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Financial Transaction Tax and Investment Funds: An Analysis of Key Factors and Their Impact on Performance

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Abstract

Using retrospective data analysis, this paper looks at the potential effects that the EU financial transaction tax would have on registered Austrian funds. We use original data for 927 investment funds over a 12-month trading period covering the 2014 calendar year. We analyse its effect on total net assets and on performance. We find that the cost of FTT on Austrian funds for 2014 would be € 89.5 million. The effect of FTT differs between funds and is influenced by fund category, gilt-edged securities held, risk and investment strategy. Behavioural changes in the market would likely arise in these areas if FTT were to be introduced.

Keywords: FTT, transaction tax, investment funds, investment strategies

1 Introduction

Over the last century, the debate on the use of transaction taxes has been a recurring issue. During the Great Depression of the 1930s, John Keynes (1936) suggested for the first time the use of transaction taxes to curb market speculation. Later, Nobel Prize laureate James Tobin (1972), in the context of the international monetary crisis of 1971 (Johnson, 1973), proposed a transaction tax on currency spot transactions in order to curb speculative trading in currency exchanges after the end of the Bretton Woods agreement in 1971. The recent financial crisis has again led to an emphasis on transaction taxes as a means to discourage speculative trading.

Currently, the political debate within the European Union focuses on whether or not to

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introduce a financial transaction tax (FTT). The outcome of this debate is still uncertain. In 2013, Member States did not agree on a harmonized approach to financial transaction taxation. The Commission proposed a compromise and published a draft directive for enhanced cooperation amongst Member States (Proposal for a Council Directive Implementing Enhanced Cooperation in the Area of Financial Transaction Tax, COM(2013) 71 final) (the Proposal). Eleven Member States are presently signatories to the Proposal.[1]

The general idea is that taxing transactions in financial instruments introduces an additional trading cost to the seller or the buyer which might decrease the trading volume and trading frequency. The reduction of trading frequency, especially with respect to algorithm-based high-frequency trading, in turn stabilizes the (financial) market.

The Proposal sets out three anticipated results. First, it seeks to avoid fragmentation in the internal market for financial services. Second, it seeks to ensure that financial institutions make a fair and substantial contribution to covering the costs of the recent crisis. Third, it aims at creating appropriate disincentives for transactions which do not enhance welfare or the efficiency of financial markets (COM(2013) 71 final, explanatory memorandum, ch. 1.2., p. 4). This helps support regulatory measures aimed at avoiding future crises. However, these objectives are highly criticized from a legal (Englisch, Vella & Yevgenyeva, 2013), economic (Oxera, 2011; London Economics, 2013) and social perspective (Oxfam International, 2013).

As FTT aims at increasing transaction costs, the question arises as to how the net yield from financial investments will be affected, in particular when FTT cascades on purchases and sales, without the right for input deductions, or in a series of transactions. Costs and tax burdens will likely be passed on to clients of financial institutions (SEC(2011) 1102 final, vol. 1: 54), it can be reasonably assumed that financial institutions will shift the costs of this new tax (Davis, Smith, Wagner & O'Kelly, n.d.; Mirrlees et al., 2011). This contradicts a primary objective of the Proposal, which seeks to ensure that financial institutions pay their 'fair share'. The Commission itself notes that a 'large part of the burden would fall on direct and indirect owners of traded financial instruments' (SEC(2011) 1102 final, vol. 1: 53).

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1 Austria, Belgium, Estonia, France, Germany, Greece, Italy, Portugal, Slovakia, Slovenia and Spain.

Several investment funds operating within Europe argue that a FTT will significantly affect long-term returns of investors (Black Rock, 2011; Oxera, 2011; AIMA Report, 2012; European Fund and Asset Management Association, 2013; Davis et al., n.d.). The Commission Services (n.d.: 3) discussed the impact that FTT could have on financial institutions, noting that the impact will depend on both the asset allocation (portfolio) and the investment strategy (SWD (2013) 28 final).

This paper analyses the effects of a potential FTT as designed in the proposed Directive, based on monthly returns of 927 Austrian investment funds. The Austrian fund sector has increased substantially over the past two decades. Supported by strong credit ratings by international bodies and a stable political environment, the total net assets of mutual funds have increased 192% since 1998, while for the same period total assets of Austrian pension funds have increased 307% (Oesterreichische Nationalbank, n.d.). The important position that Austrian funds have developed is reflected also in the high value of total net assets held by the funds analysed within our data. As the Austrian fund sector is now well established, we assume that our conclusions are not only Austria-specific, but that they are relevant for funds across Europe. For 2014, closing monthly total net assets for all funds in our data set was € 67 billion.

We focus on two research questions: First, how large is the effect of the proposed FTT on investment funds, in particular on their performance and their total net assets? Second, which types of investment funds[2] are particularly affected? FTT seeks to be neutral, but differing fund types; the number of transactions within a chain of transfer of instruments; and different investment strategies and risk profiles cause FTT to affect funds in different ways.

We use confidential, anonymised, disaggregated data of investment funds that have been provided by the Austrian Kontrollbank (*Oesterreichische Kontrollbank*, OeKB)[3] and the Association of Austrian Investment Companies (*Vereinigung Österreichischer*

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[2] Data provided included a total of 21 different categories of funds. This included investments in socially responsible funds, gilt-edged securities, real estate funds and asset- and mortgage-based funds.

[3] The Austrian Kontrollbank (*Oesterreichische Kontrollbank Aktiengesellschaft*, OeKB) is Austria's main provider of financial and information services to the export industry and the capital market.

Investmentgesellschaften, VÖIG),[4] with the consent of each investment fund. The data are unique and cover specific investment funds operating in Austria during the 12-month period from January to December 2014.[5] Key information provided includes gross sales and purchases of derivative and non-derivative financial instruments, on which we apply the FTT rates as suggested in the Proposal. In contrasting the actual returns of funds with the hypothetical returns after FTT, we measure the effect of the FTT as the tax wedge.

The remainder of this article is organized as follows: Section 2 describes the institutional background of the Proposal, while section 3 outlines related literature and our hypothesis. Data and methodology are outlined in Section 4. Section 5 presents the results and section 6 offers conclusions.

2 Institutional Background

As unanimity amongst Member States has not been achieved, the FTT Proposal of February 2013 encourages enhanced cooperation amongst participating Member States. Though not yet adopted, the Proposal suggested implementation of the Directive by participating Member States by no later than December 2016 (Joint Statement, 2014). The Proposal is wide in scope (Article 3(1), COM(2013) 71 final), with only limited exemptions (Article 3(2) & Article 3(4), COM(2013) 71 final). This is reflected in the "all markets, all actors, all products" approach that the Proposal takes.[6] As such, the Commission seeks to minimize circumvention by reducing the possibility of both instrument and market substitution. Financial institutions are the primary focus of the Proposal (Article 3(1), COM(2013) 71 final), as "they execute the bulk of the transactions on financial markets" (Exploratory Memorandum to COM(2011) 594 final) and are liable for payment of FTT (Article 10, COM(2013) 71 final).

The proposed FTT rate distinguishes between derivatives and other instruments. For

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4 The Association of Austrian Investment Companies is an umbrella organization for all Austrian investment fund management companies and all Austrian real estate investment fund management companies.

5 Data represent 100% of all Austrian funds held domestically.

6 This includes "all markets (regulated and over-the-counter), all actors (from traditional banks via the so-called shadow-banking sector to non-financial companies that undertake significant financial transactions) and all products (from shares and bonds to derivatives and structured products)" European Commission (n.d.), p.3.

derivatives the rate is 0.01% of the gross value of each transaction, before netting and settlement (Article 9(2), COM(2013) 71 final). FTT is therefore similar to other indirect taxes that ignore profitability. In all other cases the rate amounts to 0.1% (Article 9(2), COM(2013) 71 final). Financial transactions covered by the Proposal include (i) the purchase and sale of instruments, (ii) transfers between group entities where the right to dispose of as owner and the transfer of the risk is associated, (iii) the conclusion of derivatives contracts (iv) exchanges of financial instruments and (v) repurchase agreements (Article 2(2), COM(2013) 71 final).

Financial instruments subject to FTT are defined by reference to section C of Annex I to Directive 2004/39/EC of the European Parliament and of the Council on markets in financial instruments, and includes structured products (Article 2(3), COM(2013) 71 final). This includes transferable securities, money-market instruments, units in collective investment undertakings, options, futures, swaps, forward rate agreements and any other derivative contracts. Derivatives contracts are defined in subsections (4) to (10) of section C of Annex I to Directive 2004/39/EC, as implemented by articles 38 and 39 of Commission Regulation (EC) No. 1287/20067 (Article 2(4), COM(2013) 71 final).

FTT is charged on each leg of a transaction, i.e. at the seller and at the buyer, including all intermediaries. In a series of transactions, FTT is levied multiple times, on gross values without deductions. Figure 1 below illustrates the FTT implications of a simple transaction (Davis et al., n.d.) and illustrates the substantial cascading effect that could arise from the introduction of FTT. In this case, one transaction between two asset managers involves five further intermediaries, and FTT is levied 10 times.[7]

Figure 1: Example – Trade Chain in Cash Equities Markets and FTT Implications[8]

7 As gross values increase along the value chain, the ultimate cascading effect may be very significant.

8 Davis et al. (n.d) figure 13, p. 19 (all figures bps (basis points)).

Under the assumption that each seller in the chain will shift the FTT burden to the next buyer, all FTT accumulates at the end of that chain, i.e. Asset Manager 2. For them, the accumulated FTT is a transaction cost, which – in case of an investment fund – will ultimately reduce the performance of the fund at the expense of the fund shareholder. The worst-case scenario of 10 times FTT from effectively one transaction involving a chain of intermediaries, is reflected in the literature (AIMA, 2012; Clifford Chance, 2013).

