Taxing financial transactions

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The idea of taxing financial transactions is an old one. However, it came up again recently when the European Commission presented a proposal on a financial transaction tax within the EU in September 2011.[1] The aim of the tax is twofold. First, the transaction tax is intended to improve the workings of the financial markets, which could reduce the risk of financial crises in the future. Second, the tax is intended to generate revenues and thus to get the financial sector to contribute to covering the costs that arise as a result of financial crises.

The hypothesis is that the tax would reduce any elements of speculation in financial markets as it would increase the costs of transactions with financial instruments. This in turn would result in a more realistic valuation of the returns that the financial assets can provide in the future. Although a reduction in speculation would reduce the base on which the tax is levied, that is the tax base would shrink, it would also reduce the risk of financial crises.

In this article we show that there is no clear evidence that the financial markets would function better with a transaction tax. On the contrary, such a tax would increase firms' cost of capital, which would reduce investment and thus lead to lower GDP. The negative effects on economic activity could be considerable in relation to the expected tax revenues. One can also question the value of a transaction tax as a source of revenue. It will probably be difficult, not to say impossible, to avoid an increase in transactions with untaxed financial instruments, and equally difficult to prevent trading in financial assets from migrating to markets that do not have transaction taxes. The financial markets are global and until the tax is introduced globally there is an obvious risk that trading will move to other countries.

We begin by looking at the background to the discussion about taxing the financial sector. We then describe the Commission's proposal and give an account of the previous experience of transaction taxes. After this we discuss the arguments for the tax and, finally, we present our conclusions.

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1 See the European Commission (2011), "Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC", COM (2011) 549.

1 Background

The economist and Nobel laureate James Tobin launched the idea of taxing currency trading in 1972. Tobin proposed a tax of between 0.2 and 1 per cent in connection with foreign exchange transactions with the aim of stabilising exchange rates to some extent following the breakdown of the international system for foreign exchange cooperation, the so-called Bretton Woods system. The proposal had some impact on the political debate and similar taxes have been discussed on several occasions since then. In 1995, for example, the French prime minister at that time, Lionel Jospin, proposed a tax of 0.1 per cent on foreign-exchange transactions. In 1999, the European Parliament presented a report claiming that a tax of 0.5 per cent would generate USD 360 billion per year (European Parliament, 1999). The idea was then also taken up by Attac and the global fairness movement.

The financial crisis that began in 2007 led to government support measures for the financial sector in many countries. The effects of the crisis on the real, or non-financial, part of the economy demonstrated the need for a more robust financial system. In June 2010, the International Monetary Fund (IMF) therefore published a report commissioned by the G20 countries: *A Fair and Substantial Contribution by the Financial Sector, Final Report for G-20*. The report takes up measures in the form of taxes and charges that could be levied on the financial sector in order to strengthen public finances, fund support measures for the sector in the future and reduce the probability of future financial crises. The IMF report also discusses the issue of a tax on financial transactions.

This issue has also been discussed in the EU. The discussion resulted in a proposal for a transaction tax at the EU level that the Commission presented in September 2011. The Commission proposes that such a tax should come into force on 1 January 2014. This would entail taxing the buying and selling of securities within the EU.

2 The Commission's proposal

The Commission proposes that a tax should be levied in connection with trading in shares, mutual fund units and bonds, and also in connection with trading in derivatives, including foreign-exchange derivatives. It also proposes that the tax rate should be 0.1 per cent for shares, mutual fund units and bonds and 0.01 per cent of the nominal value of the underlying asset for derivatives.[2] The intention is that the EU countries should levy the tax on both the buyers and the sellers. In the case of a share transaction the tax would therefore total 0.2 per cent. The tax rates are intended to be minimum rates; that is the Member States will be able to opt for higher rates if they so choose.

2 Options and forwards are examples of derivatives whose value depends on the value of another, underlying asset, for example a share.

Transactions on the primary market should not be liable to tax, according to the proposal.[3] However, we question the value of this exemption. New issues of both shares and bonds would be indirectly affected by the tax because the buyers on the primary market would have to pay the transaction tax when they subsequently sell the assets concerned. We would also expect to see lower prices on the secondary market, where both buyers and sellers will be liable to the tax.

The liability to pay tax will apply to all the financial institutions that are established under the tax jurisdiction of the EU. The definition of financial institutions is broad in the proposal and covers a wide range of financial companies: everything from banks and insurance companies to investment funds. Non-financial companies may also be covered by the liability to pay tax if they conduct financial transactions on behalf of the company. The Commission also includes the marketplace itself in the definition. This means that the tax will cover all the transactions with financial instruments that take place on a regulated marketplace, irrespective of who is registered as the buyer or seller.

The Commission gives two main reasons for its proposal. The first is that the tax could improve the workings of the financial markets, for example by reducing the element of speculation. The second is that the transaction tax could get the financial sector to contribute to covering the costs of financial crises. The Commission also says that coordinated action on a transaction tax by the EU countries could constitute an important step towards global coordination.

