

**Levies on Equity Transactions
to Finance Climate Action**

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Levies on Equity Transactions to Finance Climate Action

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Abstract: Mobilising substantial new resources is essential to address the climate crisis, particularly for low-income developing countries disproportionately affected by its impacts. Financial Transactions Taxes (FTTs) on equity trading, already implemented in several countries and generating around \$17 billion annually, represent an underutilised but promising revenue stream. Drawing on existing implementations, particularly in France and the UK, the paper evaluates legal feasibility and revenue potential. We argue that expanding and harmonising such levies — designed with simplicity, enforceability, and fairness in mind — could raise an additional \$87 billion per year, significantly contributing to climate action, especially related loss and damage needs. In the context of the Global Solidarity Levies Task Force (GSLTF) initiated at COP28, the study highlights the FTT as a technically feasible, low-cost, and non-distortive mechanism to raise climate finance quickly and effectively, fulfilling the criteria sought by GSLTF and offering a practical path forward in the broader effort to scale up international development and climate funding.

Keywords: Financial transaction tax, Securities Transaction Tax, Tobin tax, Innovative financing.

Codes JEL: G21, H25.

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Capelle-Blancard is widely recognised for his expertise on financial transaction taxes (FTTs), including a book on the topic (*La taxation des transactions financières*, Ed. La Découverte, Paris, 2024 – <https://www.editionsladecouverte.fr/la-taxation-des-transactions-financieres-9782348036415>) offering a comprehensive analysis of the rationale, design, and implications of FTTs. His academic contributions include more than forty peer-reviewed articles in leading international journals such as *The Journal of Business Ethics*, *The Journal of Banking & Finance*, *The Journal of Environmental Economics & Management*, and *The Review of Finance*. In addition to his academic work, he regularly contributes to public debate on financial regulation and economic policy, helping to bridge the gap between scholarly research and real-world application.

Avinash Persaud

Avinash Persaud was a top-ranked analyst, formerly the global head of currency and commodity research at J.P. Morgan, and later a managing director at State Street Bank, one of the world's largest asset managers, custodians, and brokers for institutional investors. He was the author of a series of papers on the enforceability, efficiency and benefits to financial stability of financial transaction taxes (FTT), which contributed to the adoption of an FTT in France and Italy in 2012. Persaud was an intellectual architect of macro-prudential regulation and the 'Bridgetown Initiative' on international financial reform. Persaud has won numerous awards in global finance, served as a financial regulator, and held the position of Special Envoy to the Prime Minister of Barbados, where he was born. Currently, Persaud is Special Advisor to the President of the Inter-American Development Bank on Climate Change. The views expressed in this report are his alone and not that of the IDB.

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The work presented here constitutes an independent study undertaken by the authors. The views, interpretations, conclusions, and recommendations expressed in this report are solely those of the authors. They do not necessarily reflect the official positions, policies, or opinions of the Global Solidarity Levies Task Force, its secretariat, its members, its observers or its affiliated institutions and partner organisations.

The report has been subject to review by the Expert Group of the GSLTF and partner organisations of the Task Force, as well as a selection of additional subject matter experts on relevant topics. A full list of the Expert Group and partner organisations can be found on the Task Force website. The authors gratefully acknowledge the comments received in the review process, while retaining full responsibility for any errors, omissions, or interpretations contained in the final version. In particular, thanks to Miguel Correira for his valuable inputs in the paper’s development and preparation.

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The views expressed in this report are those of the authors alone and not those of any of the institutions with which they are affiliated, currently or in the past.

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Introduction

Addressing the devastating impacts of a warming climate requires significant levels of new resources, especially for low-income developing countries, who have contributed little to the accumulation of greenhouse gasses that has intensified the adverse climatic conditions they face. In the case of responding to loss and damage of vulnerable developing countries, this needs to be in the form of grants so they do not sink under oceans of debt not of their cause. And in the case of public infrastructure for greater resilience, it needs to be in the form of capital to support the scaling up of the provision of long-term, low-cost loans.

One potential category of taxes that could be harnessed for these grants and capital to limit the impact on budgets in developed and developing countries are Financial Transactions Taxes (FTT) on the trading of shares. They are already in the tax arsenal of many countries and currently raise approximately \$17bn per year. But this paper shows they are grossly underused. A broader application of some of the existing taxes at existing rates could raise an additional \$87bn per year. This tried and tested revenue-raiser could be extended in countries that already employ it and introduced in states that currently do not, to meet a significant proportion of climate-related loss and damage in developing countries ex-China, estimated to be over \$150bn per year and rising rapidly.

In the context of the work of the Global Solidarity Levies Task Force (GSLTF) launched at COP28, led by France, Kenya and Barbados and supported by several other countries and a wide range of international organisations, such as the OECD, G20, UN, IMF and the World Bank, applying greater taxation on equity trading is one of a number of levies that could contribute to international efforts to urgently boost development and climate finance in a substantial manner.

The aim of this study is to demonstrate why the FTT applied to equity transactions in major markets is a good candidate to fulfil the criteria that the GSLTF are looking for, in that it is technically and practically proven, inexpensive to collect, and far from causing an unhelpful distortion in economic activity serves to offset a bias towards damaging levels of short-termism. Moreover, due to its long history of providing effortless income to governments from non-essential activity, may be operationally easier to achieve more quickly than other alternatives. We conclude this paper by setting out the scale and geographical source of revenue that could be generated.

1) Background to Financial Transactions Taxes (FTTs)

FTTs are both old and new. The UK's stamp duty on share trading, which collects around US\$5bn annually, dates back to a 1624 public competition in the Netherlands² to find a tax that would raise substantial revenues, would be hard to evade and was easy to collect. The winning entry proposed that all transactions not stamped 'taxes paid' are not to be enforceable in the courts, a fate buyers have since scrupulously avoided by paying the tax – even when they are not UK tax residents. Almost half of those paying today's UK stamp duty reside abroad and do so to legally protect their ownership.³

In the case of equity trading, the taxable event is the transfer of ownership, which for reasons of simplicity we propose applies to the buyer or seller but not both, which is the basis of FTT revenue collection successfully practiced in other countries besides the UK such as France, Hong Kong, India, Italy or South Korea.

Using the most recent data from the adoption of FTTs in France and Italy for empirical estimates of the degree to which trading falls after an FTT on equity trading has been implemented in the modern, digital era, we can estimate that if all major financial markets had an FTT at the same rate as the UK currently applies, it would raise an additional \$87bn per year, putting the total raised by taxing equity transactions at \$104bn per year. This figure is not as large as some may hope, but is nevertheless substantial and would make a meaningful difference for instance if it were directed to climate loss and damage in developing countries. It supports the contention that we can scale the additional revenue for climate action we now need from levies implemented at modest rates across a few sectors, notably, finance, fossil fuel production, aviation and shipping applied in a complementary fashion.

What follows is an examination of enforceability and the liquidity and trading impact and the methodology of calculating the realisable tax take. We include a market-by-market extension of our results. But first, let us consider why an FTT on securities trading may be a natural response to rebalancing market valuations towards long-term sustainability.

2 See Dagnall, 1994.

3 See Hawkins and McCrae, 2002. For a comprehensive analysis of the technical structure of the FTT, see Correia, 2015.

2) Short-termism in equity trading and the economics of sustainability

In financial market trading, getting the long-term right is challenging because of the many things that may occur over time and impinge on the price that traders have no superior knowledge or influence over. Short-term trading however has less uncertainty and is more influenced by recent trading trends which traders have superior knowledge over than non-market participants. Consequently, the focus on trading is short-term and market valuations, influenced by the preponderance of short-term traders, are based on the price that could be achieved if the financial instrument is sold immediately not if it was held way into the future. Valuations that take into account the sustainability of an asset get drowned out by the preponderance of short-term trading in markets.