3 Related Literature and Hypothesis

Transaction taxes are found in a number of jurisdictions. They differ across the globe in scope, rate and means of implementation. The United Kingdom has one of the oldest examples of transaction taxes in Europe, whilst Sweden implemented transaction taxes in 1986, and recently both France (2012) and Italy (2013) have been inspired by the Commission to implement transaction taxes of their own.

Empirical research based on market observations provides an important insight into how markets could react to the introduction of FTT, specifically on the effect of transaction taxes on market behaviour. Tobin saw transaction taxes as a way to reduce speculative trading in the currency market (Tobin, 1978). Speculation destabilizes markets as it shifts the focus away from fundamental values (Tobin, 1978). Indirect trading taxes burden trades and discourages speculation, as it taxes both positive and negative outcomes. Derivatives have a shorter time horizon and will be affected the most by FTT (Schulmeister, Schratzenstaller & Picek, 2008).

Transaction taxes reduce trading volumes both upon announcement (Bond, Hawkins & Klemm, 2005) and upon implementation (Umlauf, 1993; Pomeranets & Weaver, 2011). A change to market volumes negatively affects market liquidity unless market makers are able to sufficiently compensate for the introduction of transaction taxes (Pellizzari & Westerhoff, 2009). There is a strong link between variance and volume, and while risk is positively correlated to volume, risk decreases with time (Jorion, 1996).

Research, however, has not been consistent on the effect of transaction taxes on volatility (Umlauf, 1993; Jones & Seguin, 1997; Bond, Hawkins & Klemm, 2005; Baltagi, Li & Li,

2006; Pomeranets & Weaver, 2011). The introduction of transaction taxes aims to reduce market volatility, but it has been found to increase, decrease and have a neutral effect. This is counterintuitive to the objectives of FTT. Furthermore, the complexity of investment styles makes forecasting the impact of regulatory reform difficult (Lensberg, Schenk-Hoppé & Ladley, 2015).

Relocation to avoid transaction taxes will arise, but bias towards home equity (Amadia & Bergin, 2008) would help to counter balance this. The introduction of transaction taxes significantly reduces stock turnover (Becchettia et al., 2014). Market volatility increases with turnover, and those stocks with a higher beta-value contribute the most to excess volatility (Kasch, 2015).

In the case of technical analysis, stylized facts indicate that transaction taxes do not eliminate profit (Menkhoff & Taylor, 2007). The cost of transaction taxes will be marginal for investors if performance can outweigh transaction costs. As for performance, the flow-performance relationship of funds is convex (Siri & Tufano, 1998; Del Guercio & Tkac, 2002). This will mean that past fund performance will affect future FTT costs, as high performing funds will encourage more investors. The more convex the flow-performance relationship, the more risk managers will take (Ferreira et al., 2012). But as the incidence of the tax affects performance, this will be reflected in asset prices. Transaction taxes are shown to consistently reduce asset prices across the board (Schwert & Seguin, 1993; Kupiecs, 1996; Habermeier & Kirilenko, 2003; Matheson, 2011; Brondolo, 2012).

Differences in performance between active and passive strategies have been noted (Huntera et al., 2014), with active portfolio strategies attracting higher costs (French, 2008). Active portfolio strategies should provide greater returns to investors, but this has not always been the case (Tudoraa, 2012). A significant short- and long-term implication of transaction taxes is their impact on investor returns. Diversification can help to improve overall returns. However, as costs increase with the introduction of transaction taxes, this may encourage more passive holdings (Rowland, 1998; Lensberg, Schenk-Hoppé & Ladley, 2015) which may negatively affect diversification.

The increase in market trading has shown that there has been a shift in focus from fundamental trading to technical trading (also known as chartist analysis). The use of

technical analysis over fundamental analysis is inversely related to time horizons (Menkhoff & Taylor, 2007). If increasing costs discourage short-term trading, transaction taxes may shift investment analysis back to fundamental analysis.

The European Commission has not quantified the potential loss of value for different category of investors. However, in accordance with the objectives of the Proposal, the Commission recognizes that market behaviour will change and that higher costs will affect profit margins.

To the best of our knowledge, the effect of an FTT on investor returns – although plausible and frequently stated – has not yet been subjected to academic research. The claim that FTT should reduce speculative trading by the industry and lead to financial institutions paying their "fair share", is in obvious contrast to the notion of financial institutions passing the burden on to clients. Not all services and transactions can be located outside the FTT zone. For customers, the burden might become material, in particular when multiple layers of a transaction chain are taxed and the tax burden cumulates at the level of the final customer[9] (Davis et al., n.d.). However, no data are available to estimate the extent of shifting in financial markets.

Private fund companies have carried out some estimations on the effect of FTT, based on aggregate data. A study by Oliver Wyman concludes that lower returns clearly affect long-term savings as "rational investors 'price in' the future cost of the FTT into perpetuity" (Davis et al., n.d.: 27). The Alternative Investment Management Association (AIMA) notes that FTT would affect mostly EU private individuals and pensioners. It adds that, on a passive investment in the S&P500 index, if one were to earn an average return of 2%, it would take 18 days in order to recoup an FTT charge of 0.1% (AIMA, 2012: 9). This would cover the estimated additional effective FTT rate of 2.2%. This would encourage longer-term investments, but would reduce turnover and market liquidity.

Results from retrospective analysis of fixed income and equity portfolios performed by Black

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[9] "These end-users represent a wide range of 'real-economy' participants, including corporations, governments and long-term investors (pension funds, asset managers and life insurers)". It also includes "retail investors (via direct investment schemes, as well as participation in collective investment schemes, and as beneficiaries of institutional plans". Davis et al. (n.d.), p. 13.

Rock show that FTT could reduce returns by up to 257 basis points (bps), with the spread dependent on the proportion of equity investments to total investments held within an investment portfolio (Black Rock, 2011). However, as a private investment fund, their data are not publically available for review. Oxera (2011) uses three illustrations to highlight the effect of FTT on returns.[10] Other institutions such as the International Capital Market Association (ICMA) and the European Repo Council (ERC) support these views.

Based on this evidence from the industry itself, we will shed further light on the effect of FTT on investment fund returns. In contrast to industry studies – some of which have the character of anecdotal evidence, while others serve lobbying purposes – we use unique disaggregate data which allow us to simulate FTT and estimate its effects on a detailed level.

As a first step, our goal is to determine the relative effect of FTT on investment fund total net assets and consequently on investment fund performance. Both are measured by change in total net assets during the period for each fund. In a second step, we analyse which fund characteristics affect the relative amount of FTT. We focus on two specific characteristics, namely the funds risk and the investment strategy.

According to the political claim, as discussed above, FTT increases transaction costs for buyers and sellers of financial instruments, and reduces the number and volume of transactions. Investors are assumed to seek to accommodate additional transaction cost by reducing the volume and the frequency of trading as a first step to avoid the tax. Empirical results do show that trading volumes fall when transaction taxes are introduced (see above).

Investors expect high returns from high-risk investments (Dey, 2005). Expected returns net of trading costs increase with the holding period, and are therefore inversely related to turnover (Amihud & Mendelson, 1986). Transaction taxes encourage long-term holdings to dampen costs (Matheson, 2011). Others suggest that the positive relation between returns and turnover reflect active management that leads to a high turnover (Dey, 2005, quoting various

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[10] Oxera, 2011: (i) a typical 40-year pension fund would suffer both a loss in returns and retirement value and potentially lose 2.7% to 5.5% of its final value; (ii) a retail investment earning an expected return of 5% could potentially lose 0.8% of its returns due to financial institutions' shifting the burden to investors and due to the cascading effect of FTT; and (iii) a typical manufacturing firm could suffer a 0.74% reduction in profits on a 10% margin on derivatives due to higher derivative costs.

authors). Active investors may be affected more by transaction taxes than those undertaking passive investment strategies, which may have a longer investment horizon. Their participation in the market would reflect this. Overall market turnover increases with the number of active investors (Tauchen & Pitts, 1983). The objective of the Proposal is to encourage stability. If trading volumes are positively related to investment betas (risk) (Ciner, 2015), then lower volumes would suggest a more stable market. Thus, FTT could help to limit market instability (Carfi & Musolino, 2014).

We should find that investments with higher risk are subject to higher tax costs. Further, if FTT is to discourage speculative trading, then funds which are managed actively should be affected more than passively managed funds. Our hypothesis therefore read:

H1: The reduction of performance by FTT is higher for funds with a riskier portfolio.

H2: The reduction of performance by FTT is higher for funds with an active management style.

4 Data and Methodology

4.1 Data and Sample Selection

We use data from Austrian investment funds. Austrian funds are regulated by law, including the implementation of, among others, Directive 2014/91/EU, which covers undertakings for collective investment in transferable securities (UCITS). The investment funds are subject to supervision by the Federal Ministry of Finance (*Bundesministerium für Finanzen*, BMF), the National Bank of Austria (*Oesterreichische Nationalbank*, OeNB) and the Financial Market Authority (*Österreichische Finanzmarktaufsicht*, FMA).