The Commission has also analysed the consequences of a transaction tax in the EU. In the main scenario of this analysis (European Commission, 2011) the Commission calculates that the revenues would be more than EUR 57 billion per year with a tax of 0.1 per cent on share-, bond- and foreign-exchange transactions, and on transactions with stock exchange-, foreign exchange- and OTC derivatives. The calculation is based on trading in financial instruments in 2010 and the revenues correspond to 0.5 per cent of GDP in 2010, which is a relatively high figure compared with previous fiscal experience of transaction taxes (see section 6 for an account of previous fiscal experience). The Commission assumes in this calculation that the tax base will shrink when the tax is introduced; it assumes that the so-called transaction elasticity will be 1.5, which means that trading in financial assets will fall by 1.5 per cent when the tax is increased by 1 per cent. However, there are grounds for believing that elasticity will actually be much higher. We can compare the elasticity assumed by the Commission with the elasticity of the securities transaction tax that was introduced in Sweden in 1984 and abolished in 1991, which Lindgren and Westlund (1990) have calculated as 0.85-1.35 (see section 4 for a more detailed description of this tax). This tax was in force during a period in which the mobility of capital in Sweden was limited due to regulations in force at the time. As a result of these regulations, the transactions

3 The stock market comprises trading in shares in companies and this trading takes place on stock exchanges or bilaterally between the parties concerned (so-called OTC trading). In the case of a share issue, the money paid by the shareholders to buy the shares directly benefits the company in that it increases the company's equity. This is trading on a primary market. If the shares are bought on a stock exchange or bilaterally by another investor, then this is instead a case of trading on a secondary market, as the shares have already been issued.

were not able to migrate to the extent that would have been possible if there had been free movement of capital. When the Commission assesses to what extent the transaction tax will be able to uphold the tax base on today's financial markets with free movement of capital, its assumptions do not therefore deviate significantly from the calculated elasticity on the strictly-regulated Swedish financial market in the 1980s. There is thus a risk that the size of the tax base will be much smaller than the Commission expects.

What then will be the overall economic effect of the Commission's proposal? In its impact analysis, the Commission (2011) notes that one can expect a tax of 0.1 per cent on shares to reduce the level of GDP by at least 0.5 per cent annually and possibly by as much as 1.8 per cent when the full force of the tax comes into effect. However, there is great uncertainty regarding this cost. In its assessment, the Commission assumes that the tax will improve the workings of the financial markets and that this will help to reduce the economic cost of the tax. According to the Commission, the fall in GDP will stem from the fact that companies' capital costs will increase when they have to compensate investors on the financial market for the transaction tax. The higher capital costs will in turn reduce investment and thereby GDP. These costs may also increase further if bond and foreign-exchange transactions, and transactions involving stock exchange-, foreign-exchange- and OTC derivatives are also taxed. At the same time, the Commission claims in its main scenario that a transaction tax of 0.1 per cent could generate approximately 0.5 per cent of GDP in tax revenues. We wish to emphasise, however, that this assessment is also highly uncertain. Unlike the calculation of costs, the assessment includes the revenues that arise when bond and foreign-exchange transactions, and transactions involving stock exchange-, foreign-exchange- and OTC derivatives are taxed. The estimate is also high in relation to the previous experiences of those European countries that have, or have had, a transaction tax (see section 6).

If the Commission's assessment is correct, then the proposal entails the introduction of a tax resulting in an economic cost that will reduce economic activity in the long term. This cost may thus be remarkably high in relation to the revenues from the proposed tax. A decline in economic activity also means that revenues from other taxes will fall; a factor that the Commission has not taken into account in its assessment. Given this background we find it hard to justify the Commission's proposed legislation in economic terms.

3 International experience

A number of countries have or have recently had some form of transaction tax. Below we briefly describe the transaction taxes that are currently in force in the UK and Switzerland, two countries that are usually regarded as financial centres. Other countries that have a transaction tax at present are Belgium, Finland, Greece, India, Italy, Poland, Singapore, South Africa, South Korea and the United States. In the case of the United States the tax takes the form of a very low charge that is levied in connection with share trading in order to fund the financial supervisory authority, the US Securities and Exchange Commission

(SEC). Transaction taxes on derivatives are comparatively unusual, but they do exist in, for example, India and Taiwan (Matheson, 2011).

The transaction tax in the UK is a so-called stamp duty. It thus corresponds to the charge a buyer pays when acquiring real estate or site leaseholds. Stamp duties have primarily been introduced for fiscal reasons. The transaction tax amounts to 0.5 per cent of the sum paid in connection with the purchase and sale of shares in companies registered in the UK. It is thus levied on transactions that take place outside the UK too, if the company issuing the share is registered there. The tax also covers the underlying shares in the case of trading in options and forwards.

Various forms of tax relief are offered to brokers who trade in shares on their own behalf, while more long-term investments are taxed in full. The aim of the tax relief measures is to uphold the role of the London Stock Exchange as a financial centre. As a result of these exemptions, over 70 per cent of the trade in shares in the UK in 2005 was not taxed (Oxera, 2007). The tax yields annual revenues corresponding to just over 0.2 per cent of the nation's GDP (Matheson, 2011).

