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A General Financial Transactions Tax. Motives, Effects and Implementation According to the Proposal of the European Commission

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WORKING PAPERS

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Stephan Schulmeister

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The paper summarises at first the main arguments in favour and against a FTT and provides empirical evidence about the movements of the most important asset prices. It is shown that their long swings result from the accumulation of extremely short-term price runs over time. Therefore a (very) small FTT – between 0.1 and 0.01 percent – would mitigate price volatility not only over the short run but also over the long run. The subsequent section discusses the most important implementation issues if only a group of 11 EU member countries introduces this tax (without the UK). If London subsidiaries of banks established in one of the FTT countries are treated as part of their parent company, overall FTT revenues of the 11 FTT countries are estimated at € 65.8 billion, if London subsidiaries are treated as British financial institutions, tax revenues would amount to only € 28.3 billion.

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A General Financial Transactions Tax: Motives, Effects and Implementation according to the Proposal of the European Commission

Paper presented at the conference "Issues and Challenges Concerning the Introduction of a Financial Transaction Tax in the European Union" at the University Complutense de Madrid on February 17, 2014

Abstract

The paper summarizes at first the main arguments in favour and against a FTT and provides empirical evidence about the movements of the most important asset prices. It is shown that their long swings result from the accumulation of extremely short-term price runs over time. Therefore a (very) small FTT - between 0.1% and 0.01% - would mitigate price volatility not only over the short run but also over the long run. The subsequent section discusses the most important implementation issues if only a group of 11 EU member states introduces this tax (without the United Kingdom). If London subsidiaries of banks established in one of the FTT countries are treated as part of their parent company, overall FTT revenues of the 11 FTTCs are estimated at 65.8 bn. €, if London subsidiaries are treated as British financial institutions, tax revenues would amount to only 28.3 bn. €.

JEL: F31, G12, G13, G14, H25

Keywords: Boom and bust of asset prices, speculation, financial transaction tax.

Stephan Schulmeister

A General Financial Transactions Tax: Motives, Effects and Implementation according to the Proposal of the European Commission

1. Introduction: Concept of a general financial transactions tax

Over the past 30 years, financial innovations, in particular derivative instruments of all kinds, have contributed to a spectacular rise in turnover in all asset markets. At the same time, exchange rates, stock prices, and commodity prices have undergone wide swings.

The growing instability of financial markets and the related crises in the 1990s re-ignited the debate over the pros and cons of a currency transaction tax (*Haq – Kaul – Grunberg,* 1996; *Spahn*, 2002; *Jetin – Denys*, 2005).

The strong acceleration of trading activities in the 2000s and the related booms of stock and commodity prices between 2003 and 2008 (which laid the ground for the great asset devaluation leading into the great recession) motivated the Austrian Institute of Economic Research, to consider the pros and cons of a *general* and *uniform* financial transactions tax (*Schulmeister – Schratzenstaller – Picek*, 2008). Such a tax would be imposed on transactions of all kinds of financial assets, and, hence, would not be restricted to specific markets as proposed by *Keynes* (1936) for the stock market, *Tobin* (1978) for the foreign exchange market or securities taxes implemented in the past (e. g., stamp duties) [1]).

A general financial transactions tax (FTT) tracks two main targets: First, mitigating the fluctuations of the most important asset prices like stock prices, exchange rates, and commodity prices, and second, providing substantial revenues for governments.

The essential features of a general FTT are as follows:

- The FTT is levied on all transactions involving buying/selling of spot and derivative assets. These instruments are traded either on organized exchanges or over the counter (OTC).
- The tax base is the value of the underlying asset; in the case of derivatives their notional value (e. g., the value of a futures contract at the current futures price, the notional principle of a swap, the spot value of the underlying asset in the case of options).

1 The WIFO study builds upon previous research on special transactions taxes as summarized there. After the outbreak of the financial crisis the debate over the usefulness of a general FTT intensified. A summary of this debate can be found in *Claessens – Keen – Pazarbasioglu* (2010*), European Commission* (2011), *Schulmeister* (2011).

- The tax rate should be low so that only very "fast" (= speculative) trading with high leverage ratios will become more costly due to the FTT (i. e., the tax rate should lie between 0.01% and 0.1%).
- The FTT does not tax "real-world-transactions" like payments related to the goods and labour markets, to initial public offerings of stocks and bonds as well as foreign exchange transactions which stem from international trade or direct investment.

2. The debate over the usefulness of financial transactions taxes

The proponents of financial transaction taxes base their position on the various assertions about trading and price dynamics in asset markets and the effects of a transaction tax (*Keynes,* 1936; *Tobin*, 1978; *Stiglitz,* 1989; *Summers – Summers,* 1989; *Eichengreen – Tobin – Wyplosz,* 1995; *Arestis – Sawyer,* 1998; *Spahn,* 2002; *Pollin – Baker – Schaberg,* 2003; *Jetin – Denys*, 2005; *Baker,* 2008; for a more detailed summary of pro-FTT-arguments see *Schulmeister*, 2011). These "pro-FTT-propositions" (PP) can be summarized as follows:

- PP1: There is excessive trading activity (= liquidity) in modern asset markets due to the predominance of short-term speculation.
- PP2: The most pressing problem is not so much the volatility of asset prices over the short run but over the long run. This is so because short-term speculation produces long swings in asset prices and, hence, persistent deviations from their fundamental equilibria.
- PP3: The overshooting of exchange rates, but also of stock prices, interest rates and commodities prices fosters the "predominance of speculation over enterprise" (*Keynes*, 1936) and thereby dampens economic growth and employment.
- PP4: A uniform tax per transaction increases the costs of speculative trades the more, the shorter their time horizon is. Hence, a transaction tax would have a stabilizing effect on asset prices and would thereby improve the overall macroeconomic performance.
- PP5: A FTT would compensate the distortion effect caused by the exemption of financial services from the value-added-tax.
- PP6: A transaction tax would provide governments and/or supranational organizations with considerable revenues which could/should be used for fiscal consolidation and/or the achievement of policy goals, particularly on the supranational level.