All Austrian funds are required to report transactions to the National Bank of Austria. The National Bank acts as an intermediary data collector for the Austrian National Bank, providing the necessary IT platform for the submission of timely data. The National Bank, in cooperation with the Association of Austrian Investment Funds (*Vereinigung Österreichischer Investmentgesellschaften,* VÖIG) provided us with access to these disaggregate data, ensuring that all requirements of confidentiality and anonymity are met.

Data exclude real estate funds,[11] where FTT – by its nature – will have only little effect, and alternative investment funds, as the respective law was implemented in Austria during our observation period, in mid-2014. Fund of funds are excluded, as they do not add insight, but rather merely an additional institutional layer. We also exclude special funds (*Spezialfonds*): they are not available on the market, they serve specific purposes and they are subject to specific rules and limitations. Hedge funds are also excluded from our data. Our data also exclude repos, as Austrian funds have no regulatory obligation to report such transactions.

The information provided by the OeKB comprises end of month time series data of 927 funds covering the 12-month period from January to December 2014. Data are available per fund and per month, and in total comprise 10,393 observations.[12] Our data include monthly totals for all purchases and sales in euro, without netting, separately for bonds, index securities, fund investments, equity shares and derivative products. Data on derivatives are provided on a positive or negative net trade basis.[13] Further, end of month closing total net assets are provided in euro, and monthly performance as percentages. Additional fund characteristics are provided for each observation, which may vary per month, also within one specific investment fund.[14]

Table 1 provides a summary of the sample data. We exclude observations with total net assets (TNA) per month-end of zero and with observations with zero performance, which is reported as "n/a". We maintain observations with a monthly performance of zero or virtually zero;[15] however subsequent calculations on the tax effect are shown as "missing value" to avoid error terms or outliers, which distort results.

< Insert Table 1 about here >

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11 I.e. all funds that fall under the real estate funds regime and all funds with more than 20% of their total net assets invested in real estate

12 Not all funds had data available for a full 12 months. This may be due to either funds commencing trading later in the year or ceasing trading before year end.

13 For our data analysis, we convert all negative values to positives. Derivative values are both negative and positive, with negative values reflecting a net payment obligation.

14 Our data include a mix of investments periods, including investments held for short- (0-3 years), medium- (3-7years) and long-term periods (more than 7 years).

15 Performance < 0.00001; 3 observations.

Table 2 outlines descriptive statistics for total purchases and sales.

< Insert Table 2 about here >

4.2 Variables

Our variables measure the hypothetical effect of an FTT on a fund's performance. They result from simulation. Hypothetical FTT in euro is calculated for each observation, i.e. per fund/month, based on total purchases and sales in euro that occurred during the month, applying the provisions of the proposed FTT directive. The calculation, in a first step, excludes cascading effects. If FTT were to arise only once in a transaction, it would amount to (in euro):

> 0.001 x [purchases (bonds, index papers, funds shares, equity shares) + sales (bonds, index papers, funds shares, equity shares)] + 0.0001 x [purchases (derivatives) + sales (derivatives)]

The FTT that we calculate is underestimated in one regard: the data on purchases and sales of derivatives in euro relate to amounts that are transacted, whereas FTT is really levied on the notional value of the underlying, which is normally considerably higher than the value that is registered on exchanges. Unfortunately, our data do not give information on notional values.

To simulate the performance after hypothetical FTT, we reduce the monthly performance before FTT by FTT per month related to the month-end TNA. As the performance depends on valuations of assets (total net assets, TNA) held by a fund at the end of a period, it therefore depends on realized and unrealized changes in market values, as well as on dividend and interest income. TNA values are published on a daily basis, and include any re-invested dividends. They are based on the value of total net assets and daily fund price plus any dividend per share. Transaction costs and administrative costs reduce performance, as would FTT. The performance is corrected for fund share splits and for the distributing/non-distributing character of the fund.

The variable TWPER1 denotes the tax wedge in performance (PER), i.e. the relative

reduction of performance after the deduction of FTT:[16]

$$TWPER1 = \frac{PER - PER_{FTT}}{PER}$$

The effect of FTT on the TNA is calculated similarly:

$$TWTNA = \frac{NAV - NAV_{FTT}}{TNA}$$

Further, we include categorical variables to explain the differences in the effect of FTT, depending on different attributes.

We also consider the impact of cascading. Based on a worst-case scenario as discussed in the literature, we consider that the above variables based on 10pbs[17] FTT cost, i.e. the effect of FTT would reflect a chain of transactions from start to finish that multiples FTT by 10 (see Figure 1).

To analyse the effect of the riskiness of the fund on its FTT-exposure, we use three variables: fund category (CAT, CATGRP), gilt-edged (GE) and bond risk category (RISK), as follows.

CAT: The fund category ranges between five broad groups: bond funds, money market funds, equity funds, derivative funds and mixed funds. The classification as bond funds or equity funds requires that the majority of the portfolio (51%) be held in bonds or equity, respectively. Money market funds are regulated according to CESR/10-049.[18] Mixed funds are based on non-bond exposure and ignore the derivative position of the fund. Further, a distinction according to duration is drawn.

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[16] An alternative measure of the effect of FTT on performance measures the reduction in percentage points. As the results in our subsequent descriptive and statistical analysis are the same, we therefore display only results for TWPER1.

[17] percentage basis points.

[18] Committee of European Securities Regulators (CESR) guidelines on a Common Definition of European Money Market Funds, CESR/10-049. The CESR's guidelines set out a two-tiered approach for a definition of European money market funds, namely (i) short-term money market funds and (ii) money market funds. "This approach recognises the distinction between short-term money market funds, which operate a very short weighted average maturity and weighted average life, and money market funds which operate with a longer weighted average maturity and weighted average life". CESR, p. 1.

CATGRP: We group above CAT variables based on type, by dropping the distinction according to duration. This includes equity, derivatives, mixed, money market and bonds.

GE: Highly conservative funds which are adequate, under Austrian law, for the investment to the benefit of wards (e.g. children who lack legal right capacity), are classified as gilt-edged. As only 3% of funds were observed to be gilt-edged, our data are binary (yes/no).

RISK: Bonds account for 67% of all purchases and 66% of all sales. As only bond funds, mixed funds and money market funds give information on their risk in bonds, the data accordingly show a high percentage of n/a. Our data include triple-A, investment grade and non-investment grade bonds. Classification of funds between different groups is based on a weighted average of bond data, with minimum thresholds for classification set at 51%. Classifications represent the quality of investments. Investments in AAA bonds have high credit worthiness. Investment grade bonds are the next tier of credit worthiness and have a BBB rating. They are ranked higher in terms of credit worthiness to non-investment grade bonds that have a BB ranking. The latter is the lowest rank for bonds in our sample and carries a higher risk of default for investors.

RR: We group GE and RISK as risk variables by classification. Funds classified as categorical variable GE, are grouped with funds that are classified under RISK variables having a classification of MINAA, INGR or NINGR. Those having no classification as GE funds are then classified separately under each categorical variable of RISK, MINAA, INGR and NINGR, respectively. We thus construct an ordinal variable which considers GE-funds as the least risky, followed by non-GE MINAA, INGR and NINGR as the most risky, in that order (i.e. ranking from 1 to 4). The variable RR is applicable only for money market funds, bond funds and mixed funds.

The investment strategy of the fund can be found in two variables, namely active investment strategy and passive investment strategy.

ACT: The fund's management actively looks for market inefficiencies and invests accordingly. The manager therefore actively decides on timing of investment and on specific stocks, bonds or other instruments. As an active investment strategy is available only for

equity funds or mixed funds, therefore, again, we find a large number of n/a. Data provided differentiate between growth style, value style and blend style of management.

PASS: A fund's portfolio normally mirrors components of a market index, and automatically reflects any changes in the underlying index (for example market capitalization, based on the assumption that an individual investor cannot outsmart the market). The data are binary (yes/no).

MGST: We group ACT- and PASS-style management and construct an additional variable on management style. As some funds are classified as neither active or passive (that data entry is not mandatory), we leave them unclassified.

Table 3 presents descriptive statistics of our categorical variables. Table 4 groups our descriptive statistics by CAT, RR and MGST. Table 5 provides descriptive statistics only for bonds found within CAT.

< *Insert Table 3 about here* >
< *Insert Table 4 about here* >
< *Insert Table 5 about here* >

5 Results

5.1 Tax Wedge: The Absolute and Relative Effect of FTT on Performance and TNA

In our analysis, we differentiate between a best-case and a worst-case scenario. In the best-case scenario, FTT is levied exactly once upon each transaction. Not even the second leg of the transaction (the counterparty's FTT) is included in the simulation. In the worst-case scenario, we assume that each transaction is the result of a chain of sub-transactions with the incidence of FTT being 10 times, due to the cascading effect, as described above. Both scenarios are equally unrealistic: FTT will neither be levied once, nor will it arise 10 times for each single transaction; the two scenarios merely determine the lower and upper boundaries of the FTT burden. Based on our above thoughts, we assume that in both scenarios, the investor ultimately bears the burden of FTT.

In the best-case scenario, we find that the total cost of FTT is € 89.5 million based on tax rates provided by the Proposal multiplied by sales and purchase values. This would represent 0.062% of tax revenue generated in Austria in 2014, which amounted to €143.7 billion (Statistics Austria). In that scenario, FTT would reduce performance at a median of 0.7% (average 8.12%; TWPER1) (see Table 6).[19] The effect on the total net assets is small, as one would expect: the median tax wedge would be 0.00006% (average 0.014%) of TNA.