For instance, current market valuations place a substantial value on long-term fossil fuel reserves of companies that, on current trends, collectively, cannot be exploitable in the future because it would imply a world of such warming that economic activity would decline and energy demand fall. Each owner's reserves are valued as if they will be the only one exploring them for ever more. There is a fallacy of composition: what makes sense at an individual firm's perspective, does not make sense collectively. If reserves were valued to take this systemic reality into account, current investment in fossil fuels would fall to lower levels. The bias towards short-term trading in an uncertain world has led to a bias against long-term valuations which have in turn incentivised activities that have contributed to global warming. A small, enforceable FTT on equity share trading would reduce this bias by making business models based on heavy short-term trading less profitable than before, pushing trading and valuations to the more longer-term.

3) The Impact of the French FTT on turnover, liquidity and tax collection

The French FTT collects around \$2bn per year and has collected more than \$15bn since it was introduced in 2012. Shortly after its introduction several different academic studies examined its impact on liquidity, turnover and market structure. Recall that trading industry participants warned that turnover would collapse, volatility would rise and liquidity would decline, in short that it would raise little revenue and cause more damage to markets, investment and the economy than it was worth. The trading industry hinted at something just short of nuclear Armageddon. For this reason and a mistaken belief that high-frequency trading (HFT) supports liquidity in the marketplace, HFT was exempted from the tax and we estimate that only 15% of published turnover is taxable. Later we will discuss why this exemption would not make much impact on the taxable revenue.

To measure the impact of the tax on liquidity, turnover and the structure of the market, the academic studies used Difference-in-Difference (DiD) comparisons – considered the most robust method – with some (small) methodological differences. Differences in turnover, volatility and liquidity on taxed transactions in France were compared with untaxed transactions over the same period, including French mid- and small-caps that were exempted;⁴ shares in firms not registered in France but listed on the same trading platform, Euronext;⁵ and shares in German firms listed on the Deutsche Boerse.⁶ The studies considered different time periods: from 20 trading days surrounding the introduction of the French FTT⁷ to one year.⁸ Finally, two different data frequencies have been used, both daily data⁹ and tick-by-tick data.¹⁰

Despite these small methodological differences, the results of these studies converge on four similar results. First, the academic results produced so far indicate no significant impact on the important thing that was supposed to be dangerously impacted: market liquidity. This was measured by examining the price impact of trades, which captures the ability to trade large quantities quickly, at low cost, and without moving the price.¹¹ Claims on the cost to consumers, investors and the economy were built around the idea that falling turnover would hurt market liquidity. While price impact of trading is the essential aspect and proof of liquidity, some intermediate measures of liquidity showed a reduction, like market depth¹² number of trades¹³ and frequency of quotes.¹⁴

Second, consistent with the finding on liquidity, the studies found that the impact of the tax on price volatility was statistically insignificant, and that this was robust to different measures of volatility.¹⁵

4 See Becchetti et al., 2014; Capelle-Blancard and Havrylchyk, 2016.

5 See Capelle-Blancard and Havrylchyk, 2016; Colliard and Hoffmann, 2017.

6 See Gomber et al., 2015; Capelle-Blancard and Havrylchyk, 2016.

7 See Gomber et al., 2015.

8 See Capelle-Blancard and Havrylchyk, 2016.

9 See Becchetti et al., 2014; Capelle-Blancard and Havrylchyk, 2016.

10 See Gomber et al., 2015; Meyer et al., 2015; Colliard and Hoffmann, 2017.

11 See Meyer et al., 2015; Capelle-Blancard and Havrylchyk, 2016.

12 See Gomber et al., 2015; Colliard and Hoffmann, 2017.

13 See Gomber et al., 2015.

14 See Meyer et al., 2015.

15 See Capelle-Blancard and Havrylchyk, 2016; Colliard and Hoffmann, 2017; Gomber et al., 2015.

Third, the introduction of the French FTT did reduce the turnover of securities that were subject to the tax, relative to non-taxed securities by around 20% with some later estimates suggesting the long-term impact was just a 10% reduction.¹⁶ Interestingly, when the tax rate was raised from 0.2% to 0.3% in 2017 there was no discernible impact on turnover.¹⁷ This suggests that some of this 20% initial reduction was high-frequency trading that did not benefit from the exemption and once we consider non-HFT, the decrease in volume is even smaller than 10-20%. Indeed, the low impact on turnover as well as liquidity is also indicated by similar studies on the new tax in Italy¹⁸ and Spain.¹⁹

Fourth, in those fewer studies that analysed the impact on types of market participants, there was evidence that the holding period of institutional investors became more longer-term and even though they were exempted because of a mistaken belief that they play a positive market liquidity role, opportunities for high frequency trading fell.²⁰

16 See Meyer et al., 2015; Capelle-Blancard and Havrylchyk, 2016; Colliard and Hoffmann, 2017.

17 See Capelle-Blancard and Khemakhem, 2023

18 See Hvozdyk and Rustanov, 2016; Capelle-Blancard, 2017; Cappelletti et al., 2017; Galvani and Ackman, 2021.

19 See Fuertes et al., 2024.

20 See Colliard and Hoffmann, 2017.

4) Considerations in the matter of FTTs

Enforceability

In recent decades, finance has transformed from institution-based; for example, banks took in cash deposits and gave out loans, to market-based: banks today often borrow from the money markets and invest in securitised loans. This has led to a profusion of new functions, from originating loans to securitising, rating, trading, distributing, exchanging, settling, accounting, custody, and managing, each with a small fee. According to the first in-depth historical study,²¹ when all of these fees are added up, the total cost to a consumer of a finance unit has not changed much over the last fifty years. These costs are now distributed to a set of intermediaries paid per transaction rather than in sharing the value creation of the finance. Consequently, the industry has become a vociferous opponent of financial *transactions* taxes. However unlikely, it has positioned itself as a guardian of consumer welfare to rally a defence. Below, we examine their main counter-arguments starting with enforceability, costs and liquidity.

Initially, the industry argued that FTTs would be utterly unenforceable. The botched attempt in Sweden to put a tax on Swedish brokers in the 1980s, which led to transactions going abroad, has been constantly wheeled out as an example. However, unlike brokerage taxes, stamp duties on financial transactions are not based on where a transaction takes place – the venue of the trade in market-speak – but on the change in title and its enforceability in a court. Since the geography of the trade is irrelevant to the capture of a well-designed FTT, the Swedish example does not stand up to scrutiny. In other words, the poor design of Sweden's FTT was at fault for its lack of success, not the FTT itself.

Most existing FTTs are based on the so-called issuance principle, whereby the tax is applied based on the country where the financial instrument was issued, regardless of where the transaction takes place. For example, an American tax resident can buy a 'BP' share using a bank account in Hong Kong, and the tax is still automatically paid when they assume the title of that share and the purchase is cleared and settled. The UK stamp duty is collected at settlement by the clearing houses, and a digital stamp is applied – these clearing houses are not even located in London. This works for shares with a central share registry, as in the UK and many other places. These registries are increasingly required by law as part of anti-money laundering efforts to record beneficial ownership and against bearer instruments.

In the UK (and likely in other common law jurisdictions), the enforceability of the FTT is further strengthened by the legal principle that ownership transfer is conditional upon payment of the tax. In other words, the legal title to a security is not recognised unless the tax (i.e. the stamp duty) has been duly paid, making the mechanism both robust and self-enforcing. However, this feature is not universal: in civil law countries, enforcement typically relies more on regulatory obligations and potential penalties for non-compliance rather than on the legal invalidity of untaxed transactions.

