



Market microstructure matters when imposing a Tobin tax—Evidence from the lab[☆]

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ABSTRACT

Trading in FX markets is dominated by two microstructures: exchanges with market makers and OTC-markets without market makers. Using laboratory experiments we test whether the impact of a Tobin tax is different in these two market microstructures. We find that (i) in markets without market makers an unilaterally imposed Tobin tax (i.e. a tax haven exists) increases volatility. (ii) In contrast, in markets with market makers we observe a decrease in volatility in unilaterally taxed markets. (iii) An encompassing Tobin tax has no impact on volatility in either setting. Efficiency does not vary significantly across tax regimes.

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1. Introduction

The idea of implementing a transaction tax on foreign exchange (FX) markets was first circulated by James Tobin in the early 1970s as a reaction to the high volatility in FX markets after the fall of the Bretton-Woods system of fixed exchange rates (Tobin, 1978). He argued that the tremendous increase in trading volume since then had mainly been due to speculative behavior.¹ Tobin assumes two archetypes of traders on financial markets: stabilizing long-term investors who base their trades on fundamentals, and short-term speculators who try to detect time trends in prices. Hence, a small transaction tax would mainly harm the frequently trading speculators who would either leave the market or at least markedly reduce

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¹ Galati et al. (2005) report an annual increase of 17% in the daily trading volume on world FX markets from 1973 until 2005.

their trading volume. Consequently, this would lead to a decrease in volatility and to an increase in market efficiency, while potential tax revenues are a “side effect” for Tobin.² The attitude on the last point has changed in the past few years, at least among politicians, as during the financial crisis 2007–2009 the idea of a Tobin tax has become very popular among them. The tax seems to target “evil speculators” and promises substantial tax revenues which do not have to be paid (directly) by the “normal” tax payer/voter.

Scientific research on the impact of a Tobin tax has started mainly in the 1990s with studies on the more general issue of how transaction taxes affect financial markets.³ There is broad consensus in the literature on some “trivial” issues such as negative effects of a Tobin tax on trading volume and market shares of taxed markets (compared to untaxed markets, i.e. tax havens).⁴

While the direction of the volume effects seems to be clear, other issues, especially the impact of a Tobin tax on volatility and on market efficiency, are still hotly debated, with strong academic backers for both sides. Parts of the controversy regarding volatility are likely due to different methodological approaches and different model assumptions: the main body of literature supporting the hypothesis of Tobin relies on agent-based models,⁵ while studies opposing the hypothesis of Tobin are mainly empirical, but suffer from the problem that they can only infer the impact of transaction taxes indirectly, since a Tobin tax has not yet been implemented.⁶

One common feature of all the papers mentioned so far is that the market microstructure has been ignored. This paper is an attempt to close this research gap. Currently, global trading in foreign exchange is dominated by two market microstructures: part of global volume is handled by exchanges where market makers ensure permanent liquidity provision.⁷ An even larger share of global volume is traded OTC (over-the-counter) between individual parties without market makers.⁸ The only paper to directly address the important market microstructure issues with respect to a Tobin tax is by Pellizzari and Westerhoff (2009). They use an agent-based model with the chartist/fundamentalist approach and explore the effect of a Tobin tax in different market microstructures, namely dealership and double-auction markets. They report that liquidity decreases in reaction to the imposition of a Tobin tax in a double-auction market and thus a given market order has a stronger price impact. As a consequence the imposition of a Tobin tax does not decrease price volatility, since the stabilizing effect of a reduction in speculative orders and the destabilizing effect of an increased price impact of orders due to lowered liquidity offset each other. By implementing a dealership-market with artificial market makers providing constant liquidity provision, they find that the introduction of a Tobin tax reduces volatility in dealership markets as speculation is reduced. Thus, a Tobin tax has different effects, depending on the market microstructure.⁹

Our paper can be understood as a cross-test of agent-based models and laboratory experiments, as we base our research question on and compare our results to Pellizzari and Westerhoff (2009). We implement two important alterations to their setup by (i) conducting laboratory markets with real humans interacting, and by (ii) implementing trade on two markets (for the same currency pair) simultaneously, thereby allowing for tax havens. For the experiment we build on and extend the setup in Hanke et al. (2010). In particular, we compare the impact of a Tobin tax under different market microstructures in laboratory markets: in Treatment OTC no market makers are present and thus each human trader can post limit and market orders. Hence, liquidity evolves endogenously through the actions of the human traders. In Treatment MM computerized market makers constantly post limit orders irrespective of the tax regime and thus keep liquidity provision constant.

We observe very strong and significant differences in the effects of a Tobin tax under different market microstructures: (i) in markets without market makers (Treatment OTC) an unilaterally imposed Tobin tax (i.e. a tax haven exists) increases volatility. (ii) In contrast, in markets with market makers (Treatment MM) an unilaterally imposed Tobin tax decreases volatility, while (iii) an encompassing Tobin tax has no impact on volatility in either setting. We do not find any significant differences in market efficiency across tax regimes, as all markets are fairly efficient.

² For various aspects of the Tobin tax see Haq et al. (1996), Spahn (2002) and Habermeier and Kirilenko (2003).

³ See e.g. Stiglitz (1989), Summers and Summers (1989), Schwert and Seguin (1993), Jones and Seguin (1997), Subrahmanyam (1998), Dow and Rahi (2000) and Baltagi et al. (2006).

⁴ For example, volume fell by one-third after a stamp tax of 0.1 percent was increased to 0.3 percent on the Shanghai Stock Exchange in May 2007. In Sweden the introduction of a transaction tax of 0.5% in 1984 led to the markets for futures and for bills to dry up almost completely and more than half of share trading to move abroad, mostly to London (Umlauf, 1993).

⁵ See Lux (1998), Lux and Marchesi (2000) and Hommes (2006) for studies with the chartist/fundamentalist approach (in the spirit of Tobin's distinction between speculators and fundamentalists). Already Frankel (1996) speculates that a transaction tax could increase the number of long-term fundamentalists or decrease the number of speculators. Either way, the price variability should decrease. More recent contributions by Westerhoff (2003), Ehrenstein et al. (2005) and Westerhoff and Dieci (2006) provide further evidence that a Tobin tax drives chartists from the market and stabilizes prices. Instead, with a different agent-based modelling approach, Mannaro et al. (2008) include a group of random traders and contrarians in addition to fundamentalists and chartists and find a positive (negative) impact of a Tobin tax on volatility (trading volume).

⁶ See e.g. Aliber et al. (2003), Habermeier and Kirilenko (2003) and Hau (2006).

⁷ At the CME and the LIFFE some currency pairs in their future markets are traded with market makers. In general, the importance of market makers has slightly decreased during the last years.

⁸ In this market microstructure big institutional investors (e.g., banks, large companies) trade currencies directly with each other without market makers. The biggest electronic trading platforms are EBS and Reuters 3000 XTRA.

⁹ A negative relationship of market liquidity and the price impact of orders has already been claimed by Ehrenstein et al. (2005), Lillo and Farmer (2005) and Mannaro et al. (2008). Ehrenstein et al. (2005) and Mannaro et al. (2008) further argue that transaction taxes probably have a negative impact on market liquidity, hinting at increased volatility when liquidity drops, since the price impact of orders increases.

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