< *Insert Table 6 about here* >

It is obvious that these results considerably underestimate the effects of FTT. There are a number of reasons for this. On the one hand, we cannot take into consideration the notional values of derivative transactions or the potential influence of factoring on derivatives, due to lack of data, both of which may significantly increase the tax base for FTT for such instruments. The best-case scenario also excludes the cascading effect of the tax.

For the worst-case scenario (Table 7), where we assume that a typical transaction may involve 10 instances of FTT liability, one can easily multiply the results from Table 6 by 10.[20] The median effect of FTT would then be a 7% reduction in fund performance, and even as high as 80% on average.

< *Insert Table 7 about here* >

5.2 Differences in medians between groups

5.2.1 Graphical illustration

Graphs 1 and 2 show the difference in medians of our categorical variables. Results for fund

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[19] If the reduction were measured in percentage points, the fund performance before FTT would decrease from 0.525% to 0.511% due to a reduction on average of 0.014 ppt (TWPER2) (median of TWPER2 = 0.006 ppt).

[20] We assume a cumulative relation between the 10 FTT-instances; there is no indication that an exponential relation would apply. As transaction taxes have been found to reduce asset prices, we do not account for taxes on taxes.

category show that FTT affects money market funds the most. Investments which are not classified as gilt-edged securities are also affected more than those which are classified as gilt-edged. We also find that investments which have neither active nor passive style management are affected more by FTT than those that do have a declared (active or passive) management style.

<Insert Graphs 1 and 2 about here>

Graphs 3 and 4 show the results from grouping our data. Our results again show that money market funds and funds with no management style classification are the most affected by FTT. As reference to management style is not a mandatory field, details are not always provided by funds.

<Insert Graphs 3 and 4 about here>

We further analyse our data by removing money market funds (which clearly dominate) from fund category (CAT), and compare the duration of bond fund investments. The removal of money market funds from our data clarifies the impact of FTT on other fund categories.

The results for bond fund classification clearly show that FTT will have the greatest impact on short-term bond funds. This is in line with the objectives of FTT to encourage longer-term holdings, as short-term trades increase the cost of FTT on a fund. Graphs 5 and 6 show our results.

<Insert Graphs 5 and 6 about here>

5.2.2 Non-Parametric Testing

The quality of the data requires non-parametric testing, as our data do not have a normal distribution. We use the Wilcoxon rank-sum (Mann-Whitney U) test and Kruskal-Wallis test to compare medians between groups that result from our categorical variables. We thus test whether the difference in medians of FTT effects (TWTNA, TWPER1, TWPER2) is significant between the different groups per categorical variable (CAT, GE, RISK, ACT,

PASS).

Our results are summarized in Table 8 for the best-case scenario, and in Table 9 for the worst-case scenario, including cascading.

<Insert Table 8 about here>
<Insert Table 9 about here>

We also group data to highlight our results and test for significance. We group GE and RISK as one variable, RR. We group ACT and PASS as one variable, MGST. We also find that the results for TWPER1 and TWPER2 are similar.

Our results for the best- and worst-case scenarios for grouped data are summarized in Table 10 and Table 11, respectively.

<Insert Table 10 about here>
<Insert Table 11 about here>

Our results show that both RR and MGST affect the FTT tax wedge. We find that return does not increase uniformly with risk. Our results do show that actively traded funds are affected more by the introduction of FTT than passively managed funds. This is significant, given the additional costs charged to investors for actively managed funds.

We can therefore confirm both of our hypotheses, according to which the effect of FTT on performance and total net assets depends on risk and investment strategy. The results are significant on a 0.01% level.

6 Conclusion

The understanding of FTT is largely based on estimations of how markets will react based on a number of assumptions. This paper analyses the effects of FTT on funds using Austrian data for the 2014 calendar year as provided by the OeKB. Austria is a keen supporter of the introduction of FTT. Although, at first glance, we might estimate that the effect of FTT on

Austrian funds may be marginal, cascading can lead to a reduction of fund performance of up to 80% on average. The gradual growth of the Austrian fund sector over recent years should be considered within the context of the limited adoption of FTT at the European level. Furthermore, the cascading effect may vary between these boundaries depending on the number of intermediaries in a transaction.

The results highlight that behavioural changes may arise more specifically in certain categories of funds. This may infringe portfolio diversification. However, underlying these observations is confirmation that data do support that the objective of FTT will be meet. Active strategies may require reassessment. Bonds which have a short-term trading duration will be affected more.

We must also take into perspective the quantum of FTT paid in relation to the overall value of funds traded. After initial market shock, the marginal increase in costs may not be overly significant to investors, but would nonetheless affect investment strategies.

Our results are limited to some extent. We cannot induce the indirect effects of FTT (such as relocation and the decision not to trade at all), nor the potential decision by market participants to increase the holding periods of investments.

Our analysis could be further developed in a number of ways. Further research could highlight specific trades, such as the role that intermediaries play within the financial markets of Austria. This could support the current debate to extend the scope of exemptions to intermediaries in order to reduce the effect of cascading on financial markets.

Table 1: Sample Description

	No. of observations	No of funds*	Total net assets (TNA)	Total purchase value		Total sales value	
				Non-derivatives	Derivatives	Non-derivatives	Derivatives
			€	€	€	€	€
Initial sample	10,393	927	759,603,566,061	44,776,327,386	572,722,330	45,324,792,042	853,220,741
Observations containing zero TNA	34	34	0	14,774,872	260,735	656,788,889	286,032
Observations containing marginal TNA**	1	1	501,0000	0	10,296	1,614,613	32,590
Observations containing errors in monthly performance	3	3	112,382,340	7,926,173	0	7,969,595	36,150
Final sample	10,355	927	759,491,164,223	44,753,626,341	572,451,299	44,658,418,945	852,865,969

Notes: *When referring to data removed from the sample, any reference made to number of funds reflects only the number of unique fund observed with zero TNA or zero monthly performance. This seeks only to give an indication of the characteristic of such values, but does not indicate that other observations of that particular fund were removed.
**Return 97%

Table 2: Descriptive Statistics

Category		Mean	Std. deviation	Minimum	Q1	Median	Q3	Maximum
TNA		73,345,356	116,795,306	280,536	10,684,612	30,011,699	77,273,788	872,331,333
PER		0.52543	1.8895	-18.21109	-0.05548	0.39073	1.18470	17.18305
FTT		8,648	21,214	0.00	292	1,753	7,014	350,471
Bond								
	Purchase	2,916,646	10,356,309	0	0	0	1,314,269	232,124,170
	Sales	2,894,472	10,526,114	0	0	0	1,280,558	240,753,817
Index								
	Purchase	7,510	128373	0	0	0	0	7,150,012
	Sales	7,996	140,912	0	0	0	0	7,827,402
Funds								
	Purchases	394,297	2,665,323	0	0	0	0	63,943,691
	Sales	386,158	2,692,957	0	0	0	0	91,103,578
Shares								
	Purchases	1,003,481	4,540,596	0	0	0	85,107	123,577,542
	Sales	1,024,113	4,508,274	0	0	0	102,746	149,037,060
Derivatives								
	Purchase	55,283	567,902	0	0	0	0	35,839,139
	Sales	82,363	645,814	0	0	0	2,811	36,492,260

N = 10,355

Note: Observations contain a large number of non-purchase/sales. As a result, the median is 0 for all observations.

Table 3: Descriptive Statistics of Categorical Variables

N = 10,355		Frequency	Percentage	Purchase	Sales
			%	€	€
Fund category (CAT)					
Equity	AKT – Equity fund	2,644	25.53	9,188,717,535	9,721,030,301
Derivatives	DERF – Derivative fund & DEVRK – Derivative fund*	104	1.00	328,097,884	330,949,160
Mixed	GAUS – Mixed fund balanced	722	6.97	2,427,947,055	2,044,379,999
	GDYN – Mixed fund dynamic flexible	1,187	11.46	2,890,206,162	2,873,049,769
	GFLEX – Mixed fund flexible	360	3.48	1,027,089,682	981,726,503
	GKON – Mixed fund conservative	281	2.71	713,178,199	507,967,002
Money	MMF – Standard money market funds	74	0.71	115,103,699	132,527,927
Bond	RFLEX – Bond fund flexible (flexible duration)	2,612	25.22	14,888,278,248	14,568,616,515
	RLONG – Bond fund long (duration > 7 yrs)	71	0.69	452,315,678	940,981,821
	RMED – Bond fund medium (duration 3-7 yrs)	1,405	13.57	8,596,804,501	8,818,504,222
	RSHT – Bond fund short (duration 0-3 yrs)	895	8.64	4,698,338,998	4,591,551,696
Gilt-edged (*mündelsicher*) (GE)					
	Yes	260	2.51	1,246,875,843	1,524,003,940
	No	10,095	97.49	44,079,201,796	43,987,280,974
Category of risk bond (RISK)					
Yes	MINAA – AAA to AA	679	6.56	3,130,622,387	3,219,545,569
	INGR – Investment grade	3,346	32.31	19,829,373,126	19,383,030,519
	NINGR – Non-investment grade	365	3.52	1,521,287,098	1,861,967,325
No	NA	5,965	57.61	20,844,795,030	21,046,741,501
Active style management (ACT)					
Yes	BLEND – Blend	1,263	12.20	4,373,191,066	4,384,941,366
	GRWTH – Growth	234	2.26	381,746,783	547,594,255
	VALUE – Value	418	4.01	2,469,662,405	2,404,309,609
No	NA	8,440	81.51	38,066,618,798	38,174,439,684
Passive style management (PASS)					
	Yes	97	0.94	153,713,555	81,266,871
	No	10,258	99.06	45,172,364,081	45,430,018,043

Notes: Data for 927 unique funds with 10,355 observations. Variables with zero outputs were not excluded from the analysis in order to ensure that appropriate comparison was carried out. Furthermore, we retain observations with n/a categories. This is a significant reason for this. The use of n/a could reflect instances where data entries genuinely cannot be included in other categories, but it could also reflect a "garbage" option for data inputters. In both cases, then, it is highly probable that the information that is contained in the other categories is correct and any results of these variables provide results that can be relied upon not to have "garbage" data.
We assume that all transactions are undertaken in the secondary market.
*Categories have been grouped due to confidentiality.