Derivatives

Some derivative instruments have the same economic effect as a share transaction without their being a change in ownership. In this case, the same principle can be extended to all contracts with the same

21 See Philippon, 2015.

economic effect of the taxed transaction – a standard principle in law that things should be treated as like. If no tax has been paid on the derivative contract, it may not be enforced in the jurisdiction that has levied the tax. The owner of such a contract, expecting to be "in the money", would not want to find that their counterparty is left off the hook because they have filed to void the contract in the tax jurisdiction because taxes were not paid. Counterparty credit risk, a significant factor in the derivative markets, would skyrocket if the counterparty was not paying what was due and was in danger of being unable to enforce contracts where they are owed money.

Intra-day trading, liquidity and the market-making exemption

Today, most transactions are intra-day transactions by high-frequency traders. Most of these transactions cancel each other out, and the margins are small, just profitable in volume. The tax would crush these small margins, making many intra-day trades no longer viable.

In the past, however, these high-frequency traders claimed to be market-makers engaged in harmless price discovery and critically supporting liquidity. They claimed and were given a "market-maker" exemption from the tax. This is a mistake from the perspective of liquidity and relatedly from the standpoint of market integrity. However, it is likely that if these low-margin trades were taxed, many wouldn't have occurred, so taxing them would be unlikely to yield much tax. Would it hurt liquidity? No.²²

A liquidity provider acts as a contrarian, happy to buy when you want to sell and vice versa. Many high-frequency traders are momentum traders; they use superior or faster trading information to run ahead of large institutional investors and buy before their order to buy gets executed, pushing the price up and away from the institutional investor or vice versa. This behaviour reduces liquidity. It can be measured by the wide "price-impact-of trading" in apparently liquid markets with many high-frequency traders. Their claim to be market makers must be contested, and a test must be applied to determine whether they are quoting a sufficiently narrow spread in size between buying and selling prices. If not, their transactions should be taxed or legally unenforceable.

Sensitivity of turnover to FTTs

Many market participants argue that the cost of trading is so low that even small taxes would cause the entire market to disappear. The evidence in France, Italy and elsewhere suggests this is untrue. In this paper, we use the revealed ratios of tax revenues to turnover with respect to the relatively recently-introduced French and Italian FTTs. The reason why the industry is wrong about the sensitivity of non-intra-day turnover to the tax is that transaction costs are not as low, and the tax as a proportion of those costs is not as high, as they think. It is essential to compare the transaction tax with all the transaction costs and not just part of them. Total transaction costs include the price impact of trading, exchange and custody fees, brokerage, research, and other transaction costs, when these are added together, they often represent the same level or more than the proposed tax levels.

22 See e.g. Shkilko and Sokolov, 2020; Aquilina et al., 2022;

5) Consideration in the matter of revenue estimation

Estimating additional revenues from the spread of the adoption of the French FTT

How much additional revenue would be raised if other countries adopted the French FTT or extended their own FTT to the same rate or more? That is the fundamental question this paper answers. Essentially to estimate the tax take we need to multiply the taxable transactions by the tax rate. The challenge is two-fold. First, given the depth of exemptions on high-frequency trading to protect liquidity provision by market makers and the shallowness of the available data, we do not know exactly what proportion of published turnover before a tax is imposed is taxable. Sample estimates a few years ago are that close to half of all trades and three quarters of all orders are high-frequency trading (HFT), driven by algorithmic trading programs²³ but estimates based on tax takes where FTTs exist or based on the longevity of investor holdings suggests it is as much as 85% of traded turnover. Second, the imposition of the tax will reduce the number of taxable transactions. (In economic parlance this is the elasticity of turnover to the tax rate.) There are too many unknowns for us to derive an estimate of the tax elasticity of taxable trades, however with the following approach we do not need to, to conservatively estimate tax takes.

We have up-to-date data and studies on turnover changes, tax revenues and tax rates in the recent case of France and Italy, countries that have a high proportion of HFT traders. We know that turnover falls by approximately 20% or less from before the tax is adopted, and when HFT is exempted, 15% of the remaining turnover are taxable transactions and 85% are not.²⁴ We can use these ratios to estimate tax takes in other countries. This will only be an overestimate if HFT/exempted trades represented a significantly greater proportion than 85% of turnover, which based on available studies appears unlikely. Similar calculations for the UK and Italy indicate exempted trades are just 60% and 80%, respectively, suggesting our assumption of 85% is safely conservative. The other potential source of an overestimate of tax revenues would be if the overall turnover decline is greater than 20%. However, given that some studies indicated a 10% or less impact on turnover and when the French tax rate was raised from 0.2% to 0.3% in 2017 there was no discernible impact on turnover, our 20% estimate seems safe.²⁵

Stock turnover data

There is currently no single database that covers all countries and all trading platforms. We must therefore go through a process of carefully combining data sources. We start with data published by the World Bank (World Development Indicators), specifically the data set labelled “Stocks traded, total value (current

23 See, Estimates of HFT activity in EU equity markets,

https://www.esma.europa.eu/sites/default/files/library/2015/11/esma20141_-_hft_activity_in_eu_equity_markets.pdf

24 In 2022, the French FTT generated €1,363 million for the general budget (source: Situation Mensuelle de l'État), plus an additional €528 million (the capped amount) allocated to the Solidarity Fund for Development (FSD), bringing total revenues to €1,891 million. Given that the nominal FTT rate is 0.3%, this corresponds to a taxable base of €630 billion (1,891 / 0.3%). According to ESMA (TRV No.1 2023 Structural Market Indicators), the total stock traded value in France in 2021 was €2,646 billion, with Euronext's market share at 42%. However, Refinitiv data, which includes OTC trades, reports a total traded volume exceeding €4,300 billion in 2022. Since Refinitiv provides harmonized data for all countries, we use it as our reference source. Based on this, we calculate the proportion of taxable turnover from total turnover = (630/4,300) = 15%.

25 See Capelle-Blancard and Khemakhem, 2023.

US\$)” for 2022 – the latest available year at the time of writing. The dataset covers 218 countries but only 74 have up to date data. Moreover, individual country data on about 20 major countries is missing, including France, the Benelux countries, Italy (which share a single main trading platform, ‘Euronext’), the Scandinavian countries, Singapore or Taiwan.

To complement this database — both to include more countries and to obtain more comprehensive data for certain major countries — we use data from the Monthly Market Share reports published by Refinitiv (Thomson Reuters) for 2022. This database has the advantage of providing harmonized data that covers the full scope of transactions, including those conducted on alternative trading platforms and Over-The-Counter markets (where trades are bilateral and not over an exchange). The data is in euros, and we use an exchange rate of EUR/USD = 1.05 for conversion, reflecting 2022/23 exchange rates. The matching of databases is performed manually for each country.

To sum up, we use World Bank data for 64 countries and Refinitiv data for 27 countries. It is important to note that, given the challenges in capturing all transactions related to a country’s companies, this should be considered estimates and interpreted with a degree of caution. All this data is available in the attached Excel file for others to check.

The total stock transaction volume in 2022 amounts to just over \$100 trillion according to World Bank data. However, when incorporating Refinitiv data, the figure increases more than \$170 trillion. The following table presents the total transaction volume by country group in 2022, comparing figures based on World Bank data alone and those supplemented with Refinitiv data.

We distinguish countries by seven regions (North America, East Asia & Pacific, Europe & Central Asia, South Asia, Latin America & Caribbean, Middle East & North Africa, Sub-Saharan Africa), four income levels (High income, Upper middle income, Lower middle income, Low income), and membership in five international political groupings (EU, G7, BRICS, G20, OECD).