The critics of an FTT base their position on a fundamentally different perception of trading and price dynamics in financial markets that is (e.g., *ECB,* 2004; *Habermeier – Kirilenko*, 2003; *Grahl – Lysandrou*, 2003; *IMF*, 2010; *EC,* 2010A and 2010B; a detailed summary and evaluation of the arguments against an FTT as put forward in the recent debate by the IMF and the EC are provided in *Schulmeister*, 2011). The counter-FTT-propositions (CP) can be summarized as follows:

- CP1: The high transaction volumes in modern financial markets reflect the liquidity necessary for the price discovery process and, hence, for facilitating and smoothing the movements of asset prices towards their fundamental equilibria.
- CP2: A great deal of short-term transactions is related to hedging and, hence, to the distribution of risk.
- CP3: Speculation is an indispensable component of both, the price discovery process as well as the distribution of risks. As part of the former, speculation is essentially stabilizing, i.e., it moves asset prices smoothly and quickly to their equilibria.
- CP4: Any increase in transaction costs, e.g. due to an FTT, will cause liquidity to decline which in turn will increase the short-term volatility of asset prices.
- CP5: An endogenous overshooting caused by excessive speculation does not exist. Any deviation of asset prices from their fundamental equilibrium is due to exogenous shocks.
- CP6: Transaction taxes are hard to implement, in particular taxes on international transactions. In addition, actors will find ways to circumvent the tax.

The pros and cons with respect to the usefulness of an FTT as summarized above are derived from two fundamentally different perceptions of the behaviour of market participants, price dynamics, and market efficiency.

3. "Fundamentalist hypothesis" and "bull-bear-hypothesis"

According to mainstream economic theory, asset prices are determined by the respective equilibrium conditions, i.e., by the so-called market fundamentals. The main assumptions of the "fundamentalist hypothesis" can be summarized as follows (see also figure 1):

- The theoretical benchmark model is an ideal, frictionless market where all participants are equipped with perfect knowledge and where no transaction costs exist ("world 0").
- The model underlying the "fundamentalist hypothesis" ("world 1") actors do not know the expectations of other actors and transaction costs matter. Hence, prices reach a new equilibrium only through a gradual price discovery process.
- The high transaction volumes in modern financial markets stem mainly from the activities of market makers who facilitate the movements of asset prices towards their fundamental equilibrium.
- Speculation is an indispensable component of both, the price discovery process as well as the distribution of risks. As part of the former, speculation is essentially stabilizing, i.e., it moves prices smoothly and quickly to their fundamental equilibrium (*Friedman*, 1953).
- An endogenous overshooting caused by excessive speculation does not exist. Any deviation of asset prices from their fundamental equilibrium is due to exogenous shocks.

- The emergence of news and shocks follows a random walk and so do asset prices. Therefore, speculation techniques based on past prices cannot be systematically profitable (otherwise the market would not even be "weakly efficient" – *Fama*, 1970).

The "bull-bear-hypothesis" perceives trading behaviour and price dynamics in asset markets as follows ("world II"):

- Imperfect knowledge is a general condition of social interaction. As a consequence, actors use different models and process different information sets.[2])
- Actors' expectations and transactions are governed not only by rational calculations, but also by emotional und social factors.
- Not only are expectations heterogeneous but they are mostly formed only qualitatively, i.e., as regards the direction of an imminent price movement.
- Upward (downward) price movements – usually triggered by news - are lengthened by "cascades" of buy (sell) signals stemming from trend-following technical trading systems.
- The "trending" of asset prices is fostered by the dominance of either a "bullish" or a "bearish" bias in expectations. News which are in line with the prevailing "market mood" gets higher reaction than news which contradict the "market mood".
- This behaviour of market participants causes price runs in line with the market mood to last longer than counter-movements. In such a way short-term runs accumulate to long-term trends, i.e., bull markets and bear markets.
- The sequence of these trends then constitutes the pattern in long-term asset price dynamics: Prices develop in irregular cycles around the fundamental equilibrium without any tendency to converge towards this level.

Figure 1: Three stylized paths of asset prices

[2]) In a pathbreaking book, *Frydman - Goldberg* (2007) demonstrate that recognizing the importance of imperfect knowledge is key to understanding outcomes in financial markets.

To clarify the differences between the "fundamentalist hypothesis" and the "bull-bear-hypothesis", it is useful to distinguish between three (stylized) paths of asset prices (figure 1):

- In "world 0", new information at t = 1 causes the asset price to jump instantaneously from the old equilibrium at P = 100 (point A) to the new equilibrium at P = 104 (B). In t = 3, news cause the price to jump to P = 102 (at E), and in t = 5 the price jumps to P = 106 (at I).
- In "world I", it takes a series of transactions to move the price from P = 100 to P = 104 (from A to C). Since traders are rational, the movement will stop at the new fundamental equilibrium level and stays there until t = 3, when a new adjustment process takes off.
- In "world II", there exist traders who form their expectations according to the most recent price movements, i.e., when prices move persistently up (down) they expect the respective short-term trend to continue. Hence, they buy (sell) when prices are rising (falling), causing the price to overshoot (from C to K, from G to L, and from M to O).

As a consequence of asset price trending, rational investors (in the sense of profit-seeking) will try to systematically exploit this non-randomness in price dynamics. The conditions of "world II" will therefore almost inevitably emanate from those of "world I": If prices move smoothly from one fundamental equilibrium to the next, and if this price discovery process takes some time, then profit-seeking actors will develop trend-following trading strategies. The most popular types are summarized under the heading "technical analysis". [3])

Any evaluation of the different arguments in favour of against an FTT has to answer the following question. Does the empirical evidence concerning transaction volumes and price dynamics in financial markets fit approximately better into the picture of the "fundamentalist hypothesis" or does the evidence rather support the "bull-bear-hypothesis"?

4. Pattern of asset price dynamics

In this section, I investigate the relationship between the following two phenomena:

- Stock prices, exchange rates and commodity prices move in a sequence of upward and downward trends which last for several years (bull and bear markets).
- Trading in asset markets has become progressively "faster", mainly due to the use of technical systems based on intraday data. As a consequence, transaction volume has expanded enormously.

The coincidence of both developments constitutes a puzzle. How can very short-term transactions generate asset price movements which accumulate to long-term bull markets and bear markets?

To find a first answer to this question, I look at the "Gestalt" of asset price movements (figures 2 and 3):

[3]) For theoretical models dealing with the interaction of heterogeneous actors see *DeLong et al.*, 1990A and 1990B; *Frankel – Froot*, 1990; *De Grauwe – Grimaldi*, 2006; *Hommes*, 2006; *Frydman – Goldberg*, 2007.

