THE INFLUENCE OF THE TRANSACTION TAX ON THE SELECTED ECONOMIC INDICATORS

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Abstract: The paper focuses on the effect of transaction taxes in the French financial market and the selected economic indicators. We would like to point out the importance of transaction taxes on the economy in the EU and to analyse the influence of this tax on the single European capital market. We assume that financial transaction tax (FTT) has a positive effect on economic growth and that the correlation between FTT and the hedging assets is statistically significant. We used a regression model where we analyse FTT, economic growth, market volume, price of index CAC40, total financial assets, financial derivatives, and debt instruments. Our results have shown the negative impact on market volume as well as on economic growth shortly after the adopting FTT in France.

Keywords: financial transaction tax, financial regulation, EU market, France.

1 Introduction

The tax system fulfils several important functions in the economy. Taxes are a source of public revenue, a source of risk reduction in the financial sector, and a source of additional funding in a case of a bank failure. Except from stabilizing function of taxes, they also serve as an instrument for risk prevention to correct market fragmentation. To prevent, or at least to mitigate the effects of future financial crises due to risky operations with financial instruments, it is important that a country (or group of countries) has an effective tax system. An effective and optimal tax system should regulate the volume of short-term, high-risky transaction activities in the financial sector. The literature currently discusses on appropriate form of financial services and banking regulation, on the optimal tax system of derivatives in speculative strategies, or on the impact of fiscal taxes and capital regulation on the stability of the financial system. Within the EU Member States, taxation is very actual issue in the context of understanding harmonization and integration process.

Because of different tax systems within the EU Member States, the research in taxation of financial instruments is becoming a challenge for finding optimal system for transparent capital market and competitive fiscal union. Therefore, our motivation is to evaluate the impact of financial transaction tax on capital market, and to find out how this tax influences the development of economic indicators, such as trading volume of financial assets, volatility, economic growth, or derivatives instruments.

There are several types of taxation of financial transactions and financial instruments in the world economies. It is a direct form of taxation (such as financial transaction tax, FTT), and indirect form of taxation (such as value-added tax or financial activity tax, FAT). In the United Kingdom, the Unites States, Switzerland, China or in most Asian countries, there is applicable a stamp duty which includes all types of shares and securities as well as electronic financial transactions. Another type of transaction taxation is security transaction tax (STT) on purchases and sales of securities, which is applicable in South Korea, South Africa, or Taiwan. In Belgium or Poland, there is a transfer tax that taxes on transfers of shares ownership. The indirect tax that is promoted by the International Monetary fund at the international level, represents financial activity tax (FAT), which taxes on total profits, dividends and remunerations that are paid by financial institutions. The main argument for introducing FAT is that the profits bring value added, but due to the VAT exemption of financial services, these revenues are not taxed. Finally, with a structure remarkably like the STT, it is a financial transaction tax that has provoked the most discussion among professionals and at the EU level in recent times. FTT is applied in various forms in countries such as France, Italy, Finland, or Brazil. After the financial crisis in 2008/09, there are stronger opinions on the introduction of FTT within EU countries, as a fiscal policy instrument to prevent the crisis and provide an additional budgetary source to cover debt costs in the financial sector or to protect markets from speculative transactions.

Since 2012, the debate on the European financial transaction tax has been more discussed between the European Commission and European Ministers of Finance, especially in Germany. In the context of the individual Member States, FTT as a direct form of taxation represents an economic policy instrument for regulating and stabilizing the common capital market. It aims to eliminate risky speculative activities on the market, to prevent transactions that could lead to financial fraud and to provide additional sources to the European budget.

In this paper, we will focus on the analysis of the effectiveness of FTT in France. The aim is to determine the impact of this tax on the French market in comparison with the period before and after the adoption of the tax. The contribution is divided into general introduction and three chapters. The first chapter presents the theoretical background and studies which deal with taxation on financial markets from different points of view. In the second chapter, there is described the methodology, our assumed hypothesis and data used. In the third analytical chapter, we interpret our results and compare them with similar studies. To analyse the impact of FTT, we used regression analysis. In conclusion, we summarize our results and recommend further analysis in this field for future research

2 Theoretical background

The ideas of the tax burden of financial instruments are not new and began to emerge in the late 19th and early 20th centuries, especially in the United Kingdom and the Nordic countries of Europe. Transaction taxes experienced more significant improvement during the Great Depression, promoted by J. M. Keynes. Later, during the 1970s, at a time of high price volatility and asset price fluctuations, J. Tobin came up with the idea of proposing transaction tax on assets to stabilize markets and to ensure stable exchange rates. In those times, the economic policy aimed to find a balance model for the financial assets' prices, increase market efficiency and limit speculative transactions.