Switzerland taxes shares, bonds and some types of derivative.[4] As in the UK, the transaction tax in Switzerland is a stamp duty, that is a tax that has above all been justified on fiscal grounds. Other declared aims of the tax have been to avoid excessive capital inflows and a too strong currency (Wrobel, 1996). Both domestic and foreign investors are subject to the tax, while brokers that trade in shares on their own behalf are exempt. Exemptions also apply, for example, to Swiss investment funds, foreign banks, foreign insurance companies and foreign brokers.[5] The many exemptions are generally regarded as one of the explanations why Switzerland is seen as a financial centre despite the tax (Brondolo, 2011). The tax yields annual revenues of approximately 0.5 per cent of GDP.

What effects does a transaction tax have in countries with less well-developed financial markets and fewer generous tax deductions? Let us discuss this in the light of experience in Sweden.

4 Experience in Sweden

A securities transaction tax (popularly referred to as the "financial yuppie tax") was introduced in Sweden in 1984. One of the aims of the tax was to reduce volatility, that is the variation of prices of assets, on the financial market. Another reason for the introduction of the tax is said to be that the Swedish Trade Union Confederation advocated such a tax, as reflected in the criticism directed by Stig Malm, the President of the Confederation at that time, at the high payments made to "financial yuppies".

Initially the tax rate was 0.5 per cent in connection with both the purchase and sale of shares; that is a total of 1 per cent for a transaction. Brokers and companies that traded

4 The tax rate is 0.15 per cent for trading in shares in domestic companies and 0.3 per cent for trading in shares in foreign companies.

5 Swiss investors can also avoid the tax if (i) the transaction is conducted through a foreign bank rather than through a domestic broker, (ii) buyers and sellers own shares worth less than CHF 10 million.

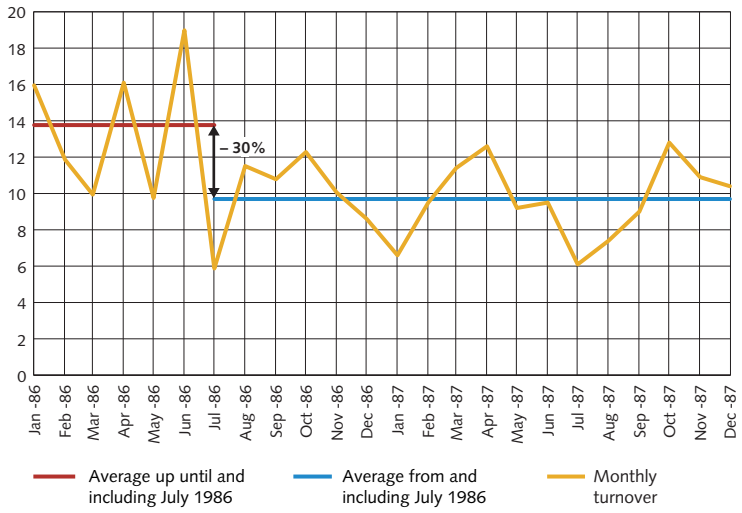
securities to a value of at least SEK 500 000 during the course of half a calendar year were liable to pay the tax. The tax was geographically limited, unlike the British transaction tax which taxes all share trading in companies registered in the UK irrespective of where the trading takes place. The Swedish tax thus covered only Swedish securities traded on a Swedish marketplace.

The revenues from the tax amounted to 0.13 per cent of Sweden's GDP for the budget year 1984 (The Swedish National Financial Management Authority, 2011). On 1 July 1986, the tax rate was doubled to 2 per cent per transaction and the tax base was broadened so that it also covered share options and convertibles.[6] As a result, revenues increased to 0.33 per cent of GDP for the budget year 1986 (The Swedish National Financial Management Authority, 2011). However, it must be remembered that these tax revenues came in a period when the outflow of capital from Sweden was limited by the foreign exchange controls that were in force from 1939 to 1989. These controls meant that Swedish investors had little chance of moving transactions to markets abroad, which affected the tax revenues.

Figure 1 illustrates how trading on the Stockholm Stock Exchange (yellow line) changed when the taxrate was doubled and the tax base was broadened. Average turnover on the Exchange fell by approximately 30 per cent during the second half of 1986 and throughout 1987 (blue line) compared with the first half of 1986 (red line). The tax increase also coincided with a 60 per cent fall in trading in the 11 most traded shares (Umlauf, 1993). The reasons for the lower turnover were that foreign investors reduced their share trading in Sweden and that Swedish investors reduced the quantity of share transactions (Wrobel, 1996). The lower turnover may of course also have been due to other factors than just the change in the tax rate. However, it is difficult to identify other factors that could have affected turnover so significantly at the time.

6 A convertible is a debt instrument that can be converted into shares in the issuing company at a predetermined price.

Figure 1. Turnover on the Stockholm Stock Exchange 1986-1987
SEK billion



Note. On 1 July 1986, the tax rate was doubled and the tax base was broadened to include share options and convertibles.

Source: Nasdaq OMX.

After the tax base was broadened once more to include forward contracts for shares and share indexes on 1 July 1987, it showed further signs of erosion and tax revenues did not increase to the extent expected; in the budget year 1987, tax revenues amounted to 0.37 per cent of GDP (Swedish National Financial Management Authority, 2011).