Figure 2a: Asset price dynamics

Source: IMF, CBOT, NYMEX, Yahoo Finance

Figure 2b: Asset price dynamics

Daily US dollar/euro exchange rate

Technical trading of oil futures 2007- 2012

Italy

Source: Fed, NYMEX, Thomson Reuters

- Over the short run, asset prices fluctuate almost always around "underlying" trends. If one smoothes the respective price series with simple moving averages, one can identify these trends.
- The phenomenon of short-term trending repeats itself across different time scales. However, the volatility of fluctuations around the trend is higher the higher is the data frequency.
- Over the long run, asset prices move in a sequence of upward and downward trends lasting several years in most cases ("bulls and bears"). These trends cause prices to deviate widely from fundamental benchmark levels.
- These observations suggest a "hierarchy" in asset price trending: Very short-term price trends (runs) based on high frequency data are embedded into comparatively longer-term trends based on data of lower frequency and so on. A "bull market" or "bear market" would then be the result of short-term upward (downward) trends lasting longer than counter-movements over an extended period of time.

Figure 3: Intraday asset price dynamics

Source: Fed, Olson

In order to examine this hypothesis, the following exercise is carried out. First, I identify the most pronounced bull markets and bear markets which occurred over the past 15 years in the stock market (S&P 500), in the foreign exchange market (dollar/euro rate) and in the oil futures market (NYMEX). Then I elaborate how the sequence of monotonic movements ("runs") of daily asset prices brings about long-term trends.

The tripling of US stock prices between November 1994 and March 2000, their doubling between October 2002 and October 2007 as well as their subsequent rise by roughly 70% was

mainly due to upward runs lasting on average by one third longer than downward runs, the average slope of upward and downward runs was roughly the same (figure 2a, table 1). Also the bull markets of the dollar/euro exchange rate and of oil futures prices are brought about by upward runs lasting longer than downward runs. Differences in the slope contribute little to the overall appreciation.

Table 1: Asset price runs during "bull markets" and "bear markets"
Based on daily prices

			Upward runs			Downward runs		
			Number	Average duration in days	Average slope [1])	Number	Average duration in days	Average slope [1])
S&P 500								
11/23/1994	3/24/2000	↑	319	2.35	7.28	318	1.87	-7.38
3/24/2000	10/7/2002	↓	167	1.73	12.92	168	2.05	-12.93
10/7/2002	10/9/2007	↑	341	2.04	7.08	341	1.65	-7.43
10/9/2007	3/9/2009	↓	103	1.69	15.93	103	1.74	-20.41
3/9/2009	1/19/2010	↑	57	2.25	10.28	57	1.56	-9.63
Dollar/euro exchange rate								
1/1/1999	10/26/2000	↓	113	1.79	0.47	113	2.38	-0.48
1/31/2002	12/30/2004	↑	209	1.96	0.56	209	1.66	-0.51
12/30/2004	11/14/2005	↓	57	1.74	0.53	58	2.16	-0.57
11/14/2005	4/22/2008	↑	168	2.03	0.49	167	1.65	-0.45
4/22/2008	10/27/2008	↓	31	1.74	0.71	32	2.31	-0.97
2/18/2009	12/3/2009	↑	57	1.81	0.88	57	1.68	-0.69
Oil futures prices (NYMEX) [2])								
12/21/1998	9/20/2000	↑	101	2.51	1.44	100	1.76	-1.43
9/20/2000	11/19/2001	↓	72	1.99	2.15	73	1.95	-2.68
11/19/2001	7/17/2006	↑	296	2.12	3.18	295	1.73	-3.43
7/17/2006	1/19/2007	↓	33	1.70	2.74	33	2.15	-4.01
1/19/2007	7/15/2008	↑	102	2.02	4.98	101	1.74	-4.07
7/15/2008	2/19/2009	↓	39	1.44	7.48	40	2.45	-8.43
2/19/2009	10/23/2009	↑	46	2.24	2.87	45	1.56	-3.12

Note: Bull markets are indicated by ↑, bear markets by ↓

Source: Own calculations; see also *Schulmeister*, 2009A, 2009D. [1]) Average change in price level per day. - [2]) Most traded contract.

The picture is somewhat different for bear markets. As the speed of price movements is generally greater during "bears" as compared to "bulls", the differences in the slope of upward and downward runs contribute to a greater extent to the overall price change

during "bear markets" than during "bull markets". However, also the persistence of price movements matters: During "bear markets", downward runs last on average by one third longer than upward runs.

Table 2: Asset price runs during "bull markets" and "bear markets"
Based on 5-days moving averages of daily prices

			Upward runs			Downward runs		
			Number	Average duration in days	Average slope [1])	Number	Average duration in days	Average slope [1])
S&P 500								
11/23/1994	3/24/2000	↑	122	6.90	3.31	122	4.08	-3.52
3/24/2000	10/7/2002	↓	62	4.32	5.25	63	5.75	-5.79
10/7/2002	10/9/2007	↑	130	5.55	3.19	129	4.12	-2.93
10/9/2007	3/9/2009	↓	39	3.74	5.23	40	5.08	-8.01
3/9/2009	1/19/2010	↑	24	5.79	4.75	24	3.08	-3.27
Dollar/euro exchange rate								
1/1/1999	10/26/2000	↓	44	3.80	0.23	45	6.64	-0.24
1/31/2002	12/30/2004	↑	70	6.77	0.24	68	4.06	-0.24
12/30/2004	11/14/2005	↓	25	3.36	0.23	26	5.23	-0.27
11/14/2005	4/22/2008	↑	59	6.29	0.24	58	4.17	-0.19
4/22/2008	10/27/2008	↓	11	3.91	0.36	12	6.75	-0.54
2/18/2009	12/3/2009	↑	24	5.13	0.36	23	3.13	-0.28
Oil futures prices (NYMEX) [2])								
12/21/1998	9/20/2000	↑	36	7.64	0.70	35	4.29	-0.56
9/20/2000	11/19/2001	↓	30	4.40	0.89	28	5.14	-1.19
11/19/2001	7/17/2006	↑	98	6.81	1.42	98	4.73	-1.55
7/17/2006	1/19/2007	↓	11	3.27	1.14	12	7.25	-1.84
1/19/2007	7/15/2008	↑	40	5.95	2.18	39	3.59	-1.66
7/15/2008	2/19/2009	↓	12	2.83	3.08	13	8.92	-4.07
2/19/2009	10/23/2009	↑	17	6.41	1.37	16	3.75	-1.31

Note: Bull markets are indicated by ↑, bear markets by ↓

Source: Own calculations; see also *Schulmeister*, 2009A, 2009D. - [1]) Average change in price level per day. - [2]) Most traded contract.

The accumulation of monotonic price movements to long-term trends is particularly pronounced on the basis of 5-days moving averages of the original price series (table 2). This is not surprising: Since there prevails an "underlying" trend, smaller counter-movements are smoothed out even by a short moving average. E. g., during the "internet bull market" between November 1994 and March 2000, there occurred 637 runs based on the original S&P

500 data, but only 244 based on 5 days moving averages. Out of the latter, upward runs lasted on average 6.9 days, downward runs 4.1 days (table 3).