TABLE 1. Stock Traded Data by Country Group

Stock Traded are estimates based on World Bank and Refinitiv data for 2022. Figures are \$billions.

Country	(2022, USD)	(in %)
World	170,993	100.0%
North America	89,771	52.5%
East Asia & Pacific	50,065	29.3%
Europe & Central Asia	26,428	15.5%
South Asia	1,967	1.2%
Latin America & Caribbean	1,456	0.9%
Middle East & North Africa	1,050	0.6%
Sub-Saharan Africa	256	0.1%
High income	132,772	77.6%
Upper middle income	36,045	21.1%
Lower middle income	2,176	1.3%
Low income	0	0.0%
EU	17,887	10.5%
G7	111,804	65.4%
BRICS	36,735	21.5%
G20	162,002	94.7%
OECD	127,690	74.7%

Addressing tax rate and additionality

Today, an FTT on equity trades is implemented in approximately 30 countries. The French FTT is now 0.4%, doubled from the 0.2% rate when it was introduced in 2012. The UK tax rate is 0.5%. Many of those countries have FTT rates that fall within that 0.2% to 0.5% range and in our estimations we consider two FTT rates: 0.2% and 0.5%.

We aim to measure the additional revenue that could be generated when 1) countries that do not have an FTT adopt one at 0.2% or 0.5% on taxable share transactions and 2) those that already FTTs extend their rates.

Unfortunately, how much revenue is being collected currently is patchy. While tax rates are often accessible, obtaining details on the tax base and actual revenues is much more challenging. For this reason, we estimate current revenues based on the tax rates currently applied in each country (information collected manually). However, for the tax base, we assume, as before, a uniform share of 15% of taxable transactions of post-tax turnover across all countries. When calculating the projected revenue of a global FTT, for countries that already have such a tax, we retain the projected amount only if it exceeds the current estimated revenue. This applies particularly in cases where the projected global tax rate is lower than the rate currently applied by the country.

The information regarding countries that apply the FTT, their respective tax rates, and an estimate of their tax base is available in the attached Excel file. We estimate that the various existing FTT systems currently generate approximately \$17 billion worldwide. This total is composed of 50% from Europe and 40% from East Asia.

6) Results

Aggregated revenues

Table 2 summarises the expected tax revenues if the FTT were extended to the EU27, the G7, the BRICS, the G20, the OECD and the world. We also present the estimations by region and by level of development. The country-level details are provided in the Excel table, including all assumptions on data and parameters. In total, a global FTT could generate between \$85 billion (with a tax rate of 0.4%) and \$105 billion (with a tax rate of 0.5%), based on our very conservative assumptions. This corresponds to additional revenues ranging from \$67 billion to \$87 billion.

Table 2. Estimated tax revenue from FTT. Figures in \$ billions.

Country	Tax Revenue FTT Rate (τ)		Additional Tax Revenue FTT Rate (τ)	
	0.40%	0.50%	0.40%	0.50%
World	84.8	104.6	67.3	87.1
North America	43.1	53.9	43.1	53.9
East Asia & Pacific	24.0	30.0	16.9	22.9
Europe & Central Asia	15.4	17.8	6.4	8.9
South Asia	0.9	1.2	0.2	0.5
Latin America & Caribbean	0.7	0.9	0.1	0.3
Middle East & North Africa	0.5	0.6	0.5	0.6
Sub-Saharan Africa	0.1	0.2	0.0	0.1
High income	66.4	81.7	55.3	70.5
Upper middle income	17.3	21.6	11.6	16.0
Lower middle income	1.1	1.3	0.3	0.6
Low income	0.0	0.0	0.0	0.0
EU	9.9	12.0	5.4	7.4
G7	55.0	67.9	49.0	61.8
BRICS	17.6	22.0	11.3	15.7
G20	80.5	99.2	65.1	83.8
OECD	64.0	78.6	54.4	69.0

Notes: This table shows the expected tax revenues from FTT, at the global level. Transaction volumes are estimates based on World Bank and Refinitiv data for 2022.

Robustness

Compared to some studies, our estimates are conservative. However, the methodology is straightforward, as it simply projects the expected revenues based on applying the same FTT design as in France, and to some extent the UK, Italy and Spain. In our view the greatest source of uncertainty stems from the total transaction volume, which can fluctuate significantly from year to year. However, others will have concerns regarding our two variables, the reduction in overall turnover from the tax and the proportion of total transactions that are taxable and so we have constructed a database that allows users to choose different levels on both variables.

Table 3. Distribution of revenues by top 15 countries. Figures in \$ billions.

Country	Stock Traded (Estimate)		Tax Revenue FTT Rate (τ)		Additional Tax Revenue FTT Rate (τ)	
	(2022, USD)	(in %)*	0.40%	0.50%	0.40%	0.50%
United States	84,977	49.7%	40.8	51.0	40.8	51.0
China	32,463	19.0%	15.6	19.5	10.7	14.6
Japan	7,279	4.3%	3.5	4.4	3.5	4.4
United Kingdom	5,130	3.0%	3.8	3.8	0.0	0.0
Canada	4,794	2.8%	2.3	2.9	2.3	2.9
France	4,515	2.6%	2.2	2.7	0.1	0.7
Germany	4,219	2.5%	2.0	2.5	2.0	2.5
Korea, Rep.	3,049	1.8%	1.5	1.8	0.8	1.1
Hong Kong	2,849	1.7%	1.4	1.7	0.9	1.3
Netherlands	2,743	1.6%	1.3	1.6	1.3	1.6
Taiwan	2,334	1.4%	1.1	1.4	0.0	0.4

* Percentage of world total of stock traded

Table 4. Distribution of revenue within the EU. Figures in \$ billions (B) and \$ millions (M).

Country	Stock Traded (Estimate)		Tax Revenue FTT Rate (τ)		Additional Tax Revenue FTT Rate (τ)	
	(2022, USD)	(in %)**	0.40%	0.50%	0.40%	0.50%
France	4,514.6B	2.6%	2167.0M	2708.7M	135.4M	677.2M
Germany	4,219.4B	2.5%	2025.3M	2531.6M	2025.3M	2531.6M
Netherlands	2,742.8B	1.6%	1316.5M	1645.7M	1316.5M	1645.7M
Finland	486.4B	0.3%	1167.4M	1167.4M	0.0M	0.0M
Sweden	1,748.6B	1.0%	839.3M	1049.2M	839.3M	1049.2M
Spain	1,244.1B	0.7%	597.2M	746.5M	223.9M	373.2M
Italy	889.8B	0.5%	427.1M	533.9M	226.9M	333.7M
Ireland	315.2B	0.2%	472.8M	472.8M	0.0M	0.0M
Denmark	734.8B	0.4%	352.7M	440.9M	352.7M	440.9M
Belgium	523.4B	0.3%	251.2M	314.1M	78.5M	141.3M
Austria	184.4B	0.1%	88.5M	110.6M	88.5M	110.6M
Poland	65.6B	0.0%	98.4M	98.4M	0.0M	0.0M
Portugal	128.1B	0.1%	61.5M	76.9M	61.5M	76.9M
Greece	70.3B	0.0%	33.7M	42.2M	33.7M	42.2M
Hungary	9.4B	0.0%	4.5M	5.6M	4.5M	5.6M
Czechia	5.7B	0.0%	2.7M	3.4M	2.7M	3.4M
Romania	2.4B	0.0%	1.2M	1.5M	1.2M	1.5M
Slovenia	0.4B	0.0%	0.2M	0.2M	0.2M	0.2M
Estonia	0.4B	0.0%	0.2M	0.2M	0.2M	0.2M
Bulgaria	0.4B	0.0%	0.2M	0.2M	0.2M	0.2M
Lithuania	0.3B	0.0%	0.1M	0.2M	0.1M	0.2M
Croatia	0.2B	0.0%	0.1M	0.1M	0.1M	0.1M
Malta*	0.0B	0.0%	0.1M	0.1M	0.0M	0.0M
Luxembourg*	0.0B	0.0%	0.0M	0.0M	0.0M	0.0M
Cyprus*	0.0B	0.0%	0.0M	0.0M	0.0M	0.0M
Slovak Rep.*	0.0B	0.0%	0.0M	0.0M	0.0M	0.0M
Latvia*	0.0B	0.0%	0.0M	0.0M	0.0M	0.0M

