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The EU financial transactions tax proposal: a preliminary evaluation



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Executive Summary

The European Commission proposed the introduction of a Financial Transaction Tax (FTT) in September 2011 to come into effect from 1 January 2014. The proposal involves a transaction-based tax of 0.1 per cent on securities and 0.01 per cent on derivatives. The Commission outlined three objectives of the tax. The first is to avoid the fragmentation of the internal market for financial services, given that some Member States have already made their own proposals regarding financial sector taxation. The second is to ensure that the financial sector makes a reasonable contribution to the costs of the crisis. Given that many financial services are exempt from Value Added Tax (VAT), the Commission also wants to make certain that the taxation requirement on financial services is similar to other non-financial sectors. Finally, the Commission's proposal is intended to complement the existing EU regulatory framework for a safer financial system by discouraging financial transactions that do not lead to more efficient financial markets.

The baseline estimates from the Commission's impact assessment of the proposed FTT suggest that a broad-based FTT could generate €59 billion (0.5 per cent of 2010 EU-27 GDP) in revenue. The Commission stresses that the revenue estimates are subject to much uncertainty and are highly sensitive to assumptions chosen for the tax rates and the magnitude of the evasion and relocation effects.

The motivations for transaction-based taxation of the financial sector include a theoretically large tax base, collection at source by firms engaging in the transaction, and the apparent simplicity and transparency of the proposed tax. A consequence of the imposition of an FTT is a possible change in behaviour of both providers and users of financial services. This potential to change behaviour and financial innovation to avoid the tax may also significantly alter the estimated revenue base, and, as a consequence, the actual revenue collected from the tax. This is one of the key findings of the economic literature and country experiences following the introduction of FTTs.

Baseline estimates using the tax rates in the Commission's proposal and other parameters suggest that the FTT could raise approximately €490-730 million in revenue for Ireland. This corresponds to between 1 and 1.5 per cent of total tax revenue in 2010 or 0.3-0.5 per cent of 2010 GDP. This includes estimates of the impact on transaction volume and ability to avoid the tax. Given that the FTT would also replace stamp duty, the net revenue effect is likely to be smaller than the estimated gross revenue. Based on the most recent information available (2010), stamp duty on financial transactions amounted to almost €182 million or around one fifth of total revenue from stamp duty in Ireland. This revenue will be foregone following

the introduction of the FTT offsetting between 24 to 38 per cent of the estimated revenue gain from the FTT.

The revenue estimates are subject to considerable uncertainty for three reasons. The first relates to the parameters used in the Commission's formula used to derive the potential revenues, and various robustness checks have been carried out by the Bank using alternative parameters. The second issue relates the transaction volume data available to the Bank which is subject to some limitations regarding coverage of certain types of Over the Counter (OTC) derivatives and other financial instruments. Where possible, approximations have been made using non-transaction based data sources available to the Bank.

The final source of uncertainty is the potential for significant changes in financial institutions' behaviour, including any possible decisions to relocate, following the imposition of the tax. This is challenging to evaluate because the geographical scope of the tax in the EU has not yet been agreed by Member States. In turn, this is important in determining the degree of avoidance through constructing financial transactions with counterparties in geographic locations not covered by the tax or relocating entirely. Overall, this suggests that a widespread implementation of the FTT within and outside of the EU is an important condition for effective revenue generation from the tax. This may be particularly important for the revenue estimates mentioned above given the concentrated nature of the volume of trading among several Irish based institutions who may decide to relocate. The relocation of a small number of firms who account for a large share of the total volume of equity and bond transactions which would be subject to the tax would reduce the estimated gross tax yield by 83 to 85 per cent.

Financial firms operating in Ireland may make their decision to stay in Ireland or relocate based on a range of factors, and not solely whether a FTT is applied. These considerations include taxation, the legal and regulatory environment, availability of skilled employees, and general costs of conducting business in Ireland, including the additional potential costs associated with the FTT. Nevertheless, given that several firms in both financial intermediation and fund service providers are large employers within their sectors, concentrated employment losses are a possibility if relocation occurred within those sectors.

There are other sectoral effects that need to be considered in evaluating the FTT proposal. One of the effects on financial intermediaries is the possibility of cascade effects, which refers to the incremental charges incurred by each part of the financial intermediation chain. This may affect the profitability of firms whose activities encompass various parts of the financial intermediation chain including various types of fund managers and firms engaging in frequent transactions to hedge the risk in certain products such as

variable annuities. Another potential effect arises from the possible impact of the tax on the Irish Stock Exchange (ISE) that has recently seen some relocation of primary equity listings from Dublin to London. Should the FTT proposal be agreed among a group of Member States excluding the UK, this trend towards the primary UK listings may continue. Finally, the proposal may also affect short-term secured financing, corporate, and sovereign debt markets as the tax does not take into account the maturity structure of securities transactions.

The broader economic effects of FTT may be approximated by analysing the economic contribution of the financial services sector to the Irish economy. Gross value added (GVA) is one such measure. It is composed of profits and wages, and is estimated to amount to around 10 per cent of GDP with banking and financial intermediation accounting for around two thirds of the total. The analysis in this paper suggests that if foreign owned IFSC banks - which have few direct intermediation relationships with the Irish economy - and non-bank financial firms relocated following the introduction of the tax overall GVA would not be significantly affected, as these firms account for the smallest share of overall gross value added. It is important to note that given the difficulty in assessing the likely reaction of financial sector firms in response to the tax, the estimates of the potential impact of the FTT on financial sector output are subject to significant uncertainty.

An additional consideration in assessing the macroeconomic impact of the FTT is the potential for revenue recycling. This involves using the revenue gain from the introduction of a new tax instrument to reduce other distorting taxes such as income and corporate taxes. Previous studies for Ireland have found that economic activity can be increased if the revenue from the tax instrument is recycled through a reduction of income taxes. In theory, this would have the effect of shifting the burden of the tax from labour towards capital. In a small open economy such as Ireland, where labour is particularly mobile and labour costs are a large determinant of international competitiveness, this tends to improve economic performance.

However, in the case of the proposed financial transactions tax where the estimated net revenue yield is relatively small, the potential for revenue recycling is likely to be limited. Related to this, the Commission has proposed that two thirds of the revenue from the FTT be used to fund Member States' contributions to the EU budget which are based on their GNI.¹ The FTT would not reduce Ireland's contributions to the EU

¹ See: <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/12/300&format=HTML&aged=0&language=en&guiLanguage=en>
Details on the calculation of the revenue estimate for Ireland are not provided.

budget but rather could provide a source of revenue to fund part of Member States EU budget contributions.

The Commission's proposal has led to discussions in both the official and private sectors on amendments to the FTT and alternative proposals, and the situation remains fluid at present. Possible changes include potential exemptions for market makers, sovereign-bond markets, and certain bank-financing markets. Alternative proposals analysed as part of the G20 discussions include a Financial Activities Tax (FAT). In a FAT, the tax base is the wages and profits resulting from financial services activities. Alternative EU Member State proposals include a recent French proposal which includes a tax on transactions in French listed equities. This is similar in nature to UK and Irish stamp duty. The French proposal also includes certain types of sovereign CDS trades and high frequency trading. The French FTT contains exemptions for smaller listed firms, derivatives, market-making activity and sovereign financing.

Aside from taxation of the financial sector, there are alternative means of contributing to the stability of the EU financial system through pan-European regulatory measures which would directly address concerns surrounding high-frequency trading. These include measures to limit some of the more undesirable aspects of this type of trading such as temporary 'circuit breakers' where a minimum execution time is required for trading in adverse market conditions, or a wider application of resting periods between trades at all times regardless of market conditions.

Overall, the analysis in this paper suggests that the net gain in tax revenue for Ireland as a result of the introduction of the proposed financial transactions tax is likely to be modest and significantly offset by the loss of stamp-duty revenue. In terms of possible effects on the financial system, certain parts of the financial system could be impacted significantly, but this depends crucially on the form and geographical scope of the tax which is unclear at present. This is because agreement has not yet been reached by EU Member States on the form and scope of the transaction tax proposed by the Commission. Clarity on these elements will assist in evaluating the effects on the Irish financial system.

Section 1: Introduction

This paper has been prepared by the Bank and ESRI following a request from the Minister for Finance for an initial assessment of the Commission's current proposal to implement a FTT in the EU. The Bank is undertaking this work because the Commission's proposal has the potential to impact the Irish financial system, and thus on the Bank's supervisory and financial-system-oversight responsibilities. The tax may also have macroeconomic effects and the ESRI have previously conducted research on various macroeconomic and distributional aspects of taxation policy in Ireland.