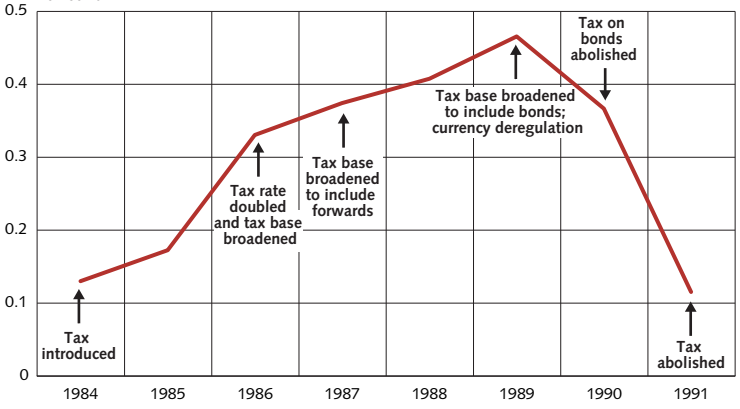
The tax base was broadened yet again in 1989 to also include bonds. The reason for this was the desire to create neutrality between the taxation of bonds and the taxation of shares. It was believed that this would avoid trading in untaxed assets. Trading in bonds fell by 85 per cent in connection with this broadening of the tax base. Trading in bond-based derivatives fell by 98 per cent, and trading in options practically came to a complete halt. The increase in tax revenues resulting from this broadening of the tax base was therefore relatively small and amounted to SEK 80 million, or less than 5 per cent of the expected revenues (Campbell and Froot, 1993). At the same time as turnover declined, trading in untaxed, but similar, debt instruments such as debentures, forward-rate agreements and variable-rate notes increased. These were instruments that could recreate the risk and return profile that bonds had had. Thus the total trade in debt instruments did not fall significantly as trading increased in similar but untaxed assets (Campbell and Froot, 1993). We therefore question to what extent the tax actually reduced speculation on the bond market.

By 1990, over 50 per cent of the trading in Swedish shares had moved to the London Stock Exchange (Umlauf, 1993). This was shortly after the last vestiges of the currency controls were abolished in Sweden. The tax on bonds was subsequently abolished in July 1990. The tax on other financial transactions was halved on 1 January 1991, and, finally, the securities transaction tax was abolished completely in December 1991. By then, the

tax revenues had fallen to 0.12 per cent of Sweden's GDP (The Swedish National Financial Management Authority, 2011). Once the tax was abolished, trading on the Stockholm Stock Exchange began to increase again: in 1992, over 50 per cent of trading in Swedish shares took place on the Stockholm Stock Exchange, compared to 40 percent in 1991 (Campbell and Froot, 1993).

Figure 2 shows the tax revenues as a percentage of GDP. The figure shows that the increase in revenues from the gradually-broadened tax base was limited after 1986.

Figure 2. Tax revenues as a percentage of GDP
Per cent



Note. The revenues relate to the budget year, that is the period that applies for the government budget. Prior to 1997, the budget year ran from and including 1 July to and including 30 June.

Source: The Swedish National Financial Management Authority.

The tax gave rise to a number of legal complications during the period it was in force. There were, for example, problems in defining what should constitute a taxable transaction. Taxable transactions were defined as completed transactions. Consequently some types of derivative were not taxed, which undermined tax neutrality. The lack of neutrality in turn led to increased trading in similar but untaxed financial instruments.

The tax was in introduced in a period in which the financial markets were regulated. The mobility of the tax base has increased significantly since the 1980s as a result of the deregulation and internationalisation of the financial markets in combination with the computerisation of securities trading. It is therefore not probable that the tax would generate the same revenues today. The number of financial instruments has also increased over time, as has the complexity of these instruments. This means it would be more difficult to uphold tax neutrality between different assets if a transaction tax was introduced today. If the tax increases trading in untaxed assets then one may question to what extent it would reduce speculation on the financial markets.

Those who argue in favour of a transaction tax say that the securities transaction tax in Sweden was not effectively designed and that a better designed tax could correct for market deficiencies. We give an account of these arguments below.

5 The workings of the financial market

A common starting point for economic analyses of taxes is that the distorting effects of a tax should be as limited as possible. Examples of such effects are when a tax favours certain investments more than others, or when it means that some exchanges of goods and services do not take place. The revenues provided by the tax should be weighed against the economic costs it gives rise to in the form of reduced economic activity. Expenditure should therefore be funded by taxes that have as limited distorting effects as possible.

However, a transaction tax explicitly aims to create distortions. This is justified by saying that the tax can correct for so-called negative externalities and that it can thus improve the workings of the financial market. A negative externality arises when the costs of the goods or services involved are not fully borne by the parties to a transaction and thus affect external parties. A correctly designed tax can in such circumstances increase economic efficiency by getting the parties to take into account the costs that they generate for society as a whole. The tax will then be a second-best solution that corrects for one distortion by introducing another distortion. From this point of view, a transaction tax is similar to environmental taxes or to so-called sin taxes on items such as alcohol and tobacco.

5.1 NEGATIVE EXTERNALITIES AS A RESULT OF HIGH VOLATILITY

One argument that is sometimes put forward is that short-term and speculative transactions damage the workings of the financial markets. High-frequency trading is often mentioned as an example of such transactions. A transaction tax would then be justified because it reduces transaction volumes and thus improves the functioning of the financial markets.

