28ead3c9617b/201710\\_Etude\\_TTF\\_VA.pdf](https://www.amf-france.org/magnoliaPublic/dam/jcr:d9fe690a-fc86-4dc8-827c-28ead3c9617b/201710_Etude_TTF_VA.pdf).



## United Kingdom

Currently imposes a stamp tax on share purchases. Does not apply to approximately 70% of trading in the UK.

## United States of America

Imposed in 1914; repealed in an overwhelming bipartisan vote by a Democratic Congress in 1965. In the years following the repeal, trading volume increased substantially.



# Lessons of History

## Germany

Repealed the 0.185% FTT in 1991. Prior to the repeal, most Germany trading activity took place in London.

## Sweden

In 1984 imposed a 1% FTT. Share prices increased and trading moved almost immediately offshore. By 1990, 50% of Swedish share volume took place in London. Sweden repealed the tax in 1991.

## China

Currently imposes a 0.1% stamp duty on certain shares.

## Italy

In 2013 imposed an FTT on trades in large Italian companies. Several studies found that trading volume fell and bid-ask spreads and volatility increased.

## France

In 2012 imposed a 0.2% FTT on securities of large firms headquartered in France, but exempts market-makers. Even so, numerous studies document the decrease in trading caused by the tax.

## Japan

In 1953 imposed an FTT and reduced the rate several times before abolishing it in 1999.

## European Union

EU leaders have been debating an FTT for years, with no success. EU economists found that a 0.1% FTT would reduce GDP by more than the amount of revenue collected.

## China

China has imposed a securities transactions tax that it has modified numerous times in an attempt at macroeconomic control.<sup>38</sup> Baltagi, Li, and Li (2006) found that an increase in the stamp tax from 0.3% to 0.5% led to a drop in volume of about one-third along with an increase in volatility.<sup>39</sup> A more recent paper by Su and Zheng (2011) found that a 0.22% increase in the tax caused a 28% drop in volume while a 0.17% decrease in the tax caused an 89% increase in trading volume. There was no clear impact on volatility, as it went up after both the increase and the decrease. China currently has a 0.1% stamp duty on its A (Chinese Yuan (CNY)-denominated) shares, but not on its B (foreign currency-denominated) shares, bonds, or mutual funds.<sup>40</sup>

## France

France imposed an *impôt sur les opérations de bourse* in 1893 but abandoned it in 2008.<sup>41</sup>

More recently, in 2012, France imposed a transactions tax at a rate of 0.2% on securities of large firms headquartered in France. Numerous studies have documented the decrease in market quality caused by the tax. Gomber, Haferkorn, and Zimmerman (2016) found that trading volume declined by 15%, and bid-ask spreads increased.<sup>42</sup> This increase in the bid-ask spread is noteworthy because the French FTT, like the U.K. version, exempts professional market makers. France also excludes the primary market and stock lending trades. Since the currently proposed FTTs in the U.S. do not include an exemption for market makers, the negative impacts of an FTT in the U.S. would be significantly worse than the impacts observed in France.

Likewise, Capelle-Blancard and Havrylchuk (2016) found that the French FTT reduced trading volume but did not impact volatility.<sup>43</sup> Colliard and Hoffmann (2017) found a decline in trading volume and market quality.<sup>44</sup> In January 2017 the rate was increased to 0.3%.

## Germany

Germany had an FTT of 0.185% paid by residents, but it was abolished in 1991. Wrobel (1996) reports that prior to the abolition of the tax, 30% of trading in Bunds (German government bonds) took place in London.<sup>45</sup> It was even worse for other instruments, as 80% to 90% of trades in floating rate Deutschmark-denominated bonds took place in London.

---

<sup>38</sup> Su, Yongyang, and Zheng, Lan. 2011. "The impact of securities transaction taxes on the Chinese stock market." *Emerging Markets Finance and Trade* 47(sup 1): 32-46.

<sup>39</sup> Baltagi, Badi H., Li, Dong, and Li, Qi. 2006. "Transaction tax and stock market behavior: Evidence from an emerging market." *Empirical Economics* 31.2: 393-408.

<sup>40</sup> See <http://english.sse.com.cn/tradmembership/tradingfees/>.

<sup>41</sup> See Capelle-Blancard, 2017, op cit.

<sup>42</sup> See Gomber, Peter, Haferkorn, Martin, and Zimmermann, Kai. 2016. "Securities transaction tax and market quality—The case of France." *European Financial Management* 22.2: 313-337.

<sup>43</sup> Capelle-Blancard, Gunther, and Havrylchuk, Olena. 2016. "The impact of the French securities transaction tax on market liquidity and volatility." *International Review of Financial Analysis* 47: 166-178.

<sup>44</sup> Colliard, Jean-Edouard, and Hoffmann, Peter. 2017. "Financial transaction taxes, market composition, and liquidity." *The Journal of Finance* 72.6: 2685-2716.