This paper starts with an outline of the Commission's current proposal in section 2. Because financial systems differ across the EU and the Irish financial system has a substantial international component, section 3 first discusses the possible effects on various aspects of the Irish financial system if the proposed tax is implemented. This section provides an overview of these issues, discusses whether the tax will render the Irish or EU financial system safer, and deals with some selected issues such as the impact on selected types of financial intermediaries and markets. To frame the evaluation, section 4 reviews the literature and country experiences where FTTs were previously imposed and draws out some of the key issues regarding the current proposal. Section 5 evaluates the revenue-raising capacity using a transaction-based approach, and section 6 assesses some macroeconomic effects on value added and tax revenue to determine the overall net effect. Given that it is unclear at present whether the proposal will be accepted by Member States in its current form, and consequently, the geographical scope of its application by Member States, section 7 discusses how the current proposal could be modified and briefly reviews alternatives to the FTT. Section 8 concludes.

Section 2: The EU Commission's Proposal

The Commission published its proposal for a FTT in September 2011. It provides the following objectives for this proposal²:

- "to avoid fragmentation of the internal market bearing in mind the increasing number of uncoordinated national tax measures being put in place;
- to ensure that financial institutions make a fair contribution to covering the costs of the recent crisis and to ensure a level playing field with other sectors from a taxation point of view; and
- to create appropriate disincentives for transactions that do not enhance the efficiency of financial markets thereby complementing regulatory measures aimed at avoiding future crises".

The proposed FTT has a wide scope and captures a broad range of financial transactions where at least one of the financial institutions is established in a EU Member State. The Commission's preferred option for a harmonised FTT is a tax on the trading of financial instruments and derivatives thereof by financial institutions and covering shares, bonds and related derivatives – at notional value – and based on the residence principle. This refers to geographic residence of one or more of the parties to the transaction being located in an EU Member State. Primary markets for bonds and shares would be exempted as to mitigate the direct impacts on the financing of companies in the real economy.

The Commission's proposal is based on a tax on securities at a rate of 0.1 per cent in addition to derivative contracts at a rate of 0.01 per cent, potentially raising €57 billion every year. The Commission has proposed that the tax should come into effect from 1st January 2014 and sees the FTT as one element of the overall process of regulatory reform which is currently taking place as well as contributing to the debate on financial-sector taxation and the development of a FTT at a global level.

Three aspects of the Commission's impact assessment are particularly important. These are revenue generation, relocation, and macroeconomic impacts. In terms of revenue generation, the Commission estimates a FTT at a tax rate of 0.01 per cent could raise between €16.4 and €43.4 billion, depending on the assumed elasticity and trading volume decrease. If this rate is increased to 0.1 per cent, total estimated revenues are between €73.3 and €433.9 billion. The revenue estimates are heavily reliant on the

² EU Commission Proposal for a Council Directive on a common system of financial transaction tax and amending directive 2008/7/EC, September 2011, page 2.

assumptions on volume decrease and on the elasticity of remaining trade volumes to the tax. The impact assessment used two assumptions on volume decrease (including relocation and disappearance), a 70 per cent decrease in line with existing studies on reactions in derivative markets and a 90 per cent decrease based on the Swedish experience.

As part of the Commission's impact assessment, a closed economy macroeconomic (DSGE) model is used to analyse the macroeconomic impacts of a FTT. The model assumes that all private investment is financed by securities and that the financial sector only trades these securities. In the model simulations, it is assumed that the tax is paid by traders to the government who transfer the revenue generated from the tax to the household sector via a lump-sum payment. In the model, the tax decreases share prices which increases financing costs for companies. This in turn leads a reduction in investment, GDP and other macroeconomic variables. Higher household consumption arising from the lump sum transfer offsets some of the direct loss of output as a result of the tax.

Overall, the model results suggest that at 0.1 per cent, a transaction tax on securities³ could, without the application of mitigating effects mentioned by the Commission such as the exclusion of primary markets and most transactions that do not involve at least one financial institution, reduce future GDP growth in the long run by 1.76 per cent. Under the assumption that all mitigating effects fully occur, the output losses could be reduced from 1.76 per cent to 0.53 per cent of future GDP. In the modelled scenarios, securities transaction taxes had a limited employment impact.

³ The modelling approach used by the Commission is limited to a tax on securities and therefore excludes the derivatives market.

Section 3: Overview of possible effects on the financial system

Overview

The concept of transaction based taxes is not recent. The economics literature suggests that transaction based taxes are attractive because they may be levied on a theoretically large tax base, can be collected at source by firms engaging in the transaction, and appear to be simple and transparent.⁴

The Commission's proposal states that the intention of the FTT would be to raise revenue for individual Member States and the EU budget commensurate with the aims outlined in section 2. The Commission has also stated its intention to ring-fence households and firms from the tax. In particular, it argues the proposal isolates borrowing and lending activities of households, enterprises, and financial institutions and other day-to-day financial activities, such as mortgage lending or payment transactions.⁵ As part of its impact assessment, the Commission indicates that while the legal incidence remains with those who have the legal obligation to pay the tax, such as institutions engaging in financial transactions covered by the proposal, the economic impact will affect direct and indirect owners of traded financial instruments.

The difference between initial incidence and economic impact is due to the interconnected nature of domestic financial systems as subsets of the euro area, EU, and global financial systems. The financial assets of one sector in the economy, such as bank loans, are liabilities of others sectors such as households and firms. For example, the cost of financing for firms and households depends on the cost of financing for banks which in turn depends on the cost of available instruments such as repurchase agreements, money-market instruments, structured deposits and debt instruments used to hedge interest-rate risks.

Similarly, investments of household savings through investment in mutual funds, pension funds and various insurance products ultimately are in the liabilities of other sectors such as corporates, financial institutions and sovereigns. Households seek to diversify risk and reduce transaction costs by investing in entities managing a wide range of investable assets such as equities, corporate and sovereign bonds, money-market instruments and deposits. This should result in lower transaction costs for the household than if they had directly invested in the underlying assets separately. Typically, these types of financial institution will also use various derivatives to take and hedge risk. For example, a pension fund may invest in bonds

⁴ A comprehensive review financial activities and transaction taxes review is contained in Matheson (2011). Honohan and Yoder (2010) concentrate on financial transaction taxes.

⁵ EU Commission Proposal for a Council Directive on a common system of financial transaction tax and amending directive 2008/7/EC, September 2011, page 4.

and equities, as well as using interest-rate and inflation swaps to ensure the returns are sufficient to fund members' retirement benefits in line with the mandate of the fund as they fall due.

Where sellers of such products have market power, it would be expected the cost of the tax will be passed on through lower returns on securities for investors or higher costs for issuers of securities through higher cost of equity capital for corporates and potentially lower secondary-market transaction volume and higher illiquidity premia being required for various types of debt. While financial innovation may lead to products being offered that do not incur the tax as currently proposed, the incidence of the tax is likely to be on end users of the products currently provided by financial intermediaries.

Contributions to a safer financial system

The Commission has stated that the FTT will discourage potentially destabilising transactions and may have a positive impact on the stability of the financial system. In particular, it may reduce speculative and high-frequency trading. The detailed arguments from the academic literature are set out in detail the next section. A more practical consideration is that the overall effect of the tax may depend on its geographic scope. For example, a localised tax may only result in trading migrating to other geographic areas rather than an overall reduction of trading.

There are supervisory alternatives to taxing high-frequency trading such as including market-making guidelines, close supervision of institutions engaging in high-frequency trading, temporary circuit breakers where a minimum execution time is required for trading or a wider application of resting periods or a 'speed limit' between trades at all times.⁶

The impact of a FTT on financial-system risk in the current financial crisis in Ireland may have been limited to the possible impact on the maturity structure of domestic banks market-based financing for property investment. However, the crisis was most closely associated with problems on the asset side of banks' balance sheets due to property-market bubbles. These are markets where transactions costs tend to be high due to the leveraged and illiquid nature of property market investments. Therefore, prudent macroeconomic policies, effective financial regulation and supervision also have a major role to play promoting a more stable and resilient financial system by preventing the build-up of financial imbalances within economies. In this context, various micro and macroprudential instruments can also be considered

⁶ Haldane, A., (2011), 'The race to zero', speech to the International Economic Association, 8 July.

as alternatives to transaction-based taxes. These include increased collateral requirements and counter-cyclical capital buffers.

Specific effects on the financial system

Effects on the financial system could be wide-ranging and difficult to assess fully at present due to the uncertainties surrounding the scope of the proposal. However, some include cascade effects, sectoral shifts, geographical shifts, the possible impact on the ISE, and on selected financial markets such as sale and repurchase agreements ('repo') markets and sovereign debt markets. These issues are briefly discussed in the following sub-sections.