The recent global financial crisis in 2008/09 was evidence how the financial sector can significantly affect the functioning of the economy. In literature, there can be found some studies analysing the financial and debt crisis and discussing about the use of fiscal taxes as an instrument for regulating market activities (Colliard & Hoffmann, 2017). Also, we can find tax studies focus on maintaining the effective corporate taxation (Andrejovska & Pulikova, 2019; Andrejovska et al., 2015), financial stability or small and medium businesses (Andries et al., 2017; Mura et al., 2017), supporting the economic growth (Raisová, 2015), evaluating corporate taxation and its impact on the competitiveness within the European countries (Mihokova, et al., 2016) increasing the efficiency of capital market (Bodnar et al., 2003; Pastor et al., 2017), or regulating speculative tax strategies with derivatives (Batram, 2019).

Generally, recent theoretical and empirical studies focus on two main areas in FTT analysis: (1) on the effect of the tax on market volatility, and (2) on the effect of the tax on trading volume. Pomeranets & Weaver (2011) claimed the general hypothesis that the correlation between FTT and market volume is statistically significant and an increase in tax would lead to an increase in volatility of prices of some financial assets. Baltagi et al. (2006) emphasized that the introduction of FTT can lead to speculative transfer from taxed to non-taxed transactions, or non-taxed foreign financial markets. Colliard & Hoffmann (2017) and Chou & Wang (2006) determined the impact of FTT on market liquidity and price volatility. Hanke et al. (2010) found

out that if policymakers provide additional liquidity on markets shortly after the introduction of FTT, then price volatility will decrease. McCulloch & Pacillo (2011) states that transaction tax could be a source for additional budgetary revenues, and it cannot lead to tax distortions. Li et al. (2013) found out that security transaction tax contributes to stabilize markets by reducing market volatility but has negative effects on market efficiency.

Also, there are some studies supporting the FTT, as well as studies that criticize its efficiency. Baltagi et al. (2006), Rühl & Stein (2014) and Davila (2019) believe that this tax will ensure financial stability, reduce short-term speculative strategies, strengthen capital market efficiency, increase market transparency in line with the real economy and reduce fluctuations of the financial asset price. These studies provide evidence that FTT represents an instrument for preventing market fragmentation. Kastner (2018) focuses on the advocacy within EUfinancial industry at different stages of the policy debate and describes changes after FTT introduction on regulatory environment. However, opposing arguments (e.g. Dell' Era, 2018) provide evidence that applying FTT with different definitions of tax bases and tax rates make it more likely to take aggressive strategies in optimizing accounting profits. In EU countries, opponents argue that different tax rates in the Member States encourage speculative capital transfers and increase the risk of financial frauds. Consequently, FTT is a *"double-edged sword"* which can lead to a weakening of the financial position and increase market uncertainty.

Within EU countries, the topic of a financial transaction tax is very actual in terms of a more detailed understanding of the effect of the tax on harmonization and the integration process. The studies analyse FTT in those Member States that have already introduced it in their national economies and examine the impact on the economy and economic entities. Hvozdyk & Rustanov (2016) researched how FTT affects the volatility of the Italian capital market. Using statistical tests, they have shown that FTT has a positive effect on the cost of capital, but no effect on market liquidity. It may mean that the performance of the capital market depends more on market liquidity of financial institutions. Schulmeister (2008) emphasizes that FTT reduces asset price volatility and that total tax revenues in the European budget would reach 1.6% of GDP if the FTT rate were at the level of 0.05%. Solilová & Nerudová (2015) research the possible effect of FTT in EU27 and EU11 and find negative impact on tax revenues. Authors recommend that FTT is undesirable to adopt at fragile economic period and recession in Europe.