<sup>45</sup> See Wrobel, Marion G. 1996. *Financial Transactions Taxes: The International Experience and the Lessons for Canada*. Available at <http://publications.gc.ca/collections/Collection-R/LoPBdP/BP/bp419-e.htm>.

# Hong Kong

Hong Kong introduced a stamp duty of 0.15% imposed on both buyer and seller in 1993. As in many jurisdictions, trades by securities and options market makers are exempt.<sup>46</sup> The stamp duty was lowered to 0.12% in 1998, to 0.1125% in 2000, and then to the current rate of 0.10% in 2001. Debt securities, ETFs, and various foreign securities and debt securities are also exempt.<sup>47</sup>

# India

India introduced a securities transaction tax in 2004 at a rate of 0.075% on equity trades, increased the rate to 0.10% in 2005, and then again to 0.125% in 2006.<sup>48</sup> Sinha and Mathur (2012) found that the increase in 2006 led to a more than 25% drop in trading volume with an insignificant impact on index volatility.<sup>49</sup> It was reduced to the current rate of 0.10% in 2013. Currently, there is widespread speculation that the tax may be eliminated.<sup>50</sup>

# Italy

Italy imposed an FTT in 2013 on trades in Italian-resident companies with a market capitalization greater than €500 million. The rates is 0.1% for trades on exchange and 0.2% for off-exchange trades. Italy went a step further and applied even higher tax rates to so-called high-frequency traders, although, like other countries, it rightly exempted market makers. Ruehl and Stein (2014) examined the imposition of the tax and found, similar to the evidence from France, that trading volume fell and trading costs measured by the bid-ask spread went up.<sup>51</sup> Cappelletti et al. (2016) found that the Italian FTT increased trading costs and increased volatility.<sup>52</sup>

Coelho (2016) examined the behavioral response to imposition of an FTT in France and Italy. As mentioned above, the Italian FTT collected less than one-fifth of the expected revenue. Coelho finds that "FTTs may be poor instruments for government revenue-raising due to the considerable erosion of the tax-based induced."<sup>53</sup>

---

<sup>46</sup> For a history of the Hong Kong stamp duty, see [http://www.ird.gov.hk/eng/pdf/sd\\_stock\\_rates.pdf](http://www.ird.gov.hk/eng/pdf/sd_stock_rates.pdf). For current rates see [https://www.gov.hk/en/residents/taxes/stamp/stamp\\_duty\\_rates.htm](https://www.gov.hk/en/residents/taxes/stamp/stamp_duty_rates.htm).

<sup>47</sup> For a list of exemptions, see [https://www.hkex.com.hk/Services/Trading/Securities/Stamp-Duty-Reporting-and-Payment/Securities-exempt-from-Hong-Kong-stamp-duty?sc\\_lang=en](https://www.hkex.com.hk/Services/Trading/Securities/Stamp-Duty-Reporting-and-Payment/Securities-exempt-from-Hong-Kong-stamp-duty?sc_lang=en).

<sup>48</sup> Pore, Laltu. 2012. "Analysis on securities transactions tax." *SEBI Bulletin* 10.3: 201-208..

<sup>49</sup> Sinha, Pankaj, and Mathur, Kritika. 2012. *Evolution of Security Transaction Tax in India*. Available at [https://mpira.ub.uni-muenchen.de/40165/1/MPRA\\_paper\\_40165.pdf](https://mpira.ub.uni-muenchen.de/40165/1/MPRA_paper_40165.pdf)

<sup>50</sup> See <https://www.businesstoday.in/union-budget-2019/market/budget-2019-fm-nirmala-sitharaman-expected-to-scrap-securities-transaction-tax-this-year/story/361130.html>. There is a lower tax rate on stock trades that do not go to settlement. For details on the current implementation, see [https://www.nseindia.com/int\\_invest/content/tax\\_other\\_taxes.htm](https://www.nseindia.com/int_invest/content/tax_other_taxes.htm).

<sup>51</sup> Ruehl, Tobias R., and Stein, Michael. 2014. "The impact of financial transaction taxes: Evidence from Italy." *Economics Bulletin* 34.1: 25-33.

<sup>52</sup> See Cappelletti, Giuseppe, Guazzarotti, Giovanni, and Tommasino, Pietro. 2016. *The Stock Market Effects of a Securities Transaction Tax: Quasiexperimental Evidence from Italy*, European Central Bank. Working Paper 1949. Available at <http://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1949.en.pdf>.

<sup>53</sup> Coelho, op. cit.