Cascade effects

The Commission's proposal covers all derivative contracts. Derivatives can be used for hedging and for speculative trading. Some reports from industry groups as well as the official sector have suggested that the so called 'cascade effect' could occur (AIMA 2012, Jurgen *et al.* 2012). This refers to the compound effect of many transactions in the intermediation chain resulting in costs that are a multiple of the original tax rate. For example, if a life company dynamically hedges the investment risk of a variable annuity policy, it may incur the transaction-tax payment several times. As a result, these costs may be passed onto consumers and the price of the insurance policy could increase. Other examples include costs incurred through subscriptions and redemptions in various types of retail mutual funds.

Sectoral shifts

The proposal may lead to a re-intermediation of corporate financing - through a move to more bank-based lending and away from the corporate-bond market as the former are not covered by the tax. This example highlights the importance of taking into account the ease of substitutability when projecting the revenue from the tax.⁷ This may matter for larger corporates more than smaller corporations as Ireland and much of the EU remains a bank-based financial system.

As noted by Matheson (2011) assets with a shorter holding period will be affected more by a FTT. This is because the annual increase in transaction costs will have a larger effect on asset valuation, asset prices, and cost of capital. If the FTT is imposed it is likely that there will be a shift away from short-dated funds

⁷ For example, the easier it is to substitute the transaction, the higher the value for elasticity in the Commission formula.

e.g. money-market funds and repos, towards deposits as plain-vanilla deposit products are not covered by the tax. It is also worth noting that the introduction of stamp duty in the UK was also argued to be part of the reason for growth in equity derivatives and contract for difference products.⁸

Geographical shifts: re-location of business, re-routing of trades and domicile selection

Financial institutions may be able to avoid the tax through re-location of existing business, re-routing of trades and domicile selection. Some existing financial institutions may relocate due to this proposed tax. However, this is difficult to assess ex-ante as it will depend on the ultimate scope and geographic application of the tax, existing business models, and the ability to avoid the tax. For example, a fund may decide to relocate outside of Ireland to avoid the tax. It is difficult to determine at present whether fund administration and other services would follow. This would depend on further clarification of the proposal.

The residency principle is one of the determining factors in whether the tax is applicable.⁹ The Commission's proposal states that if there is no link between the "economic substance" of the transaction and the territory of any Member State, the financial institution will not be considered established in any Member State and therefore there will be no FTT charged on the transaction.¹⁰ While it remains to be seen how the term will be interpreted, the Commission may well be influenced by the other work currently being discussed by the OECD on defining economic substance as it relates to trade and financial services.

There are many examples of trades being re-routed to avoid the payment of transaction taxes. These include the development of the US Dollar Eurobond market in Europe in the 1970s and the offshore bond market in Sweden in the late 1980s.

Transactions can be re-routed through other financial institutions to avoid the tax. It may be possible to pay a FTT once a year as part of an annual transfer of funds rather than on an on-going basis. Also, financial institutions may set up overseas branches (e.g. in the US) to avoid the tax. The ease with which

⁸ Mizen, Miranda and Rode, (2011), *'Breaking Down the UK Equity Market: Executable Liquidity, Dark Trading, High Frequency and Swaps'*, Tabb Group.

⁹ "The territorial application of the proposed FTT and the Member States' taxing rights are defined on the basis of the residence principle. In order for a financial transaction to be taxable in the EU, one of the parties to the transaction needs to be established in the territory of a Member State. Taxation will take place in the Member State in the territory of which the establishment of a financial institution is located, on condition that this institution is party to the transaction, acting either for its own account or for the account of another person, or is acting in the name of party to the transaction", EU Commission Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, September 2011.

¹⁰ EU Commission Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, September 2011, section 3.3.1.

this can be done is unclear at this stage as it will depend on the interpretation of certain tax terms, such as “economic substance” (see Appendix A) by the relevant tax authorities across the EU.

The success of an EU FTT would depend on the efficient exchange of information across borders. Domicile selection may be strongly influenced by the tax regime enforced in each location. UCITS funds may decide to remain in the EU to maintain the UCITS brand, in this case. The Irish financial system may benefit from a transparent regime if all EU Member States agree to the tax. For non-UCITS, funds may move their domicile to other locations where they will not be subject to the tax.

Irish Stock Exchange

The ISE has seen some relocation of primary equity listings and trading volumes from Dublin to London. Since the EU Markets in Financial Instruments Directive (MiFID) the market for trading equities has become increasingly fragmented. Should Ireland but not the UK, sign the Commission’s proposal, it is likely that this trend of equity trading moving away from the ISE towards the London Stock Exchange (LSE) and other venues will gather momentum. The bulk of transactions that Irish firms engage in are related to instruments that are not admitted to trading on the Irish Stock Exchange. The majority of Irish securities are already admitted to trading in London. As well as the loss of stamp duty this could encourage the relocation of trading in Irish equity. The scope of the tax will no longer be based on the country in which the listed company is registered but on the country in which the financial institution is established.

Financial intermediaries

Intermediaries play a key role in the efficient operation of the markets, matching buyers and sellers and providing liquidity for transactions to take place. The potential impact on intermediaries can be assessed by comparing the current situation regarding stamp duty and FTT and the interpretation of beneficial ownership (see Appendix A for a detailed definition).

Unlike an FTT, stamp duty is levied on the purchaser of equity instruments with the exception of brokers or other eligible counterparties. This exemption is known as intermediary relief. Intermediary relief is applied due to the importance of intermediaries in the efficient operation of markets. For example, the intermediary may buy shares for the following reasons:

- to provide market-making facilities;
- to facilitate client orders;

- to create structured products or derivatives for a client;
- to trade on its own account; and
- for stock lending or borrowing.

The current proposal for FTT does not allow such an exemption for intermediaries. Without such an exemption the risk is that it becomes uneconomical for intermediaries to provide these services. This may lead to lower volumes of transactions and less liquid markets. The proposal may mean that intermediaries also face costs due to the administrative burden of collecting the tax. In the case of stamp duty, the intermediary in the transaction is required to calculate and collect the tax. This process has been largely automated for listed companies through the central clearing mechanisms such as the CREST settlement system.

Since the introduction of the EU Markets in Financial Instruments Directive (MiFID) in 2007, a number of Multi-lateral Trading Facilities (MTFs) have been set up, mainly in the UK. Irish registered companies can be traded on twelve listings, ten of which incur Irish stamp duty (as they are traded as Irish shares) and two of which do not (as they are ADRs). Should the intermediary be trading Irish shares (rather than ADRs) the requirement is for the intermediary to calculate the stamp duty irrespective of where the shares are traded.

Collection of the FTT

Regarding the calculation and collection of the FTT, the proposal does not make clear who is liable for the collection of the tax, although it does state that each financial institution is liable to pay the tax to the tax authorities.¹¹ With the FTT proposal, if the collection mechanism is similar to the current stamp-duty process, it is the broker or settlement agent who is liable for the calculation and collection of the tax. This may have an impact on Irish investment firms and the Irish funds industry. The Commission's proposal states that the FTT is to be paid to the tax authorities at either the moment the tax becomes chargeable (in the case of electronic financial transactions) or within three working days from chargeability, in all other cases.¹² Due to the wide scope of the FTT (including intra-group transfers and OTC derivative transactions)

¹¹ EU Commission Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, September 2011, section 3.3.3.

¹² EU Commission Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, September 2011, section 3.3.3.

transfer and the fact that counterparties are jointly and severally liable, this liability will imply many additional operational and compliance risks for intermediaries.

For example if an EU citizen subscribes to or redeems units in an EU or a non-EU collective investment scheme, the financial institution with which they transact is liable for the tax but the individual is also jointly and severally liable. The implication of joint and several liability may result in EU citizens being liable if the financial institution does not pay. If a non-EU citizen subscribes to or redeems units in an EU collective investment scheme, the financial institution is again liable for the tax but the individual is also jointly and severally liable.¹³ Trading and settlement decisions may be influenced by the tax considerations.

Additional Supervisory Complexity

Considering the complex administrative and tax implications of the Commission's proposal, non-compliance with the tax may be an important issue for firms. This will render supervision of financial institutions more challenging and perhaps more costly. Some specific examples of the additional complexities for intermediaries and supervision are set out below.

As an example of the complexity that could occur, consider the residency of investors in Irish funds, the majority which are sold to non-Irish investors. The Bank has no details in terms of number of shareholders per jurisdiction but Irish funds are sold globally in over 70 countries worldwide. In each case where there is a subscription or redemption to an EU citizen, there would be a FTT charge on the fund, even if the fund is non-EU established. Also whenever the fund requests its fund manager to purchase or sell assets, there would be a charge to the fund as long as either the fund or the asset manager is EU established. Joint and several liability would apply in all cases. It is likely that these taxes would be calculated and collected by the intermediary. If the financial instrument was not exchange traded, it is unclear how this would be administered. Also worth considering is the trend within financial tax law to impose penalties for misreporting of taxes due such as the Financial Account Tax Compliance Act (FATCA) passed in the United States. Should similar penalties be imposed for misreporting of the FTT tax, this could lead to financial risks for intermediaries.