However, the link between transaction volumes and the workings of the markets is unclear. A market can be considered to be functioning well if it is:

(i) liquid, that is if the turnover is substantial and single transactions do not affect the market price to any great extent;

(ii) effective, that is if the prices reflect all the relevant and available information.

A further development of (ii) is that volatility should be in proportion to the volatility of the economic fundamentals that the market reflects.

In simple terms, one can say that modern financial markets are usually liquid and relatively efficient. At the same time, however, the volatility of the prices of certain assets is higher than is justified by the volatility of the fundamentals that the prices should reflect (Shiller, 1981; LeRoy, 2008). This excess volatility can be seen as a negative externality, particularly if it entails risks to financial stability or increases firms' cost of capital.

According to Summers and Summers (1989), one can expect a transaction tax to reduce volatility because it is detrimental to short-term investors but favours long-term investors. Summers and Summers (1989) say that excessively large price movements arise because some investors speculate that an observed price change will continue in the same direction,

that is that it will have momentum. Small price movements may then be temporarily reinforced in a way that is not justified by the fundamental economic variables. In such a situation, a transaction tax may reduce volatility, if long-term investors are more prone than short-term investors to base their investments on economic fundamentals and also on average conduct fewer transactions. In practice, however, it is difficult to distinguish between short-term and long-term investors. Nor have theoretical models of the micro structure of financial markets resulted in any unequivocal conclusions about the link between transaction taxes and volatility.[7]

Moreover, empirical studies provide no clear evidence that transaction taxes reduce volatility.[8] Studies of high-frequency trading indicate that these transactions probably help to reduce volatility, although it cannot be ruled out that they may have a negative impact on the workings of the market during particularly turbulent periods.[9]

To sum up, the main arguments for a transaction tax as a means of reducing volatility are threefold:

(i) volatility on the financial markets is greater than is economically optimal;

(ii) volatility decreases if transaction volumes decrease;

(iii) a transaction tax leads to lower transaction volumes.

Even if (i) is correct, (ii) is at best a hypothesis, both theoretically and empirically, and (iii) presupposes that the transaction volumes do not migrate to other countries or to untaxed investment instruments.

We would also like to point out that a larger transaction volume usually entails greater liquidity on the financial market. This can be regarded as positive, as liquidity improves risk management and enables an efficient supply of capital to households and companies. If a transaction tax reduces trading volumes it is therefore a tax on liquidity rather than on volatility. On highly-liquid markets, asset prices are not affected by the size and frequency of trading, while trading can have a significant impact on prices on an illiquid market (Habermeier and Kirilenko, 2003). A transaction tax therefore increases, rather than reduces, volatility on the market to the same extent that it reduces liquidity.[10]

There is also research that shows that high-frequency transactions improve liquidity in share trading, reduce transaction costs and make pricing on the financial markets more efficient (Hendershott et al., 2011). There are also several studies that examine the link between liquidity on the stock market and long-term growth.[11] In these studies, liquidity on the stock market is positively correlated with long-term growth, capital build-up and productivity growth. According to the studies, a transaction tax would thus lead to lower economic growth as it would reduce liquidity.

7 See for example Subrahmanyam (1998); Dupont and Lee (2007); Pellizzari and Westerhoff (2009).
8 See the European Commission (2010b) for an overview, or Umlauf (1993) for a detailed study of Swedish experience in the 1980s.
9 See for example Brogaard (2010); Zigrand et al. (2011); Linton and O'Hara (2011).
10 See for example Suvanto (2001) or the European Commission (2010a).
11 See for example Levine (1991); Holmström and Tirole (1993); Bencivenga et al. (1995); Levine and Zervos (1998); Beck et al. (2000).

5.2 NEGATIVE EXTERNALITIES AS A RESULT OF SHORT-TERM INVESTMENT HORIZONS

Another related argument that is sometimes put forward is that a transaction tax promotes a long-term investment horizon among investors. The tax should thus lead company managements to attach less importance to short-term consequences. The argument is not convincing. There is no evidence that there is a simple and clear link between how often investors buy or sell a company's shares or bonds and the decisions that the company's management makes. Ultimately, the valuation of a company's shares should reflect the current value of expected future profits. It is hard to see how a transaction tax could affect expected future profits apart from the negative effect arising from an increase in capital costs.

It should also be pointed out that the link between the investment horizon and the degree of speculation is unclear. It is difficult to determine whether an investment entails an economic cost to society solely on the grounds of its time horizon. *Hedging*, which is sometimes characterised as a short-term transaction, is for example an investment strategy that aims to reduce or eliminate financial risk. It can be questioned whether it entails an economic cost to society. Many short-term investments also reflect a company's need to insure itself against fluctuations in exchange rates and commodity prices. An investor will also need to adjust the balance of an optimal portfolio that contains both risk-free and risky assets when the value of the risky assets changes. This applies irrespective of whether it relates to long-term saving or a short-term investment. Investments with short maturities may thus reflect needs other than speculation.