These results suggest the following: First, upward (downward) asset price runs last on average longer during bull (bear) markets because there occur more (very) persistent upward (downward) runs than expected under the "random-walk-hypothesis". Second, that phenomenon which accounts for the realization of bull and bear markets provides the basis for the profitability of technical trading systems. Third, the widespread use of technical trading systems feeds back upon the pattern of asset price dynamics as a sequence of persistent runs, interrupted by "whipsaws".

This pattern conflicts with the most fundamental assumption of the "efficient market hypothesis". According to this concept any asset price reflects the fundamental equilibrium value of the respective asset. If new information arrives, actors will drive the price instantaneously to its new equilibrium. This (rational) behaviour assures that asset prices follow a random which in turn implies "weak market efficiency". This concept means that one cannot systematically make trading profits from exploiting just the information contained in past prices.[4])

5. Technical trading and the trending of asset prices

Technical analysis tries to exploit price trends ("the trend is your friend"). Hence, these trading techniques derive buy and sell signals from the most recent price movements which (purportedly) indicate the continuation of a trend or its reversal (trend-following or contrarian models).[5])

Technical analysis is omnipresent in financial markets. In the foreign exchange market, e. g., technical analysis is the most widely used trading technique (for recent survey studies see *Cheung – Chinn - Marsh*, 2004; *Gehrig - Menkhoff*, 2006; *Menkhoff - Taylor*, 2007). It seems highly plausible that technical analysis plays a similar role in stock (index futures) markets as well as in commodity futures markets (*Irwin-Holt*, 2004).

Many factors have contributed to the popularity of technical trading systems among practitioners. First, these systems can be "universally" used, i.e., they can be applied to any kind of price data frequency. Second, these price data have become easily available (at ever falling costs). Third, computer software has been continuously improved (and got cheaper at the same time). Fourth, the internet has enabled traders (professionals as well as amateurs) to trade in real time on all important market places in the world.

Figures 2 and 3 show how simple moving average (MA) models based on different data frequencies operate in the dollar/euro market, the stock index futures market and the oil

[4]) Recent contributions to the debate about the efficiency of asset markets are *Le Roy* (1989), *Shiller* (2003), *Lo* (2004).

[5]) *Kaufman* (1987) provides an excellent treatment of the different methods of technical analysis. For a short description of the most important trading rules see *Schulmeister*, 2008A).

futures market. The trading rule is as follows: Buy (go long) when the current price crosses the MA from below and sell (go short) when the converse occurs (if a model uses two moving averages, then their crossing indicates a trading signal). The figures show that even these simple rules are able to exploit asset price trends; however, during "whipsaws" they produce a series of losses.

There exists a general pattern in the profitability of technical trading systems (table 3):

- The number of profitable positions is always smaller than the number of unprofitable positions.
- The average return per day during profitable positions is lower than the average return (loss) during unprofitable positions.
- The average duration of profitable positions is several times greater than that of unprofitable positions.

This pattern characterizes technical trading in general (for a detailed analysis see *Schulmeister*, 2008A, 2008B, 2009A, 2009C, 2009D): Make profits from the exploitation of relatively few persistent price trends and limit the losses from many small price fluctuations ("cut losses short and let profits run").

Table 4: Components of the profitability of technical trading systems in various asset markets

	Number of models	Gross rate of return per year	Mean of profitability components					
			Profitable positions			Unprofitable positions		
			Number per year	return per day	Duration in days	Number per year	return per day	Duration in days
Stock market, S&P 500 [1])								
1960 - 2007, Spot, daily data	2580	1.5	6.5	0.09	42.1	11.7	-0.15	13.1
1983 - 2007, Futures, Daily data	2580	-3.7	6.5	0.09	40.5	13.5	-0.16	13.3
1983 - 2007, Futures, 30-minutes data	2580	7.2	87.4	0.40	2.6	138.7	-0.59	1.0
Foreign exchange market								
1973 - 1999, DM/dollar rate, daily data [2])	1024	7.9	6.0	0.07	55.0	8.1	-0.09	16.9
1975 - 2007, Yen/dollar rate, daily data [3])	1024	6.9	6.1	0.07	50.7	9.0	-0.09	16.3
1999 - 2006, Dollar/euro rate, 30-minutes data [4])	2466	1.1	139.5	0.31	1.7	223.5	-0.45	0.8
Commodity futures markets, 1989 - 2008 (June) [5])								
WTI crude oil, daily data	1092	12.7	3.3	0.15	84.4	5.7	-0.23	23.0
Corn, daily data	1092	3.8	3.0	0.11	89.8	6.5	-0.17	23.3
Wheat, daily data	1092	2.4	2.9	0.11	87.0	6.7	-0.16	25.0
Rough rice, daily data	1092	12.6	3.1	0.12	94.3	5.7	-0.17	23.5

[1]) *Schulmeister* (2009C). - [2]) *Schulmeister* (2006). [3]) *Schulmeister* (2009B). [4]) *Schulmeister* (2009D). [5]) *Schulmeister* (2009A). - Note: For any single trading system the following relationship holds: GRR = NPP*DRP*DPP-NPL*DRL*DPL

There operates an interaction between the "trending" of asset prices and the use of technical models in practice. On the one hand, many different models are used by individual traders aiming at a profitable exploitation of asset price trends, on the other hand the aggregate behaviour of all models strengthen and lengthen price trends (*Schulmeister*, 2006, 2009A, 2009B, 2009D).

One can therefore conclude that the widespread use of technical trading systems strengthens short-term asset price trends (runs). At the same time, the sequence of price runs accumulates to long-term trends when an "expectational bias" prevails in the market ("bullishness" or "bearishness").

6. Trading Dynamics and the stabilizing effects of a FTT

Trading activities in financial markets have exploded over the past 20 years (figure 4):[6])

- There is a rising discrepancy between the levels of financial transactions and the levels of transactions in the "real world". In 2007, the former was roughly 74 times higher than nominal world GDP.
- Trading in derivatives markets has expanded significantly stronger than trading in spot markets. In the world economy, derivatives trading volume is roughly 66 times higher than world GDP, whereas spot trading amounts to "only" 8 times world GDP.

Figure 4: Financial transactions in the world economy

Source: BIS, WFE, Schulmeister (2011)

[6]) A comprehensive estimate of financial transaction in the global economy, differentiated by types of instruments and regions, is provided by *Schulmeister – Schratzenstaller – Picek*, 2008. These data are based on the Triennial Bank Survey organised by the Bank of International Settlements (*BIS*, 2010).