In terms of the beneficial ownership issues, stamp duty is liable to be paid if there is a change in beneficial ownership. The definition of beneficial ownership for stamp duty purposes is understood by investors and

¹³ EU Commission Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, September 2011.

intermediaries. This clarity is important to the operations of many market intermediaries as the effective management of their work often involves formal transfers of ownership without changes in beneficial ownership. Rather than using the beneficial ownership concept, the FTT proposal refers to “transfer of risk”.¹⁴

Insurance Companies

The taxation of insurance contracts is explicitly exempt under the proposal where they provide a primary service for individuals and businesses. However, the proposal is unclear on the treatment of reinsurance contracts and insurance-type guarantees where the counterparties are both financial institutions.

The most likely initial impact of the tax will be on the various types of investment asset transactions and hedging of liabilities. Transactions conducted as part of the asset-management business will be liable for FTT, including the purchase and sale of securities and derivatives such as options, future, swaps and forwards. As part of their risk-management strategy, insurance and reinsurance companies may transfer underwriting risk to capital markets by issuing tradable insurance-based instruments (for example, the issuance of catastrophe bonds via an SPV). Such securitisations are also explicitly included in the FTT.

Box 1: Are (re)insurance arrangements and guarantees in the scope for financial transaction tax?

The EU Markets in Financial Instruments Directive (MiFID) provides the current definitions for financial instruments including derivatives. There are two areas of uncertainty relating to business to business transactions and financial guarantees.

1. (Re)insurers manage risk by entering agreements, usually on an indemnity basis, with another reinsurance company. This is a business-to-business transaction which can be achieved either externally or through a captive entity within a group structure. The treatment of these arrangements is not specified under the EU proposal.
2. Transactions where insurers issue financial guarantees are also unclear (a financial guarantee is where entity A issues a loan to entity B, but at the same time entity A enters a guarantee contract with an insurer, where the insurer is liable for the repayments in the event that entity B defaults). The positions derive value from an underlying asset, however they are like an insurance contract in nature.

¹⁴ EU Commission Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, September 2011, Article 2.1.

The treatment hinges on the definition of financial transaction & financial instrument. Reinsurance contracts and guarantees are not specifically cited in the Commission's proposal nor are they mentioned in the financial instruments section of the MIFID.¹⁵

Variable annuities

Variable annuities are a type of life insurance product where the insurance company offers some form of guaranteed return to policyholders. The insurance company invests premiums to generate a return and meet the guaranteed pay-offs, however the company will assume some market risk as they will pay-out irrespective of the investment performance. Over the past decade these products have become widespread, and recently Ireland has developed as a centre to sell these products to the European market. Insurers offering variable-annuity products manage their market risk associated with the product by using various techniques, including dynamic hedging of the liability (i.e., the guaranteed return). The general principle of a dynamic hedge is to construct a hedge portfolio of derivatives so that as the value of the underlying liability increases or decreases, the value of the derivative portfolio will offset the change. To maintain the hedged position the process must be repeated frequently, as hedging instruments may not have the same maturity as the liability, and because as the hedge portfolio is not a perfect match to the underlying liability. This re-balancing is achieved by high-frequency derivatives trading and therefore the implications of a FTT to the cost and viability of this activity could be significant.

Selected financial market impacts of the FTT proposal

Repurchase agreements

Repurchase agreements (repos) can be thought of as lending against high quality collateral where an institution sells a security and agrees to repurchase it a short time later, at a price which includes interest charged for the period of the loan. The repo market is important for the functioning of the financial system as it provides a source of secured funding and can therefore be used to manage liquidity for banks and provide income for longer term investors such as pension funds and insurers if they lend out securities they own.

¹⁵ The accounting standards provide a possible framework to assess whether reinsurance and guarantees are financial transactions. Under IASB guidelines, the standards explicitly differentiate between insurance contracts (IFRS 4) and financial contracts (IAS 39). Moreover, The IASB board has identified "no reason" for different measurement approaches for direct insurance liabilities and reinsurance liabilities. However, in reference to financial guarantees, the standards explicitly exclude such instruments from an insurance classification and therefore they are treated as financial contracts under IAS 39.

Box 2: Example of FTT impact on repos

Consider an Irish-based bank repo with value €100,000,000 at a repo rate of 1.5 per cent (i.e. achieves financing at slightly less than ECB marginal lending facility of 1.75 per cent). The interest cost charged to Irish bank for 5 day repo is $5/360 * 0.015 = €21,000$. The bank might then use the funds to lend (or enter a reverse repo) at a higher interest rate over a longer horizon.

The EU proposal explicitly includes repos within the scope for FTT.¹⁶ However, if a transaction tax of 0.1 per cent is applied to both sale and repurchase, the tax charge in the above example = €200,000 ($€100,000,000 * 0.001 * 2$) for each transaction. This is equivalent to a very significant annual interest rate of 14 per cent ($200,000 / 100,000,000 * (360/5)$), which is levied for entering just one 5-day repo. Notably this rate is significantly greater than the ECB marginal lending facility rate of 1.75 per cent. Further examples are included in Table 1.

As the tax is imposed on a transaction basis, the frequency of financing will result in a stronger impact on shorter-term financing. This is important because most repo agreements undertaken by EU and euro area banks are less than one month. A survey by the International Capital Market Association in September 2011 showed that even though the maturity profile for the European market is lengthening, transactions of less than one month still account for over 50 per cent of repos in Europe. Similarly a recent ECB money market survey indicated that overnight and short term repos to account for c. 70 per cent of daily turnover in the bilateral repo market. These interest rates are uneconomic and if implemented as currently drafted, an FTT is likely to lead to a significant decline in repo transactions at a time when financial institutions such as banks need to access reliable secured sources of funding. This suggests that the proposed tax may need to be adjusted.

Table 1: Repo market impact

No of repos per month	Transactions charged	Tax charged, €	Annual interest rate, per cent
1	2	200,000	2.40
4	8	800,000	9.60
20	40	4,000,000	48.00

Fixed-income securities with short term maturity will be more greatly impacted by FTT

¹⁶ It only excludes repos/reverse repos as part of monetary policy operations with central banks.

Table 2: Effect on fixed income securities by maturity

Bond maturity	Current yield curve (before FTT), per cent	Equivalent discount rate (a)	Tax rate	After tax equivalent discount (b)	Yield to investor (after paying FTT) (c), per cent	Cost of tax in terms of yield (a) - (c), per cent
ECB AAA zero coupon yield curve						
3 month	0.062	0.9998	0.001	0.999	0.462	0.400
6 month	0.080	0.9996	0.001	0.999	0.280	0.200
1 year	0.152	0.9985	0.001	0.997	0.252	0.100
5 year	1.377	0.9356	0.001	0.935	1.398	0.021
10 year	2.558	0.7963	0.001	0.796	2.571	0.013
30 year	2.959	0.5298	0.001	0.529	2.965	0.006

a) $1/(1+(\text{yield} \times 0.01 \times \text{days}/360))$

b) discount rate * (1-tax rate)

c) $((1/\text{after tax discount})-1) \times 100 \times 360/\text{days}$

In a similar vein, as the FTT is calculated on the value of a transaction, it will result in short term debt becoming proportionally more expensive than long term debt. Bonds of longer maturities usually demand a higher yield for the various risks investors wish to be compensated for over a longer holding period. Costs associated with this tax, irrespective of whether borne by market participants or issuers, will have a greater relative impact on short term issues due to their smaller discounts. Table 2 illustrates this effect.¹⁷

Impact on Irish government bond primary dealer systems

Similar to several other EU debt management agencies, the NTMA sells Irish sovereign bonds through a primary dealer network. These dealers provide continuous two-way quotes and use the bid-ask spread to cover costs. Spreads have already significantly widened since the start of the financial crisis and this has been accompanied by periods of increased illiquidity in financial markets, including in Irish government bonds.

¹⁷ The payment of coupons complicates the analysis, as the cash flows at every coupon date need to be included when calculating the effect on the yield. Additionally when coupons are paid, cash received may be reinvested and this in turn will generate further FTT. However, the principal of tax being more costly for short term investments is consistent.

Table 3: Irish Government bond bid-ask spreads

Bid-ask spread, basis points		
Bond:	08 April 2008	22 March 2012
IRISH 5 04/18/2013 Govt	7	90
IRISH 4.6 04/18/2016 Govt	10	163
IRISH 4.5 10/18/2018 Govt	8	160
IRISH 4.4 06/18/2019 Govt	13	191
IRISH 4.5 04/18/2020 Govt	8	188

Primary dealers also act as market makers and consequently under the EU proposal may be taxed twice for a trade when they intermediate buys and sells in the secondary market. Dealers facilitate the functioning of markets and therefore as a service provider are unlikely to absorb the cost due to the tax. Costs would then be passed on to investors in the form of higher spreads. This may also lead to additional sovereign financing costs when the Irish State re-enters the market, and would not improve current secondary market illiquidity.