*0.0B equates to the total being less than 0.05%; **Percentage of world total of stock trade

7) Conclusion

FTTs in the form of modest levies on transactions in shares have a long history – they have been a workhorse for the provision of government revenue for decades. Automation makes collection inexpensive and far from causing an unhelpful distortion in economic activity serves to incentivise buy and hold strategies over short-termism. In this paper we demonstrate that greater taxation on equity trading is feasible and a relatively simple option to contribute an additional \$87 billion per year to urgent international efforts to boost climate finance.

As a proof of concept in the relatively recent past, we cite the experience in France, where over the last 10 years, adjusted for inflation, France's cumulative FTT revenues amount to \$15.3 billion. We cite, in appendix 5, revenue foregone by countries who have held back from introducing this tried and tested revenue-raiser. By applying the same parameters to Germany as happened in France – with a tax rate of 0.2% from 2013 to 2016, increasing to 0.3% from 2017 to 2022, and assuming a 20% decline in transactions – the estimated FTT tax revenue would have amounted to \$13.4 billion over the 10-year period. For North America (United States and Canada), FTT tax revenue over the 10-year period would have amounted to \$192.8 billion, based on the same parameters.

By bringing this levy – based on the Stamp Duty principle, which predates income tax first applied more than 300 years ago – into the 21st century, this market can be harnessed to generate a steady stream of significant additional income. The figures we set out are extremely conservative as we assume a 20% drop in volume of transactions, which is greater by some degree than the recent experience in France. In our revenue estimates, we look to both countries yet to implement FTTs, as well as those who already apply them to increase their tax rates to 0.5% (noting that countries such as the UK, Ireland, Poland and Finland already levy at 0.5% or more). We find the vast majority of additional income would be generated in high income and upper middle income countries, \$70.5 billion and \$16 billion respectively, with \$54 billion coming from North America (US & Canada), \$23 billion from East Asia and Pacific and \$9 billion from Europe and Central Asia. Countries with most potential to generate additional revenue from introduction, apart from the United States (which would generate more than \$50 billion a year) are Germany, Japan and Canada. For those countries already applying FTTs, increasing to 0.5%, most extra revenue would be generated by China, the Republic of Korea and Hong Kong.

The task of this paper is to deliver robust estimates of the revenue governments could raise if they adopt the most ambitious Financial Transaction Taxes in the same manner as already exist in a number of important financial markets, such as Italy, France and the UK. Due to this focus, we have considered and decided not to include any potential revenues from taxing high-frequency trading (HFT), even though it represents up to 85% of trades in liquid financial markets. For that reason, we offer some explanation and reflection on the matter of HFT.

HFT is motivated by small returns, a few hundredths of a percentage point over tiny periods, a matter of minutes. So it would not happen, and Governments would raise no revenues if they levied a tax of nearly half a percentage point (50 basis points) on trades expected to yield less than that. Moreover, it would be hard to collect the tax through central clearing as currently many HFT trades are effectively cancelled or netted out to nothing at the end of the day. Moreover, because this industry dominates trading today and delivers a significant proportion of profits at the expense of ordinary investors (trading profits at these

frequencies is a zero-sum game) it would also generate much opposition from the industry and those they influence. They will claim at the top of their voices that this industry provides vital liquidity to the markets and taxing them would usher in the market equivalent of a nuclear winter.

However, from a public policy point of view, our analysis suggests that HFT mainly provides liquidity in quiet times when the market is already awash with liquidity by generally adopting contrarian trading strategies and takes liquidity away in stressful times when it is in short supply by adopting a trading strategy of getting in front of sharp moves through quicker, and sometimes preferred, access to trading systems. Many studies show that markets appear bigger with the growth of HFT, yet "thinner". Consequently, reducing this type of trading back to levels when markets still exhibited high liquidity could provide more systemic or real liquidity even if it does not derive any revenues. Governments could achieve this by extending the share trading tax and enforcement mechanism to high-frequency trading but providing a market-maker exemption that governments enforce robustly for those truly providing liquidity.

Market makers were the traditional liquidity providers before the rise of HFT killed them off. To be eligible for the market-makers exemption, traders would need to show that they provide to the market a genuine and narrow spread between their buying price (bid) and their selling price (offer) so they can't only offer to buy when the market is going up or only to sell when it is going down as they are in the business of, and hold an exemption for, market making not investing. This extension and exemption would give markets systemic liquidity that doesn't disappear when pushed. Still, we caution against expecting this to lead to much additional revenue from the estimates we present here as much of this market froth would just disappear.

Finally, returning to the substantive matter of revenue, the greater taxing of equity transactions is not a question of feasibility – it is proven, it works. Such levies are desirable – at modest rates, the costs are comfortably borne by those who trade and the revenue would provide a substantial beneficial difference for climate action – not least to benefit people on the frontline of catastrophic climate change. Resistance is simply and only political. Decision makers may wish to consider, if their country has a reasonable-sized stock market, that of all the sources for raising additional revenue, levying greater taxation on equity transactions must rank as one of the simplest to achieve sizable income at little discernible political cost.

Appendices

Appendix 1. Methodology for calculating tax revenue

The impact of the FTT on tax revenues can be broken down as follows [Schwert and Seguin, 1993]. Given a tax rate τ applied to the total amount of transactions, defined as the product of prices (P) and quantities traded (Q), tax revenue (R) can be expressed as: $R = \tau(P+\Delta P)(Q+\Delta Q)+\Delta OR$ where ΔP represents the effect of the FTT on prices, ΔQ captures its impact on trading volumes, and ΔOR accounts for changes in other tax revenues (e.g., income tax).

This equation is purely an accounting identity. In practice, the actual impact of the FTT depends on how investors respond to the tax. Their behavioural reactions will ultimately determine the extent to which the FTT affects trading activity, asset prices, and overall tax revenues.

Opponents of the FTT often invoke the spectre of a decline in market activity and massive capital flight, ultimately leading to low or even negative tax revenues, as reduced trading volumes could also diminish other tax revenues. While this scenario is theoretically possible, in practice, it is a gross exaggeration. According to the academic literature, the FTT does lead to a moderate reduction in trading volumes—either because some investors choose to exit the market, relocate their activity, or shift their focus to alternative assets. However, when it comes to asset prices, the actual impact remains highly uncertain and, at worst, is likely to be marginal.

The framework

Consider country i and year t . Let $\tau_{i,t}$ be the tax rate and $B_{i,t}$ the taxable base. The total tax revenue $R_{i,t}$ can be expressed as:

$$R_{i,t} = \tau_{i,t} \times B_{i,t} \quad (1)$$

The taxable base depends on many factors and because there is no available information on the composition of the transactions, the base must be estimated. The taxable base can be accounted for as follows:

$$B_{i,t} = T_{i,t} - E_{i,t} - X_{i,t} \quad (2a)$$

where $T_{i,t}$ represents the total value of transactions, $E_{i,t}$ is the total value of exemptions, and $X_{i,t}$ is a catch-all category that includes all amounts that are not exempt but not taxed (data omission, tax evasion, possible fraud, etc.). Essentially, it captures any transactions that fall outside the scope of taxation but are not subject to exemptions. If data collection is perfect, then $X_{i,t} = 0$. However, if there are reporting issues, avoidance strategies, or fraud, then $X_{i,t} > 0$.