- Trading of futures and options on organized exchanges has risen stronger than "over-the-counter"-transactions.
- Given the spectacular level of derivatives trading only a comparatively small share of transactions stem from hedging activities. The greatest part of transactions is related to speculative trades between actors with heterogeneous price expectations.

A FTT would specifically dampen very short-term oriented trading in derivatives markets. There are two reasons for that. First, a FTT makes trading the more costly the shorter its time horizon is (e. g., technical trading based on intraday data). Second, a FTT will dampen specifically derivatives trading since the tax rate refers to contract value (e. g., the effective tax on the margin "invested" is by the leverage factor higher than the tax relative to the notional value).

Since long-term asset price trends (bull and bear markets) are brought about through the accumulation of (very) short-term runs, a FTT would also dampen the "long swings" of exchange rates, commodity prices and stock prices.

Hedging as well as "real-world-transactions" (this would only concern foreign exchange transactions stemming from international trade) would hardly be affected by a low FTT between 0.1% and 0.01%.

7. Main features of the FTT proposal of the European Commission and some issues of its implementation

The main features of the FTT concept of the EC (in the following abbreviated as ECP) are as follows (for a more detailed description see *Schulmeister – Sokoll*, 2013, or the original publication, *EC,* 2013):

The tax base is defined very comprehensively. Almost all transactions in financial instruments carried out by financial institutions (FIs) are subject to the tax except for three types of transactions. The first exception concerns currency spot transactions, they remain tax-free to preserve the free movement of capital (currency derivatives transactions, however, are subject to the FTT). The second exception regards transactions of/with the European Central Bank, the European Stability Mechanism and the European Union itself. The third exception concerns transactions on primary markets both for shares and bonds.

Those financial activities which directly serve activities in the "real economy" are not subject to the FTT. This regards mortgages, consumer credits and day-today payment services.

As regards the country to which the tax revenues accrue, the ECP adopts the "residence principle" and completes it with the "issuance principle". The residence principle means that all transactions of FIs established in one of the 11 FTT countries (FTTCs) are subject to the tax wherever they are carried out. If both parties to a transaction are established in a FTTC the tax revenues go to the respective states, if a FI established in a FTTC trades with a FI established in a Non-FTTC the revenues for both sides of the trade go to the respective FTTC.

With respect to the issuance principle, the EC states: "The residence principle is supplemented also by elements of the 'issuance principle' as a last resort, in order to improve the resilience of the system against relocation…….. This applies where none of the parties to the transaction would have been 'established' in a participating Member State, on the basis of the criteria set out in the Commission's initial proposal but where such parties are trading in financial instruments issued in that Member State…….. In the context of the issuance principle, which also underlies certain existing national financial sector taxes, the transaction is linked to the participating Member State in which the issuer is located. The persons involved in such transaction will be deemed to be established in that Member State because of this link, and the financial institution(s) concerned will have to pay FTT in that State." (*EC*, 2013, p. 11).[7])

For the minimum tax rates (above which there is "room for manoeuvre for national policies") the ECP proposes 0.1% as regards financial instruments other than derivatives (i. e., spot transactions of stocks and bonds), and 0.01% as regards derivatives transactions. Each party has to pay the tax at the respective rates, i.e., 0.1% or 0.01%, respectively.

There are three main issues concerning the FTT implementation according to the ECP:

- First, the ECP burdens spot transactions in the stock and bond markets with a tax rate which is 10 times higher than proposed for derivatives transactions even though fast and mostly destabilizing speculation is primarily carried out through the use of derivatives.
- Second, according to the ECP, each party to a transaction has to pay the FTT at a rate of 0.1% or 0.01%, respectively. If the other party – resident of a Non-FTTC - cannot be obliged to pay the tax, the first party has to pay for both sides, i. e., 0.2% or 0.02%, respectively. However, on organized exchanges a party does not know who the counterparty is in a certain transaction.
- Third, financial institutions established in a FTTC might relocate a great deal of trading to their subsidiaries in London. To the extent that these subsidiaries are or become incorporated according to UK law, they would be considered British FIs, and, hence, could hardly be obliged to pay the FTT.

The first issue concerns the difference between the tax rates for spot transactions in stock and bond markets on the one hand, and derivatives transactions on the other hand. The ECP proposes for spot transactions with stocks and bonds a tax rate which is 10 times higher than for derivatives transactions (0.1% and 0.01%, respectively). It is argued that the respective transactions are different in nature. This is certainly true in the sense that derivatives transactions are to a much larger extent driven by short-term speculation than trading of "real" stocks and bonds. There are at least three reasons for that:

[7]) Compared to the volume of transactions covered by the residence principle, the additional taxable transactions volume according to the issuance principle will be small. Moreover, it is impossible at present to estimate the volume of these transactions as there is no sufficient information available about "who trades where with whom in which instruments".

- First, transactions costs are much lower when trading derivatives as compared to trading stocks and bonds in the spot markets.
- Second, leverage effects cause profits (but also losses) to be many times higher than the return of the underlying.
- Third, stocks and bonds are to a much larger extent bought to hold them as an investment as compared to derivatives. This is not only true for individual investors but also (and in particular) for investment and pension funds.

The ECP implies that the effective tax burden (relative to the cash requirement/margin) would be *lower* for most derivatives transactions than for buying or selling of "real" stocks or bonds. E. g., if one buys German government bonds at a taxable value of 100.000 € he would have to pay a FTT of 100 €, if he buys instead a "Bund" derivatives contract (with German bonds as underlying), he would only pay 10 € (at a margin requirement of 1%, and, hence, a leverage ratio of 100).

If one would tax all transactions at a uniform rate of 0.01%, the effective tax burden of derivatives trading – relative to the cash requirement – would be higher than when trading "real" stocks and bonds. In addition, the tax burden rises with the leverage ratio, and, hence, with the riskiness of the transaction – a meaningful (dis)incentive effect. At the same time, lowering the tax rate for stock and bond transactions to 0.01% would strongly mitigate the objections of pension funds against a FTT.

The second issue concerns the following question: How can a party to a transaction on an organized exchange know who is the other party and what is the territory of its residence? This is relevant for enforcing FTT payments in case only one party to a transaction is established in a FTTC.

To give a concrete example: A French bank buys one future at LIFFE (London), (almost) at the same time 9 other traders from the UK buy the same contract. The electronic system adjusts the price until the value of long and short positions is again equal. Let us suppose this is the case due to 10 additional short positions, 3 of which were opened by German traders and the othe 7 by UK traders. If one could match – according to the sequence in time (milliseconds) – buys and sells then the overall FTT payment could be calculated and paid. E. g., if the French trader buys from one of the German traders 3 transactions would be taxed, if the French trader buys from a British trader, 4 transactions would be taxed.