Section 4: Review of literature and country experiences

This section reviews the relevant academic literature and provides a brief overview of country experiences with financial transaction taxes.

Literature review

There is a substantial literature on the taxing of financial transactions, with generally two areas of focus: limiting undesirable market behaviour and revenue generation. The Commission's proposal refers to these as objectives of an EU FTT. This section looks at what insights the theoretical and empirical literature can offer on both of these issues. Other issues, including alternative taxation proposals and an analysis of wider costs of the FTT in terms of possible macroeconomic impacts are addressed elsewhere in this document (see sections 6 and 7).

Matheson (2011) comments on the general downward trend in the use of financial transactions taxes – both as regards the incidence of such taxes and in terms of rates applied where they remain – over the last decade or so. This has been driven by attempts to lower capital costs and the fact countries are worried about competitive financial markets in the face of increasing globalisation. A number of G-20 countries do however continue to impose some form of transactions tax, with the most common being an ad valorem tax on share trades. This is generally in the region of 10-50 basis points and raises less than 0.5 per cent of GDP.

Much of the literature looking to assess the impact of transaction taxes on market behaviour has focused on market volatility, and whether such a tax through its impact on speculative and high frequency trading leads to less volatility. Therefore, this strand of the literature is focused on in this paper. As transaction taxes tended to be applied to specific instruments and countries, the empirical literature reviewed in this section concentrates on the impact of the taxes on volume, and revenue raising capacity.

Limiting undesirable market behaviour

The argument in favour of a FTT in terms of impacting on market behaviour comes from the view that short-term transactions are speculative in nature, do not add to economic welfare and are more likely to be destabilising than long term trades. Furthermore financial-market instability and the financial crises associated with this instability may have damaging economic effects. A FTT which represents a higher tax

rate for short-term trading than long-term investments thus aims to discourage the former. Additionally, a FTT increases the transactions cost of trades making some of them unprofitable.

One argument against the tax is that the current banking and sovereign debt crisis in the EU did not occur due to high-frequency trading but due to opacity and a large increase in debt and leverage in the regulated financial system. In reviewing the widespread failures of the Irish system, Honohan (2010) states that the root causes were threefold: weaknesses within the Central Bank and Financial Services Authority of Ireland; poor management and regulation of Irish banks; and pro-cyclical macroeconomic and budgetary policies. Another argument by opponents of transaction taxes is that by reducing liquidity, price discovery is hindered potentially increasing volatility.

Theoretical literature

The theoretical relationship between transactions tax and volatility is ambiguous and depends on the model used. Although a number of papers suggest that a small FTT would reduce volatility, the literature notes that care needs to be taken in choosing the size of the tax as if too large a reduction in liquidity could result in an increase in volatility. Furthermore, the range of models and assumptions used in the literature draws attention to the fact that market microstructure and composition of trading play important roles in determining the impact of a FTT.

Honohan and Yoder (2010) note, based on evidence on the microstructure of the foreign-exchange market, that most transactions are undertaken to hedge risk or ensure liquidity rather than speculation. They also note, referring to the work of Mende and Menkhoff (2003), that even a small tax is likely to dramatically alter the way in which wholesale participants operate in the foreign exchange market.

Many models look at the roles played by different actors in the market, generally in relation to the role of fundamental traders and noise traders. The results vary depending on the characteristics of the model chosen in terms of liquidity of market, balance between traders etc. These are summarised in Table 4 below.

Table 4: Results from selected theoretical and simulation models

Author(s)	Impact of tax on volatility
Hanke <i>et al.</i> (2010)	Increase or decrease depending on market size
Shi and Xu (2009)	Increase or decrease depending on the effect on the number of noise traders
Westerhoff (2003) and Westerhoff and Dieci (2006)	Decrease
Ehrenstein (2002); Ehrenstein <i>et al.</i> (2005)	Decrease, as long as the tax rate is not too high to affect the liquidity
Mannaro <i>et al.</i> (2008)	Increase, but only in presence of noise traders in the market
Kaiser <i>et al.</i> (2007)	Decrease
Bianconi <i>et al.</i> (2009)	Decrease but depending on market size
Bloomfield <i>et al.</i> (2009)	Little effect on volatility
Hau (1998)	Decrease
Pellizzari and Westerhoff (2009)	Decrease in highly liquid dealership markets; no effect in limit order markets

Source: McCulloch and Pachillo (2011)

Empirical literature

Literature looking at actual transaction taxes is somewhat limited. Existing studies include Roll (1989) and Umlauf (1993). Roll (1989) studying the relationship between transaction costs and stock return volatility across 23 countries, found transaction taxes were negatively but insignificantly correlated with volatility across countries. This suggests that taxes may not act as an effective policy instrument to dampen volatility. Umlauf (1993) studied the effects of transaction taxes on the behaviour of Swedish equity returns during the 1980–1987 period finding that volatility did not decline in response to the introduction of taxes although stock price levels and turnover did.

There is a more widespread literature looking at the impact of transactions costs on, in particular, short-term price volatility. Generally these papers find a positive relationship (i.e. higher transaction costs are associated with higher volatility) or no effect. Jones and Seguin (1997) find that U.S. stock commission deregulation, which led to a decline in transaction costs, led to decreased price volatility. They find a

reduction in the market volatility in the year following the deregulation, but the same volatility decrease, although less pronounced, also occurred on the previously unregulated NASDAQ market. This renders the identification of the volatility effect difficult in a pure time-series study. Hau (2006) finds that this relationship holds for the French stock market as well, where tick-size reduction led to a fall in volatility. In the light of this evidence, higher transaction costs in general, and security transaction taxes in particular, should be considered as volatility increasing. Mulherin (1990) examines trading costs in the New York Stock Exchange (NYSE) and volatility of the Dow Jones returns concluding that although the imposition of a transaction tax can be expected to be followed by lower trading volume, a corresponding decline in volatility is not an obvious result.

The literature on transactions costs and long-run volatility, concerning how asset-price swings lead to booms and busts, is less well explored. The literature on long-term volatility instead has focused on the role played by excess leverage in bubbles/crashes, where there is an amplification effect between asset prices and credit in both the upswing and the downturn (e.g., Allen and Gale, 2000, Reinhart and Rogoff, 2009, and Akerlof and Shiller, 2008). This literature illustrates that although transaction costs may play a role in determining market cycles, they are not a decisive factor.

The impact of a FTT on bubbles is explicitly considered by Scheinkman and Xiong (2003) as their model allows for overconfident agents to pay prices that exceed their own valuation of future dividends as they believe in future another buyer will pay even more. Their findings suggest that a small trading tax may be effective in reducing speculative trading, but may not be effective in reducing price volatility or the size of the bubble. Porter and Smit (2003), on the other hand, find some evidence that a FTT can impact on bubbles, as they find that increased transactions costs, brought about by raising brokerage fees, reduce the amplitude of bubbles.

While transactions costs may have some role to play, they do not appear to be a decisive factor in bubbles formation and triggering crashes. The impact of a FTT on systemic risk may be further questioned as financial crisis are often associated with property market bubbles/collapses where transactions costs tend to be high due to illiquid nature of property market investments, certainly in comparison with shares, bonds, derivatives and currency instruments.

An additional potential issue in this regard may be the impact of an FTT on the so called “debt bias” which results from the favourable tax treatment of debt financing over equity financing. Much of the literature on bubbles and financial crises finds leverage plays a key role, with the current economic crisis illustrating

the harmful economic effects of excessive levels of debt in the banking sector (e.g. Adrian and Shin (2009)). Introducing a tax which then puts a cost on equities but not debt could potentially exacerbate the issue.

Finally, taxation may result in a deadweight loss to society by distorting private decisions thereby increasing market inefficiency and reducing economic wellbeing. Honohan and Irvine (1987), using data for the late 1980s in Ireland, identified high deadweight losses from income taxes because of the then high marginal rates of income tax. While the marginal and average tax rates have fallen since the 1980s, income tax still involves a significant deadweight loss through the distortions it induces in the labour market. By broadening the tax base, it could be argued that the introduction of a low rate financial transactions tax could result in lower deadweight costs than increases in labour taxes. Anthony *et al.* (2012) (CPB discussion paper) suggest that a FTT compares unfavourably to alternative taxes in terms of efficiency as it is levied on part of the inputs of the financial production process thus distorting prices and hence decision making within the financial sector. The paper argues that the tax does not perform well at correcting existing distortions such as the VAT exemption of financial services and debt bias. Kirilenko and Summers (2004) looking at a bank transaction tax in Latin America, found a large deadweight loss in the region of 30-45 per cent in three countries.