The equation (2a) holds once the FTT is in place, but in the first year (denoted t_0), the effect of reduced activity due to the introduction (or rate increase) of the tax must be considered. For this, let ε_i be the decrease of volumes in percent. Thus:

$$B_{i,t_0} = T_{i,t_0} (1 - \varepsilon_i) - E_{i,t_0} - X_{i,t_0} \quad (2b)$$

The objective here is to estimate the taxable base B for each country by making reasonable assumptions about the other terms in the equation. The challenge is that each of these components is difficult to estimate due to a lack of data, even in aggregated form.

The Amount of Transactions (T). Paradoxically, despite the ubiquity of data in today's world, it has never been more difficult to accurately measure the total volume of stock market transactions (see previous section).

Moreover, it is important to note that due to sharp fluctuations in stock prices, the value of shares traded can vary significantly from one year to the next, as seen for instance during the dot-com bubble of 2000 or the financial crisis of 2007-2008.

The Amount of Exemptions (E). In the case of the FTT, exemptions are often numerous and varied. These can include transactions related to Initial Public Offerings (IPOs), operations conducted by clearing houses or central depositories, market-making activities, intragroup transactions, securities lending, employee savings plans, etc. Additionally, thresholds are sometimes set to protect small businesses (for example, in France, only companies with a market capitalization over €1 billion are subject to the tax, while in Italy, the threshold is €500 million). Most importantly, the taxes only apply to transfers of ownership, which effectively excludes intraday transactions, particularly high-frequency trading (HFT).

Leakages (X). Tax collection relies on reports submitted by market participants. Experience shows that illicit behavior is not uncommon in the financial sector, as evidenced by numerous academic studies. In addition to this, difficulties in the collection process itself may contribute to further leakage.

An estimation of the effective tax base by inference

Based on equations (1) and (2a), tax revenues for any country i once the tax is implemented (we will address the impact on trading volumes later) can be expressed as:

$$R_{i,t} = \tau_{i,t} \times T_{i,t} (1 - e_{i,t} - x_{i,t}) \quad (3)$$

where $e_{i,t} = E_{i,t}/T_{i,t}$ et $x_{i,t} = X_{i,t}/T_{i,t}$ represents, respectively, the share of exemptions and leakages in the total volume of transactions. Only the tax rate $\tau_{i,t}$ is known, while the other variables must be observed.

In the absence of direct observations, there are two possible approaches:

- **Assumption-Based Estimation:** This method involves making assumptions about the total transaction volume, the level of exemptions, and the extent of potential leakages. However, due to a lack of precise data, this approach may introduce significant vagueness.
- **Inference-Based Estimation:** Instead of relying on assumptions, this method infers the taxable base by using data from a country—here, country j —where precise figures on tax revenues and total transactions are available, and which will serve as a benchmark. Even without precise knowledge of each component, the effective tax base can be accurately derived. We set:

$$z_{j,t} \equiv e_{j,t} + x_{j,t} = 1 - R_{j,t}/(\tau_{j,t} \times T_{j,t}) \quad (4)$$

This coefficient $z_{j,t}$ can then be applied to the total transaction volume of other countries without an FTT, under the assumption that the share of exemptions and leakages is the same across all countries ().

Estimation of the parameter ϵ

As a reference, for the estimation of the parameters, we consider France one of the latest countries (along with Italy and Spain) to have implemented an FTT on domestic equities.

When the FTT was introduced in France in 2012, there were numerous empirical studies aimed at estimating its impact on market quality and volatility. These studies employ a very similar methodology, that of difference-in-differences, although they focus on slightly different samples. Overall, the results are highly consistent. The findings show an impact on trading volumes of around 10 to 20%, but no effect on liquidity or volatility (see the box and the table for details).²⁶ For instance, for Colliard and Hoffman [2017], “trading volume decreased on average by around 10%”. The FTT in France was initially set at 0.2%. However, when the rate was increased to 0.3% in 2017, there was no notable effect on trading volumes [Capelle-Blancard and Khemakhem, 2023].

To be cautious, we set the parameter ϵ at 20%, independently of the tax rate. It should be noted that the parameter ϵ is *not* an elasticity. We make the strong assumption that the decline in stock market activity remains the same regardless of the tax rate. This assumption is motivated by two key reasons. First, we aim to maintain a simple and fully transparent approach, allowing anyone to replicate our estimates and adjust the parameters as needed to generate alternative scenarios. Second, the effect of taxes is likely non-linear, with significant threshold effects. The FTT is expected to have a substantial impact on short-term financial transactions, particularly those with very low margins, where even a small tax rate can be enough to discourage activity. However, it is likely to have a much smaller effect on long-term transactions, which are less sensitive to this marginal increase in transaction costs.

Estimation of the parameter z

As a reference, we consider France. A similar approach could also be applied to the United Kingdom and/or Italy.

To measure the effective tax base, we need to determine the parameter z . In 2022, the French FTT generated €1,363 million for the general budget (source: *Situation Mensuelle de l'État*), plus an additional €528 million (the capped amount) allocated to the Solidarity Fund for Development (FSD), bringing total revenues to €1,891 million. Given that the nominal FTT rate is 0.3%, this corresponds to a taxable base of €630 billion (1,891 / 0.3%).

According to ESMA (TRV No.1 2023 Structural Market Indicators), the total stock traded value in France in 2021 was €2,646 billion, with Euronext's market share at 42%. However, Refinitiv data, which includes OTC trades, reports a total traded volume exceeding €4,300 billion in 2022. Since Refinitiv provides harmonized data for all countries, we use it as our reference source. Based on this, we calculate: $z = 1 - 630/4,300 = 85\%$.

26 However, note that the growth rate of stock traded is around 15% per year since the 1970s.

Similar calculations for the UK and Italy yield lower exemption rates, approximately 60% and 80%, respectively. However, to remain conservative, we maintain an assumed exemption rate of 85%.

Which rate?

The European project applies a rate of 0.1% for transactions in cash. This may seem low compared to the rate applied in France (0.2% when it was introduced in 2012; 0.3% since 2017; 0.4% from April 2024) or the United Kingdom (0.5%).

In our estimations, we consider two FTT rates: 0.2% and 0.5%. Once again, these parameters can be easily adjusted as needed.

Additional tax revenues

The FTT is implemented in many countries (around 30), and in our estimates, we aim to measure the additional revenue that could be generated by an international framework. To do so, we need to determine the current tax revenues for countries that already have an FTT.

Unfortunately, such data is rarely available. It is particularly difficult to gather and compare information on existing FTT systems: while tax rates are often accessible, obtaining details on the tax base and actual revenues is much more challenging. For this reason, we estimate current revenues based on the tax rates currently applied in each country (information collected manually). However, for the tax base, we assume, as before, a uniform share of 15% across all countries. When calculating the projected revenue of a global FTT, for countries that already have a tax, we retain the projected amount only if it exceeds the current estimated revenue. This applies particularly in cases where the global tax rate is lower than the rate currently applied by the country.

The information regarding countries that apply the FTT, their respective tax rates, and an estimate of their tax base is available in the attached Excel file. We estimate that the various existing FTT systems currently generate approximately \$17 billion worldwide. This total is composed of 50% from Europe and 40% from East Asia.