This would not be a problem for implementing the ECP if the clearing and settlement systems used by organized exchanges, central counterparty platforms or in OTC-trading documented for each transaction the identity of both parties and, hence, the residence of their establishment. However, this can hardly be enforced by EU authorities from the providers of the clearing and settlement systems which are established in a Non-FTTC of the EU, not to speak about providers located outside the EU.

This problem is relevant for all types of exchanges, irrespective of their residence. If exchanges in FTTCs would collect the tax for both parties (if one is a FTTC resident) whereas

exchanges in Non-FTTCs would not (so that the tax would only be paid by one party, e. g., the buyer or seller from a FTTC), then exchanges in FTTCs are discriminated relative to exchanges in NFTTCs.

An alternative to the ECP would be to implement the FTT as a (uniform and) unilateral tax so that only that side - buy and/or sell - of any transaction is taxed which is carried out by a resident of a FTTC (for systematic reasons this rule should not only apply to transactions on exchanges but also to OTC transactions). Of course, FTT revenues would be smaller in this case as compared to taxing any transaction to which at least one party is resident of a FTTC at the full rate (this effect will, however, become the smaller, the more countries introduce a FTT). At the same time, the disincentive to trade with a resident from a FTTC would be weaker, and, hence, the related distortion of "trading partnerships". Moreover, also the tax administration seems to be simpler if residents of FTTCs have to pay only their part of the FTT.

Both modifications of the ECP, namely, reducing the tax rate on spot transactions with stocks and bonds to the (uniform) level of 0.01% as well as conceptualizing the tax as unilateral, would also weaken the objection of (some) EU countries against joining the "coalition of the willing". This is so because one of the most popular arguments against the FTT concerns its impact on the wealth of private investors, in particular with respect to their pension capital: As pension funds invest primarily in stocks and bonds and manage their portfolio actively the value of their assets is substantially diminished by a FTT rate which is 10 times higher for stocks and bonds as compared to derivatives.

The third implementation issue concerns the role of London subsidiaries of banks established outside the United Kingdom. Almost all "big players" in international financial markets like Goldman Sachs, UBS or Deutsche Bank have subsidiaries in London. If such subsidiary is incorporated in the UK – as is the case with many "dealer banks" - it would be considered a British FI (e. g., DB UK Bank Limited, the London subsidiary of Deutsche Bank). In other words, these affiliates are not just branches of their parent companies.[8]) In addition, there are many (big) hedge funds which are also incorporated in the UK and, hence, operate as British FIs.

Treating the London subsidiaries of FIs which have their headquarters in a FTTC, as British FIs would have two consequences. First, all transactions of these subsidiaries carried out already now with other FIs which are established in a Non-FTTC would be exempt from the FTT (provided the traded instruments are not issued in a FTTC). Second, banks with their headquarters in a FTTC would relocate trading activities to London.

The first effect would reduce FTT revenues from trading in OTC markets as well as on organized exchanges - even without/before relocation of trading will take place. E. g., if Deutsche Bank London (DBL) trades with a British, Swiss or US bank (or with any FI established in a Non-FTTC) it would not have to pay any FTT. The same holds true If DBL (or any London

[8]) Tables 1A and 2Ain the Annex of *Schulmeister – Sokoll*, 2013) shows a list of all banks incorporated in the UK and a list of the UK branches of banks) incorporated in the European Economic Area. Table 3A in the Annex documents the size of the biggest financial institutions in international markets based on data collected by the U.S Commodity Futures Trading Commission.

subsidiary incorporated in the UK which is owned by a parent bank established in a FTTC) trades on an organized exchange located in a FTTC and if the other party to the transaction happens to be established in a Non-FTTC (provided the transaction of DBL – be it in OTC markets or on exchanges - is not subject to the tax according to the issuance principle).

The second effect, e. g., moving trading activities from FTTCs to London, might even be more substantial than the first one. This is so because parent banks established in a FTTC as well as British FIs and political agents have strong interests in such relocations, the first to avoid tax payments, the second to profit from the relocation of trading to the London market.

There are three channels through which trading would move from FTTCs to the UK. First, parent banks established in a FTTC would shift trading activities to their London subsidiaries which are already incorporated in the UK and, hence, operate as British FI (like DBL). Second, many London branches of banks with headquarters in FTTCs would become incorporated in the UK (until now, many big banks in FTTCs like Societe Generale, BNP Paribas, Natixis or Commerzbank only have branches on the London market place). Third, banks which as yet do not have a London branch might establish a subsidiary incorporated in the UK. The second and third type of trading relocation could easily be supported by the UK government in order to attract more trading activities to London (e. g., by facilitating the access to British bank licenses etc.).

The consequences could be far reaching. The „dealer banks“ dominate short-term trading in general and they control certain markets in particular (e.g., credit default swaps are exclusively carried out via these banks). If the FTT is implemented in the 11 member states those banks which have their headquarters in a FTTC would shift trading to their affiliate in London. E. g., trading between the biggest German, French, Italian or Spanish banks would then be FTT-free even if the transaction takes place at a market place/exchange in a FTTC (provided the traded instruments are not issued in a FTTC).

This issue would not represent a great problem if all EU member states (with important financial market places) implemented a FTT as implied by the original ECP (because there is no attractive financial centre in the same trading time zone). However, if a country like the UK does not implement the FTT, the ECP needs to be modified. Otherwise the London market place could gain a lot from the implementation of the FTT in the 11 countries (however, these gains would be much lower than the gains from also introducing the FTT – this shall be shown later in section 6).

A possible modification of the ECP could consist in the following rule: All financial institutions in which a parent FI established in a FTTC has an equity stake of more than 50% are deemed to be residents of the territory of the parent company. The latter is responsible for the tax payment.

8. Estimation of FTT revenues according to the proposal of the European Commission

Estimating the volume and distribution of FTT revenues if the tax is implemented in only a group of EU countries according to the residence principle (as proposed by the EC) is much more complicated as compared to tax estimates in the case of an implementation according to the "territorial principle (i.e., when all financial transactions carried out within a certain jurisdiction are subject to the FTT). In the latter case one would need just the data on transactions in the FTT jurisdictions together with assumptions concerning the elasticity of transactions with respect to the tax rate and concerning relocation effects.