Table 4: Description Statistics for Grouped Data

N = 10,355		Frequency	Percentage	Purchase	Sales
			%	€	€
Fund category (CAT)					
Equity	AKT – Equity fund	2,644	25.53	9,188,717,535	9,721,030,301
Derivatives	DERF – Derivative fund & DEVRK – Derivative fund*	104	1.00	328,097,884	330,949,160
Mixed	GAUS – Mixed fund balanced	722	6.97	2,427,947,055	2,044,379,999
	GDYN – Mixed fund dynamic flexible	1,187	11.46	2,890,206,162	2,873,049,769
	GFLEX – Mixed fund flexible	360	3.48	1,027,089,682	981,726,503
	GKON – Mixed fund conservative	281	2.71	713,178,199	507,967,002
Money	MMF – Standard money market funds	74	0.71	115,103,699	132,527,927
Bond	RFLEX – Bond fund flexible (flexible duration)	2,612	25.22	14,888,278,248	14,568,616,515
	RLONG – Bond fund long (duration > 7yrs)	71	0.69	452,315,678	940,981,821
	RMED – Bond fund medium (duration 3-7yrs)	1,405	13.57	8,596,804,501	8,818,504,222
	RSHT – Bond fund short (duration 0-3yrs)	895	8.64	4,698,338,998	4,591,551,696
Risk (RR)					
Gilt-edged (*mündelsicher*) (GE) + Category of Risk Bond (RISK)	GE + MINAA, INGR, NINGR	260	2.51	1,117,015,691	1,377,363,428.61
	Non-GE + MINAA	544	5.25	2,504,472,359	2,435,453,487
	Non-GE + INGR	3,278	31.66	19,336,131,349	18,789,759,172
	Non-GE + NINGR	365	3.52	1,521,287,098	1,861,967,325
	No classification	5,908	57.05	20,844,795,030	21,046,741,501
Management Strategy (MGST)					
Active Style Management (ACT) + Passive Style Management (PASS)	BLEND, GRWTH, VALUE + No Passive	1,681	16.23	7,255,264,342	7,330,711,624
	No Active + Yes Passive	88	0.85	149,519,059	75,133,265
	No Active + No Passive	8,586	82.92	37,917,099,739	38,099,306,419
Notes: Data for 927 unique funds with 10,355 observations.					

Table 5: Description Statistics for Grouped Data – Fund Category (CAT) – Bond

N=4,983	Frequency	Percentage	Purchase	Sales
		%	€	€
RFLEX – Bond fund flexible (flexible duration)	2,612	52.42	14,888,278,248	14,568,616,515
RLONG – Bond fund long (duration > 7yrs)	71	1.42	452,315,678	940,981,821
RMED – Bond fund medium (duration 3-7yrs)	1,405	28.20	8,596,804,50	8,818,504,222
RSHT – Bond fund short (duration 0-3yrs)	895	17.96	4,698,338,998	4,591,551,696
Notes: Based on data for bond funds only.				

Table 6: Tax Wedge – No Cascading (Best Case Scenario)

	Mean	Std. deviation	Minimum	Q1	Median	Q3	Maximum
TWPER1	8.117%	55.197	0%	0.143%	0.745%	2.823%	2,572%
TWTNA	0.014%	0.033	0%	0.002%	0.006%	0.015%	1.550%
N=10,355							

Table 7: Tax Wedge – With Cascading (Worst Case Scenario)

	Mean	Std. deviation	Minimum	Q1	Median	Q3	Maximum
TWPER1	80.163%	548.590	0%	1.279%	7.212%	27.674%	25,723%
TWTNA	0.140%	0.334	0%	0.016%	0.063%	0.152%	15.504%
N=10,355							

Table 8: Summary of Non-Parametric Tests – Without Cascading

		TWPER1	TWTNA
CAT	chi-squared with ties	687.162 ***	213.898 ***
GE	z-values	8.565***	49.589 ***
RISK	chi-squared with ties	112.132 ***	126.394 ***
ACT	chi-squared with ties	177.586 ***	22.895 ***
PASS	z-values	-6.764 ***	-4.967 ***
Notes: Kruskal Wallis Test for CAT, RISK, ACT; Mann Whitney U Test for GE, PASS *** denotes p < 0.01%			

Table 9: Summary of Non-Parametric Tests – With Cascading

		C1TWPER1	C3TWTNA
CAT	chi-squared with ties	577.618 ***	213.898***
GE	z-values	-2.867 ***	-7.042***
RISK	chi-squared with ties	93.520 ***	126.394***
ACT	chi-squared with ties	158.293 ***	22.895***
PASS	z-values	-6.533 ***	-4.967***
Notes: Kruskal Wallis Test for CAT, RISK, ACT; Mann Whitney U Test for GE, PASS *** denotes p < 0.01%			

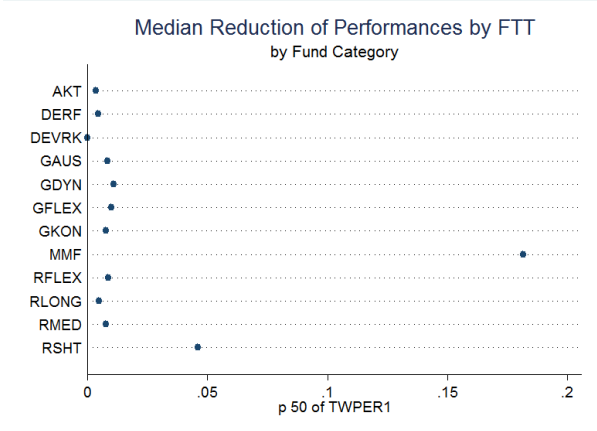
Table 10: Summary of Non-Parametric Tests – Grouping – Without Cascading

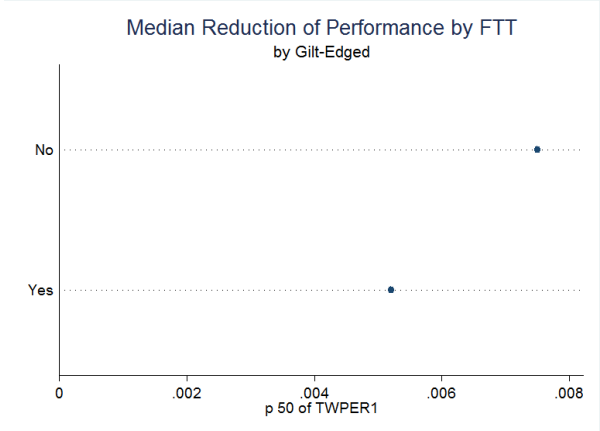
		TWPER1	TWTNA
CATGRP	chi-squared with ties	423.506 ***	118.268 ***
RR	chi-squared with ties	122.774 ***	150.245 ***
MGTS	chi-squared with ties	173.053 ***	26.236 ***
Notes: Kruskal Wallis Test for CATGRP, RR, MGST *** denotes p < 0.01%			

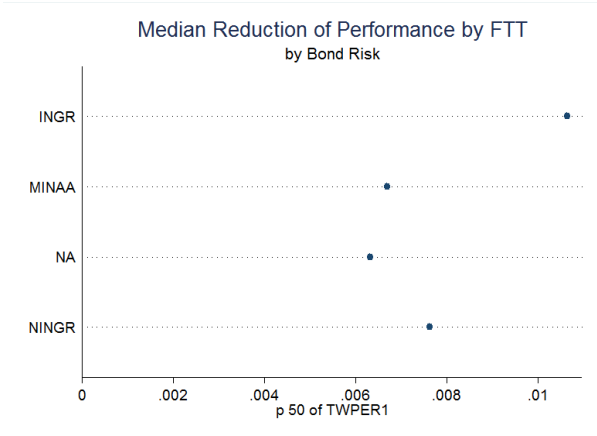
Table 11: Summary of Non-Parametric Tests – Grouping – With Cascading

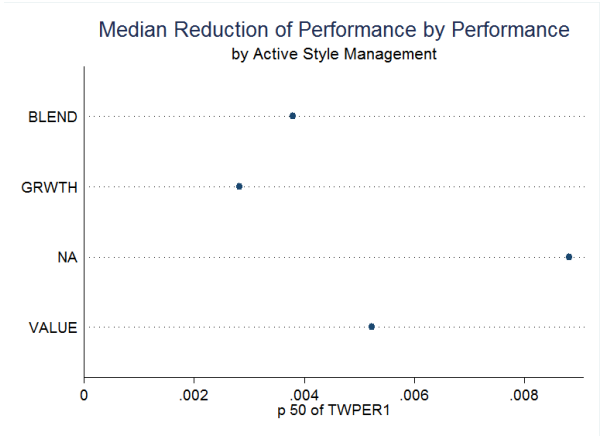
		C1TWPER1	C3TWTNA
CATGRP	chi-squared with ties	369.684 ***	118.268 ***
RR	chi-squared with ties	102.773 ***	150.245 ***
MGTS	chi-squared with ties	156.177 ***	26.236 ***
Notes: Kruskal Wallis Test for CATGRP, RR, MGST *** denotes p < 0.01%			