# Japan



Japan instituted an FTI in 1953 but abolished it in 1999. Like in many countries, the rate was reduced several times before final elimination. The rate was reduced from 0.55% to 0.30% in 1989, then to 0.21% in 1996 and finally to 0.10% before being eliminated in 1999. Shinhua Liu (2007) examined various changes in the rates and found that decreases in the rate improved the efficiency of the price discovery process.<sup>54</sup>

# Sweden



Sweden's disastrous experience with an FTI demonstrates the dangers of such a tax. Sweden imposed an FTI of 1% in 1984. Share prices dropped by 2.2% on the announcement date.<sup>55</sup> The drop in total was 5.3% in the 30 days up to and including the announcement. The tax was later increased to 2% in 1986, which led to another 0.8% drop. Trading activity moved almost immediately offshore, and by 1990, 50% of Swedish share volume was taking place in London. The tax raised little revenue due to dramatic reduction in trading activity and was finally repealed in 1991. Subsequently, trading volume increased; however the markets in Sweden have not returned to where they were before the tax. Westerholm (2003) found that the Swedish reduction in the tax from 2% to 1% on January 1, 1991, increased share prices by 7.5% and the final abolition of the tax in December 1991 increased share prices by 9.7%.<sup>56</sup>

The Swedish experiment also demonstrates how far off revenue estimates can be. When the tax was implemented, the expected revenue was 1,500 million Swedish kroners per year. However, the tax never collected more than 80 million kroners per year.<sup>57</sup>

# United Kingdom

The United Kingdom has had a stamp tax on share purchases since 1808.<sup>58</sup> However, unlike recent proposals in the United States, the U.K. tax, like that in France and Italy, rightly does not apply to financial intermediaries such as market makers. Indeed, the tax does not apply to approximately 70% of trading volume in the U.K.

As is the pattern in many other countries, the rate has been reduced over the years. In 1984 it was reduced from 2% to 1% and in 1986 it was reduced from 1% to 0.5%. Bond, Hawkins, and Klemm (2005) examined changes in the U.K. stamp tax rate and found that a reduction in the stamp duty did increase shares prices, more for the more actively traded stocks.<sup>59</sup>

---

<sup>54</sup> See Liu, Shinhua. 2007. "Securities transaction tax and market efficiency: Evidence from the Japanese experience." *Journal of Financial Services Research* 32.3.

<sup>55</sup> See Umlauf, Steven R. 1993. "Transaction taxes and the behavior of the Swedish stock market." *Journal of Financial Economics* 33.2: 227-240.

<sup>56</sup> Westerholm, Joakim. 2003. "The impact of transaction costs on turnover, asset prices and volatility: The cases of Sweden's and Finland's security transaction tax reductions." *Liiketaloudellinen Aikakauskirja* 52(2).

<sup>57</sup> See Wrobel, Marion G. 1996. *Financial Transactions Taxes: The International Experience and the Lessons for Canada*. Available at <http://publications.gc.ca/collections/Collection-R/LoPBdP/BP/bp419-e.htm>.

<sup>58</sup> See *Stamp Taxes Manual*. 2001. Available at <https://webarchive.nationalarchives.gov.uk/20140206163254/http://www.hmrc.gov.uk/so/manual.pdf>.

<sup>59</sup> See Bond, Steve, Hawkins, Mike, and Klemm, Alexander. 2005. "Stamp duty on shares and its effect on share prices." *FinanzArchiv: Public Finance Analysis* 61.3: 275-297.

What is most instructive about the U.K. experience, however, is the cleverness of traders in finding ways to move their trading to untaxed instruments. The U.K. tax does not apply to options or futures. The U.K. pioneered contracts for differences (CFDs) as a means around the stamp tax. A CFD provides a way for an investor to take on the potential for gain or loss from the price of an asset without actually owning the asset. Two parties mutually agree to exchange the difference in price at some time in the future. To assure completion, a margin is required similar to futures contracts. However, there is no fixed expiration date as with futures.

Another result of the U.K. stamp tax is the movement of trading volume to ADRs. Because the U.S. has no stamp tax on the trading of ADRs, investors who can choose between trading the ordinary share in London and the ADR in the U.S. have an incentive to trade in the U.S. due to the lack of a stamp tax in the U.S. Approximately 24.6% of the value of trading in U.K. shares takes place in ADRs in the United States. This would change if the U.S. imposed an FTT, because much of this trading volume would move to another less-taxed jurisdiction.

While the current stated rate of the U.K. stamp tax is 0.50%, in 2018 the U.K. collected only 0.18% on the *reported* share volume in the U.K.<sup>60</sup> The effective rate falls to less than 0.10% when reported U.K. derivative activity is taken into consideration. The actual collected rate is lower still when CFDs, ADRs, and over-the-counter derivative activity are taken into consideration.

Even with exemptions for market makers, the U.K. has experienced the ill effects of an FTT through revenue loss to untaxed instruments and the migration of trading to lower-taxed venues. Current proposals in the United States do not contain market maker exemptions and thus would have dramatically worse effects.

## European Union

EU leaders have been debating an FTT for years. However, enthusiasm has waned as closer examination illustrates the many problems with FTTs. The EU's own economists have concluded that the proposed 0.10% tax would reduce GDP by more than the amount of revenue collected. This shows that the FTT clearly fails the efficiency criterion for good taxation. The economists also concluded, "As far as the FTT is concerned, a large part of the burden would fall on direct and indirect owners of traded financial instruments."<sup>61</sup> In other words, it is the asset owners—the investors in pension funds and mutual funds—who pay, not the intermediaries.