Appendix 2. Robustness

Compared to previous studies, our estimates are particularly conservative. The methodology is straightforward, as it simply projects the expected revenues based on applying the same FTT design as in France, and albeit to a lower extent the UK. However, concerns may arise regarding the sensitivity of the estimates to the chosen parameters. Nonetheless, the greatest source of uncertainty comes from the total transaction volume, which can fluctuate significantly from year to year.

In the Excel file, we present a simple robustness exercise, considering the two key parameters:

- The impact of the FTT on trading volumes, which we vary between -10% and -50%.
- The exemption rate, which we adjust between 60% and 85%.

For this exercise, we assume a tax rate of 0.5% and amount of stock traded worldwide equal to \$170,993 billion. The results are provided in the table below. The highlighted cell corresponds to the parameter set used in the previous section (although the revenue estimates are not exactly identical since, for simplicity, we assume in this robustness check that the negative impact of the FTT on volumes applies to all countries, including those that already have an FTT).

Table A1. Sensitivity of FTT Tax Revenues

The sensitivity of FTT tax revenues depends on key parameters, particularly: The impact of the FTT on trading volumes (in column); The exemption rate (in line). We assume that the total volume of transactions worldwide is \$170,993 billion, and we consider a tax rate of 0.5%. Impact applies to all countries, including those with a current FTT.

Impact	Exemption rate					
	60%	65%	70%	75%	80%	85%
-10%	308B	269B	231B	192B	154B	115B
-15%	291B	254B	218B	182B	145B	109B
-20%	274B	239B	205B	171B	137B	103B
-25%	256B	224B	192B	160B	128B	96B
-30%	239B	209B	180B	150B	120B	90B
-35%	222B	195B	167B	139B	111B	83B
-40%	205B	180B	154B	128B	103B	77B
-45%	188B	165B	141B	118B	94B	71B
-50%	171B	150B	128B	107B	85B	64B

In the worst-case scenario, with an 85% exemption rate and a 50% decline in trading volumes globally, the FTT would still generate \$64 billion. Conversely, in the best-case scenario, where the exemption rate is only 60% and the decline in trading volumes is just 10%, the FTT could generate over \$300 billion.

Appendix 3. The Data

Paradoxical as it may seem in this era of Big Data, we have never been less equipped to accurately measure financial activity. The significant growth in stock market activity is a well-established fact, although quantifying it remains challenging. Up until the 2000s, this was not a major issue, as the World Bank regularly published detailed, country-by-country data on stock market capitalization and transaction volumes. However, since then, the situation has become far more complex.

Four categories of entities collect and disseminate aggregate data on stock market activity:

i) international public organisations, such as the World Bank; ii) professional federations, particularly the World Federation of Exchanges (WFE); iii) agencies specialising in financial data dissemination; and iv) the stock exchanges themselves.

Reconciling these data sources is no simple task. The primary issue lies in the fact that the World Bank only accounts for transactions in domestic equities on traditional stock markets. The WFE, on the other hand, depends on the cooperation of its members, and many new trading platforms are largely overlooked, as are trades conducted on opaque platforms (dark pools) or over-the-counter markets. Information on these transactions is typically only available through specialised agencies, such as Refinitiv-Thomson Reuters or Fidessa, but with significant discrepancies.

A very large proportion of trading now does not take place on regulated markets (lit venues, such as Euronext, or Deutsche Börse), but dark pools (particularly opaque market operators), by systematic internalisers (financial intermediaries who act directly as counterparties for their clients' orders), or over-the-counter (OTC, such as CBOE BXE). For instance, in Europe, according to ESMA (TRV No.1 2023 Structural Market Indicators), in 2023 there will be 116 regulated markets (RMs), 144 multilateral trading facilities (MTFs), 29 organised trading facilities (OTFs), 179 systematic internalisers (SIs), 15 approved publication arrangements (APAs) and 19 approved reporting mechanisms (ARMs) in the EU27.²⁷

Figure 1 illustrates the discrepancies in measuring global stock market transactions, depending on the data source used. The blue curve represents data aggregated by the World Bank, while the orange curve corresponds to data provided by Refinitiv. We can see the increase of the alternative trading platforms in recent years, often at the expense of market transparency and data quality. By the end of the period (2022, as World Bank data updates with a delay), the gap between the two sources is about 70%!

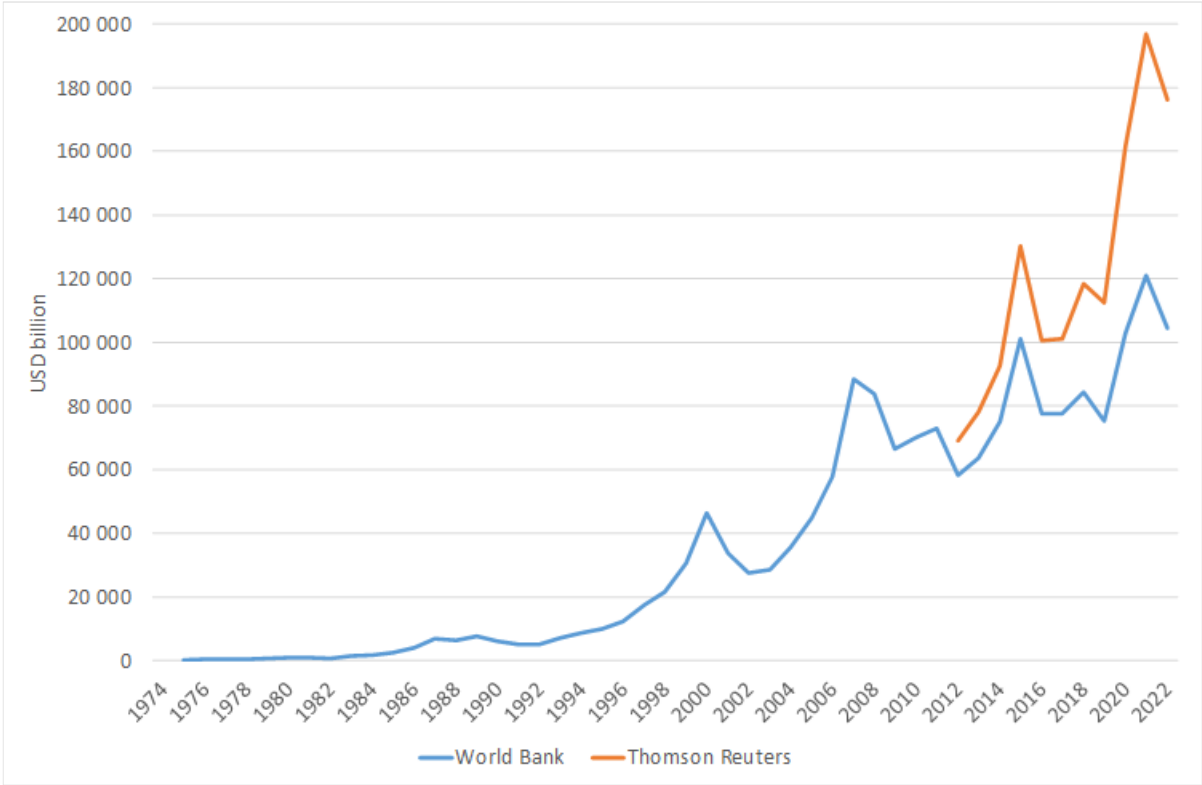
The fact that the total volume of stock market transactions is not readily available presents a twofold problem: first, issues of fairness, given the increasing opacity of markets, and second, challenges in efficiency, as it becomes difficult to regulate and/or tax what we cannot properly measure.