FTT in France (FFTT) after its adoption has been analysed in several studies, where most authors dealt with tax in relation to total tax revenues, market liquidity, trading volume and total assets. Becchetti et al. (2014) analysed non-taxed securities with lower market capitalization than EUR 1 billion. Their findings did not confirm any significant effect of the tax on market liquidity. Colliard & Hoffmann (2017) evaluated the French FTT before and after 2011 (i.e. after the introduction of the tax in the country) and concluded that there was a slight positive relationship between transaction taxes and economic growth. They also found out that after the introduction of FTT, the volume of shares decreased by 10%. This can be explained by a decrease in market activity, an increase in possible arbitrage trades and an increase in the spread between the purchase and sale price. Griffin & Persaud (2012) came to the opposite conclusion, explaining the negative relationship between FTT and economic growth with different periods of holding assets. Campbell et al. (2011) found by regression analysis that FTT has a statistically significant effect on expected profits and market performance. Cappelletti et al. (2017) explained the effect of FTT on market volatility in the French and Italian markets based on difference-in-difference analysis (DID). Becchetti et al. (2014) also based on DID, parametric and non-parametric tests found a significant decrease in market volume after the introduction of the French tax compared to non-taxable shares. Eichfelder & Lau (2017) examined the monthly volatility of the French stock index CAC40 and found that if most authors analyse intraday price volatility in their research, it is questionable whether short-term liquidity is affected by the transaction tax because the French proposal do not tax net intraday transactions.

The French FTT model is mentioned in the last proposal of a European financial transaction tax by the European Commission from 2019. The conditions for the French transaction tax are as follows: (Amafi, 2019)

- the tax is applied to any purchase of equity securities issued by a company listed on a French stock exchange Euronext with a market capitalization of more than EUR 1 billion (the reference date is December 1st of previous tax period).
- the tax rate is at the level of 0.2% for trading transactions with shares, and 0.01% for highly frequency assets and credit default swaps.

In summary, we can state that the adoption of FTT has both benefits as well as weaknesses for the economy. The assessment of the tax is described in the following table (KPMG, 2019).

Tab. 1: Benefits and drawbacks of FTT

Strengths	**Weaknesses**
- reduction in the volume of short-term speculative transactions - an additional source of public revenues - increasing the transparency of the capital market - reduction of fluctuations in financial assets	- only negligible effect on economic growth - difficult to determine tax base - an increase of speculative transactions from short-term point of view - total tax revenues are dependable of real transaction volume
Opportunities	**Threats**
- protection against financial market fragmentation - improving the efficiency of capital market - compensation of public revenues due to the exemption of financial services from VAT - limitation of speculative investment activities	- higher transaction costs and limited trading with derivatives instruments - higher risk of aggressive tax strategies - excessive tax burden on the financial sector - shifting the tax burden to final consumers

Source: authors' proceeding based on literature review

Except for the impact of transaction tax on the financial market, there is also an analysis of the relationship between tax and banking regulation. However, it is less often discussed in the literature. Banks, as market makers, are important economic entities whose activities are significantly affected by regulatory measures. Banking regulation requires minimum capital adequacy requirements to provide sufficient protection against the financial risks and market failures. Regulatory measures are primarily aimed at improving market discipline, increasing the transparency of financial intermediation, and protecting consumer interests. Based on US data, Schandlbauer (2017) empirically proves the role of taxes in capital structure and provides evidence that better-capitalized commercial banks increase long-term borrowing debt, and therefore they use more efficient benefits of the tax shield. Conversely, weaker capitalized banks with lower ability to provide loans have higher capital financing costs and thus higher tax liability. Andries et al. (2017) analyse in detail the function of corporate tax as an instrument for achieving and ensuring the stability of the financial sector. They evaluate how the tax system affects the financial statements of banks and confirm the hypothesis that taxes harm the financial statements in terms of stability and transparency. Increasing debt financing and the possibility of debt deduction promotes excessive indebtedness, which does not contribute to the bank's stability. Andries & Căpraru (2014) investigates the tax competition within the banking system in EU

countries and found that in the new Members States was competition significantly higher between 2001 and 2006 than in the old Member States. Studies such as Bartram (2017) or Giraldo-Prieto et al. (2017) evaluate the influence of transaction taxes on risk management and found statistically significant effect on hedging derivatives.

As the theoretical literature proves, the financial transaction tax is an important indicator that affects the economic processes in the country as well as in the internal environment of the companies. Therefore, it is in our interest to analyse the impact of this tax shortly after the introduction on the financial market and to draw conclusions for the Single European market.

