

Implementation of a general financial transactions tax

4. Objections of the International Monetary Fund and the European Commission to a general FTT

Both the International Monetary Fund (IMF) and the European Commission (EC) have published a paper on possible contributions of the financial sector to cover the costs of (future) financial crises (IMF, 2010; EC, 2010A). In both papers, a comparison between a bank levy and a financial transactions tax (FTT) plays a major role. The conclusions of both papers are similar (the arguments against an FTT are repeated in a more recent EC paper (2010B):

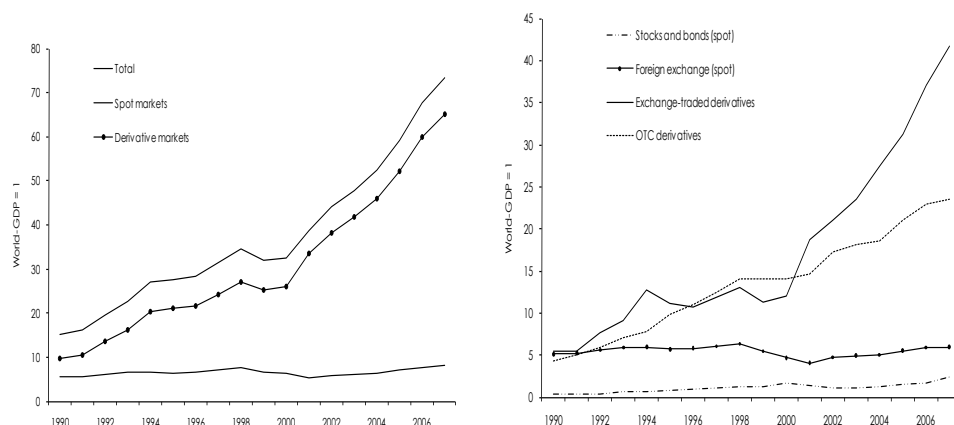
- The IMF and the EC recommend a bank levy on certain balance sheet positions. The IMF calls the bank levy a "Financial Stability Contribution", the EC calls it a "measure for pricing leverage and risk-taking in the financial sector" or a "stability levy".
- By contrast, "an FTT does not appear well suited to the specific purposes set out in the mandate from G-20 leaders", according to the IMF (2010, p. 19). The EC asserts that an FTT "would affect the price finding mechanism and could have negative effects on the allocative efficiency of financial markets" (EC, 2010A, p. 52).
- Both institutions propose all liabilities of financial institutions other than equity and (savings) deposits covered by a deposit insurance as a tax base of the bank levy. These balance sheet items are considered the basis for the banks' leverage.
- According to the EC, a bank levy would raise 50bn € for the EU-27 if a tax rate of 0.15% is applied to all banks. By contrast, an FTT would yield only 20bn € "using realistic assumptions" (EC, 2010A, p. 46), i.e., when only spot transactions but no derivatives are subject to an FTT.
- From the point of view of the IMF and the EC, a bank levy serves as a contribution to "financial stability". By contrast, an FTT "is not focused on core sources of financial instability" (IMF, 2010, p. 19). In addition, "its real burden may fall largely on final consumers" (IMF, 2010, p. 20) or "the burden might be shifted to consumers and companies using services of the financial sector" (EC, 2010A, p. 20).
- In addition, according to the IMF, "an FTT would also increase the cost of capital" (IMF, 2010, p. 20). The EC judgment is similar: "the tax poses also a risk of increasing the cost of capital for business and the cost of financial risk distribution" (EC, 2010A, p. 24), particularly, if the notional value of derivatives is taken as a tax base (this would increase hedging costs).

- If the FTT “is not introduced on the global scale it has the potential to divert economic activity Therefore, tax has to be as comprehensive as possible” (EC, 2010A, p. 24). In other words, the EC is of the opinion that only a global FTT would be feasible.

The above conclusions are based on the theoretical perception/approach (“Weltanschauung”) of how financial markets (should) work in the (equilibrium) theory rather than on empirical evidence. This for the following reason:

- The tax base of a bank levy consists necessarily of some balance sheet positions (“stocks”). Hence, by its construction the bank levy is not apt to increase the costs of risky/detrimental activities (“flows”). A bank levy can at best comprise the *holding* of risky assets.
- A bank levy would also increase the costs of financing *real investment*. If, e.g., a bank consortium intends to finance a large project in the real economy and would raise capital through a bond issue this would be considered as a risky leveraging and be taxed through the bank levy. In other words, a bank levy cannot differentiate between essentially different types of leverages and risk, and hence different types of banking businesses.

Figure 1: Overall financial transactions in the world economy



Source: BIS, WFE, OECD.

Below I give some examples of detrimental activities which would remain unaffected by a bank levy.

- Example 1: Before the mortgage crisis broke out, Deutsche Bank together with Goldman Sachs, Morgan Stanley etc. (“finance alchemy banks” – FABs) created a new derivative, the ABX index contract, and used this instrument to speculate for a decline in the value of mortgage backed securities (MBSs). This business turned out extremely profitable. At the same time, FABs earned billions in fees from securitizing and selling MBSs.

- Example 2: Between September 2007 and June 2008, FABs together with "trend-following hedge funds" drove commodity prices up by heavily opening long positions in derivatives markets. When the "bull market" tilted into a "bear market", shorting derivatives positions strengthened the fall in commodity prices (figure 3).
- Example 3: In the same way, these actors strengthened both, the booms and the busts of stock prices (figures 4 and 5). In particular, opening short positions in stock (index) futures and options after the collapse of Lehman accelerated the fall of stock prices.
- Example 4: Through incurring and trading credit default swaps (CDSs) FABs and hedge funds engage increasingly in speculating against certain debtors governments (even if the same actors had organized the issuance of the government bonds in the first place). By doing so, risk premiums are driven up, which in turn raises the value of the CDSs.
- Example 5: High-frequency (flash) trading has almost exploded over recent years (boxes 1 to 3). These strategies are based on algorithms which completely neglect market fundamentals and, hence, necessarily destabilize asset prices (in the US stock market, high-frequency trading accounts already for roughly 70% of transaction volume).