If we disregard these data discrepancies and use World Bank data for the beginning of the period (when historical stock exchange operators had a monopoly on transactions) and Refinitiv data for the end of the period (which accounts for alternative trading platforms), the increase in transaction volumes is striking. Since the 1970s, global GDP has increased by a factor of 15, market capitalisation by 50, and the volume of stock market transactions by a staggering 500! These are approximate orders of magnitude, of course,

27 It is, however, quite regrettable that ESMA has not updated these figures, as the latest available data dates back to February 2023. See https://www.esma.europa.eu/sites/default/files/2024-05/ESMA50-524821-3149_EU_Securities_Markets_2023.pdf

but they illustrate the dramatic scale of growth. The ratio of total stock market transactions to GDP has risen from 5% to 200-300% over the past fifty years. This rapid growth has been accompanied by the rise of alternative trading platforms, which has made it increasingly difficult to accurately measure the total volume of transactions.

Figure 1. Evolution of global stock market transactions (in bn \$)



Sources: World Bank, World Federation of Exchanges & Thomson Reuters (Monthly Market Share Reports).

Since there is currently no database that is simultaneously comprehensive (covering a wide range of countries), exhaustive (including transactions on both historical stock exchanges and alternative trading platforms), and precise, we have to combine the data sources.

We start with data published by the World Bank (World Development Indicators), specifically the variable “Stocks traded, total value (current US\$)” for 2022 (the latest available year at the time of writing). This dataset covers 218 countries, of which 74 have available data. However, about 20 key countries are missing, including France, the Benelux countries, Italy (which share a single platform via Euronext), the Scandinavian countries, Singapore, and Taiwan. The World Bank data also allows us to classify countries into different categories. We distinguish countries by region (North America, East Asia & Pacific, Europe & Central Asia, South Asia, Latin America & Caribbean, Middle East & North Africa, Sub-Saharan Africa), income level (High income, Upper middle income, Lower middle income, Low income), and membership in specific economic groups (EU, G7, BRICS, G20, OECD).

To complement this database —both to include more countries and to obtain more comprehensive data for certain major countries— we use data from the Monthly Market Share reports published by Refinitiv (Thomson Reuters) for 2022. This database has the advantage of providing harmonized data that covers the full scope of transactions, including those conducted on alternative trading platforms and OTC markets. The data is in euros, and we use an exchange rate of EUR/USD = 1.05 for conversion.

The matching of databases is performed manually for each country. In the end, we use World Bank data for 64 countries and Refinitiv data for 27 countries. It is important to note that, given the challenges in capturing all transactions related to a country's companies, these data should be considered estimates and interpreted with caution. All this data is available in the attached Excel file.

The total stock transaction volume in 2022 amounts to just over \$100 trillion according to World Bank data. However, when incorporating Refinitiv data, the figure increases to over \$170 trillion. The following table presents the total transaction volume by country group in 2022, comparing figures based on World Bank data alone and those supplemented with Refinitiv data.

Table A2. Matching of the Stock Traded Data (US\$, 2022)

Country Group	World Bank	World Bank + Refinitiv
North America	46,565,152,470,000	89,771,173,546,687
East Asia & Pacific	46,293,967,540,000	50,064,600,512,216
Europe & Central Asia	4,542,473,980,000	26,427,675,568,207
South Asia	1,967,314,876,896	1,967,314,876,896
Latin America & Caribbean	1,455,750,630,000	1,455,750,630,000
Middle East & North Africa	1,050,028,020,000	1,050,028,020,000
Sub-Saharan Africa	237,173,580,000	256,295,549,859
High income	63,909,728,460,000	132,771,584,097,109
Upper middle income	36,026,092,430,000	36,045,214,399,859
Lower middle income	2,176,023,456,896	2,176,023,456,896
Low income	16,750,000	16,750,000
EU	1,795,695,000,000	17,886,846,718,052
G7	54,500,351,480,000	111,804,248,624,553
BRICS	36,716,144,266,896	36,735,266,236,755
G20	na	162,002,061,119,597
OECD	61,177,668,670,000	127,690,093,231,232

Appendix 4. Previous FTT revenue estimates – beyond equities

Numerous estimates exist regarding the potential revenue from an FTT, and they consistently suggest substantial amounts:

- At the European Union (EU27) level, the European Commission estimated that an FTT could generate €57 billion, with two-thirds of this amount coming from the taxation of derivatives [European Commission, 2011]. This is a significant sum, considering that the total EU budget in 2015 was €145 billion.
- For the 11 EU member states participating in enhanced cooperation (EU11), estimated revenue would be €30 to €35 billion, approximately 0.5% of the GDP of the countries concerned.
- Other estimates suggest even higher figures. For instance, WIFO estimates annual FTT revenues at €120 billion for the EU [Pekanov & Schratzenstaller, 2019], while Schulmeister (2011) projects revenues of up to €310 billion for a broader European scope including Norway and Switzerland.
- In the United States, the CEPR estimated in 2009 that an FTT could generate between \$177 billion and \$354 billion in tax revenue. A more recent estimate puts the potential revenue at \$75 billion annually (0.4% of GDP) for a tax rate of 0.34% [Burman et al., 2016].
- At the global level, according to a summary report by the Institute of Development Studies, an FTT covering all spot and forward financial markets could yield between \$147 billion and \$1.63 trillion [McCulloch & Pacillo, 2011]. The wide range of estimates reflects differences in tax bases (e.g., whether cash markets, organized derivatives markets, OTC derivatives, or foreign exchange markets are included), variations in trading volumes, and differing tax rates used in the calculations.

These revenue projections are highly sensitive to assumptions about the type of tax and, consequently, the behavioural response of investors, particularly the elasticity of trading to taxation. They are also heavily influenced by exemptions and potential tax avoidance strategies. Currently, previous estimates suggest that tax exemptions and evasion rates are around 20%. However, as observed in practice, the actual rate is likely much higher—particularly due to the rapid expansion of high-frequency trading, which is effectively exempt from taxation.

Appendix 5. Specific countries

The FTT gained renewed interest following the 2007-2008 financial crisis, which sparked strong demand for better market regulation. In 2011, the European Commission proposed an ambitious FTT, but it has yet to be implemented.

Meanwhile, France took the lead by introducing a new FTT framework in 2012, followed shortly by Italy in 2013 and Spain in 2021. These experiences demonstrated that, contrary to initial concerns, it is possible for an individual country to implement an FTT independently without fundamentally disrupting the functioning of its financial markets or economy.

But what about other major economies?

- Germany, for instance, has a significant stock market and is part of the Enhanced Cooperation framework for a European FTT.
- The United States operates the largest stock market in the world, accounting for nearly 50% of global financial transactions.

In this section, we examine how much revenue these two countries could have generated with an FTT over a 10-year period, from 2013 to 2022.

The methodology remains the same as previously described, using France as a reference case. In the Excel file, we have recorded annual FTT revenues since its introduction, along with Refinitiv data on total transaction volumes. Notably, the taxable base has remained relatively stable, ranging from 17% to 15% of the total volume, implying an exemption rate between 83% and 85%.

Over 10 years, and adjusted for inflation, France's cumulative FTT revenues amount to \$15.3 billion. It is important to emphasise that this figure represents the actual collected revenue, not an estimate.

By applying the same parameters to Germany—with a tax rate of 0.2% from 2013 to 2016, increasing to 0.3% from 2017 to 2022, and assuming a 20% decline in transactions—the estimated FTT tax revenue would have amounted to \$13.4 billion over the 10-year period. For North America (United States and Canada), the FTT tax revenue over the 10-year period would have amounted to \$192.8 billion, based on the same parameters.

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