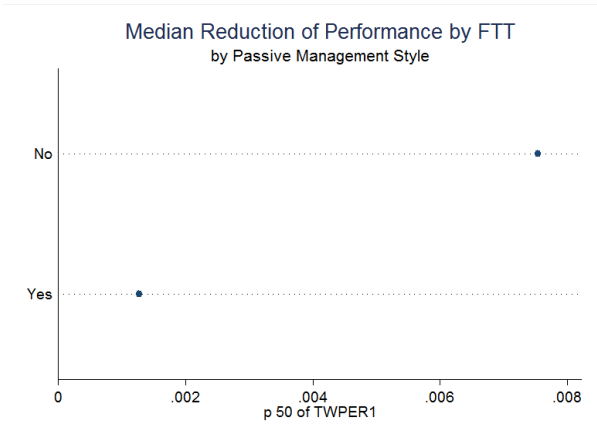
Graph 1: Median Reduction of Performance by FTT – TWPER1 excl. Cascading





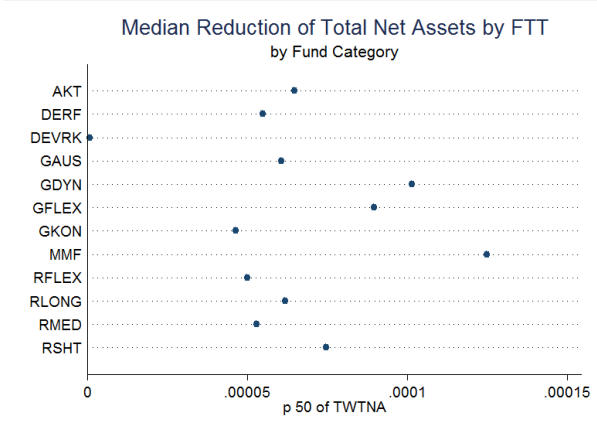


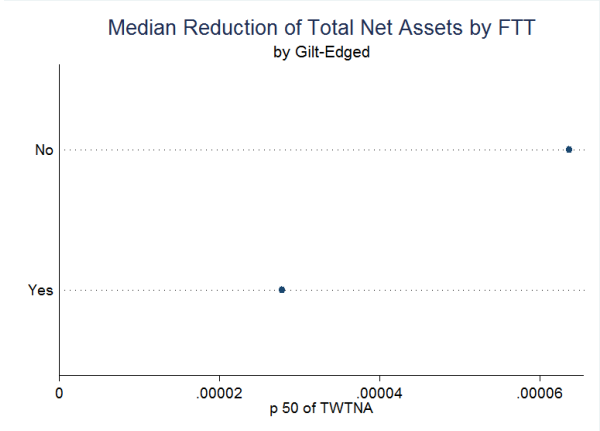


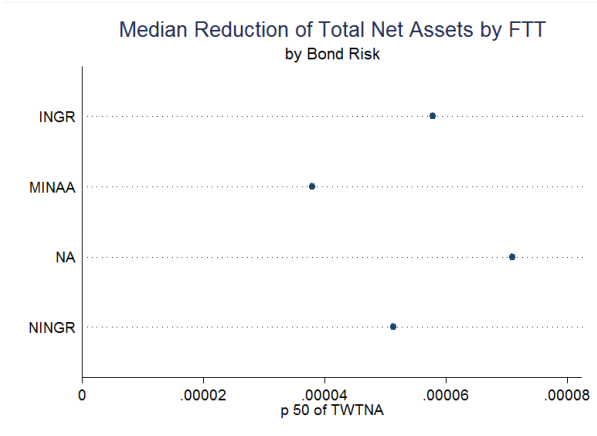


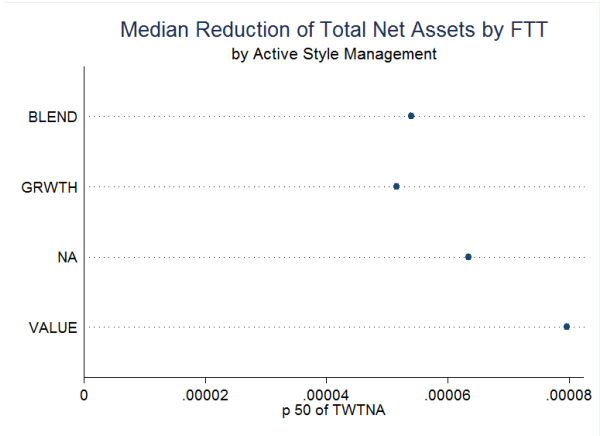
N=10,355

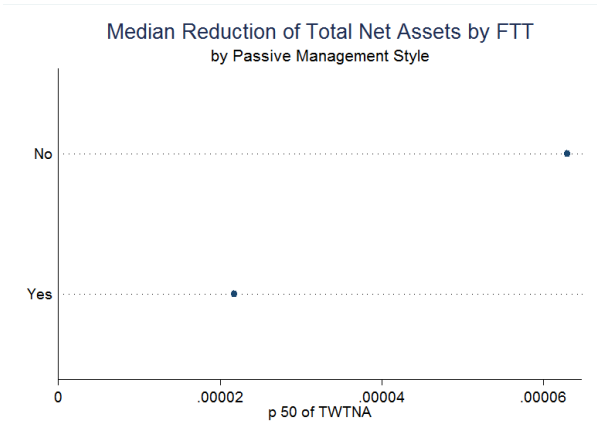
Graph 2: Median Reduction of TNA by FTT – TWTNA excl. Cascading





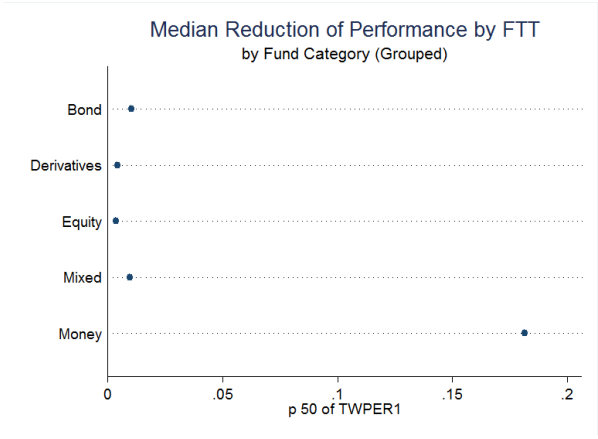


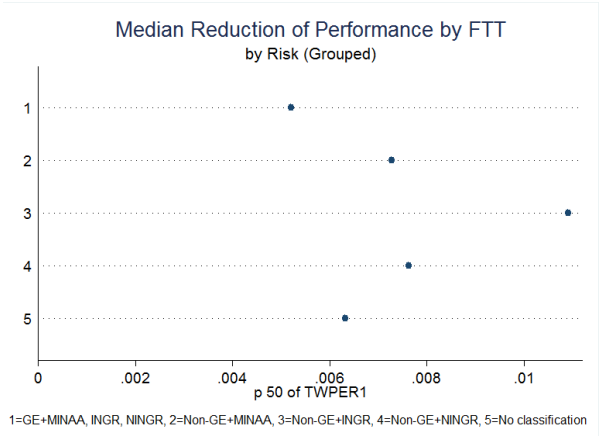


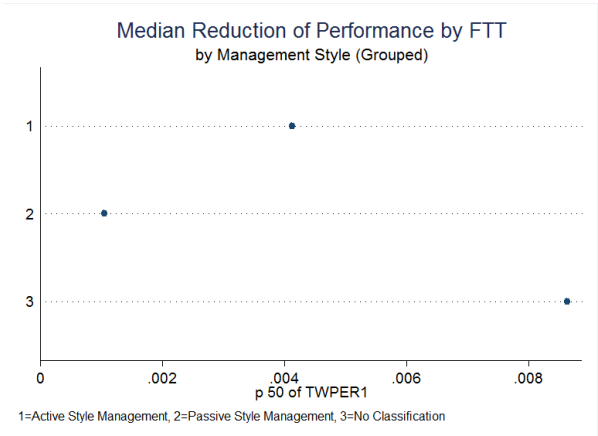


N=10,355

Graph 3: Grouped Categories – Median Reduction of Performance by FTT TWPER1 excl. Cascading