All activities mentioned above cannot be tackled by a bank levy due to its construction, i.e., due to the fact that it is based on balance sheet positions ("stocks"). In addition, the authors of the IMF and EC papers does not seem to have considered the following fact: Exactly those smart banks (the FABs) which most successfully speculate in assets markets do not hold risky assets for an extended period of time (their main profits stem from short-term *trading* and from selling risky assets to less smart banks like the German "Landesbanken".....).

The second reason why a bank levy cannot specifically tax detrimental activities in financial markets is as follows: The most important leverage potential is not represented by certain balance sheet components but is provided for by derivative instruments. The cash (margin) requirement to acquire a futures or an option constitutes only a (very) small part of the contract/notional value of the instrument. Hence, to make use of this leverage one does not need funds in excess of equity and savings deposits (as taxed by a bank levy).

Since the bank levy is based on *holding* assets/liabilities the value of these balance sheet components has to be assessed on a specific day (usually December 31). Even if open derivatives positions ("off-balance sheet items") should be included, any (FAB) bank or hedge fund could easily close the positions on December 30, and open them on January 2.

As the above examples already have shown, a bank levy would not cover asset *trading* like stock, bond, foreign exchange, and commodity trading, in particular in the respective derivatives markets. Hence, exactly those transactions which destabilize the most important prices both over the short run and over the long run would remain untaxed (the "bull markets" and the "bear markets" result from the accumulation of short-term price runs, strengthened by high-frequency trading systems – *Schulmeister, 2010*).

Short-term transactions in derivatives markets, mainly driven by trading systems (i.e., unrelated to market fundamentals) not only destabilize asset prices but also account for 90% of the

trading volume in financial markets (roughly 70 times world GDP - figure 1). For these reasons, a general FTT must comprise all transactions in order to earn the “double dividend”, i.e., raising substantial revenues and reducing market inefficiencies.

The assertion of the EC that “under realistic assumptions” only spot transactions but not derivatives should/could be taxed does not seem justifiable:

- Most transactions are carried out on derivatives exchanges (figure 1) where commissions are paid through electronic settlement systems. In the same way, a FTT could be easily collected.
- As regards over-the-counter (OTC) transactions, the FTT could be implemented through electronic settlement and information systems like Fedwire, TARGET, CLS Bank, CHIPS, and SWIFT.
- These both types of transactions could also be taxed at banks, brokerage firms and hedge funds (see chapter 8 of this study).
- The cost of capital or hedging would not rise substantially due to the FTT because the former refers to *holding* a liability or a derivatives contract, whereas a small FTT of, say, 0.05% is only carried by traders *changing* open positions frequently.

By excluding derivatives transactions (i.e., 90% of all transactions) from the potential tax base of an FTT, the EC paper arrives at a (biased) estimate of FTT revenues of only 20bn € for the EU-27. By contrast, if all transactions would be levied by a uniform rate of 0.05%, revenues would amount to roughly 290bn \$ (215bn €) or 1.6% of the GDP in Europe (including the EU27, Norway and Switzerland - table 2).

These estimates are based on the assumption that trading volume would decline by roughly 65% if an FTT of 0.05% were implemented. Even then, however, the transaction volume in advanced economies would still be as high as 35 times the GDP. This is sufficient to enable an efficient price discovery process and provide enough liquidity for hedging purposes.

In the following subsections I will evaluate in more detail some key arguments of the IMF and the EC against a general FTT.

Table 1: Hypothetical transaction tax receipts in the global economy 2007

Tax rate: 0.05%

	World		Europe		North America		Asia and Pacific	
	In % of GDP	In Bill. \$	In % of GDP	In Bill. \$	In % of GDP	In Bill. \$	In % of GDP	In Bill. \$
Spot transactions on exchanges	0.11	60.9	0.12	21.2	0.18	28.3	0.16	10.3
Derivatives transactions on exchanges	0.65	358.1	0.69	122.7	1.28	198.7	0.51	32.8
OTC Transactions	0.44	242.0	0.82	145.1	0.33	50.8	0.67	43.6
All transactions	1.21	661.1	1.63	289.0	1.79	277.8	1.34	86.7

Source: Schulmeister (2009E)

4.1 FTT and the cost of capital

The IMF and the EC believe that an FTT would increase the cost of capital. However, it is not explained how and why this should happen. This issue is explored in more detail in a forthcoming IMF working paper (Matheson, 2010).¹⁾ This argues that an FTT – like any transactions tax – will reduce the value of an asset and, hence, will increase capital costs. This result is derived from a theoretical model in the following way.

Since an FTT burdens futures transactions with additional tax payments, the effect of taxing financial transactions is the same as taxing future dividends. As a consequence, the present (discounted) value of an asset will decline in reaction to the introduction of an FTT: To compensate for the future tax burden, investors will demand a higher return and therefore a lower asset price. At a given discount rate, the devaluation effect rises with the FTT rate and falls with the length of the holding period of an asset. The paper presents some numerical results: “For very short holding periods (e.g., one day), an STT²⁾ at even the very low rate of one basis point reduces securities value by almost a half. For very long holding periods (e.g., 10 years), the drop in value from even a 50 basis point STT is quite small (1.4 percent).” (Matheson, 2010, p. 12).

The assumptions of the model do not match with the basic characteristic of the FTT, namely, that it does not burden the asset as such but only the trading of that asset. More specifically: The assumption that an FTT has the same effect as a tax on dividends is misleading because the latter would affect any stock, whereas the FTT would address only those stocks which are (frequently) traded. A simple example might clarify this point: Let us assume that 50% of the stocks of a company are held by a pension fund. The other 50% are traded frequently, the average holding period is one day. A tax of one basis point is introduced and levied on each transaction. According to the model, the value of the stocks traded every day should fall by almost a half, whereas the value of the stocks held by the pension fund would not be affected. This is not consistent with the law of one price.

A more realistic model of asset markets should distinguish between the role of an asset as an instrument for *holding* a (partial) ownership and its role as an instrument for *trading*. Theoretically speaking, this distinction seems artificial because a high-frequency trader can be conceived as an owner of stocks for only a few seconds. However, insofar as a model aims at explaining economic behavior in a concrete way, such a distinction is not meaningful.