As far as impacting volatility, the EU economists simulated the effects with a dynamic stochastic general equilibrium model and concluded that the impact on market volatility would be "very marginal."

Indeed, under closer examination, it has become clear that a European FTT would collect far less than originally expected. According to documents seen by Euractiv, the most recent analysis of the proposed European FTT shows that it would raise less than one-tenth of previous estimates.<sup>62</sup>

---

<sup>60</sup> Data from HM Revenue and Customs. *Annual Stamp Tax Statistics 2017-2018 Commentary*. Available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/743345/ASTP-Release-Bulletin-Sept18.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/743345/ASTP-Release-Bulletin-Sept18.pdf); and London Stock Exchange. *Monthly Market Report*. Available at <https://www.londonstockexchange.com/statistics/monthly-market-report/monthly-market-report.htm>.

<sup>61</sup> See European Commission. *Impact Assessment Accompanying the Document Proposal for a Council Directive on a Common System of Financial Transaction Tax and Amending Directive 2008/7/EC*. Staff working paper, p. 53. Available at [http://ec.europa.eu/smart-regulation/impact/ia\\_carried\\_out/docs/ia\\_2011/sec\\_2011\\_1102\\_en.pdf](http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2011/sec_2011_1102_en.pdf).

<sup>62</sup> See Valero, Jorge. "EU's 'Tobin tax' now expected to collect only €3.5 billion." Available at <https://www.euractiv.com/section/economy-jobs/news/eus-tobin-tax-now-expected-to-collect-only-e3-5-billion/>.

# Myths versus facts on FTTs

There are many myths surrounding FTTs, including who will be impacted and how the tax would work. This section seeks to dispel the many inaccuracies surrounding those myths.

<i>Myth</i>	<b>FACT</b>
An FTT is a tax on Wall Street.	FTTs are taxes on investments. The burden is passed on directly to the owners of investments including IRAs, 401(k)s, mutual funds, and pensions funds.
The proposed FTTs are tiny taxes that will not cause any damage.	The proposed FTTs are huge taxes on all investors that will add up over time. Sen. Sanders' proposed version of the FTT will cause a lifetime drop of 8.5% or over \$20,000 on the average IRA's lifetime accumulation. Any large tax will have a large impact on the economy as well as on individuals.
An FTT will raise enough revenue to fund programs such as free college or student loan forgiveness.	Throughout history, FTTs have not raised the projected revenue expected by proponents.  When Sweden enacted an FTT in 1984, it projected revenue of 1,500 million Swedish kroner per year but never collected more than 80 million.  In December 2018, the U.S.'s nonpartisan CBO projected a 0.1% FTT would actually lead to a \$43.9 billion <i>loss</i> in revenue in the first year.

## *Myth*

## **FACT**

An FTT will punish Wall Street traders who caused the financial crisis.

The financial crisis was based on illiquid subprime mortgage-backed securities—products that did not trade a lot. A tax on trading would not punish those involved with the crisis. Instead, it would punish everyday Americans investing through their 401(k)s, 529 plans, pensions, or other products to save for retirement, college, and their futures.

An FTT will curb speculative trading and prevent the next financial crisis.

By impairing market liquidity and taxing risk management, an FTT could actually make markets more volatile and could help *cause* the next financial crisis.

An FTT will not affect every-day investors.

There is no way to exempt a particular subset of investors. Even if certain investors do not pay the tax directly, they will pay indirectly through the higher cost of investing.

The U.K. has an FTT and its financial markets work just fine.

The U.K. Stamp Duty is very unlike the US FTT proposals. Among other things, it rightly exempts market makers who are the targets of the U.S. proposals. Furthermore, the U.K. has experienced significant movement of trading activity to untaxed instruments and to the U.S.

# Conclusions and Key Findings

A financial transactions tax may at first seem like an easy way to raise revenue, but on close examination it becomes clear that an FTT does more harm than good. Indeed, some famous economists have suggested transactions taxes only to change their mind. For example, Larry Summers at one time supported a financial transactions tax, but later when he was secretary of the Treasury he firmly opposed it.<sup>63</sup>

Nobel prize-winning economist James Tobin also supported a transactions tax on currency trading as “an innocuous way to throw some sand in the wheels of super-efficient financial markets and create room for differences in domestic interest rates, thus enabling national monetary policies to respond to domestic macroeconomic needs.”<sup>64</sup> In short, he was calling for a mechanism to give governments more control over their currencies by slowing down the market. Indeed, some call an FTT a Tobin tax. However, Tobin was later reported to have “distanced himself from the Tobin tax crowd.”<sup>65</sup>

An FTT sounds too good to be true: raise badly needed revenue while punishing bad guys and not hurting good guys. Alas, it is too good to be true. Key findings of this study show the following:

**Main Street will pay for the tax, not Wall Street.** The real burden will be on ordinary investors, such as retirees, pension holders, and those saving for college. They will pay the tax directly when they trade, and pay it again as financial intermediaries pass on the taxes they face as a cost of doing business. FTTs are not actually a tax on financial intermediaries; they are a tax on investors.