3 Research and methodology

Our main goal is to explain the impact of the introduction of FTT on the European market and its impact on the behaviour of companies. To research the impact of FTT, we choose the method of regression analysis, expressed in the following form:

$$y\,(FTT) = \beta 0 + \beta 1 \,.\, GDP + \beta 2 \,.\, Price + \beta 3.\, Volume + \beta 4 \,.\, DFA + \beta 5 \,.\, Debt\ short\text{-}term\ assets + \beta 6.\ Debt\ long\text{-}term\ assets \quad (1)$$

where: Y – financial transaction tax (measured as a proportion of equity securities to total financial assets)
GDP (X1) – real economic growth, expressed in %
Price (X2) – development of French stock index CAC40 (log value)
Volume (X3) – market volume of CAC40 (log value)
DFA (X4) – derivative financial assets (log value)
Debt assets (X5, X6) – short-term and long-term debt financial assets held for trading (log value).

The relation to express FTT can be described as follows:

$$Tax_{it} = FTT_{it} / TT_{it} \quad (2)$$

where: TT_{it} – the volume of all securities on the French market; FTT_{it} –the volume of relevant taxed transaction with equity securities on the French market in the given year.

To achieve our goal, we have set two hypotheses in the following form:

H1: *The introduction of FTT in France supports the economic growth in the country and, and in the long run reduces the market volume of shares.*
H2: *There is a statistically significant relationship between FTT and hedging assets.*

In the first hypothesis, we assume that a transaction tax, as a fiscal instrument of economic policy, stimulates economic growth and ensures financial stability after a period of the debt crisis. The introduction of the tax limits high-risk short-term financial transactions, which cause market fragmentation, and thus limiting fluctuations in the prices of financial assets. In the long run, the tax harms the trading volumes of taxable instruments on the market.

In the second hypothesis, we assume that FTT has a significant effect on trading and hedging derivatives. As trading instruments are mainly used for short-term market activities, we assume that the tax will harm the volume of these instruments and reduce excess liquidity in the short term, which may distort the price of hedging assets.

We retrieved the data from the French stock exchange Euronext (i.e. data for the development of index CAC 40), from ECB Statistical Warehouse and Bank for International Settlement (i.e. data for derivative instruments) and form Eurostat (i.e. data for economic growth).

4 Results and discussion

Based on the results, GDP growth would fall by 0.1056% (if the other variables are equal), while the results are statistically insignificant. Our assumption of stimulating economic growth through FTT has thus not been confirmed. Results also showed a slight negative effect of market price and market volume of the index CAC40. The weaker strength of the test (79.61%) and the statistical insignificance (on the significance level $\alpha = 0.05$) for the volume of trading asset may indicate the fact that the FTT reform affects the volume of an asset only in the short-term period, i.e. shortly after the introduction of the tax, while in the long period the tax has negligible effect. This may also be explained by the fact that, under the French measure, intraday securities transactions are not taxed. For debt assets, results showed that FTT harms short-term transactions (-0.18), but in the long run, the tax effect on debt instruments is positive (0.23). For bond issuance, this may mean a decrease in the rate of return on the bond (especially in the case of government bonds) and an increase in the cost of debt.

Tab. 2: An impact of FTT: The results of regression analysis

	df	*SS*	*MS*	*F*	*Significance F*	
Regression	6	0.00153	0.00026	8.1562	0.01797	
Residual	5	0.00016	0.00003			
Total	11	0.00169				
	Coeff.	***St. Error***	***t-Stat***	***P-value***	***Lower 95 %***	***Upper 95 %***
Intercept	1.1979	1.0976	1.0914	0.32	-1.6235	4.0192
X1	-0.1056	0.1569	-0.6727	0.53	-0.5091	0.2979
X2	-0.0589	0.0456	-1.2896	0.25	-0.1761	0.0584
X3	-0.0221	0.0335	-0.6583	0.54	-0.1083	0.0641
X4	-0.0827	0.0277	-2.9884	0.03	-0.1538	-0.0115
X5	-0.1797	0.0491	-3.6572	0.01	-0.3060	-0.0534
X6	0.2253	0.1024	2.2009	0.08	-0.0378	0.4885

Source: authors' calculation

Our results are in line with the conclusion achieved by Griffith-Jones & Persaud (2012), who emphasized that the negative correlation between FTT and GDP is due to different periods of holding financial assets. Also, several other studies explain rather a negative effect on economic growth (such as Campbell et al., 2011; Cappelletti et al., 2017; or Schandlbauer, 2017). However, Colliard & Hoffmann (2017) came to the opposite conclusion and based on regression they proved the positive correlation of the tax and GDP in France. In the original proposal of FTT at the level of the euro area, the European Commission predicts that an increase in the tax rate by 0.10% will lead to a long-term decline in GDP of 1.76%.