Actors who focus on the ownership role of an asset (“investors”) form expectations over a (comparatively) long time horizon. They evaluate the innovative power of the companies in question, their organizational strength, etc. By contrast, actors who focus on the trading

¹⁾ The evaluation of the pros and cons of a FTT presented in this paper is more balanced than in the official IMF document of June 2010. It remains unclear if the standard disclaimer “the views expressed in this WP do not necessarily represent those of the IMF” is specifically relevant in this case.

²⁾ The term “securities transactions tax” (STT) is used for what is mostly called an FTT.

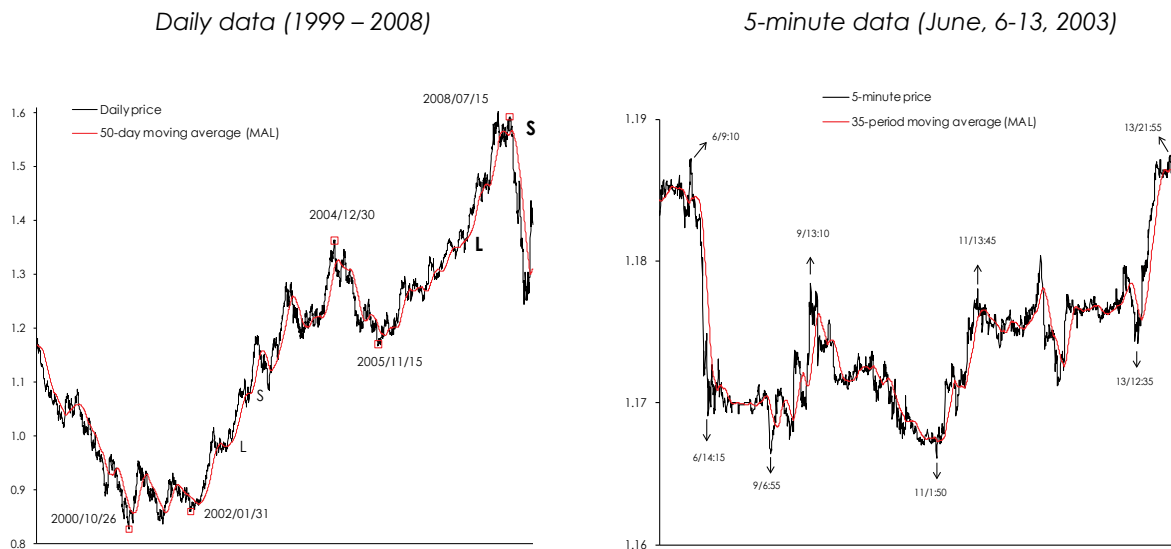
vehicle role of an asset ("speculators") form expectations only over a (very) short run, and mainly regarding the direction of imminent price movements.

From these differences in expectations follows that the FTT does not affect the fundamental value of an asset as any change in the asset value is brought about exclusively through changes in expectations. In short-term trading, a speculator does not consider the discounted value of future FTT payments of other traders as this is not relevant at all for his expected profit from the next trade. What matters is the FTT he will have to pay for the imminent trades. At the same time, the future FTT payments are also irrelevant for an investor as he intends to hold the asset.

The same result is obtained when looking at trading as a redistribution process. Speculators trade assets that already exist. The differences between buying prices and selling prices represent profits for the winners and losses for the losers (a redistribution of wealth). They have nothing to do with values added (apart from that small part that goes to "the organizers of the game"). Hence, this trading and its taxation cannot affect the fundamental value of the assets concerned.

The above objections to the IMF and the EC assertion that an FTT will raise the costs of capital are primarily due to the theoretical foundation of that argument. As regards the empirical relevance of the capital-cost-argument, the IMF paper concludes (Matheson, p. 13): "The overall impact of a low-rate (5 basis points or less) STT on the corporate cost of capital is thus likely to be quite modest" (even if the model used was adequate).

Figure 2: Movements of the dollar/euro exchange rate and technical trading signals



Source: Fed, Olson Ltd.

In any case, the extension of the (flawed) capital-cost-argument to the financial costs for governments and their negative impact on the overall economy – as done in the EC paper – seems somewhat exaggerated (“The tax can thus generate adverse effects on investment and the level of economic activity and this may impact on the collection of other taxes.” – *EC, 2010A*, p. 24).

4.2 FTT and the price discovery/distortion processes

Even though the trading of financial assets like stocks or foreign exchange does not impact their fundamental equilibrium value (which is determined by variables such as future profits, relative price levels and interest differentials), trading does of course affect market prices. This happens in two different ways which correspond with the two different “financial worlds” discussed above.

In the “world 1”, trading reflects and supports the (fundamental) price discovery process. This process moves market prices towards their fundamental equilibrium (i.e., speculation is seen as stabilizing). In this world, trading fulfils an important economic and social function, and should therefore not be hampered by an FTT or any other increase in transactions costs. The lower the transactions costs and the higher the level of transactions (liquidity), the better the price discovery process and the more efficient the asset market. This is the world of Milton Friedman and his followers, the adherents of market efficiency and rational expectations (destabilizing speculators cannot survive).

In the “world 2”, trading produces price trends at different data frequencies (trends based on tick data, minute data, up to daily and monthly data), which accumulate to long-term trends (“bulls” and “bears”), so that asset prices move in long swings around their fundamental equilibrium without any tendency of convergence.

In the “world 2”, smart traders (mostly professionals) exploit the phenomenon of asset price trending in two ways. Trend-followers buy (sell) during the early stage of an upward (downward) trend, contrarians sell (buy) during the late stage of an upward (downward) trend (both strategies are carried out by using computer-driven technical trading systems). Their counterparts are less skillful (these are mostly amateurs – as regards trading, also managers of pension funds have to be considered amateurs. The representatives of the “finance alchemy banks” like Goldman Sachs or Deutsche Bank are simply more skillful – and faster). The amateurs often behave as “late coming bandwagonists”, i.e., they sell at the end of a downward trend and buy at the end of an upward trend.