**An FTT will drive up the cost of trading by more than the amount of the tax.** The cost to a retail investor who buys a round lot of a \$100.00 stock would be \$50.00 in direct costs and even more in indirect costs. This represents a more than tenfold increase in the cost of trading in a world of \$5.00 commissions.

**Retirement savings will be hit hard.** Under the version of the tax proposed by Sen. Bernie Sanders (D-VT), a typical retirement investor will end up with 8.5% less in his or her 401(k) or IRA after a lifetime of savings. In dollar terms, the average IRA investor would have \$20,000 less at retirement as a result of this tax.

**An FTT will drive up the cost of home mortgages.** The yields on mortgage-backed securities will go up because of both the direct impact of an FTT on the cost of trading them and the impact of an increase in benchmark Treasury rates. Because the rate on home mortgages is related to the yields on these mortgage-backed securities, an FTT will be passed on to homeowners through higher mortgage rates.

**Mutual fund expenses will go up and reduce mutual fund returns.** The transaction taxes paid directly and indirectly by mutual funds will increase their costs and decrease returns to investors. This will harm mutual fund investors such as 401(k) participants saving for retirement.

---

<sup>63</sup> See Summers, Lawrence H., and Summers, Victoria P. 1989. “When financial markets work too well: A cautious case for a securities transactions tax.” *Journal of Financial Services Research* 3.2-3: 261-286 for his support and later for his opposition at [https://ips-dc.org/obama\\_supported\\_financial\\_transactions\\_taxes\\_before\\_summers\\_nixed\\_it/](https://ips-dc.org/obama_supported_financial_transactions_taxes_before_summers_nixed_it/).

<sup>64</sup> See Tobin, James. 1996. “A currency transactions tax, why and how.” *Open Economies Review* 7.1: 493-499.

<sup>65</sup> See Fleming, Charles. 2001, November 21. “France institutes controversial tax on currency deals—Conditional language makes levy unworkable, critics say.” *Wall Street Journal Europe*.



**Pension fund expenses will go up and pension fund returns will go down.** Likewise, the transaction taxes paid by pension funds will reduce their returns, worsening existing problems with underfunded pensions and making it more costly for governments and corporations to provide pensions.

**Taxpayers will pay more because government financing costs will go up.** An FTT on municipal and U.S. Treasury securities will lead to higher interest rates on those securities. This will increase government borrowing costs, which will be borne by all taxpayers, not just investors. This will also increase the cost of capital for public projects, such as infrastructure improvements.

**Corporate financing costs will go up.** While the proposed FTTs do exempt new issues of equity and debt, they would apply to secondary market transactions. Investors will expect higher returns to offset the reduced cash inflows caused by an FTT, which will raise the costs of corporate financing.

**Hedging costs for producers will go up, and consumers will pay for it.** Producers such as farmers, oil companies, and airlines use derivatives such as options and futures to manage their risk. Taxes such as FTTs are part of their cost of doing business that gets passed on to the consumer in the form of higher prices for groceries, gasoline, and travel.

**GDP will be reduced by more than the net revenue raised.** An FTT will depress economic activity in several ways. The higher cost of capital will result in less investment and thus less economic growth, fewer jobs, and less income tax revenue. At the same time an FTT will depress trading activity and send it offshore, resulting in a loss in jobs and tax revenue, consistent with what has occurred in other countries that have experimented with FTTs. European Union economists have estimated that a proposed EU FTT, similar to the ones proposed in the U.S., would actually reduce GDP by more than the revenue raised.

**FTTs will not raise the revenue that proponents expect.** By suppressing economic and trading activity and driving more trading offshore, the amount of revenue raised will be far less than estimated. The experience in other countries is that FTTs collect far less than forecast.

**An FTT will cause stock prices to fall.** Stock prices are a function of after-tax cash flows received by investors. By decreasing the after-tax cash flows investors receive, an increase in taxes will cause the value of stocks to fall. This will hurt retirement savers and impose additional stress on already underfunded state and local pension funds. It will also result in less capital gains tax revenue to the government.

**FTTs may increase market volatility.** In many cases around the world, the experience has been that volatility actually increased after FTTs were enacted due to trading activity shifting and liquidity decreasing, making markets less able to withstand future market stress events.

**FTTs have consistently failed throughout history.** FTTs around the world have generated less revenue than forecast due to trading activity shifting to other jurisdictions. They ended up being scaled back due to their deleterious impact on the economy. Indeed, a Democratic Congress and president wisely scrapped the previous FTT in the United States.

**The proposed FTTs are more onerous than FTTs in foreign countries.** Most countries with FTTs exempt liquidity providers such as market makers from FTTs because of their important role in smoothing market operations. The lack of such an exemption in the proposed FTTs would exacerbate their negative impacts.