Overall, the literature does not provide conclusive evidence in favour of a FTT reducing volatility. Generally, the theoretical results are ambiguous. Similarly, the empirical evidence does not suggest that a FTT has a positive impact on market behaviour in terms of reducing volatility and while transaction costs may have some role to play in long-term mispricing they do not appear to be a decisive factor in bubbles and crashes.

Revenue-generating potential

The main argument in favour of an FTT is that given the large volume of financial transactions, even a small tax could lead to substantial revenue. The revenue potential of such taxes may be overstated due to the potential impact on transactions volume and market behaviour, both of which are likely to change overtime following the introduction of an FTT. Based on the experience of other countries, the imposition of a transactions tax is likely to result in a substitution, migration and reduction in the number of transactions. The implementation of the tax will impact on the scale to which these occur, with the tax base, rate and elasticity of transactions all likely to impact on the revenue potential.

Looking at the migration issue, studies of the Swedish transaction tax have found that it resulted in significant migration of trading in Swedish stocks from Stockholm to London (Umlauf (1993), Froot and Campbell (1993)). Chou and Wang (2006) look at the reduction of the STT on Taiwanese futures markets and find it to have resulted in migration of trade from Singapore to Taiwan. These examples show that the effect can differ depending on how the tax is implemented.

There is less of a focus in the literature on the impact of financial transaction taxes on fixed income markets, despite these markets being sizeable in comparison to markets for other types of financial instruments. The relative size of assets allocated by institutional investors to fixed income and related securities for OECD countries was slightly bigger than for equity investments, currency, and other investments.

One of the few studies that assess the impact of FTT on fixed income markets is Froot and Campbell (1993). They find that the effects in the Swedish case were very significant. In particular, bond trading volume was reduced by 85 per cent over the first week compared to the average over the summer of 1987. In the bill market, the drop was 20 per cent. In the futures market (treasury bill and bond), trading decreased by 98 per cent over the same period. Froot and Campbell (1993) note that much of the decline in volume had occurred in anticipation of the tax, arguing that low levels of expected future liquidity in the market raised the risk of current liquidity. They also argue that one of the reasons for the drop off in volume was the existence of substitutes such as bank loans, other locally available substitutes such as variable rate notes, and forward rate agreements (FRAs), which were not covered by the tax. The latter instrument had a similar pay-off profile and was not subject to the tax.

An interesting finding from Froot and Campbell (1993) is that short term debt instruments such as treasury bills experienced less of a decline in volume. This was due to the fact that the tax rate applied varied by maturity. In particular, the tax rate (round-trip) was 0.2 basis points for less than 90 day maturities, linearly increasing for intermediate maturities up to 1 basis point for 1 year, and 3 basis points for maturities greater than 5 years. Although this is the experience of one country study, this may suggest that maturity scaling of the FTT could lessen the impact, unlike the Commission's proposal as currently drafted.

The literature on the possible revenue generated by transactions taxes shows a wide range of estimates. Studies looking at the issue from a global perspective find estimates ranging from as little as \$10 billion to hundreds of billions per annum, depending on the assumptions chosen. Schulmeister *et al.* (2008), for example estimate that a transactions tax on global stocks, bonds and derivatives could raise \$202–266

billion. Studies looking at country or region specific taxes similarly arrive at varying estimates. A number of studies have looked at the EU (Belgium Ministry of Finance, 2001; Jetin and Denys, 2005) with estimates of revenue varying between \$10-150 billion. Some of the discrepancy can be attributed to changes in the volume of transactions over time, with differing underlying assumptions also impacting on revenue potential. An example of a US study is Pollin *et al.* (2002) which estimates the tax would raise \$66–132 billion per annum.

Matheson (2011) provides evidence on the revenue from some empirical examples of transactions taxes. The author notes that in France, Japan, Germany and Italy, where the transaction tax was subsequently abolished, revenue collected amounted to in the region of 0.2 per cent of GDP. There are however example of countries (U.K., South Africa, South Korea, Switzerland) where revenue proved more significant in the last decade, 0.2–0.7 per cent of GDP. Hong Kong and Taiwan have been most successful and succeeded raising revenue of as much as 1–2 per cent of GDP. Equity stamp duties continue to raise large amounts where they are surrounded by highly liquid and large equity derivative markets as in the case of Hong Kong and Taiwan.

Transactions costs and elasticities

Higher transaction costs are usually associated with lower trading volume. The size of transaction costs can vary depending on the market (e.g. equity versus foreign exchange), trade size (small versus large) and whether trade takes place on-or-off exchange. McCulloch and Pachillo (2011) note these differences across markets finding the median transactions cost for foreign exchange and futures markets to be in the region of 0.025 per cent of transaction value, while in the case of equities it can be over 1 per cent. Such differences are why Pollin *et al.* (2003) suggest that the size of a transactions tax should be tailored to individual markets to try to ensure a uniform percentage increase in transaction costs from such a tax.

Similarly, the elasticity of trading volume to transaction costs tends to vary. Matheson (2011) points out that, in the case of the stock-market elasticities generally range between -0.5 and -1.7. Schmidt (2007) estimates the elasticity of foreign exchange trading for a multilateral tax on the U.S. dollar, euro, sterling and yen at -0.4. In this case the broad base of the tax which reduces the opportunity for avoidance resulted in a relatively low elasticity. The Commission's impact assessment notes that the elasticity of trading volumes to transaction cost, which broadly range from -0.4 to -2.6, will impact on revenue generation. Estimates of revenue generated by proposed tax in Ireland are presented in Section 5, which applies a number of different scenarios in order to take account of the range of possible impacts.

Revenue generated by a transactions tax should not be viewed in isolation. The overall net revenue impact of the proposal should be looked at. A financial transaction tax could have a negative impact on other tax revenue streams such as corporation and income tax for example if industry migrates to other jurisdictions. In the Irish case also there would be an impact on existing stamp duty revenue and possibly on the cost of Government financing – these issues are addressed in more detail in section 6. Revenue raised also has to be seen in the context of costs associated, including reduction in GDP arising from firms increased cost of capital and therefore reduction in investment as well as potentially through changes to impact on trading volume and volatility.

In summary, the estimates of revenue potential from a FTT vary substantially although studies looking at a global/regional perspective do suggest that there is the potential for significant revenue to be generated from a FTT. A key issue however, highlighted by some of the empirical examples, is the mobility of services and the possibility that services would migrate beyond the reach of the tax. In the context of the Commission's proposal this could have significant implications for revenue as transactions may merely migrate outside of the taxable zone, particularly if the tax is applied to the euro area only.

Country Experiences

This section outlines country experiences that may be informative for evaluation of the transaction tax.

Ireland

The transfer of stocks or marketable securities of an Irish incorporated company is liable to Irish stamp duty at a rate of 1 per cent. The transfer of an instrument which relates to the stocks or marketable securities of an Irish company (other than Irish regulated fund) or to Irish immovable property is liable to Irish stamp duty and the applicable rate will depend on the nature of the financial-services instrument transferring. For example, where the financial services instrument transferred is an option over listed Irish shares, Irish stamp duty at a rate of 1% applies. If the financial services instrument transferred is a derivative contract (not being stock or a marketable security), a rate of 2% could potentially apply. The rate is determined by the nature of the financial services instrument being transferred.

UK

The UK stamp duty, which raises in the region of 0.2 and 0.3 per cent of GDP per annum, is a tax on share transactions in UK incorporated companies, currently levied at 0.5 per cent of the purchase price of shares.

It does not apply to foreign companies listed in London. Intermediate share purchases are exempt from the tax recognising the potential liquidity enhancing role which intermediaries play. According to one source, in 2004/2005 the tax applied to approximately 20 per cent of share trading on the London Stock Exchange. A large proportion of the tax is collected via the CREST automated clearing system.¹⁸

Stamp duty reserve tax is difficult to avoid because the vast majority of UK company shares are held in the CREST settlement system which automatically debits when they are transferred. Notwithstanding this, the stamp duty can be avoided legally by the use of American Depository Receipts or Exchange Traded Funds.

Many UK companies have American Depository Receipts (ADR) programmes which enable them to market themselves in the US. Shares are issued to a US depository bank which issues ADRs in respect of them. It is the receipts rather than the underlying shares that are traded on the US markets. Such trading is currently free from standard 0.5 per cent transfer charges, but to compensate, there is a charge instead (only paid once at the higher rate of 1.5 per cent) when the shares are issued to the depository bank. An overseas collective investment scheme, including ETFs, that are listed on a UK exchange currently qualifies for exemption provided that it is not centrally managed and controlled in the UK or has a UK share register.¹⁹ The exemption was introduced in 2007 to encourage overseas ETFs to list in the UK. However, owners of an ETF share do not legally own the shares in the fund.