The IMF and EC papers implicitly assume that the real world corresponds with the “world 1” model. Even though both papers discuss the phenomenon of short-term “noise trading” and its potentially detrimental effects on asset price formation they do not consider these effects to be so important as to justify an increase in the overall transaction costs in financial markets. In other words: It is implicitly assumed that the stabilizing forces of rational traders are stronger

than the destabilizing forces of short-term speculators so that reducing trading activities through an FTT would have more drawbacks than benefits.

Box 1: High-frequency trading

From an article by Carol L. Clark, Controlling risk in a lightening-speed trading environment, Chicago Fed Letter, March 2010:

“High-frequency algorithmic trading strategies rely on computerized quantitative models that identify which type of financial instruments to buy or sell (e.g., stocks, options, or futures), as well as the quantity, price, timing, and location of the trades.....

The TABB Group, a financial markets research firm, estimates that algorithmic trading in the U.S. equities markets grew from 30 percent of total volume in 2005 to about 70 percent in 2009 and that 2 percent of the 20,000 trading firms in the U.S. initiate these transactions. These firms made about \$21 billion in profits during 2008.....

A main goal of high-frequency trading strategies is to reduce latency, or delays, in placing, filling, and confirming or cancelling orders.....

Latency is measured in microseconds (millionths of a second) and has various components, including speed at which market data and signals from the marketplace are processed and geographical distance and response time from the exchange matching engine.....

By reducing latency, high-frequency traders are able to send their buy and sell orders to the exchange matching engine at breakneck speeds in the hopes of getting their trades executed first.....

Another development in reducing latency is related to how close a trading firm's server is to the exchange matching engine. It is estimated that for each 100 miles the server is located away from the matching engine, 1 millisecond (thousandth of a second) of delay is added. To reduce this latency, many exchanges now offer co-location services, which allow trading firms to place their servers close to the exchange matching engine.....

Co-location services are offered by numerous exchanges, including NYSE (New York Stock Exchange) Euronext, Eurex, IntercontinentalExchange (ICE), and the Chicago Mercantile Exchange.....

The high-frequency trading environment has the potential to generate errors and losses at a speed and magnitude far greater than that in a floor or screen-based trading environment...”

The hypothesis of the “world 2” is not taken into consideration in the IMF and EC papers. Thus, the empirical literature on the profitability and price effects of technical trading systems is not even mentioned. The same is true for the most “fashionable” form of technical trading, i.e., the high-frequency algorithm trading (the latter is dealt with in *Matheson*, 2010, however, it is not discussed how an asset market like the US stock market could be efficient when “in 2009, algorithm trading accounted for at least 60% of U.S. equity trading volume” – *Matheson*, 2010, p. 17).

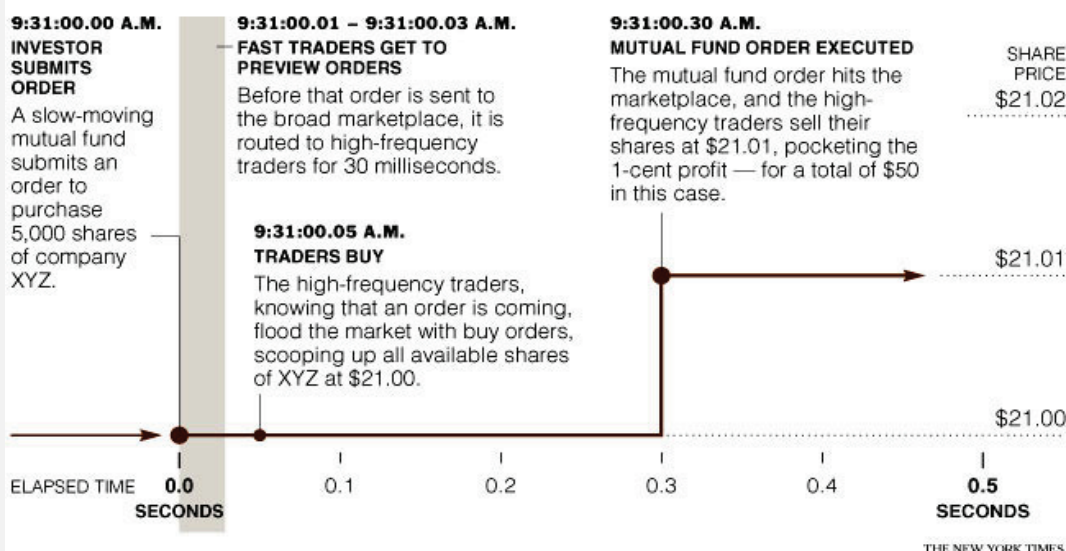
Box 2: High-frequency flash trading

One popular form of high-frequency trading involves so called flash orders. In flash orders, stock exchanges allow some customers, for a fee, to get a brief look at orders before they are placed. With this short time advantage and the use of computerized trading some traders can place a stock order ahead of the other orders and thereby influence the market to their advantage.

In high-frequency trading, computers buy and sell stocks very fast. Some marketplaces allow traders to see orders for 30 milliseconds before they are shown to everyone else. This allows traders to profit by very quickly trading shares they know will soon be in high demand. Each trade earns cents, sometimes million times a day as shown in the figure below.

The Thirty-Millisecond Advantage

In high-frequency trading, computers buy and sell stocks lightning fast. Some marketplaces, like Nasdaq, often offer such traders a peek at orders for 30 milliseconds — 0.03 seconds — before they are shown to everyone else. This allows traders to profit by very quickly trading shares they know will soon be in high demand. Each trade earns pennies, sometimes millions of times a day.



Source: New York Times (2009), Stock Traders Find Speed Pays, in Milliseconds

<http://www.nytimes.com/2009/07/24/business/24trading.html>

The bias of the IMF and the EC towards market efficiency is understandable insofar as it represents the paradigm which has been prevailing in economics and politics for the past decades. At the same time, the market efficiency bias is remarkable for at least three reasons. Firstly, a clear coincidence between the deregulation of financial markets and the rising financial instability over the past three decades can be observed. Secondly, the phenomenon of "bulls" and "bears" in the stock markets, the currency markets and the commodity derivatives markets in particular have become progressively more pronounced

over this period. Thirdly, the use of trading systems which process only information contained in past prices has increased tremendously. This implies that either the traders do not act rationally (if the systems are unprofitable) or the markets are not even weakly efficient (if the systems are profitable).