This paper is not the only one to reach these conclusions. As the CBO succinctly summarized:

*"First, the tax could reduce private investment (leaving aside the effects of higher tax revenue on federal borrowing and thus on the funds available for investment). Specifically, the tax would raise the costs of financing investments to the extent that it made transactions more costly, financial markets less liquid, and financial risk management more expensive.*

*Second, the transactions tax would reduce the value of existing financial assets because investors would not be willing to pay as much for assets that became more expensive to trade, lowering household wealth.*

*And third, the cost to the Treasury of issuing federal debt would probably increase (again, leaving aside the effects of deficit reduction) because investors would pay less for Treasury securities that were less liquid. In addition, traders would have an incentive to reduce the tax they must pay by moving their trading out of the country (although offshore trades by U.S. taxpayers would be taxed)."*<sup>66</sup>

FTTs really are too good to be true. They flunk Adam Smith's four basic principles of taxation—efficiency, fairness, convenience, and certainty. Due to the major damage they inflict on real economic activity—greater than the amount of revenue raised—FTTs flunk the efficiency principle. The fact that the burden of transactions taxes boomerangs even onto non-investors through their impact on jobs, pension funds, and government borrowing costs flunks the fairness principle. The fact that the damage from the tax is spread far and wide throughout the economy through fewer jobs flunks the convenience and certainty principles as well.

Bad ideas have a habit of coming around again. The U.S., like many other nations, experimented with an FTT and wisely got rid of it. Yet each generation seems to be tempted by the false promise of a painless revenue stream. The Bush administration considered the idea of an FTT in 1990 but wisely dropped it after realizing the damage it would do to the economy.<sup>67</sup> It would be wise to pay attention to the wisdom of experience and again avoid this false temptation. After all, those who fail to learn from history are doomed to repeat it.

---

<sup>66</sup> See Congressional Budget Office. 2013. *Options for Reducing the Deficit: 2014 to 2023*. p. 173. Available at <https://www.cbo.gov/sites/default/files/cbofiles/attachments/44715-OptionsForReducingDeficit-3.pdf>.

<sup>67</sup> See Grundfest, Joseph A., and Shoven, John B. 1991. "Adverse implications of a securities transactions excise tax." *Journal of Accounting, Auditing & Finance* 6(4): 409-442.

## Appendix A

# How market makers reduce the cost of trading for long-term investors

Long-term investors, by definition, do not trade very often. At any given time, there are likely to be very few long-term buyers or sellers in the market for a stock. This example demonstrates how stock trades are executed on stock exchanges and how market makers reduce the cost of trading for long-term investors.

Stock exchanges gather buy and sell orders from investors. A limit order is an order that has a limit price attached to it. For example, any investor can put in an order to buy 100 shares of XYZ at a price no higher than \$10.00 per share. A stock exchange takes all of these orders from its customers and ranks them by the price. The order to buy at the highest price is known as the best bid. When a sell order comes in from someone who wants to sell immediately, which is known as a “market” order, that order is executed at the price of the best bid.

Likewise, customers can place limit sell orders to sell a stock at a price no lower than a limit price. The stock exchange ranks those orders by price as well. The sell limit order with the lowest price is called the best offer or best ask price. When a market buy order comes in, it will execute at the best offer price with the best offer.

The following table is an example of the “limit order book” at a stock exchange if there were orders only from long-term investors but not from any market makers:

Buy orders (bids)		Sell orders (asks or offers)	
Number of shares	Price	Price	Number of shares
		\$100.25	300
		\$100.22	100
		<b>\$100.20 (Best offer)</b>	<b>200</b>
<b>100</b>	<b>\$99.94 (Best bid)</b>		
200	\$99.92		
100	\$99.90		

In this example, the best bid price is \$99.94 and the best offer (or ask) price is \$100.20. If a customer market order to buy 100 shares came in, it would be executed at the best ask price of \$100.20. If a customer market order to sell came in, it would be executed at the best bid price of \$99.94. The gap between the best bid and offer or ask price is known as the “bid-ask” spread or sometimes just “the spread.”

The bid-ask spread is one of the important costs of transacting, and it represents the cost of immediacy. An investor who wants to buy immediately or sell immediately pays the bid-ask spread. A patient seller who is willing to wait for a buyer to show up might be able to get a better execution by putting in a limit order. However, no buyer may show up willing to trade at the seller’s limit price. Indeed, other sellers may come into the market who are willing to sell at even lower prices. A seller who does not want to take on this price risk may instead sell immediately with a market order.

In this example, the bid-ask spread is \$99.94 - \$100.20, or 26 cents. With orders only from long-term investors, the bid-ask spread tends to be wide.

