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Macroeconomic effects of an equity transaction tax in a general-equilibrium model

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ABSTRACT

The paper studies the impact of an equity transaction tax (ETT) on financial and real variables in a DSGE model with two types of financial frictions: (1) financial intermediaries facing a leverage constraint; (2) noise shocks that lead to the emergence of non-fundamental equity trade. The ETT depresses the demand for equity and hence increases the cost of capital; this then affects firms' investment decisions. In the long run, the tax is found to be as distortive as a corporate income tax. The transaction tax also reduces volatility in financial markets, but the impact on real volatility is limited.

1. Introduction

The banking and financial crisis of recent years initiated a broad debate on the reform of financial regulation to improve the resilience of the financial sector. Given the costs that bank rescues have inflicted on taxpayers, the demand to make the financial sector contribute to the financing of crisis-intervention costs has also gained political voice and support (IMF, 2010). In the European Union, the European Commission has proposed an EU-wide financial transaction tax that would cover a broad set of financial assets. The political debate sees financial sector taxation as an instrument to prevent further crises and recover rescue costs from the financial sector that has previously received massive government support. In contrast to the public discussion, there is very little public finance literature on financial sector taxation, its regulatory merits/drawbacks, its potential to generate substantial tax revenue, or its macroeconomic implications. Empirical work on these questions is scarce as well. As Keen (2011) notes, governments' attempts to reform the financial sector and financial regulation have been largely unguided by academic research so far.

Against this background, this paper contributes to the literature by analysing the macro-economic effects of an equity transaction tax (ETT) in a dynamic stochastic general-equilibrium (DSGE) framework. The two main questions that our paper addresses are: (1) What is the ETT's long-term impact on financing costs, investment and economic activity? (2) Does the ETT succeed in reducing (non-fundamental) volatility of asset prices and real economic variables? The general-equilibrium analysis in this paper is an attempt to quantify both effects and their macroeconomic implications. The exercise also discusses the parameters that shape their relative importance. The analysis focuses on a tax imposed on spot market equity transactions. The discussion of financial transaction taxes on other types of transactions, e.g. foreign currency transactions or trade in financial derivatives, is beyond the scope of the present paper.

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We use an RBC model featuring two types of financial frictions. First, we incorporate financial intermediaries whose role is to collect deposits from households and invest them in corporate equity, which in turn is needed by the production sector to finance real capital installment. The financial sector is subject to an agency problem like in Gertler and Karadi (2011). This creates a channel for financial sector shocks to be transmitted to other parts of the economy. Second, we assume that some financial intermediaries act as noise traders in the sense of De Long et al. (1990) and Shleifer and Summers (1990). Idiosyncratic noise shocks generate non-fundamental trade in financial assets in the model. The presence of non-fundamental shocks also introduces a channel for the ETT to be welfare enhancing by potentially dampening non-fundamental financial transactions and their transmission to the real economy. We calibrate our model to match some stylised facts of financial markets and firms' financing.

The contribution and novelty of discussing the ETT in a DSGE framework is the emphasis on the ETT's macroeconomic impact and the exposition of relevant transmission channels. The approach contrasts with partial equilibrium approaches (e.g., Kupiec, 1996; Song and Zhang, 2005) that exclude feedback effects across different markets and over time and conjecture the impact of ETTs on the real economy off-model. To the best of our knowledge, Xu (2010) is the only existing paper studying the impact of financial transaction taxes in a DSGE model. However, the analysis by Xu focuses on foreign currency transactions in a model without physical capital or financial market frictions; in her model, a tax on financial transactions has then by construction no impact on capital costs and investment.

Our results suggest that the ETT is highly distortive, with long-run real-sector effects similar to those implied by corporate taxation. At the same time, the ETT does reduce financial volatility. However, the stabilisation gain in terms of reduced volatility in the real economy is small.

Crucial for the understanding of the main mechanism in our model is the observation that the Gertler–Karadi type of constraint on the leverage of financial intermediaries introduces inefficiency into the economy by limiting the funds available for equity investment. This gives rise to a substantial positive equity premium. The high stock returns imply that stock prices are substantially below the efficient price, which in turn implies an inefficiently low level of capital and output.

The addition of the noise shock to the model has an ambiguous effect. Negative shocks, by reducing the demand for equity, further depress asset prices, capital and output. However, positive noise shocks have an inverse effect, hence pushing stock prices up and somewhat reducing the inefficiency of the economy. Hence, as far as first-order level effects are considered, the noise shock as such does not add to the inefficiency of the economy. At the same time, the noise shock leads to an increase in the *volatility* of stock returns, which translates into an excess volatility in real economic variables. This effect turns out to be quantitatively rather small: a very high variance of the shock needs to be assumed to observe significant effects on the volatility of non-financial variables.

Introducing the ETT in our economy has two effects. First, and in contrast to the noise shock, an ETT will unequivocally reduce the demand for equity in any state of the economy, i.e. for both positive and negative noise shocks: The ETT dampens the impact of the positive noise shock and reinforces the impact of the negative noise shock. On average, the tax reduces the share price, with a negative impact on capital and output levels. Second, by making it more costly for traders to change stock market positions, the ETT will reduce noise trading and the associated volatility of financial and, potentially, real variables. The ETT's negative effect on the level, however, largely outweighs its volatility-reducing effect according to our simulations.

A capital income tax similarly increases the expected pre-tax returns on capital in the economy. Therefore, the two taxes have very similar first-order effects. At the same time, the second-order effects of the two taxes are different. The ETT directly reduces noise trade through which financial and, indirectly, real volatilities are affected. In contrast, the capital income tax directly affects real volatility while it only has an indirect effect on financial sector variables.

The negative impact of the ETT on share prices is in line with existing empirical literature. Indeed, a price decline in reaction to the (announced) introduction of a financial transaction tax appears to be a robust finding across different types of taxes, countries, and periods (e.g., Bond et al., 2005; Hu, 1998; Umlauf, 1993; Westerholm, 2003). The empirical literature on the impact of transaction taxes on the volatility of asset prices is scarcer. Papers that discuss the impact of transaction costs on stock price volatility usually report that an increase in the transaction costs actually increases this volatility (Hau, 2006; Jones and Seguin, 1997). None of the papers discusses the impact of financial transaction taxation and asset prices on the real economy, however.

Our model presents one particular way of introducing non-fundamental asset price volatility and transaction taxation in a general equilibrium framework. The model introduces noise trading in a highly stylised manner, which may in some way understate the economic costs of non-fundamental financial trade. We do not include, e.g., contagion from noise traders' beliefs to the expectations of informed traders—a feature which could amplify and lengthen the noise shocks' impact on share prices and the real sector and generate prolonged boom–bust cycles. Larger non-fundamental fluctuations might give more scope for and ETT to exert its volatility-reducing effect compared to its negative effect on the level of economic activity.

Another aspect which is argued to increase gains from an ETT and which our model abstracts from is the allocation of resources to the financial sector. The economy could arguably gain from shifting resources from noise trading towards more productive activities in response to a tax-driven reduction in noise trade (see, e.g., Summers and Summers, 1989). This argument may be valid in case such resources have sizable fixed costs while at the margin transactions cost very little and hence do not curb non-fundamental trade by themselves.