The market efficiency bias represented by the IMF and EC papers might also explain why the following phenomenon is overseen: The more transactions are carried out and the higher the speed of trading, the less does the trading support the price discovery process. The reason is simple: Traders do not have enough time to form rational expectations of market fundamentals. Upon the arrival of a piece of news there is at most one second to form directional expectations of the directional expectations of the majority of traders (Keynes' "beauty contest" problem, reduced to the direction of imminent price movements: up or down).

Nowadays, the speed of transactions and price movements has become so high that an ever increasing number of trading decisions are met by computers (in the US stock market already up to 70% - *Clark, 2010; Matheson, 2010*). Hence, the algorithms of high-frequency trading systems attempt to tackle the "beauty contest" problem. They process information of price movements, order flows and trading volume, but they disregard any kind of information on market fundamentals (boxes 1 to 3).³⁾

This development points to an essential contradiction: On the one hand, the increase in transactions volumes should enhance the price discovery process. On the other hand, the increasing trading speed makes it progressively difficult and unrewarding to find out the fundamental value of an asset. The conventional theory ("world 1") disregards this contradiction and simply assumes that the following equation holds: More transactions/liquidity = better discovery process of the fundamental equilibrium price = more efficiency. This equation might (asymptotically) hold up to a certain level of financial transactions but beyond that level, the ever increasing speed of trading makes it necessary to reduce the complexity of trading decisions. This is done by progressively disregarding the market fundamentals.

An example of this contradiction is the increasing use of technical trading systems based on high-frequency data. The trend-exploiting and trend-reinforcing "behavior" of computers exerts a growing influence on asset price dynamics (by trends I mean any kind of persistent price movements, even if they last only for a few seconds when based on ultra-high-frequency data). The trend-following algorithms strengthen upward (downward) trends by producing buy (sell) signals in their early stage. The contrarian algorithms contribute to a tilt of the trends by producing sell (buy) signals in their late stage. This interaction strengthens the persistence of asset price movements, at the same time it prevents trends from developing

³⁾ The preliminary results of the Triennial Central Bank Survey organized by the Bank for International Settlements suggests that the overall increase in financial transactions between 2007 and 2010 (by 28%) was to a substantial extent due to the rise in high-frequency trading. The very remarkable expansion of trading activities – in spite of the financial crisis – implies, that FTT revenues would be at least by 20% higher than estimated based on 2007 data.

into a bubbles.⁴⁾ However, since an optimistic (pessimistic) market mood prevails most of the time, upward (downward) runs last longer – for several months or even years – than counter-movements, bringing about bull (bear) markets in a stepwise process.

Box 3: High-frequency trading in practice: The case of Broadcom

On July 14th, 2009, Intel had reported an increase of earnings which motivated some investors to buy shares of the semiconductor company Broadcom. When the stock exchange opened, shares of Broadcom started changing hands at 26.20\$.

The investors began issuing buy orders. But rather than being shown to all potential sellers at the same time, some of those orders were routed to high frequency traders. Their computers began buying up Broadcom shares and then reselling them to the slower investors at higher prices. As an effect of the high-frequency trades, the overall price of Broadcom started to rise. Automatic programs began issuing and cancelling tiny orders within milliseconds to determine how much the slower investors were willing to pay. The computers quickly determined that some investors' upper limit was 26.40\$. As a result, the stock price went up to 26.39\$ and then high frequency traders began to flood the market with sell orders.

In the end, the slower moving investors paid 1,400,000\$ for about 56,000 shares or 7,800\$ more than without the transactions of the high frequency traders (they cashed in the 7,800\$).

Source: New York Times (2009): Stock Traders Find Speed Pays, in Milliseconds

<http://www.nytimes.com/2009/07/24/business/24trading.html>

The empirical evidence supports this hypothesis. Trading in financial markets has almost exploded over the past 25 years. At the same time also the volatility of stock prices, exchange rates and commodity prices has dramatically increased, both over the very short run and over the very long run. Hence, there exists a large amount of excessive trading which *destabilizes* asset prices. This type of excessive (destabilizing) liquidity would be considerably reduced by implementing an FTT.

A general FTT would not only yield revenues which amount 10 times higher than the EC estimate but it would also dampen destabilizing transactions, i.e., extremely short-term oriented trading in derivatives markets with high “built-in” leverage. This type of trading is

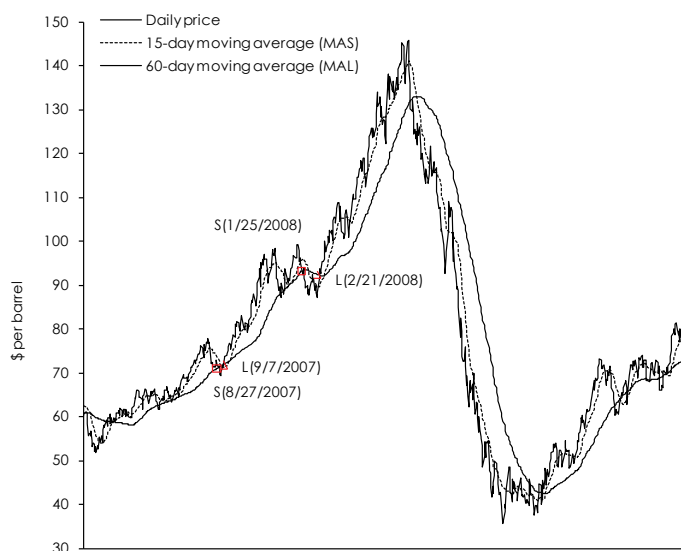
⁴⁾ The IMF papers (IMF, 2010; Matheson, 2010) point out that not all short-term trading is trend-following, implying that only the first would be destabilizing. In reality, both types of speculation complement each other in bringing about sequences of persistent upward and downward price movements which can be exploited at the expense of “latecoming bandwagonists”. Contrarian trading could only be considered stabilizing if one assumes that bubbles in the sense of economic theory (i. e., a non-fundamental equilibrium path) could occur in practice. This, however, is not the case because practitioners always know that trends are finite (for terminological clarity, economists should use terms like “boom” or “bull market” if they mean longer-term trends in the “real world” so as to preserve the term “bubble” for the theoretically exploding price path) . Unfortunately, theory has not developed a concept which matches the empirical pattern of asset price dynamics as sequences of persistent, yet finite, movements across different data frequencies (based on low frequencies: “bulls” and “bears”). Instead, theory offers two equilibrium solutions, either convergence towards the fundamental value or bubbles. Both are not found in practice.

unrelated to market fundamentals due to its “speed” and due to the models used (“algorithm trading” based on high frequency data).