Market makers provide the service of immediacy. They are willing to buy from a seller and hold inventory until a buyer comes along. They take on the short-term price risk that the market order traders do not want to take. Market makers provide this service by posting their own limit orders on exchanges. On U.S. exchanges, orders from market makers are treated just like orders from other investors.<sup>68</sup> In the above example, suppose a market maker decides to enter an order to buy at \$100.00 and an order to sell at \$100.02:

Buy orders (bids)		Sell orders (asks or offers)	
Number of shares	Price	Price	Number of shares
		\$100.25	300
		\$100.22	100
		\$100.20	200
		<b>\$100.02 (Best offer)</b>	<b>100</b>
<b>100</b>	<b>\$100 (Best bid)</b>		
100	\$99.94		
200	\$99.92		
100	\$99.90		

<sup>68</sup> Indeed, on some exchanges, orders from retail customers take priority over orders from professional market makers. Priority means that retail limit orders are executed first if they have the same limit price as a nonretail order.

Now the bid-ask spread has been narrowed to 2 cents. Customers who want to buy or sell immediately now get a better price than they would have before. The market maker hopes to buy from customers at the bid price and quickly sell to others at the ask price. Of course, market forces will move the market clearing price during the day, so market makers need to constantly adjust their bid and ask prices. This means they need to cancel their old bids and offers and put in new bids and offers.

Market makers are not long-term investors, nor is that their purpose in the market. Their comparative advantage is not in determining long-term fundamental value, but instead in providing immediacy and holding and managing risk. They provide a service to both retail investors and institutional investors who want to buy and sell stocks, bonds, or other financial instruments. Market makers take on the trading risk that an investor wants to get rid of and hold it until a counterparty comes along.

Sometimes that counterparty comes along in seconds or minutes, but sometimes it may take days. Market makers may also find themselves with too much of a particular stock and trade with another market maker to reduce their inventory.

Indeed, the role of market makers is so important that even in many of the countries that have adopted FTTs, the rules have been crafted to either fully exempt market makers from the tax (for example, in the United Kingdom), or otherwise minimize the amount of tax from market-making activities.

# Impact of an FTT

Under the proposed Wall Street Tax Act of 2019, a tax of 0.1% would be applied to each stock trade, to be collected by the exchange. While details are still uncertain, it is likely that the exchanges would collect the fee from sellers like they do the Section 31 fee.

Suppose for example, that the FTT rate of 0.1% is applied in this example, or 10 cents a share for a stock priced at \$100.00. A market maker would have to make at least 10 cents in order to cover the tax and hope to make a profit. Instead of adding competitive quotes at \$100.00 bid/\$100.02 offered, the market maker would widen the quote. For example, it might become \$99.95 bid/\$100.07 offered in order to make up for the tax.

The market would thus look like this:

Buy orders (bids)		Sell orders (asks or offers)	
Number of shares	Price	Price	Number of shares
		\$100.25	300
		\$100.22	100
		\$100.20	200
		<b>\$100.07 (Best offer)</b>	<b>100</b>
<b>100</b>	<b>\$99.95 (Best bid)</b>		
100	\$99.94		
200	\$99.92		
100	\$99.90		

Before the FTT, the total round-trip cost of transacting (buying and then selling) to investors at the exchange was just the bid-ask spread plus commissions.<sup>69</sup> On a 100-share trade, the cost from the bid-ask spread would amount to \$2.00. At an average institutional commission of 1.7 cents per share, commissions would cost \$1.70 per 100 shares for each leg of the transaction, or \$3.40 for the round trip. This brings the total round-trip transaction cost of \$5.40.

<sup>69</sup> See Virtu Inc. *Global Cost Review*, Q4/2018. Available at <https://www.virtu.com/uploads/2019/02/ITG-Global-Cost-Review-4Q18.pdf>. Retail investors typically pay a flat fee that does not change based on the number of shares. In Kiplinger's 2018 survey of brokers, the median commission was \$5.45. See <https://www.kiplinger.com/article/investing/T023-C000-S002-the-best-online-brokers-2018.html>.

After the FTT, the investor suffers a wider spread because of the FTT in addition to paying the FTT directly when they sell. The cost from the now wider bid-ask spread is \$12.00 and the FTT is \$10.00, while commissions are still \$3.40, for a total cost of \$25.40. Note that transactions costs increase by more than the direct amount of the tax. Indeed, note that total transactions costs more than quadruple as a result of the transactions tax.

The exception to this amplification of the tax impact would be cases in which the orders that set the best bid or best offer prices come from limit orders from patient long-term investors who are willing to wait for executions. However, by definition long-term investors trade less frequently and their orders are less likely to set the bid and offer prices. If the best bid and best offer prices solely represented long-term investors, bid-ask spread would be much wider and there could be many times during the day when there would be no bid or offer, period. In any event, those long-term traders would still be hit with the FTT when they transact—again, saddling investors, rather than market makers, with an added cost.

In this example, if Sanders' version of the tax were imposed at a rate of 0.50%, the tax would be \$50.00 on the transaction. In the above example, a market maker would not be able to profit at a spread of less than 50 cents between the bid and the ask price. Thus, the market maker would not quote and the spread would be the 26 cents from the long-term investor quotes. The round-trip transactions costs would be \$3.40 in commissions plus \$26.00 in bid-ask spread plus \$50.00 in taxes, for a total of \$79.40. This is a more than 1,400% increase in transactions costs over the prior \$5.40!

