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The economic consequences of a Tobin tax—An experimental analysis

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ABSTRACT

The effects of a Tobin tax on foreign exchange markets have long been disputed. We present an experiment with currency trading on two markets, where either none, one, or both markets are taxed. Our results confirm the hitherto undisputed issues: a tax reduces trading volume, shifts market share to untaxed markets, and leads to negligible tax revenues if tax havens exist. Concerning the controversial issues we find that (i) volatility effects depend on the existence of tax havens and on market size, (ii) market efficiency decreases in taxed markets when tax havens exist, and (iii) short-term speculation is reduced.

1. Introduction

In this paper we present an experimental test of the economic consequences of a Tobin tax. Such a transactions tax on foreign exchange markets was advocated by James Tobin in the early 1970s, and it has been controversial among economists and politicians ever since.[1] Of course, the actual implementation of a Tobin tax on real-world foreign exchange markets would resolve the controversies over its alleged consequences on volatility, efficiency, and short-term speculation, to name but a few of the disputed issues. Since a Tobin tax has not been implemented on any real foreign exchange market so far, however, we use the method of experimental economics to assess the effects of a Tobin tax.

In the political debate, the Tobin tax has gained popularity as a candidate instrument to fight speculation and stabilize foreign exchange markets. Its intended effects (according to many of its proponents) include a decrease in volatility and an increase in market efficiency. These expected benefits of a Tobin tax have been the reason for the Canadian House of Commons to speak out for a Tobin tax in recent years and for several political proposals in the U.S. to introduce a securities transaction tax (Bloomfield et al., 2009). Although the tax revenues are often downplayed as "side-effects", expected fiscal benefits obviously also increase the political appeal of a Tobin tax. For instance, when taking over the EU-presidency in 2006,

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[1] For collections of articles on various aspects of a Tobin tax, see Haq et al. (1996); Habermeier and Kirilenko (2003) or Weaver et al. (2003).

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the Austrian Federal Chancellor Wolfgang Schüssel proposed the introduction of a Tobin tax to provide a stable revenue basis for the EU budget.

In the academic debate, the Tobin tax has often been linked to the more general issue of how a transaction tax affects financial markets (e.g., Stiglitz, 1989; Summers and Summers, 1989; Schwert and Seguin, 1993; Jones and Seguin, 1997; Subrahmanyam, 1998; Dow and Rahi, 2000). The economics literature has reached a consensus on several issues such as the negative effects of a Tobin tax on trading volume or market shares (see, e.g., the contributions in Haq et al., 1996; Weaver et al., 2003). However, some other issues are still disputed, e.g., the impact of a Tobin tax on market efficiency and volatility.

Parts of the controversy concerning the latter issues are probably due to different modeling approaches concerning the coverage of the tax, either uniformly across all markets or applying only to a subset of markets. Assuming full coverage of the tax across all markets, Kupiec (1995) relies in his analysis partly on the empirical evidence concerning a transaction tax on stocks in Sweden (Umlauf, 1993). Kupiec then argues that a Tobin tax would increase mispricing, i.e., decrease informational efficiency, and lead to lower liquidity. The latter result is also established in a model with only one market by Subrahmanyam (1998). Palley (1999) presents a microeconomic model with two groups of risk-neutral traders (fundamentalists and noise traders). He shows that noise traders (speculators) cause inefficiencies and higher costs for fundamentalists. Therefore, anything that reduces the volume of noise trading without harming fundamentalists would be considered positive. Palley then argues that although a Tobin tax would hit fundamentalists and noise traders alike with respect to a single transaction, noise traders would be affected more heavily due to their higher trading frequency. As a consequence, a Tobin tax would reduce noise trading and, so he claims, increase market efficiency, contrary to the conclusions by Kupiec (1995). More recent models by Ehrenstein (2002) and Westerhoff (2003) also predict that a Tobin tax will increase informational efficiency by reducing the degree of mispricing (i.e., the difference between market prices and fundamental values). Cipriani and Guarino (2008) focus on the effects of a transaction tax on informational cascades, and hence market efficiency in incorporating information in market prices, in a laboratory financial market. While theory would predict the transaction tax to reduce informational efficiency, they find in the experiment no significant effect, which is due to less irrational behavior in the presence of transaction costs. Summing up the evidence on transaction taxes and market efficiency, it seems fair to say that the literature is still inconclusive.

Turning to the effects of a Tobin tax on price volatility we start by noting that Kupiec (1995) does not arrive at a clear-cut prediction for the influence of a Tobin tax on volatility, because a possible reduction in volatility might be wiped out by an increase in liquidity premia. Many other papers (see, e.g., Frankel, 1996; Westerhoff, 2003; Ehrenstein et al., 2005) expect a decrease in price volatility. However, an empirical study by Aliber et al. (2003) provides conflicting evidence. They consider the Tobin tax as a particular type of transactions costs on currency markets. Therefore, they investigate the impact of the size of transactions costs on trading volume and volatility. Using an innovative approach to derive transactions costs from futures prices, they show that higher transactions costs are associated with *higher* volatility and lower trading volume on foreign exchange markets.[2] Similar results are presented in Hau (2006). Hence, there is no general agreement on the consequences of a Tobin tax on price volatility, although two recent contributions may be able to resolve the contradictions. Haberer (2006) presents a model with a U-shaped relationship between volatility and market volume. The reduction of market volume due to the introduction of a Tobin tax can then have different consequences for volatility, depending on the relative market volume. Taxing relatively large markets may decrease volatility, whereas a tax on relatively small markets may increase volatility. This will be one of the key findings of our experiment. Pellizzari and Westerhoff (2009) have investigated in computer simulations the impact of market microstructure on the effects of a transaction tax on market volatility. They have found that different trading institutions – either a continuous double auction or a dealership market – yield different effects of a transaction tax on market volatility. While there is no significant effect in a continuous double auction (where the tax reduces liquidity), the introduction of a transaction tax reduces volatility in a dealership market (where abundant liquidity is provided by specialists and the tax crowds out speculative orders).

Interestingly, the implications of tax havens have only recently been explicitly modeled. Mannaro et al. (2008) and Westerhoff and Dieci (2006) analyze models with two markets where traders can choose on which market to trade and where a Tobin tax is either implemented on both markets or on just one of them, leaving the other market as a tax haven. Both papers show that introducing the tax on only one market leads to a strong decrease in trading volume on the taxed market. Whereas Mannaro et al. (2008) expect an increase in volatility on the taxed market, Westerhoff and Dieci (2006) claim that volatility decreases on the taxed market, but increases on the untaxed market. The latter paper stresses that the interplay between liquidity and volatility (via the price impact of orders) is difficult to assess in practice, so Westerhoff and Dieci (2006) explicitly call for an experimental analysis of the question.

Bloomfield et al. (2009) run a controlled laboratory experiment to study trading behavior on markets when a securities transaction tax (STT) is introduced. They are particularly interested in the effects of a STT on three different types of traders whom they call informed traders, liquidity traders, and noise traders. Their experimental results suggest that a STT leads to less noise trading, which then increases informational efficiency. Market volume is driven down by the tax, whereas market volatility is hardly affected. A limitation of the setting used in Bloomfield et al. (2009) is its restriction to only a single market.

[2] Werner (2003) raises the important question in which way causality is running, however, it could be from trading costs to volatility, or the other way round.