There are two reasons why a general FTT would specifically affect destabilizing transactions. Firstly, the FTT makes trading the more costly the more frequently a speculative position is changed (this concerns any kind of “day trading”, in particular “high-frequency trading – see boxes 1 to 3). Secondly, the FTT dampen specifically derivatives trading since the tax rate refers to the notional/contract value so that the tax burden relative to the margin (cash) requirement rises with the leverage ratio.⁵⁾

For these reasons, the assertion in the IMF and the EC working papers that “the transactions tax does not differentiate between different segments of the market” (EC, 2000, p. 23) or that an FTT cannot “discriminate between discouraging stabilizing and destabilizing trading activity” (Matheson, p. 18) does not seem well founded (there is a clear tendency that transactions are the more destabilizing the “faster” they are and the higher is their leverage).

Figure 3: Technical trading signals for WTI crude oil futures contract, 2007 – 2009, November 5



⁵⁾ As the IMF rejects an FTT as a tool for market stabilization, it suggests: “If the aim is to discourage particular short-term transactions, regulation or targeted taxes are more effective” (IMF, 2010, p. 20). The forthcoming IMF working paper concretizes: “.....to discourage excessive leverage at the level of securities transactions, increased collateral or margin requirements could be used.” (Matheson, 2010, p. 24). As both measures would not increase transactions costs, their effect will be much smaller and less specific as compared to an FTT. Raising margin requirements could even be counterproductive. If, e. g., margins would be doubled, a trading algorithm might react by doubling the amount (value) of open positions.

4.3 FTT, long swings of asset prices and the financial crisis

The IMF and EC papers present some relationships and draw conclusions concerning short-term trading, asset price bubbles, the recent crisis and the effects of an FTT. Hereby, they follow the following steps (here arranged in a "stylized manner"):

- The increase in short-term trading is caused by the decline in transactions costs.
- Both developments will not (necessarily) cause asset price swings (.....it is not clear "that lower transactions costs intensify cyclical market price swings", *IMF*, 2010, p. 20).
- One piece of evidence supporting this view stems from the fact that "asset bubbles arise even in markets with very high transactions costs, such as real estate." (*IMF*, 2010, p. 20).
- "This suggests that a low-rate STT will not prevent asset bubbles." (*Matheson*, 2010, p. 19).
- Even though higher transactions costs might dampen short-term trading, "there is, however, no evidence that the recent crisis was triggered by excess transactions." (*EC*, 2010A, p. 24).

This reasoning does not seem convincing. The proponents of an FTT do not claim that such a tax would prevent asset price booms for example in the real estate market. They simply point out that trading in modern financial markets is characterized by two tendencies:

- Firstly, trading aims at exploiting ever shorter price trends and therefore increasingly disregards market fundamentals. This tendency is strengthened through low transaction costs but also by the development of computer-driven trading systems.
- Secondly, asset prices move in a sequence of long-term trends ("bulls" and "bears"), and, hence, in long swings with a rising amplitude (as can be seen from the development of stock prices, exchange rates and commodity futures prices over the last 20 years).

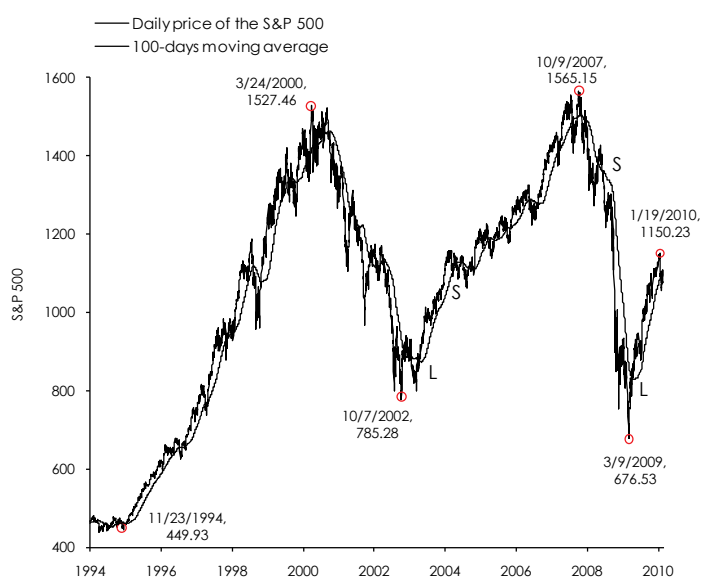
In order to explore the relationship between these two tendencies, the path of asset prices was measured across different time scales (from 1-minute data to daily data), in particular with respect the relationship between short-term runs (i.e., monotonic price movements) and long-term trends (for the most detailed study see *Schulmeister*, 2009D). The main results are as follows.

- Long-term asset price trends ("bulls/bears") are brought about through the accumulation of (very) short-term runs in the following way: If the "expectational regime" is "bullish" ("bearish") upward (downward) runs last longer than counter-movements so that the asset price rises (falls) over several months or years in a stepwise process. Hence, by making the speculative exploitation of (very) short-term runs more costly, an FTT would also dampen the "long swings" of exchange rates, commodity prices and stock prices.
- The phenomenon that "bulls" and "bears" are the result of differences in the persistence (duration) of price runs during phases of an optimistic and pessimistic market mood (and not due to differences in their slope) is present in the most important types of asset markets (*Schulmeister*, 2010, summarizes the empirical evidence for exchange rates,

commodity futures prices and stock prices). This result is important because it provides a link between the increasingly short-term oriented trading (which tries to exploit price runs) and the rise in the amplitude of long asset price swings.