Eichfelder & Lau (2016) also analyse the French tax and conclude that trading of intraday activities was more sensitive shortly after its introduction in May 2012, but they found no significant effect on trading volume over the longer period. Also, they examined the effect on volatility and stated that asset prices are more volatile in intraday trading, and in the long run, the tax has a stabilizing effect and eliminates speculative transactions. The effect on volatility was based on our results negative. It can be explained that the tax rate is low (0.02% for equity assets) and the tax base of the French FTT is not very broad and includes only shares of companies with a market capitalization of more than EUR 1 billion. Becchetti et al. (2014) confirm a statistically significant effect on the reduction of short-term daily liquidity and daily trading, as well as a reduction in the volume of trading for shares of small-cap companies. The negative effect on the volume of asset trading is also known from several critical studies, which are against the introduction of a tax on financial markets. For example, Yongyang & Zheng (2010), based on an analysis of the Chinese financial market, confirmed that a 22-percentage point reduction in the FTT tax rate would lead to a 28% increase in market volume. Any changes in the tax rate will have a significant effect on market efficiency and asset price volatility.

In the second hypothesis, we assumed a relationship between FTT and hedging derivatives. Our goal was to point out that

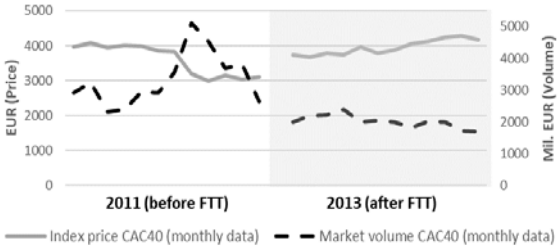
companies can achieve a significant competitive advantage when they use a risk management strategy. Companies that use hedging derivatives and hedge accounting have better market growth opportunities, lower transaction costs and less volatility in the accounting profit or loss. Hedging strategies represent an opportunity to reduce transaction costs and indebtedness. Our analysis showed that a 1% increase in the tax rate would lead to a decrease in derivative assets by 0.083%. It may indicate that hedging operations use predominantly daily and short-term trading. If derivative instruments were taxed, their trading volume would be reduced and the stability of cash flows and the protection of the accounting profit against market risks would be jeopardized. This area does not provide enough evidence in the literature. For example, Kalaitzake (2017), Davis et al. (2013) and Oxera (2011) examine the effect of FTT on the interest rate and currency risk in the financial sector and on the real economy. They state that a transaction tax increases transaction costs and limits the ability to effectively manage risks in the investment portfolio.

Debt financing can become more expensive for companies, which can lead to excessive speculative transfers of investments from debt to equity instruments (e.g. through convertible instruments), or to transfers of financial sources between the Member States that do not have these instruments taxed. The potential risk of tax avoidance on debt instruments may be that companies will use more financing through intermediaries and in the form of bank loans that are exempted from transaction tax. (PwC, 2013)

However, the tax base of the French FTT does not consider derivatives and operations with derivative instruments. In our opinion, in the case of taxation of financial transactions, derivatives should not be subject to this tax, as they improve the development of financial markets and contribute to the creation of liquidity. If derivative transactions were subject to FTT, the financial stability of companies' cash flows would be jeopardized on the one hand, and the tax would represent a risk of increasing transaction costs and restricting trading in derivative instruments on the other hand. Schäfer (2015) states that exemption of derivatives encourages traders to circumvent the tax through instrument arbitrage. Therefore, the FTT model including derivatives seems to be unsuitable for achieving the main objectives of the FTT.

Based on our analysis (Fig. 1), the real effect of FTT has increased the value of price and reduced market volume. Also, before FTT became effective, there was a higher fluctuation in the development of the French index, while after the tax introduction was the situation on the financial market stabilized. In comparison with studies, Colliard & Hoffmann (2017) found that after FTT, there was a decrease in trading activities with financial assets by 10%, affecting an overall drop in trading activities. Becchetti et al. (2014) focus on the impact of tax introduction on liquidity, intraday volatility, and volumes of stocks. They also state that FTT significantly reduces market volume comparing with non-taxed shares.