5.3 NEGATIVE EXTERNALITIES AS A RESULT OF THE SIZE OF THE FINANCIAL SECTOR

There is extensive research that demonstrates the importance of the financial sector to economic growth.[12] Well-developed financial markets facilitate access to capital and make it more profitable for companies to invest. The social functions of the financial sector are to promote the allocation of capital to where the return is highest and to make it easier to diversify risk. Financial transactions are therefore positive for the economy to the extent that they contribute to an efficient allocation of capital.

Although a growing financial sector has a positive effect on capital allocation, and thus on the economy, this effect should be weighed against the fact that the financial sector in itself represents a drain on society's resources. This is firstly because some form of authority is required to supervise financial stability. The larger the financial sector, the more resources are required for this supervision. And secondly because human capital is also required. Tobin (1984) argued that the high salaries in the financial sector attracted many highly-educated people whose human capital could provide a higher social return if they worked elsewhere. If this is the case, then this alternative cost and the costs of supervision should be included when the advantages and disadvantages of a tax on financial transactions are weighed against each other.

12 See for example Beck et al. (2000) or Levine (2005) for an overview.

In addition to these costs there are probably also other diffuse costs that stem from having a large and unrestrained financial sector. Such costs may arise, for example, if the reputation of business and industry as a whole is damaged because a certain culture within the financial sector affects the public perception of other parts of the business sector, or if the social contract is put under pressure, for example because a group of individuals are highly remunerated for work that is not considered to be to the benefit of society. The debate in the wake of the financial crisis provides some evidence that there are such links. However, even if there were some substance to these arguments, it is far from clear that a transaction tax would be the right way of handling the problem. Ultimately, a transaction tax could increase costs for households and companies by increasing the costs of financial services. In the United States, for instance, the financial intermediaries (banks, insurance companies and investment banks among others) pass on the charges for share trading to their customers (Matheson, 2011).

There is, however, some support for the view that the financial sector's share of the economy has grown in recent decades. In 1960, turnover in the US financial and insurance sector accounted for only 4 per cent of the nation's GDP; in 2007 it accounted for 8 per cent (Krugman, 2009). The financial sector's share of GDP in the United States has also quadrupled over the last 60 years, if we look at the total for profits and wages in the sector. In the UK, the banking sector's assets increased from 50 per cent of the country's GDP in the 1970s to 300 per cent in 2000, and to as much as 550 per cent in 2007.[13]

The international financial crisis during the autumn of 2008 demonstrated that an excessively large financial sector creates risks that can inflict substantial costs on the economy. This applies above all if the financial market becomes so concentrated that it is dependent on only a few financial companies that cannot be allowed to go bankrupt as this would have devastating effects on financial stability. The financial crisis in Iceland is an example of how an excessively large banking sector can create a degree of financial instability that has consequences for the real economy. This is also confirmed in several studies. These studies support the view that a larger financial sector increases growth in countries with a lower level of financial development, while a larger sector reduces growth in countries that already have well-developed financial markets.[14] One reason given for this is that excessive lending increases the risk of unproductive investments. The results in Arcand et al. (2011) indicate that an upper limit for lending to the private sector is approximately 110 per cent of GDP. However, more research is needed before we can draw any conclusions about the appropriate size of the financial sector in individual countries.

At the same time, the course of the financial crisis demonstrated that it is important for the companies that there are banks that have sufficient capacity to supply the economy with credit. One of the most basic functions of the financial market is to mediate loans between those who want to save and those who want to invest or consume but lack

13 Speech by Lorenzo Bini Smaghi, a member of the Executive Board of the European Central Bank, at the Nomura Seminar on 15 April 2010.

14 See Arcand et al. (2011); Rioja and Valev (2004); Deidda and Fattouh (2002).

sufficient funds. If the banks decline to lend to households and companies that have profitable investment schemes, then credit rationing will arise and will have negative effects on consumption, investment and GDP.

It is not self-evident that a tax on financial transactions would affect the size of the financial sector either. When analysing taxes, it is of central importance to distinguish between who in purely formal terms pays the tax and who actually bears the economic cost. It is difficult to assess the economic incidence, that is the actual allocation profile, of a transaction tax. For example, the tax may ultimately burden financial institutions, marketplaces, or non-financial firms by changing capital costs. Firms' cost of capital will increase if investors are to be compensated for the tax (which is the case, for example, if the return requirement after tax is determined in international capital markets). This will lead to a fall in investment and thus to lower GDP. The tax may also burden households and non-financial companies by making financial services more expensive and increasing the costs of risk diversification. To the extent that the tax would lead to more costly risk diversification for the households and be passed on to firms' cost of capital and the costs for government borrowing, it would not be a tax on the size of the financial sector.

There are other instruments that are more appropriate for dealing with an excessively large financial sector. The IMF (2010) has, for example, outlined a *Financial Activities Tax*. This tax would be in proportion to the total wages and profits of the financial companies, which means that the tax base can be compared to the added value that is liable to VAT. The aim of such a tax would therefore be to compensate for the fact that most financial services are exempt from VAT. This exemption from VAT means that the financial sector is indirectly subsidised and is possibly larger than it would otherwise be.

A transaction tax thus gives rise to several negative externalities. Those who advocate such a tax claim that, despite this, a properly-designed transaction tax could strengthen the central-government budgets in those countries that introduce the tax. We discuss the fiscal aspects below.