As regards the possible effects of an FTT, it cannot be concluded from this that such a tax would necessarily prevent booms and busts of financial asset prices. What an FTT would most probably do, however, is to alter the process in which booms and busts develop (e.g. by shifting technical trading back to data of lower frequencies). It would probably also even out the asset prices swings.

Figure 4: "Bulls" and "bears" in the US stock market and technical trading signals



The IMF and EC papers do not mention this research, probably also because its results are in a direct contradiction with the "efficient market hypothesis" and the basic assumptions of the "world 1". In this perception of financial markets, any asset price reflects the fundamental equilibrium value of the respective asset. Upon the arrival of new information actors drive the price instantaneously to its new equilibrium. This (rational) behavior assures that asset prices follow a random walk so that one cannot systematically make trading profits from exploiting just the information contained in past prices (markets are at least "weakly efficient").

To sum up: In the "world-1-perception" to which the IMF and the EC somewhat still seem to be attached asset price changes should be brought about in jumps and not in persistent movements, trading systems of any kind must be useless, and "long swings" should not occur regularly. However, the empirical evidence does not support this perception.

As regards the recent crisis, it is certainly clear that it was not triggered by short-term trading. However, the latter has certainly contributed to the graviness of the crisis. This is due to the fact that the impact of the real estate crisis in the US (as well as in the UK, Ireland and Spain)

on the global economy would have been much lower if the mortgage crisis had not triggered a worldwide fall of stock prices and commodity prices. The potential of these "bear markets" was "built-up" during the preceding "bull markets" between 2003 and 2008. According to the research sketched above, short-term trading, which to a great extent is based on technical systems, will have strengthened the extent of both long-term trends, the booms up to 2008 as well as the subsequent busts.

4.4 FTT and tax distortion effects

The IMF argues that the distortion effects of an FTT will be higher than those of other kinds of taxes, in particular of a VAT because the FTT is a turnover tax which burdens transactions between businesses several times. "The argument that an FTT would cause little distortion because it would be levied at a very low rate on a very broad base is not persuasive: it is a central principle of public finance that if the sole policy objective is to raise revenue then taxing transactions between businesses (which many financial transactions are) is unwise: distorting business decisions reduces total output, so that more could be raised by taxing that output directly. A tax levied on transactions at one stage 'cascades' into prices at all further stages of production. This is why, for instance, most countries have found the VAT - which effectively excludes transactions between businesses - to be a more efficient revenue-raiser than turnover taxes" (IMF, 2010, p 21).

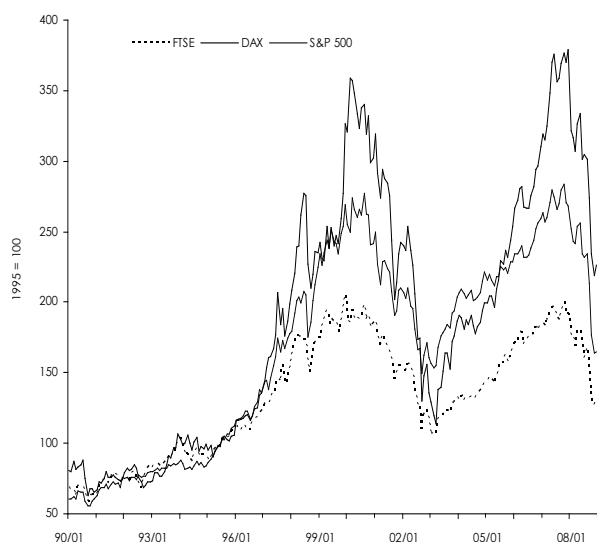
This reasoning suggests that financial transactions between banks, hedge funds, other financial institutions (e.g., insurance companies) and non-financial corporations can be perceived as intermediate inputs and outputs, respectively, as in the case of an ordinary production process in the real economy. Due to the different degree of specialization (across products, sectors, countries as well as over time), goods and services are produced in different stages. At each stage, some changes in the product are made and, hence, some value is added. Only this additional value should be taxed. If the gross value would be burdened by a turnover tax, then the specialization and the incentive structure of business would be distorted.

This reasoning is correct, however, the analogy between the trading of financial assets and the different stages of the production process is misleading. Buying an asset does not represent an (intermediate) input and selling an asset does not represent an (intermediate) output. Such a transaction means only the change of ownership without any change in the product. If the asset is sold at a higher price than it was bought, then the difference constitutes a capital gain (which is subject to the income tax). However, the difference never constitutes a value added because no value is added (only a nominal revaluation is realized).

For this reason, national income and product accounts neither take the change in ownership of already existing assets nor the valuation effects of rising or falling asset prices into account

(otherwise a price boom in the real estate market or in the stock market would “statistically” raise the GDP – I disregard indirect effects, e.g., the wealth effects on consumption).

Figure 5: Stock price fluctuations in Germany, the United Kingdom and the US 1990-2008



Source: Yahoo Finance (<http://de.finance.yahoo.com/m8>).

For the same reason, financial services are exempt from the VAT. In the “real” production process, the value added can be approximated simply by calculating the difference between the value of sales (for which VAT is paid) and the value of purchases (for which the included VAT is credited). This is not the case for selling or buying securities. Due to these conceptual problems - also regarding interest receipts and payments - the calculation of the value added of the financial sector in the system of national accounts (in the NIPA as well as in the SNA concept) differs significantly from the calculation of the value added for the “real” economy sectors.

