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The societal benefit of a financial transaction tax ☆

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ABSTRACT

We provide a novel justification for a financial transaction tax for economies where agents face stochastic consumption opportunities. A financial transaction tax makes it more costly for agents to readjust their portfolios of liquid and illiquid assets in response to liquidity shocks, which increase both the demand for and the price of liquid assets. The higher price improves liquidity insurance and welfare for other market participants. We calibrate the model to U.S. data and find that the optimal financial transaction tax is 1.6% and that it reduces the volume of financial trading by 17%.

1. Introduction

A financial transaction tax (FTT) is a proportional tax on financial transactions. One of the early advocates was Tobin (1978) who proposed it in order to add some frictions to the "excessively efficient international money markets" (p. 154). Although Tobin's proposal was a proportional tax on currency transactions, the term "Tobin tax" is commonly used today for a proportional tax levied on any financial asset transaction.

The existing theoretical literature on FTTs focuses mainly on historical episodes or provides the basic intuition in favor of or against such a tax. Although this literature discusses many dynamic issues such as price volatility and liquidity in financial markets, the analysis is most often static. Furthermore, none of these papers studies the underlying frictions that give rise to the need for financial transactions in the first place, and the reader is left puzzled about what distortion an FTT is intended to correct. Finally, very few studies offer a rigorous analysis of the welfare implications of FTTs.

Building on recent advances in monetary theory, we can now address these shortcomings by building a choice-theoretic dynamic general equilibrium model with frictions that make financial trading essential.[1] The model allows us to address important positive and normative questions regarding the impact of an FTT on the real economy: for example, under which conditions is an FTT desirable and what distortion is corrected by such a tax? More generally, what is the optimal FTT and how does it affect trading volumes in financial markets?

In our model, agents face idiosyncratic random consumption and production opportunities, and they hold a portfolio of liquid and illiquid assets. The liquid asset can be directly traded for consumption goods if a consumption opportunity arises;

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[1] These frictions include a lack of record-keeping (public communication of individual trading histories) and a lack of commitment. By essential, we mean that financial trading improves the allocation.

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i.e., it serves as a medium of exchange. In contrast, the illiquid asset cannot be used as a medium of exchange.[2] From the agents' point of view, the random consumption and production opportunities are liquidity shocks. These shocks generate an ex post inefficient allocation of the medium of exchange: some agents will hold liquid assets, but have no current need for them, while other agents will hold insufficient liquidity for their liquidity needs. To mitigate this liquidity mismatch, a financial market opens that allows the exchange of illiquid assets for liquid assets. The financial market is an over-the-counter (OTC) market, where agents are matched in pairs and the terms of trades are bargained.

Our main finding is that the portfolio choice of liquid and illiquid assets displays a pecuniary externality which results in an inefficiently low demand for the liquid asset. The reason for the pecuniary externality is that an agent does not account for the fact that, by holding more liquid assets, he not only acquires additional insurance against his own idiosyncratic liquidity risks, but also marginally increases the value of the liquid asset, which improves the insurance for other market participants, too. This pecuniary externality can be corrected by an FTT. By making it more costly to readjust a portfolio in response to liquidity shocks, agents attempt to hold more of the liquid asset ex ante. The resulting increase in the demand for liquid assets drives up the value of these assets and this effect can be so strong that it is welfare-increasing.[3]

To provide a quantitative assessment for the optimal FTT, we calibrate the model to U.S. data. For the calibration, we assume that the FTT is zero. We then perform the following experiment: we search numerically for the tax rate that maximizes welfare. We find that for the United States, the optimal tax rate is 1.6% and that the optimal tax rate reduces the real volume of financial trading by 17%. As a robustness check, we also calibrate the model to Germany and find that the optimal tax rate is 1.5%.

The optimal rate of an FTT mainly depends on the financial market characteristics, which are captured in an OTC market by the matching probability and the bargaining power. For example, we find that the optimal tax rate decreases monotonically in the matching probability. Furthermore, as the bargaining power of the agents who demand liquidity increases, the optimal tax rate increases.

FTT rates vary substantially and range from 0.1% in the European Union to 2% in the United States and Switzerland. The European Commission intends to introduce an FTT on the exchange of shares and bonds of 0.1%. The proposal is supported by eleven member states and is scheduled to be introduced in 2016. In the United States, the recent reform of the Securities and Exchange Commission, effective as of 14 October 2014, allows money market funds to impose an exit fee of up to 2%. This so-called *liquidity fee* can be imposed if the fund's liquid assets fall below a pre-specified threshold. Similar regulatory changes have been imposed by the Swiss Financial Market Supervisory Authority. Since 1 January 2015, a fee on early redemptions of time deposits of at least 2% has been levied.

Our finding of an optimal FTT of 1.6% for the United States or 1.5% for Germany is likely to be an upper bound for the optimal FTT, since, by construction, in our paper an FTT has no negative effects on the primary market and, for example, investment decisions. Furthermore, our model is a closed economy, where agents cannot avoid the FTT by moving to asset markets that have no or a lower FTT. In practice, financial investors have many choices at home and abroad and this will constrain the introduction of FTTs. An open economy, however, does not imply that an FTT will drive away all asset trading. For example, in Switzerland, the tax authority charges a stamp tax (an FTT) equal to 0.15% for each transaction in domestically issued CHF bonds and a stamp tax equal to 0.3% for each transaction in foreign issued CHF bonds. Even though these rates are considerably smaller than the optimal rates we find for the United States and Germany, the tax income generated by the Swiss stamp duty is large. For Switzerland in 2010, it generated 4.5% of the entire federal tax income.[4]

Our main finding is obtained in a model that belongs to a class of models that is by now labeled the “new monetarist economics”. This literature originated with the seminal paper by Kiyotaki and Wright (1989).[5] Our version is based on Lagos and Wright (2005) and Berentsen et al. (2007). In these new generation models, the Friedman rule is the optimal monetary policy. The Friedman rule maximizes the return on the liquid asset (money) and addresses the problem of an inefficiently low value of money more directly than an FTT. Our paper, therefore, solves a second-best problem in which an FTT can improve welfare away from the Friedman rule. Implementing the Friedman rule, however, requires taxation, since tax income is needed to subsidize the liquid asset. In many monetary models, lump-sum taxation is available and so the necessary funds to implement the Friedman rule can be levied with a nondistortionary tax instrument. If such an instrument is available, enhancing the return on money as proposed by the Friedman rule is clearly a better policy than an FTT. In practice, however, nondistortionary taxation may not be available, and a government must resort to distortionary taxation to subsidize the rate of return on the liquid asset. In this case, a well-designed FTT can be a better policy.

It is well-known that a pecuniary externality is a pricing externality. In an incomplete markets setting, the equilibrium might not be constrained-efficient, and government intervention can be welfare-improving. In our incomplete market model, there are two pecuniary externalities. First, when agents acquire money they incur disutility today, but spending and hence consumption utility occurs in the future. Since agents discount future utilities, they typically underinvest in money, which results in a value of money that is too low, or, equivalently, a price level that is too high. This is a well-known pecuniary externality that is present in the most basic version of the Lagos and Wright (2005) framework. We therefore

[2] It has been shown by Kocherlakota (2003) that an arrangement with illiquid bonds is efficient. See also Berentsen and Waller (2011) for a discussion on the societal benefits of illiquid bonds. We provide a short discussion of this result in Section 7.

[3] The pecuniary externality arises in the steady state equilibrium.

[4] The stamp duty is levied on many financial products including insurance contracts, stocks, bonds and other financial instruments.

[5] For a discussion of this literature, see Williamson and Wright (2010a, b).