6 Fiscal aspects

The fiscal arguments for a transaction tax are based in part on the claim that the tax revenues would help to strengthen the weak public finances that have followed in the wake of the financial crisis in many countries. The idea is that the tax will also fund support measures for the sector in the future. However, there is an incongruity here between the two aims of the tax: improving the workings of the financial market and generating income. To the extent that the tax affects the volume of speculative transactions it will have a negative impact on revenues; to the extent that the tax generates revenues it will not, on the other hand, affect the speculative transactions.

The financial crisis that began in 2007 led to extensive government support measures for the financial sector in many countries. Although parts of the government guarantees were not used in full, the financial sectors in, for example, Belgium, Ireland, Germany, Greece,

the Netherlands, Spain, the United Kingdom and the United States were in total offered public resources that averaged 7 per cent of GDP. If we take into account the fact that some of this support has been repaid, the costs average 5 per cent of GDP: 38 per cent in Ireland, 6 per cent in the United Kingdom, 12 per cent in Germany and 3 per cent in the United States (IMF, 2011). However, if we look at the economy as a whole the costs have been much larger: the loss of production as a result of the financial crisis during the severest downturn averaged 26 per cent of GDP in the G20 countries (IMF, 2010). The intention is that the revenues from the transaction tax will partly cover these costs.

So how large are the potential revenues? The expected revenues vary depending on the tax rate, the extent of the geographical area covered by the tax and the trading volumes. Until there is international support for a transaction tax, the revenues will also be affected by the possibility to avoid the tax. The size of the revenues will, for example, depend on to what extent the transactions migrate to untaxed markets. As mentioned earlier, the Swedish transaction tax led trading in Swedish shares to migrate to the London Stock Exchange when currency regulation was abolished. Subsequent technological developments and the globalisation of the financial markets suggest that the tax base is probably even more mobile today.

Table 1 shows revenues as a percentage of GDP in a number of countries that have or have had a transaction tax.

Table 1. Revenues as a percentage of GDP

COUNTRY	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
France	0.05	0.01	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0	0
Germany	0.06	0	0	0	0	0	0	0	0	0	0	0
Hong Kong	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	2.10	1.32
India	n/a	n/a	n/a	n/a	n/a	n/a	0.02	0.07	0.12	0.19	0.1	n/a
Italy	0.08	0.12	0	0	0	0	0	0	0	0	0	0
Japan	0.18	0.11	0	0	0	0	0	0	0	0	0	0
South Korea	0.12	0.18	0.62	0.37	0.45	0.32	0.26	0.41	0.43	0.58	n/a	n/a
South Africa	n/a	n/a	n/a	0.34	0.36	0.36	0.46	0.54	0.58	0.49	0.51	n/a
Switzerland	0.56	0.38	0.85	0.67	0.5	0.46	0.47	0.44	0.46	0.46	n/a	n/a
Taiwan	n/a	n/a	n/a	0.65	0.77	0.72	0.85	0.65	0.79	1.07	0.77	n/a
United Kingdom	0.12	0.17	0.45	0.27	0.23	0.22	0.22	0.27	0.28	0.29	0.22	n/a

Source: Matheson (2011).

The tax revenues in France, Japan, Germany and Italy amounted at most to 0.2 per cent of GDP. In South Africa, South Korea, the United Kingdom and Switzerland the tax generated revenues corresponding to 0.2-0.7 per cent of GDP, while the revenues in Hong Kong and Taiwan amounted to 1-2 per cent. Table 1 thus reveals that the Commission's estimate of the revenues from a transaction tax at the EU level, that is 0.5 per cent of GDP, is in the upper range for those European countries that have or have had such a tax.

The tax revenues will also vary depending on how the tax base is defined and to what extent transactions in similar untaxed instruments increase. Table 2 shows how the revenues are expected to vary depending on how the tax base is defined.

Table 2. Forecast revenues from the taxation of transactions

SOURCE	TAX BASE	TAX RATE (%)	FORECAST REVENUES (USD BILLION)
Pollin et al. (2008)	USA, shares	0.5	28-55
	USA, forwards	0.002	1-3
	USA, options	0.5	3-7
Schmidt (2007)	USD, spot, forward and swap	0.005	28.4
	GBP, spot, forward and swap	0.005	12.3
	EUR, spot, forward and swap	0.005	5.6
	JPY, spot, forward and swap	0.005	5
Schulmeister et al. (2008)	Shares, global	0.01	6.6-7
	Bonds, global	0.01	1.4
	Derivatives, stock exchange, global	0.01	110-147
	Derivatives, OTC, global	0.01	83-111
Spratt (2006)	USD, spot and derivatives	0.005-0.01	10.7-20.9
	GBP, spot and derivatives	0.005-0.02	4.3-8.4
	EUR, spot and derivatives	0.005-0.03	2.5-4.9
	JPY, spot and derivatives	0.005-0.04	2.1-4.1

Sources: Pollin et al. (2008), Schmidt (2007), Schulmeister et al. (2008) and Spratt (2006).