Insofar as a business uses financial assets for hedging, the respective costs are of course a component of its value added (but these costs are different from the value of the hedging vehicle, e.g., a futures contract). Hence, an FTT would certainly increase the costs of hedging, however, the size of these costs is negligible because a hedger is *holding* an asset, not *trading* (0.025% in the case of an FTT of 0.05%). All other financial transactions which constitute an equivalent to “real-world-transactions” (e.g., foreign exchange transactions stemming from international trade or direct investment) or which serve the financing of

consumption or real investment (bank credits, initial public offerings of stocks and bonds) are exempt from the FTT according to the WIFO concept (see section 2).⁶⁾

In the advanced economies, financial transactions amount to roughly 100 times nominal GDP (*Schulmeister - Schratzenstaller – Picek, 2008*), high-frequency trading alone accounts for roughly 70% of all transaction in the US stock market (*Clark, 2010*). Hence, it is clear that only a very small part of transactions stem from hedging, the by far greatest part of trading represents (very) short-term speculation with assets.

In spot markets, the stock of these assets is fixed over the short run, and is even declining over the long run in important markets (e. g., in the US stock market, the volume of stock repurchases - mainly by "old-economy-corporations" - has exceeded the volume of stock issues - mainly by "new-economy-corporations" - corporations over the past 25 years).

In derivatives markets, the volume of assets is flexible since a contract can be created whenever two parties, each holding a different opinion as regards future price movements, want to make a bet. Hence, the greater the uncertainty and the degree of heterogeneity of the expectations, the larger is the potential trading volume.

Rather than describing the FTT as a turnover tax, the following picture might better live up with the task and better match with the characteristics of asset pricing:

- There are special market places/platforms where people bet on the direction of future price movements (spot and futures trading) as well as on their timing (options trading).
- As long as the overall asset price level remains unchanged, the sum of all profits equals the sum of all losses (if the overall asset price level changes, then the holders of spot instruments profit or suffer from valuation effects).
- Asset prices move in trends, they do not follow a random walk (in contrast to games like roulette where the ball follows a random walk).
- Price movements are the aggregate outcome of the betting behavior of the individual players (in contrast to roulette).
- Price movements are also an input into the process of making betting/trading decisions, in particular when computer-based trading systems are used.
- This feed-back, together with a permanent increase in the speed of trading due to computer technology, adds to the non-randomness and complexity of asset price dynamics (it becomes increasingly difficult to exploit asset price movements).
- Professional traders like the "finance alchemy banks" and certain hedge funds are able to deal with this increasingly complex environment much better than amateurs (including insurance companies, pension funds and corporations most of which have great difficulties to catch up with the speed and complexity of financial markets).

⁶⁾ For this reason, the following IMF statement does not hold for the WIFO concept of a general FTT: "Most current proponents of an FTT do not envisage that its base would include current account bank transactions." (*IMF*, p. 21, footnote 20).

- The investment of hundreds of millions of dollars into high-frequency trading systems on behalf of a few professionals is just one example for this development (which transforms asset trading progressively into an "unfair game").
- In the aggregate, the professionals as a group turn out to be the winners and the amateurs as a group turn out to be the losers (individual variations included).
- Many losers continue playing the game because they find it so exciting, and one day they will beat the market ("dentists and doctors")....., some have to keep on trading (e. g., pension funds).
- Other losers exit the game. As a consequence, the professionals have to use a part of their trading profits for recruiting freshmen (see the ads "how to learn the art of trading" on behalf of "finance alchemy banks" in the internet or in journals for amateur traders).
- In contrast to other zero-sum games (as any kind of gambling), asset trading determines the most important prices in the global economy, i.e., those prices that intermediate between the real and the financial sphere across time (interest rates and stock prices) and space (exchange rates) or that are key inputs for the production process (commodity prices).

Even though this picture sketches the main features of modern asset markets in a very stylized manner it suggests that a low tax on financial transactions can hardly have those detrimental effects as feared by the IMF and the EC.

By contrast, since a low FTT will only affect (very) short-term trading with high leverage it will – at least in part – compensate for negative externalities stemming from such activities. This is due to the fact that – as the economic theory shows – not all taxes cause distortions of incentives, distribution and production. If a tax reduces the social costs of the economic activities in question, then it increases the overall welfare. This argument - originally put forward by Pigou – does not only hold for environmental taxes (in order to reduce, e. g., the emission of greenhouse gases), but also for a low FTT (to reduce, e.g., the price-distorting effects of high-frequency trading – for a discussion of the FTT as an Pigouvian tax see *European Parliament/EP*, 2010).

The IMF and EC papers do not deal with the negative externalities caused by short-term speculation in asset markets and its effects on asset prices. This is particularly true for the impact of financial instability on the real economy. Over the past 35 years, the sequences of "bulls" and "bears" of exchange rates, commodity prices, interest rates and stock prices, have shaped the economic development. These wide fluctuations - an outcome of "business as usual" in financial markets – have rather hampered than fostered activities in the real sphere of the economy, in particular by increasing uncertainty, by producing waves of positive and negative wealth effects, by inflating and deflating balance sheets and by redistributing trade earnings between consumers and producers of commodities. Dampening the fluctuations of these prices would make an important contribution to a sustainable recovery of the real economy.

As regards the tax incidence, the difference between an FTT and a bank levy is particularly pronounced. As the latter taxes financial institutions to the extent that their overall asset value exceeds equity and savings deposits, the banks could/would easily shift the tax burden on their clients. By contrast, the FTT would levy certain activities irrespectively of who carries them out. Banks which do not engage in proprietary trading, would pay no FTT at all (if they carry out the order of a customer, the latter pays the tax). Hedge funds which use trading systems based on high frequency data would shift the tax burden on their clients. Amateur speculators (there are millions in advanced economies nowadays) would pay the tax, their (internet) brokers would not (because they also will shift the tax burden on their clients).

To conclude this section: The rejection of the concept of a general financial transactions tax by the IMF as well as by the EC is embedded into that "Weltanschauung" which has been mainstream in economics and politics over the past decades. If one assumes that the "freest" markets, i.e., the financial markets, cannot produce systematically wrong price signals - as would be the case if trending is conceived as the most characteristic property of asset price dynamics - then one has to reject even a very modest taxation of financial transactions. The implementation of an FTT is therefore not primarily a technical problem (this is also admitted by the IMF and the EC and will be shown in detail in this study) but a question of moving from a rather theoretical and abstract paradigm out of touch with the reality to a more pragmatic and realistic worldview. Politicians might be better in the position to make such a move than the economists.