However, if a FTT is implemented in some countries according to the residence principle, one needs to know not only the overall volume of transactions by FIs established in these countries in all (important) markets of the global economy but also the distribution of these transactions by the nationality of the trading partners (according to the jurisdiction where they are resident/established).

The issue is even more complicated in the concrete case of an FTT implementation in 11 EU countries without the UK. One needs to know also which London subsidiaries of "global players" are incorporated in the UK and how much and with whom they trade in London (and elsewhere!), how many London branches of international banks (and hedge funds) established in a FTTC might become incorporated in the UK in reaction the introduction of the FTT in the country where the parent FI is established, and how much trading would be relocated from the parent company to the London subsidiary.

A first estimation of FTT earnings of the 11 EU member states based on 2010 transactions data is presented in *Schulmeister – Sokoll* (2013). The study shows FTT revenues of Germany, France, Italy, Spain, Belgium and Austria as well as of the group of the 5 other FTTCs, differentiated by the 7 regional markets ("from which market places do the revenues stem from?") and by types of instruments like stocks and bonds, exchange-traded derivatives, and OTC derivatives, respectively ("from which types of transactions do the revenues stem from?").

As it is impossible to know in advance to which extent FIs established in a FTTC would relocate trading to their London subsidiaries and how many of these subsidiaries would become FIs incorporated in the UK, FTT revenues are estimated for the two extreme cases concerning the treatment of London subsidiaries of FIs established in FTTCs. In one case, the subsidiaries are considered a part of the parent company, in the other case as British FI. In the present paper I shall present only the main results of the FTT estimation. Further details as well as a documentation of the estimation procedure can be found in *Schulmeister – Sokoll* (2013).

Table 4 shows FTT revenues of Germany, France, Italy, Spain, Belgium and Austria as well as of the group of the 5 other FTTCs, differentiated by types of instruments like stocks and bonds, exchange-traded derivatives, and OTC derivatives, respectively. The results are presented for the two extreme cases concerning the treatment of London subsidiaries of FIs established in FTTCs. In the first case, the subsidiaries are considered a part of the parent company (no

relocation effects), in the second case they are treated as British FIs (including relocation effects).

For countries, whose FIs operate to a significant extent through big subsidiaries in London like Germany and France, the FTT revenues differ strongly between the two cases. If the German and French subsidiaries are treated as FIs established in Germany and France, respectively, the FTT revenues are estimated at 23.0 bn. € and 19.0 bn. €, respectively. If the subsidiaries are treated as FIs established in the UK, the FTT revenues of Germany and France are estimated at only 6.8 bn. € and 5.2 bn. €, respectively - table 4). For the other FTTCs, this difference is smaller but still significant.

Table 4: FTT revenues by taxing countries market places and types of financial instruments
Bn. €

	Subsidiaries in the UK treated as part of parent financial institutions No relocation effects				Subsidiaries in the UK treated as British financial institutions Including relocation effects			
	Exchange traded stocks&bonds	Exchange traded derivatives	OTC without Foreign exchange spot	Total	Exchange traded stocks&bonds	Exchange traded derivatives	OTC without Foreign exchange spot	Total
Germany	10,60	7,25	5,17	23,02	3,03	2,46	1,27	6,76
France	8,30	5,24	5,50	19,04	2,33	1,60	1,24	5,16
Italy	4,53	1,62	2,72	8,87	3,94	1,10	1,13	6,17
Spain	4,96	1,83	2,94	9,72	4,43	1,25	1,23	6,91
Belgium	1,12	0,48	0,49	2,08	0,59	0,22	0,22	1,02
Austria	0,64	0,30	0,29	1,23	0,35	0,16	0,21	0,72
Other FTTCs	0,91	0,54	0,43	1,89	0,73	0,42	0,40	1,55
11 FTTCs	31,05	17,26	17,53	65,84	15,39	7,20	5,70	28,30

Source: Schulmeister – Sokoll (2013)

Roughly half of the overall tax revenues of all 11 FTTCs would stem from transactions in stocks and bonds, roughly one quarter from transactions on derivatives exchanges, and from OTC transactions, respectively (table 4). The high contribution of stocks and bonds transactions to overall FTT revenues (the share of these instruments in overall financial transactions in the EU amounts to only 2% - table 1) is due to two assumptions set in the ECP. First, stock and bond trading would decline by only 15% in reaction to the FTT implementation as compared to 85% in the case of derivatives trading. Second, the tax rate on bond trading is 10 times higher than the rate on derivatives trading.

If London subsidiaries are treated as part of their parent companies, overall FTT revenues of the 11 FTTCs are estimated at 65.8 bn. €, more than estimated by the EC for the EU27 as a whole. Roughly one quarter of these revenues would stem from transactions in North America and Asia (transactions outside the EU by FIs which are established in the EU27 are not taken into account in the impact assessment – see *EC*, 2011, volume 12).

If London subsidiaries are considered part of the parent FI revenues would be distributed among the participating states as follows. The lion's share of FTT revenues would go to Germany (35.0%) and France (28.9%), Italy and Spain would receive 13.5% and 14.8%, respectively. The smaller countries like Belgium, Austria and the 5 other FTTCs would get significantly less (3.2%, 1.9%, and 2.9%, respectively – table 4).

If London subsidiaries are treated as British FIs, a very different picture emerges as regards the level and the distribution of tax revenues (table 4). Overall revenues would amount to only 28.3 bn. €, less than half of the sum to be expected when the subsidiaries are treated as part of their parent institutions (65.8 bn. €). The reduction of revenues would by greatest for Germany and France, whereas the revenues of the other FTTCs would only moderately decline.

This result stems from the – plausible – assumption that the importance of UK subsidiaries and, hence, also the relocation effect, is by far greater for German and French FIs as compared to FIs established in the other FTTCs like Italy, Spain or Austria. As a consequence, also the distribution of FTT revenues under the condition that UK subsidiaries are treated as British FIs differs significantly from the distribution under the condition that the UK subsidiaries are treated as FIs of the headquarter country.

9. Estimation of FTT revenues in the EU27 at a uniform and unilateral tax rate of 0.01%

Finally, I would like to present estimates of FTT revenues which are calculated under three conditions which differ from the estimates presented in the previous section. First, the tax rate is set at a uniform level of 0.01%. Second, the tax rate is unilateral so that each party to a transaction has to pay for his side of the trade only. Third, the FTT is implemented in all EU member states.

The main motive for calculating hypothetical FTT revenues for the EU as a whole is to get a gauge about the FTT earnings foregone to those member states which do not participate in the "enhanced cooperation procedure". The main reasons for modifying the ECP in two respects were already discussed in the previous section.