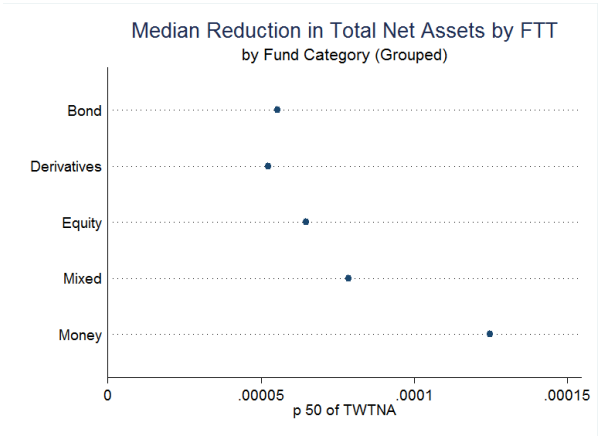


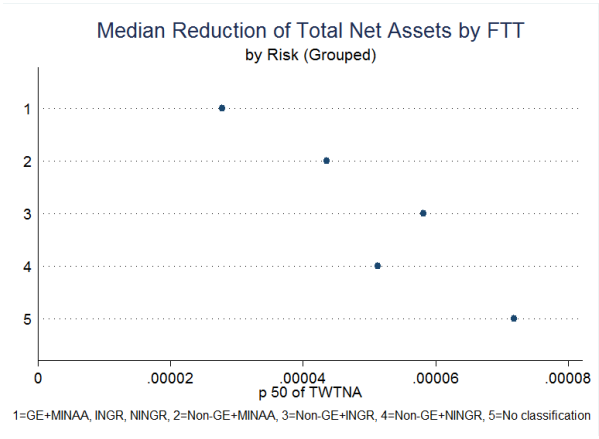


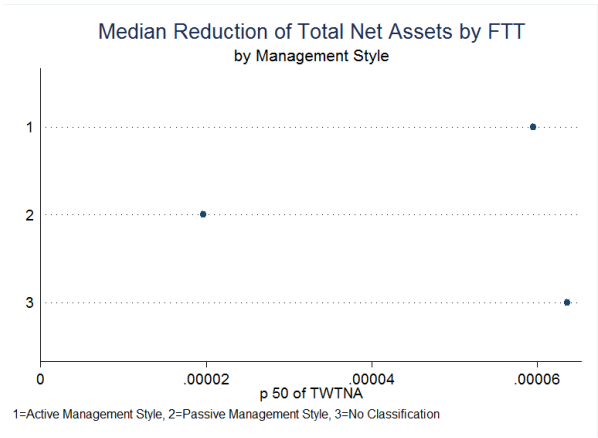


N=10,355
Note: Similar results are found for the worst-case scenario.

Graph 4: Grouped Categories – Median Reduction of TWTNA excl. Cascading

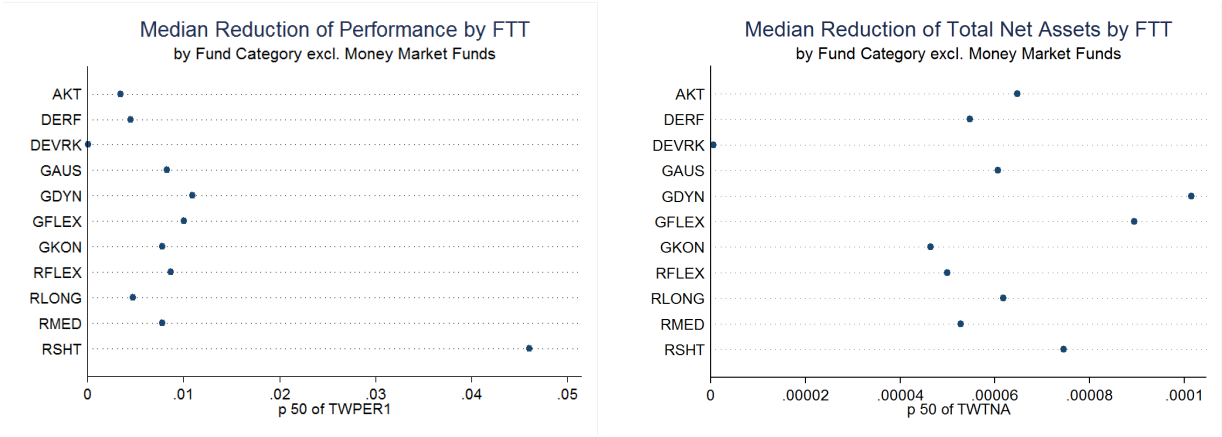






N=10,355
Note: Similar results are found for the worst-case scenario.

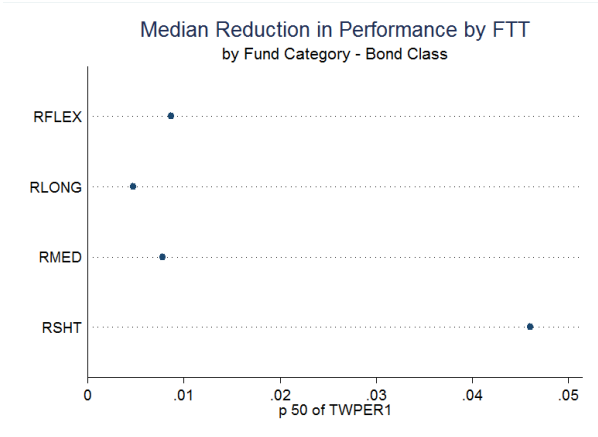
Graph 5: Grouped Categories – Fund Category – Median Reduction of TWPER1 and TWTNA excl. Money Market Funds and Cascading

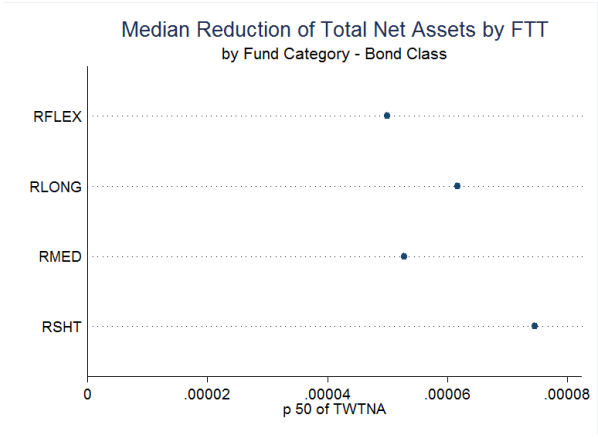


N=10,355

Note: Similar results are found for the worst-case scenario.

Graph 6: Grouped Categories – Fund Category – Median Reduction of TWPER1 and TWTNA excl. Bond Class and Cascading





N=10,355
Note: Similar results are found for the worst-case scenario.

References

AMADIA, A.A. & P.R. BERGIN (2008): *Understanding International Portfolio Diversification and Turnover Rates*, International Financial Markets, Institutions & Money, 18, 191-206.

AMIHUD, Y. & H., MENDELSON (1986): *Asset Pricing and Bid-Ask Spread*, Journal of Financial Economics, 17, 223-249.

ALTERNATIVE INVESTMENT MANAGEMENT ASSOCIATION, January 2012, *AIMA Research Note: Financial Transaction Tax, An Assessment of the European Commission's Proposed Financial Transaction Tax*, available at: http://www.aima.org/download.cfm/docid/0C29CD99-353F-403B-B9D4DB267A42838F.

BALTAGI, B.H., D. LI & Q. LI (2006): *Transaction Tax and Stock Market Behavior: Evidence from an Emerging Market*, Empirical Economics 31, 2, 393-408.

BECCHETTIA, L., M. FERRARIA & U. TRENTA (2014): *The Impact of the French Tobin Tax*, Journal of Financial Stability, 15, 127-148.

BOND, S., M. HAWKINS & A. KLEMM (2005): *Stamp Duty on Shares and Its Effect on Share Prices*, FinanzArchiv: Public Finance Analysis 61, 3, 275-297.

BLACK ROCK (2011): *Submission to the House of Lords*, 7 November 2011, available at: https://www2.blackrock.com/webcore/litService/search/getDocument.seam?source=LITLIST&contentId=1111152890&venue=pub_ind.

CARFI, D. & F. MUSOLINO (2014): *Speculative and Hedging Interaction Model in Oil and U.S. Dollar Markets with Financial Transaction Taxes*, Economic Modelling, 37, 306-319.

CINER, C. (2015): *Time Variation in Systematic Risk, Returns and Trading Volume: Evidence from Precious Metals Mining Stocks*, International Review of Financial Analysis, 2.

CLIFFORD CHANCE (2013): *The European Commission's Financial Transaction Tax Proposal: What It Means for Investors and Institutions in Europe and Worldwide*, Briefing Note, Clifford Chance, London.

COMMISSION DELEGATED REGULATION (EU) No. 231/2013 of 19 December 2012 supplementing Directive 2011/61/EU of the European Parliament and of the Council with regard to exemptions, general operating conditions, depositaries, leverage, transparency and supervision, II (Non-legislative acts).

COMMISSION PROPOSAL for a Council Directive implementing enhanced cooperation in the area of financial transaction tax, COM(2013) 71 final of 14 February 2013.

COMMISSION PROPOSAL for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, COM(2011) 594 final of 28 October 2011.

COMMISSION REGULATION (EU) No. 583/2010 of 1 July 2010 implementing Directive 2009/65/EC of the European Parliament and of the Council as regards key investor information and conditions to be met when providing key investor information or the prospectus in a durable medium other than paper or by means of a website.

COMMISSION STAFF WORKING PAPER, Executive Summary of the Impact Assessment Accompanying the document Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, SEC (2011) 1103 final, Brussels, 28 September 2011.

COMMISSION STAFF WORKING PAPER, Impact Assessment, accompanying the document Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, SEC(2011) 1102 final of 28 September 2011.

COMMISSION STAFF WORKING PAPER of 28 September 2011, SEC(2011) 1102 final, vol. 1, Impact Assessment Accompanying the document Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, COM(2011) 594 final, SEC(2011) 1103 final.

COMMISSION STAFF WORKING DOCUMENT, Impact Assessment accompanying the document Proposal for a Council Directive implementing enhanced cooperation in the area of financial transaction tax: analysis of policy options and impacts, SWD (2013) 28 final of 14 February 2013.

COMMITTEE OF EUROPEAN SECURITIES REGULATORS (2009): Annex to CESR's Technical Advice on the Level 2 Measures Related to the Format and Content of Key Information Document Disclosures for UCITS (Ref. CESR/09-949): Methodology for the Calculation of the Synthetic Risk and Reward Indicator, December, Ref. CESR/09-1026.