Sweden

Sweden's transaction tax was enacted in 1984 and abolished in 1990. The revenue raised by the tax, which averaged approximately 50 million Swedish kroner per annum, proved to be significantly below what was hoped for (1,500 million Swedish kroner). The tax applied to all equity security trades in Sweden using local brokerage services as well as to stock options. The fact that only local brokerage services were taxed is in the literature seen as the main design problem of the Swedish system. Avoiding the tax, which only required using foreign broker services, appears to have played an important role in the decision to abolish it.

Singapore

Singapore charges a 0.2 per cent stamp duty payable on all instruments that give effect to transactions in stocks and shares. Generally, there is no stamp duty payable for derivative instruments.

¹⁸ Oxera, 2006, *The Cost of Capital: An International Comparison*, Oxford, Oxera Consulting Ltd.

¹⁹ An Exchange Traded Fund is a type of financial instrument that tracks the value changes in various other financial instruments such as a stock or bond indices, commodities, or a basket of assets but trades like a stock on an exchange.

Hong Kong

Hong Kong charges a 0.2 per cent stamp duty for transfers of shares of companies which are either incorporated in Hong Kong or listed on the Hong Kong Stock Exchange. This is payable by the seller and purchaser in equal shares (0.1 per cent each). The level of duty is computed by reference to the higher of consideration or the market value of the assets transferred. There is an exemption available for transfer of shares between companies with at least a 90 per cent common shareholding, subject to certain conditions and formal clearance. Revenue raised in the case of Hong Kong has been in the region of 1-2 per cent of GDP per annum.

Switzerland

If one of the contracting parties or one of the intermediaries is a Swiss securities dealer, a transfer stamp tax is due on the transfer for value of the taxable securities. Taxable securities are bonds, shares and other participation rights, participation certificates, profit sharing certificates, units in mutual funds and documents relating to sub-participations. The stamp duty is 0.15 per cent for Swiss securities and 0.3 per cent for foreign securities and has tended to raise in the region of 0.5 per cent of GDP per annum. As mentioned above, this tax encouraged Swiss trading to move off-shore to a number of locations including Luxembourg.

Section 5: Revenue-raising capacity

This section discusses the revenue-raising capacity and the potential costs in terms of revenue loss due to displacement or curtailment activity.

Overview

In order to estimate the potential revenue from a FTT in the Irish case, the approach taken by the Commission in its assessment of data for Ireland is applied. Therefore, revenue is based on the following formula:

$$R = \tau \cdot V \cdot E \cdot \left(1 + \frac{\tau}{c}\right)^{\varepsilon}$$

where τ is the tax rate, V the annual transaction volume and E takes into account relocation and fiscal avoidance. The variable c relates to transaction costs and ε is an elasticity which describes the effect of a tax increase on the transaction volume. In this case the last term of the revenue equation (in brackets) describes the volume reaction of markets due to an increase in transaction costs only. Any relocation and avoidance is captured directly by E .

It should be noted that the formula is not based on an underlying structural model as the underlying behavioural response of the market segments is unknown. It could be argued that this is an arbitrary attempt to characterise relevant parameters. However, other studies such as McCulloch and Pacillo (2011) and Jetin and Denys (2005) have used a similar formula.

The tax rates applied are 0.01 per cent for derivatives and 0.1 per cent for other financial transactions as per the Commission's proposal. The assumptions regarding transaction costs are also taken from the Commission, in this case the impact assessment, and are as shown in Table 5 below. In terms of relocation and avoidance, the Commission assumed 10 per cent reduction in transactions volume for non-derivatives and 90 per cent for derivatives. These rates are also applied here.

Table 5: Assumed Transactions Costs

Market Segment	Pre-tax transaction cost in per cent of transaction volume
Equity	0.6
Bond	0.6
Exchange Derivatives	0.03
OTC Derivatives	0.7

Before turning to the volume data and actual revenue estimates it may be useful to look at how each component impacts on the revenue potential of a FTT. In terms of the tax rate, the impact on revenue depends on the elasticity. For elasticities of $-1 \leq \epsilon$, tax revenue will be increasing in the tax rate, whereas if $\epsilon < -1$ revenue can show a Laffer-curve effect where revenue tends to decrease in the tax rate above a certain level.

Looking at the other elements, so long as elasticity is negative the greater the absolute value of the elasticity the lower will be tax revenue, low transaction costs lead to low revenues as the tax increases transaction costs relatively stronger when the latter are low. Where transaction costs are large a small increase due to taxation does not have a strong effect. The volume and avoidance effects are relatively straightforward where greater volume leads to greater revenue and the opposite effect applies in terms of avoidance with greater levels of avoidance leading to lower revenues. A more comprehensive assessment of the relationship between revenue and the elements in the formula is provided in the Commission's impact assessment.

Data

The primary available source of data used in order to estimate the volume of financial transactions which would fall into the FTT regime comes from the Markets & Stockbrokers Supervision Division (MSSD) of the Central Bank of Ireland. The statistics presented are based on data that is reported to the Bank in "Transaction Reports" by authorised MiFID reporting firms. Transaction Reports are completed on a 'self-assessment' but legal obligation, although accuracy is dependent on firms submitting correct and complete reports. The data includes only transactions reported by local Irish reporting firms and includes all trades by such firms in financial instruments, irrespective of the competent authority responsible for these securities and irrespective of the venue at which they are traded. The calculations are split into three categories: trading in listed equities, bonds and OTC derivatives. In summary, all trading in Irish listed equities, bonds and certain types of derivatives.

A more comprehensive overview of the data limitations and underlying assumptions is included in Box 3 and Appendix B. Table 6 below presents the data for years 2010 and 2011 by category.

Table 6: Transactions Data Volume

	Trading in listed companies (Equities)	Bond trading	OTC derivative trading	Exchange-traded derivatives
	<i>Volume €billions</i>	<i>Volume €billions</i>	<i>Volume €billions</i>	<i>No. of transactions</i>
2010	501	240	330	2,647,044
2011	655	150	215	1,938,253

Base line estimates

In order to calculate a base line estimate for the revenue potential of the FTT the parameters used by the Commission to the Irish data is applied. Bearing in mind the issues relating to the data, doing so suggests that a FTT could raise in the region €490-730 million in Irish tax revenue depending on the elasticity.

Table 7: Revenue Raising Estimates – base line assumptions (EUR millions)

	Elasticity		
	0	-1	-2
EUR (millions)			
2010	670	575	493
2011	727	623	534

Notes: Estimates are based on the parameters used by the Commission. Equities and bonds: tax rate of 0.1 per cent, relocation effect of 10 per cent and transaction cost of 0.6 per cent. OTC Derivatives: tax rate of 0.01 per cent, relocation effect of 90 per cent and transactions cost of 0.7 per cent.

Box 3: Revenue Estimates and Data Limitations

The estimates of potential revenue from the FTT presented are based on transaction volume data from the Bank. When viewing the revenue estimates it is important to bear in mind the issues and limitations of the data.

- The transaction data is reported to the Bank in “Transaction Reports” by authorised MiFID reporting firms.
- The data includes transactions reported by local Irish reporting firms only. That is all transactions executed by branches located in this State where the service is provided within the territory of this State.
- The data includes all trades by Irish reporting firms in financial instruments, irrespective of the competent authority responsible for these securities and irrespective of the venue at which they are

traded – an example of this in terms of equities is it is not only Irish stocks which are included in equity transactions it is all equities traded by Irish reporting firms irrespective of location of equity.

There are some notable categories of transactions which would be taxable under the Commission's proposal but are not taken into account in the analysis due to a lack of data:

- Repo trades are not transaction reported in Ireland and therefore are not included in the data;
- Transactions in commodity, interest rate and foreign-exchange OTC/listed derivatives are not reportable and therefore are not included in OTC derivative trading data; and
- Volume data of exchange traded derivatives is not included as the underlying notional value is not reported.

Additionally a number of assumptions have been made in compiling the data:

- "Spread bets" are also excluded as the Bank understands they are not covered by the tax; and
- It is assumed that the financial institution will be charged irrespective of whether it is acting as principal or agent in the transaction.

Sensitivity analysis

Given the wide variety of estimates of elasticities in the literature, as well as the uncertainties surrounding the parameters in the Commission's formula, several sensitivity checks were carried out.

Higher transactions costs

The Commission notes that the transactions costs which it uses are somewhat lower than has been found in the literature.²⁰ The rationale proposed for this is that much of the literature on transactions costs is focused on the 1980's and 1990's and that since then transaction costs may have been reduced due development in IT infrastructure for trading. Assuming lower transaction costs has a negative impact on revenue estimates, particularly for larger elasticities. Applying transactions costs found in the literature, for example those used by McCulloch and Pacillo (2011), the revenue estimates do increase somewhat e.g. €615 million in 2011 as opposed to €530 million for an elasticity of -2 (see Table 10).