A uniform tax rate for spot and derivatives instruments would increase the costs of a derivative transaction - relative to the cash requirement for margin payments – to a greater extent than the costs of trading "real" stocks and bonds. This differentiation rises with the leverage factor of the derivative instrument. Such a differentiation is justified by the fact that trading derivatives is much more destabilizing as compared to spot trading. In addition, a lower tax rate for trading stocks and bonds would weaken the resistance of countries against the FTT where pension funds play an important role.

The main reason why the FTT rate should concern only that side of any trade which is done by a resident of a FTT jurisdiction lies in the simplification of the administration of the FTT deduction. This is so because when trading on organized (electronic) exchanges one party to a transaction does not know the other party if the exchange is not willing to disclose this information. This knowledge would, however, be necessary to also pay the tax part of the other party in case the latter is not resident of a FTTC and is not willing to pay the tax.

In order to show the opportunity costs of not participating in the FTT project the tax revenues are estimated under the assumption that all EU27 countries introduce the tax at the low and

uniform rate of 0.01%. It is further assumed that the London subsidiaries are treated as British FIs This assumption seems more realistic than the other case where subsidiaries – even if incorporated in the UK – are obliged to pay the tax to the FTTC where their parent company is established (however, this assumption overstates the FTT revenues of the UK and understates the revenues of the other EU countries to some extent).

In order to facilitate a comparison between the estimates for the EU27 and for the 11 FTTCs, the assumptions about evasion/reduction factors are kept the same (even though one would expect them to be somewhat smaller in the case of the EU27 simulation as the tax rate of stock and bond transactions is much lower and also the effective tax rate of transactions is lower if only one party is established in the EU27).

Table 5: FTT revenues according to the residence principle and according to the territorial principle

FTT is implemented in the EU27

Bn. €

	Residence principle 1) Uniform and unilateral rate of 0.01%				Territorial principle Uniform rate of 0.02% per transaction			
	Exchange traded stocks and bonds	Exchange traded derivatives	OTC without foreign exchange spot transactions	Total	Exchange traded stocks and bonds	Exchange traded derivatives	OTC without foreign exchange spot transactions	Total
Germany	0,24	2,02	1,17	3,42	0,30	4,96	1,18	6,44
France	0,26	1,75	1,61	3,62	0,15	-	2,96	3,10
Italy	0,25	0,78	0,91	1,94	0,15	-	0,44	0,58
Spain	0,27	0,90	0,93	2,10	1,55	0,04	0,48	2,08
Belgium	0,06	0,24	0,24	0,54	0,01	-	0,32	0,33
Austria	0,04	0,15	0,15	0,33	0,01	-	0,17	0,18
UK	3,49	24,60	26,24	54,32	1,09	18,29	22,25	41,63
Netherlands	0,17	0,84	0,64	1,64	0,10	-	0,69	0,79
Other EU	0,15	1,26	1,36	2,77	0,68	6,66	2,98	10,32
Total	4,92	32,53	33,24	70,69	4,03	29,94	31,46	65,43

1) Subsidiaries in the UK are treated as British financial institutions

Source: Schulmeister – Sokoll (2013)

If both parties to a transaction are residents of a FTTC the effective tax rate is 0.02% (the same as in the ECP for derivatives transactions). If only one party is established in a FTTC the effective rate is only 0.01%. It is clear that this difference becomes the less relevant the more countries participate in the FTT project.

For this reason, the revenues of the EU11 countries like Germany or France from transactions on derivatives exchanges and from OTC transactions are only a little smaller in case all EU27 countries implement the FTT at a unilateral rate as compared to the case when only the 11 FTTCs implement the tax at a bilateral rate (compare columns 2 and 3 in table 5 to the columns 6 and 7 in table 4). However, revenues from trading stocks and bonds would be much smaller (mainly due to the lower tax rate; in addition, the revenues dampening effect of moving from a two-sided tax rate to a one-sided rate is slightly higher than the revenues increasing effect of no relocation to the London market place).

The "big winner" of implementing a FTT in all EU27 countries would be the United Kingdom. Her FTT revenues would amount to 54.3 bn. €, roughly 77% of overall revenues of all EU27 countries (table 5 – FTT revenues would equal 3.2% of the British GDP). At the same time, the UK needs not fear massive relocation to other market places if all EU27 countries implement the tax (the extremely short-term trading cannot easily be relocated to market places in other time zones).

Table 5 also compares the revenue estimates based on the residence principle to the estimated revenues which EU member countries would earn if a FTT were implemented according to the territorial principle at a uniform rate of 0.02% (the effective tax rate in the case of an FTT implementation according to the residence principle in all EU27 countries is close to 0.02%); the same evasion/reduction factors are applied. The overall revenues of all EU27 countries when the FTT is implemented according to the modified FTT concept would amount to 70.7 bn. €, somewhat higher than according to the territorial principle (65.4 bn. €). The main reason for this difference lies in the fact that trading of FIs established in the EU (including US and Swiss subsidiaries in London) abroad is higher than trading of FIs established outside the EU on European markets.

Our estimates of overall FTT revenues of the EU27 countries if the modified FTT concept is realized are higher than the estimates of the European Commission (57.1 bn. €) in spite of the fact that the tax rate for trading stocks and bonds is reduced to 0.01%. The main reasons for this difference are as follows. First, the "raw" data on financial transactions according to our data base are higher than those used by the EC. Second, the ECP does not take into account the volume of trading done by FIs established in the EU27 on markets outside the EU.

10. Concluding remarks

The empirical evidence presented in this paper does not "prove" the efficacy of introducing a FTT. However, it does show the following:

- Long swings in asset prices in either direction result from the accumulation of persistent upward (downward) "mini" runs lasting longer than counter-movements over an extended period of time.
- The most popular trading practice, e. g., technical analysis, focuses on the exploitation of such price trends.
- The widespread use of technical trading systems reinforces the boom-and-bust pattern of asset price dynamics as a sequence of persistent price movements interrupted by "whipsaws."
- Technical models, including "automated trading systems", are used at ever increasing data frequencies. This development has strongly contributed to the tremendous rise in transaction volumes in asset markets, particularly in derivatives markets.

These observations provide "circumstantial evidence" for the view that the increasingly short-term oriented, non-fundamental speculation contributes strongly to the overshooting of asset prices. A small FTT would then dampen the volatility of asset prices over the short run as well as the magnitude of the swings over the longer run.

The implementation of a FTT would not constitute a great technical problem. Reaching a political consensus will be much more difficult because the idea of taxing transactions in the "freest" markets calls implicitly into question that "Weltanschauung" which has become mainstream in economics and politics over the past decades.

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