COMMITTEE OF EUROPEAN SECURITIES REGULATORS (2010): CESR's Guidelines on Risk Measurement and the Calculation of Global Exposure and Counterparty Risk for UCITS, 28 July, Ref.: CESR/10-788.

CRAWFORD, I., M. KEEN & S. SMITH (2010): *Value Added Tax and Excises*, in Mirrlees, J., S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles & J. Poterba (eds.), Dimensions of Tax Design: The Mirrlees Review, Oxford University Press, Oxford, United Kingdom.

DAVIS, M.H.A. & A.R. NORMAN (1990): *Portfolio Selection with Transaction Costs*, Mathematics of Operations Research, November 1990, 15, 4.

DAVIS, J, B. SMITH, M. WAGNER & R. O'KELLY (n.d.): *The Impact of the EU-11 Financial Transaction Tax on End-users*, Oliver Wyman, Marsh & McLennan Companies, available at: www.afme.eu/WorkArea/DownloadAsset.aspx?id=9930.

DEL GUERCIO, D. & P.A. TKAC (2002): *The Determinants of the Flow of Funds of Managed Portfolios: Mutual Funds vs. Pension Funds*, Journal of Financial & Quantitative Analysis, 37, 4, 523-557.

DIRECTIVE 2014/91/EU of the European Parliament and of the Council of 23 July 2014 amending Directive 2009/65/EC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) as regards depositary functions, remuneration policies and sanctions.

DIRECTIVE 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No. 1060/2009 and (EU) No. 1095/2010.

ENGLISCH, J., J. VELLA & A. YEVGENYEVA (2013): *The Financial Transaction Tax Proposal under the Enhanced Cooperation Procedure: Legal and Practical Considerations*, British Tax Review, 2, 111-260.

EUROPEAN COMMISSION SERVICES: Technical Fiche, *Pension Funds in the Context of the FTT Proposal*, available at: http://ec.europa.eu/taxation_customs/resources/documents/taxation/other_taxes/financial_sector/fact_sheet/pension-funds.pdf.

EUROPEAN COMMISSION, Technical Fiche, Relocation, Substitution and other Market Reactions, n.d., available at http://ec.europa.eu/taxation_customs/resources/documents/taxation/other_taxes/financial_sector/fact_sheet/relocation.pdf.

EUROPEAN FUND & ASSET MANAGEMENT ASSOCATION (2013): *Potential Impact of the New Version of the FTT on the UCITS Industry*, available at: http://www.efama.org/Publications/Public/130313_FTT_Impact_Analysis_2013.pdf

EUROSIF (2014): *Growing Sustainable and Responsible Investment (SRI) in the EU: An SRI Agenda for European Policy-makers*, Eurosif AISBL, September 2014, available at: http://www.eurosif.org.

FERREIRA, M.A., A. KESWANI, A.F. MIGUEL & S.B. RAMOS (2012): *The Flow-performance*

Relationship around the World, Journal of Banking & Finance, 36, 1759-1780.

FRENCH, K. (2008): *Presidential Address: The Cost of Active Investing*, The Journal of Finance, 63, 4, 1537-1573.

GRAUWE, P. de & M. GRIMALDI (2006): *Exchange Rate Puzzles: A Tale of Switching Attractors*, European Economic Review, 50, 1-33.

HABERMEIER, K. & A.A. KIRILENKO (2003): *Securities Transaction Taxes and Financial Markets*, IMF Staff Papers, 50, 165-180.

HUNTERA, D., E. KANDEL, S. KANDEL & R. WERMERS (2014): *Mutual Fund Performance Evaluation with Active Peer Benchmarks*, Journal of Financial Economics, 112, 1-29.

IBFD (2014): *European Tax Handbook*, 2014, Global Tax Series, IBFD.

INTERNATIONAL MONETARY FUND (2010): *Financial Sector Taxation, The IMF Report to the G-20 and Background Material*, S. Claessens, M. Keen & C. Pazarbasioglu (eds.), September 2010.

JOHNSON, H.G. (1973): *The International Monetary Crisis of 1971*, The Journal of Business, 46, 1, 11-23.

JOINT STATEMENT by Ministers of Member States Participating in Enhanced Cooperation in the Area of Financial Transaction Tax (Austria, Belgium, Estonia, France, Germany, Greece, Italy, Portugal, Slovakia and Spain), Brussels, 6 May 2014.

JORION, P. (1996): *Risk and Turnover in the Foreign Exchange Market*, in J.A. Frankel, G. Galli & A. Giovannini (eds.), The Microstructure of Foreign Exchange Markets, University of Chicago Press, 19-40.

KASCH, M. (2015): *Systematic Risk and Share Turnover*, University of Mannheim, Department of Finance, available at: http://ssrn.com/abstract=2584972.

KAVELAARS, P. (2012): *Bank Taxes in Forms and Sizes: EC Opts for FTT*, Intertax, 6/7, 40.

KEYNES, J.M. (1936): *The General Theory of Employment, Interest and Money*, London, MacMillan.

KUPIEC, P.H. (1996): *Noise Traders, Excess Volatility, and a Securities Transactions Tax*, Journal of Financial Services Research 10, 2, 115-129.

LENSBERG, T., K.R. SCHENK-HOPPE & D. LADLEY (2015): *Costs and Benefits of Financial Regulation: Short-selling Bans and Transaction Taxes*, Journal of Banking & Finance, 51, 103-118.

LONDON ECONOMICS (2013): *The Impact of a Financial Transaction Tax on Corporate and Sovereign Debt*, Report prepared for the International Regulatory Strategy Group, City of London. April 2013.

MATHESON, T. (2011): *Taxing Financial Transactions: Issues and Evidence*, IMF WP/11/54.

MENKHOFF, L. & M.P. TAYLOR (2007): *The Obstinate Passion of Foreign Exchange Professionals: Technical Analysis,* Journal of Economic Literature, 45, 4, 936-972.

MIRRLEES, J., S. ADAM, T. BESLEY, R. BLUNDELL, S. BOND, R. CHOTE, M. GAMMIE, P. JOHNSON, G. MYLES & J. POTERBA (2011): *Tax by Design: The Mirrlees Review*, Oxford University Press, Oxford UK.

OPEN LETTER ADDRESSED TO: Stuart Stoner Clerk of the European Union Sub Committee on Economic and Financial Affairs and International Trade, 7 November 2011, available at: https://www2.blackrock.com/webcore/litService/search/getDocument.seam?source=LITLIST&contentId=1111152890&venue=pub_ind.

OESTERREICHISCHE NATIONALBANK: Financial Institutions, available at: http://www.oenb.at/en/Statistics/Standardized-Tables/Financial-Institutions.html.

OXERA (2011): *What Would Be the Economic Impact of the Proposed Financial Transaction Tax on the EU? Review of the European Commission's Economic Impact Assessment*, available at: http://www.oxera.com/Latest-Thinking/Publications/Reports/2012/What-would-be-the-economic-impact-of-the-proposed.aspx.

OXFAM INTERNATIONAL (2013): *Oxfam Salutes European Parliament's Vote of Confidence for an Ambitious Financial Transaction Tax*, 3 July 2013, available at: http://www.oxfam.org/en/eu/pressroom/reactions/oxfam-salutes-european-parliaments-vote-confidence-ambitious-financial.

PELLIZZARI, P. & F. WESTERHOFF (2009): *Some Effects of Transaction Taxes under Different Microstructures*, Journal of Economic Behaviour & Organisation, 72, 3, 850-863.

POMERANETS, A. & D.G. WEAVER (2013): *Securities Transaction Taxes and Market Quality,* Bank of Canada Working Paper 2011-26, available at: http://ssrn.com/abstract=1980185.

ROWLAND, P.F. (1998): *Transaction Costs and International Portfolio Diversification*, Journal of International Economics, 49, 1, 145-170.

ROSEN, D. & D. SAUNDERS (2010): *Risk Factor Contributions in Portfolio Credit Risk Models*, Journal of Banking & Finance, 34, 2, 336-349.

SCHULMEISTER, S., M. SCHRATZENSTALLER & O. PICEK (2008): *A General Financial Transaction Tax: Motives, Revenues, Feasibility*, Austrian Institute of Economic Research.

SCHWERT, G.W. & P.J. SEGUIN (1993): *Securities Transaction Taxes: An Overview of Costs, Benefits and Unresolved Questions*, Financial Analysts Journal, 49, 5, 27-35.

STATISTICS AUSTRIA, *Public Finance 2014: Public Debt at 84.5% of GDP, Public Deficit at 2.4% of GDP*, press release 11.000-060/15 (online), available at: http://www.statistik.at/web_en/statistics/Economy/Public_finance_taxes/081336.html.

TAUCHEN, G.E. & M. PITTS (1983): *The Price Variability-Volume Relationship on Speculative Markets*, Econometrica, 51, 2, 485-505.

TOBIN, J. (1974): *The New Economics One Decade Older*, the Eliot Janeway lectures on historical economics in honour of Joseph Schumpeter, 1972, Princeton, N.J., United States.

TOBIN, J. (1978): *Proposal for International Monetary Reform*, Eastern Economic Journal, 4, 153-159.

TUDORAA, C. (2012): *Active Portfolio Management on the Romanian Stock Market*, Procedia: Social and Behavioral Sciences, 58, 543-551.

UMLAUF, S.R. (1993): *Transaction Taxes and the Behavior of the Swedish Stock Market*, Journal of Financial Economics 33, 2, 227-240.