Table 2 shows that revenues vary considerably depending on the size of the tax base. Revenues are also dependent on transaction elasticity, which indicates how the tax base is affected by changes in the tax rate. There is a high degree of uncertainty in the assessment of the transaction elasticity. Pollin et al. (2008) assume that a transaction tax of 0.5 per cent on shares and options would reduce trading in the United States by 50 per cent or that trading volumes would remain unchanged. Schulmeister et al. (2008) assume that trading in shares, bonds and derivatives would fall by 10-40 per cent if a 0.25 per cent tax were introduced at the global level.

Here we would once again like to refer to the experience in Sweden, which shows that the revenues from a transaction tax can be volatile for several reasons:

(i) On deregulated and internationalised financial markets it is easy to move transactions to untaxed markets. The development of automated and computerised trading has probably made it even easier to do so. This erodes the tax base.

(ii) It has proven to be problematic to legally determine what constitutes a taxable transaction. This makes tax inspection more difficult and increases the trade in untaxed financial instruments, which in turn erodes the tax base. Increased trading in untaxed financial instruments also gives us cause to question whether the tax reduces the element of speculation on the financial market.

(iii) If the tax performs its function and makes the market more efficient – contrary to the claims made in this article – the tax base will shrink when trading in financial instruments declines. This undermines the fiscal arguments for the tax.

7 Concluding comments

At first glance, a tax on financial transactions may seem to be an attractive policy instrument with the potential to affect the workings of the financial markets and to generate tax revenues. However, this picture does not really stand up to a closer examination.

There is a lack of clear evidence that it would be possible in any desirable way to affect the workings of the financial markets with the help of a transaction tax. Neither economic theory nor empirical experience support the claim that transaction taxes help to reduce volatility. Nor can we see that such taxes would help to establish a level of financial risk taking that is more in line with society's interests. It is true that a proportion of the computerised trading in financial instruments would no longer be profitable if a transaction tax was introduced, but we believe that it is highly uncertain whether this would be desirable. If computerised trading helps to reduce transaction costs for investors and to make price setting more efficient, then the tax would create problems rather than resolve them. There is also a direct conflict between the two aims of the tax. Either the volume of speculative transactions is not affected – and the tax then generates revenues – or these transactions decline at the expense of the tax base. Nor is it self-evident that a tax on financial transactions would affect the size of the financial sector. There is, for example, a risk that the tax would increase the cost of risk diversification and that these costs would be passed on so that they increase the companies' capital costs and the costs of central-government borrowing. In this case it would not be a tax on the size of the financial sector.

The value of a transaction tax as a source of revenue can also be questioned. Taxes generate revenues, but also usually entail costs in the form of economic distortions. These distortions reduce economic activity. When choosing between different taxes, the starting point should be that public expenditure should be funded at the lowest possible cost to the economy; in other words, taxes that entail severe distortions should be avoided. Taxes that correct for externalities are an exception, but as can be seen above it is not clear that a transaction tax performs such a function. Studying the economic effects of different taxes makes it possible to rank the alternatives in relation to how costly they are in terms of economic efficiency. Measured in this way, a tax on financial transactions would probably be seen as a poor way of generating tax revenues. Major distortions can be expected in the form of transactions migrating to other countries or to untaxed financial instruments, or coming to a complete halt. The tax would also increase firms' cost of capital, which would reduce investment and thus lead to lower GDP. Government borrowing costs would also increase and this would have to be met by other tax increases or by spending cuts.

Following a closer analysis, a tax on financial transactions appears to be primarily a political symbol. There is no doubt that there is a need to reform the financial system, and many countries are in need of tax revenues to strengthen their public finances. The financial crisis has led to an international debate on how to reform the financial system and how it should be regulated. The debate has also concerned what policy instruments are available to strengthen financial stability. This has led, among other things, to a new, extensive regulatory framework for banks, Basel III. This framework imposes tighter, countercyclical capital requirements on the banks, which means that they must restrict their lending in boom periods. The banks must also retain a larger proportion of equity on their balance sheets, and they are subject to new demands regarding liquidity management.

There are also measures that aim to minimise the costs to the taxpayers in the event of a banking crisis. For example, the Swedish stability fee, which the government introduced in 2009, is an instrument that aims to safeguard the interests of the taxpayers and to strengthen financial stability in the long term. The fee is levied on a base that, in simple terms, consists of the liabilities side of a relevant credit institution's balance sheet. The Swedish stability fee provides revenues for a stability fund that can then be used to manage financial crises. Several other EU countries are considering whether to introduce stability fees, including Belgium, Denmark, France, the United Kingdom and Germany. A new EU authority, the European Systemic Risk Board (ESRB), has also been set up recently to supervise the financial system in the EU at the macro level. The ESRB will work to prevent and reduce systemic risks that can threaten financial stability in the EU.

The *Financial Activities Tax* described by the IMF (2010) has also been widely discussed. The European Commission, for example, has discussed this alternative but not presented any concrete proposals. A tax on financial activities may take different forms, but the idea is that the tax could balance the VAT exemption that covers large parts of the financial sector. Denmark is an example of a country that has introduced such a tax.

The effects of a transaction tax should be evaluated in relation to these measures. Otherwise, there is a risk that several economic policy instruments will be introduced to achieve the same ends; in other words there is a risk that a transaction tax will be introduced at the same time as there are other planned or existing measures that are better suited to improving the workings of the financial market.

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