Figure 1: The real effect of FTT on trading volume and price of the French index CAC40 (a comparison of 2011 and 2013)

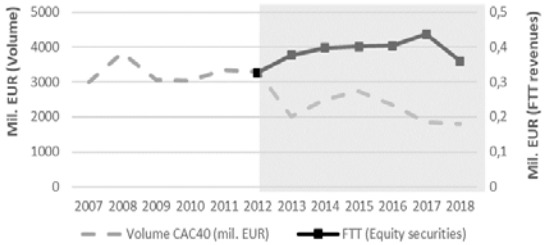


Source: authors' calculation

As FTT is associated with a market volume of financial assets, we assumed that a decrease in volume will reduce tax revenues in the state budget (Fig. 2). However, after 2013 tax revenues rose even though a market volume reduction. We must emphasize that we compared the whole index, not only shares with a market capitalization above EUR 1 billion as the French measure required. To conclude, FTT can improve the stability of financial markets after the crisis and prevent against market fragmentation, but this relationship is necessary to examine in more detail.

Schäfer (2015) estimates the tax revenues for EU countries and based on results from France, Italy, and Germany states that FTT with a broad tax base can provide substantial revenues. The broad tax base can achieve considerable tax revenues even if the tax rates of FTT are lowered. This study also points out that small countries may lose significant amount of revenues because FTT is associated with the taxation of securities issued in residential country.

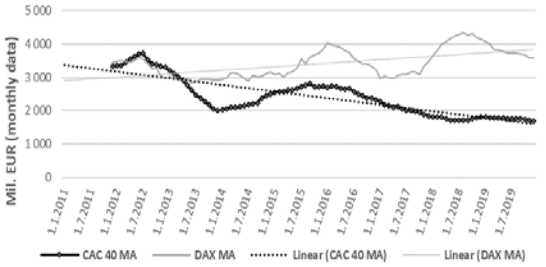
Figure 2: The relationship between FTT revenues and volume of CAC40 (2007-2018)



Source: authors' calculation

To show the real impact of FTT, we compare the French stock market with the German stock market, and we wanted to verify the effect of tax on taxed and non-taxed markets. The results showed (Fig. 3) that the FTT can influence market volume negatively. The trend of development of the French market is declining, while the trend of the German market without taxation is rising in the long-term horizon. So, financial transaction tax can lead to limitation of trading on the financial markets, but it is necessary to consider also other indicators, such as transaction costs, price efficiency, or market liquidity.

Figure 3: Volume in French market (CAC40) and German market (DAX) (moving average, mil. EUR; 2011-2019)



Source: authors' calculation

Based on regression analysis and empirical studies, we can summarize that the issue of FTT in the context of financial markets is important to evaluate for the following reasons:

a) to develop risk management strategies and the ability of companies to hedge the stability of cash flows or fair value of financial assets, as well as to contribute to the overall stability of the financial sector.
b) to identify the impact of the tax on debt financing, bond yields and transaction costs in the context of corporate indebtedness.
c) to identify and understand the behaviour of companies in the market and the influence of market makers (e.g. financial institutions) on the microstructure of the capital and debt markets.

5 Conclusion

Our assumption why the FTT should be introduced at the level of EU was that it promotes economic growth and eliminates short-term speculative market activity that can cause instability in the economy. According to our results of the regression analysis, the positive relationship between FTT and economic growth was not confirmed, and the tax has only a negligible negative trend. However, taxing only equity instruments would increase the volatility of the stock index price in the short-term period and reduce the volume of market activities in the long-term period. Should FTT be introduced in the euro area, we consider modifying the original proposal from 2013, which included all transaction transactions on the market in the tax base, i.e. both equity, debt, and derivative instruments. In the proposal from 2019, the FTT only taxes transfers with shares, what is a better alternative. To maintain the competitive advantage of stock companies, it is more advantageous to keep derivative financial transactions untaxed, mainly due to the potential decrease in trading activities, as they are main instruments in the risk management strategy.

An opportunity for further research in the field of FTT is to analyse in more detail the economic impact of this tax, as current empirical studies provide conflicting conclusions or analyse the economic stability and FTT to a small context. The challenge is to identify the effect of the tax on the effectiveness of risk management, which can help a company achieve a significant competitive advantage. In the context of taxation of the banking sector and the effect on economic output, it is welcome to compare fiscal taxation of the financial and non-financial economic entities, or to examine the relationship between FTT and bank profitability, gross fixed capital formation or individual types of financial assets.

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