## Appendix B

# The role of ETF arbitrageurs

ETFs are basket products that provide efficient ways for investors to implement a particular investment strategy. With the click of a mouse, a retail investor can implement an investment strategy that could involve hundreds if not thousands of underlying assets. For example, many retail investors invest their retirement savings in ETFs that track the entire U.S. stock market. ETFs are traded just like stocks on U.S. exchanges. An FTT will affect both the trading of the ETF itself and the trading of the underlying assets.

ETF prices stay locked on the price of the underlying assets because of the possibility of arbitrage between the ETF and the underlying assets.

The ability to exchange securities for ETF shares and vice versa creates an arbitrage opportunity. If the price of the ETF shares is above the price of the underlying securities, an arbitrageur can buy the underlying securities and sell the ETF shares. The arbitrageur then delivers the underlying securities to the ETF distributor in exchange for ETF shares, and then delivers the ETF shares to the buyers of the ETF shares. Conversely, if the price of the ETF is below the price of the underlying securities, the arbitrageur will buy the ETF and sell the underlying securities. The arbitrageur then exchanges the ETF shares for the underlying securities, which are then delivered to the buyers of the underlying securities.

Thus, arbitrageurs can make money when they spot even a small divergence between the ETF price and the value of the underlying securities. Their activities to buy the underpriced side pushes up the price of the underpriced side while their selling of the relatively overpriced side pushes down the price of the relatively overpriced side. This pushes the prices of the ETF and the underlying securities back into their proper alignment. This keeps the price of the ETF locked onto the value of the underlying portfolio.

As long as nothing interferes with this arbitrage activity, retail investors can purchase ETFs with the assurance that the price of the ETF properly tracks the price of the underlying securities. Note that these arbitrageurs are not long-term investors, but merely service providers to the rest of the market.

Here is an example: Suppose that an ETF is currently quoted at \$100.00 bid/\$100.10 offered. This means that it can be sold right now for \$100.00 or bought right now for \$100.10. Meanwhile, the underlying basket of securities is quoted at \$99.90 bid/\$99.95 offered.<sup>70</sup> The arbitrageur then buys the basket of securities at the offer price of \$99.95 and sells the ETFs at \$100.00. The arbitrageur then exchanges the underlying securities for the ETF shares to deliver to the ETF buyers. The buying of the underlying securities pushes up the price of the underlying securities and the selling of the ETF shares pushes down the price of the ETF.

Arbitrageurs will continue to do this until the price differential goes away and the ETF shares are properly priced relative to the value of the underlying portfolio of the ETF. In this example, suppose that the price impact of the arbitrage activity is reflected in the share prices of the underlying securities. They would rise by \$0.05 to \$99.95 bid/\$100.00 offered.<sup>71</sup>

---

<sup>70</sup> This is the aggregate price averaged over the whole basket. Each individual security in the basket has its own bid and ask prices.

<sup>71</sup> In practice, the price impact would be reflected partly in the price of the underlying shares and partly in the price of the ETF. For simplicity of explication, this example assumes that the price impact of the arbitrage shows up in the price of the underlying shares.



In the above example, under a 0.1% FTT, the spread for both the underlying portfolio and the ETF would widen by 10 cents on a \$100.00 stock. Thus, the ETF would be \$99.95 bid and \$100.15 offered while the underlying portfolio would be \$99.85 bid/\$100.00 offered. In this situation, it would not be profitable for the arbitrageur to conduct the arbitrage: The arbitrageur could buy the underlying portfolio of securities for \$100.00 and then sell the ETFs for \$99.95 less 10 cents in taxes, or \$99.85. Since this would be a losing proposition, the arbitrage will not occur.

An unsuspecting retail investor who purchases the ETF would be paying 15 cents more than the value of the underlying portfolio. This is another example of how investors are hurt by more than the face amount of the tax. Arbitrageurs are the traffic cops of the securities markets who keep securities in their proper relative alignment. They do this not just for ETFs, but for a wide range of related securities such as ADRs and derivatives such as options and futures.<sup>72</sup>

---

<sup>72</sup> ADRs are American Depositary Receipts, securities that trade in the U.S. but are claims on foreign ordinary shares that are listed on foreign stock markets. These make it convenient for U.S. investors to invest in foreign securities without having to deal directly with foreign currencies or market hours different from the U.S. For example, BP plc is listed on the London Stock Exchange, but U.S. investors can purchase BP ADRs on the NYSE during U.S. market hours as easily as any other U.S. stock. The holder of an ADR can convert it into the foreign ordinary share and vice versa. Arbitrage activity between the U.S. and the foreign market keeps the prices of ADRs pegged to the value of their underlying ordinary shares.







CENTER FOR CAPITAL MARKETS  
COMPETITIVENESS.