²⁰ EU Commission, *Commission Staff Working Paper Impact Assessment Accompanying the document Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC*, September 2011, volume 12, page 6.

Higher levels of avoidance

The levels of avoidance chosen by the Commission in the baseline estimates were 10 per cent for bond and equity trading and 90 per cent for derivative and foreign exchange trading. A conservative approach was taken, on derivatives in particular, due to the high degree of uncertainty with regard to the taxation of derivatives based on notional values. The Commission's impact assessment also used an alternative scenario of 70 per cent avoidance for derivatives. Schulmeister (2011) found the decline in volumes of derivative contracts in a scenario with medium market reactions was 60-70 per cent. A more extreme market reaction resulted in a decline close to 90 per cent. Schulmeister does however point out that the transaction reduction scenario accounts for the reduction of trading due to the introduction of a FTT but not due to relocation of trading. The Commission also refers to Campbell and Froot (1993) however, who note that in the Swedish case, trading in futures on bonds fell by 98 per cent within the first week of the application of the tax.

Applying higher levels of avoidance, 30 per cent in the case of equities and bonds and 98 per cent for derivatives reduces the revenue estimates substantially. Estimates in this scenario range from €380-560 million euro (see Table 9).

Implications of sectoral concentration

The volume of trading in equity and bonds is highly concentrated among a small number of firms. Assuming a 90 per cent reduction in equity volumes and a 70 per cent reduction in bond volumes (based on the share of activity accounted for by the top firms trading these instruments) following the introduction of the tax, estimates of the revenue yield fall to between €84 and €113 million. This represents a reduction in revenue yield of 83 to 85 per cent compared to the estimates in Table 7. These estimates only measure the direct effect of the relocation/avoidance of transactions. If the tax resulted in the relocation of activity abroad this could have a much wider impact through the loss of business in Ireland. This is discussed in more detail in section 6.

Alternative tax rates

Tax rates proposed by the Commission are 0.01 per cent for derivative transactions and 0.1 per cent for other financial transactions. In the proposal these rates are minimum rates and Member States can, if they wish, apply higher rates. Applying alternative rates will obviously impact on the tax revenue generated.

Assuming other things remain unchanged the revenue effect of increasing the tax rate will depend on the elasticity. In this case a doubling of the tax rate results in a doubling of the revenue generate for an elasticity of 0, however in the case of where the elasticity is -2 the tax revenue increases by a factor of 1.5. If increasing the tax rate were to lead to greater levels of avoidance this would also reduce the revenue generated by an increase in tax rate.

Bank for International Settlements statistical data

As mentioned above there are a number of particular omissions from the transaction data used (OTC interest rate and foreign-exchange derivatives, exchange traded derivatives). One alternative source of such data is from a survey coordinated by the Bank for International Settlements (BIS), although this is statistical survey which looks at the notional amount of derivatives trading between two points in time and not at individual transactions. It is designed to yield comprehensive and internationally consistent information on the foreign exchange (FX) and over-the-counter (OTC) derivatives markets. The latest survey was conducted in 2010. The Central Bank of Ireland participated in this survey collecting data on turnover with reference to April 2010 from resident credit institutions with sales desks located in Ireland. .

Additionally, the BIS publish data on derivative financial instruments traded on organised exchanges on a quarterly basis. Using the average notional value per transaction from this data²¹ and applying it to the Central Bank data on the number of transactions gives an estimate for volume of transactions in exchange-traded derivatives. Table 8 shows the estimated transactions volume for these market segments from these sources. The additional revenue generated based on these data is however relatively modest at €30-40 million.

Table 8: Estimates of transaction volume based on BIS survey data

	OTC Interest Rate derivatives	Foreign exchange Derivative	Exchange-traded derivatives
	<i>Volume €billions</i>	<i>Volume €billions</i>	<i>Volume €billions</i>
2010	1,353.7	2,147.2	533.26

²¹ BIS statistics show the turnover of derivative financial instruments traded on organised exchanges for Europe in 2011 was 2.4 billion contracts with a total notional value of \$565,162 billion. This suggests an average notional value per contract of \$234,858. The average notional value per contract for 2010 was \$267,330. (<http://www.bis.org/statistics/extderiv.htm>)

Collective investment schemes

Transactions in collective investment scheme subscriptions and redemptions are not included in the data reported to the Bank and are therefore omitted from the volume data. As a potential source of revenue, the omission of collective investment schemes may result in an under-estimation of the tax yield. Although not collected on the same basis, statistical data collected by the Bank through its Statistics Division may however serve as an approximation for investment scheme transactions. The collective investment funds data compiled by the Bank have information on transactions for shares/units issued by Irish resident funds.²² The absolute average value of net monthly transactions over 2011 was €57.5 billion. Applying the Commission's revenue formula to this figure would suggest revenue in the region of €40-50 million could be raised annually from this source.

Table 9: Revenue estimates – sensitivity analysis (€ millions)

	Elasticity		
	0	-1	-2
Revenue Estimates (€ millions)			
Higher transaction costs¹			
2010	670	617	567
2011	727	669	617
Alternative levels of avoidance²			
2010	519	445	382
2011	564	483	414
Alternative tax rates³			
2010	1340	1006	756
2011	1454	1091	819
Including BIS data⁴			
2010	710	607	520
2011	765	654	560

Notes:

¹ Estimates are based on transaction costs used by McCulloch and Pacillo (2011), 1.163 per cent for equities and bonds and 0.761 for OTC.

² Estimates are based on avoidance/relocation levels of 30 per cent for bonds and equities and 98 per cent for OTC derivatives.

³ Estimates are based on tax rates of 0.2 per cent for bonds and equities and 0.02 per cent for OTC derivatives.

⁴ Estimates include revenue from for-ex and interest rate derivatives and exchange-traded derivatives.

²² The statistical definitions of various categories of funds and the statistical concept of residency differ slightly from the supervisory concepts.

Section 6: Impact on the Irish financial sector and economy

This section outlines the impact of the tax on the financial sector and some of the possible wider effects. As well as the uncertainties surrounding the impact on behaviour and volumes of transactions, as the geographical scope of the tax is not yet certain, assessing the likely impact on employment and tax yields due to migration of activity is difficult at present. However, as the financial services sector has a substantial international dimension to it, this section first describes the overall contribution of the financial sector in Ireland to economic activity, and then evaluates the overall net revenue effect.

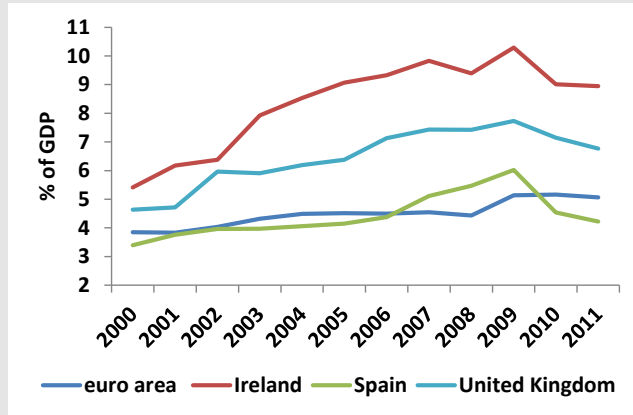
The Financial Sector in the Irish Economy

For the purpose of analysing the potential economic impact of the FTT, the CSO made available to the Bank unpublished data on gross value added in the financial sector as well as unpublished estimates of the breakdown of total GVA by subsector. Gross value added is defined as the sum of profits and wages in the financial sector. It is important to note that the CSO GVA data are not currently risk adjusted and reflect activity carried out by entities located in Ireland regardless of whether the activity is with Irish residents or not. As noted by Alon *et al.* (2011), a riskier bank is likely to record a higher return but there is no reason that this choice of risk should lead to higher imputed output, as the current national accounts GVA measure would do. Alon *et al.* argue that effective measurement of financial sector output would distinguish between income derived from lending services and income derived from portfolio decisions about risk and duration. Despite these drawbacks, gross value added provides the most readily available accurate measure of the impact of the financial sector on real economic activity.

The contribution of the financial services sector to overall economic activity has increased substantially over time as shown in Chart 1 and 2. Gross value added in financial services and insurance activities increased from around 4 per cent of GDP in 2000 to almost 9.9 per cent in 2010 (11 per cent of 2010 GNP). The expansion of the sector coincided with the reduction in the corporation tax rate applicable to the bulk of the activity in the business and financial services sector. The effect of the introduction of the 12.5 per cent corporation tax rate for the financial sector was to extend the attraction of Ireland for mobile firms in the business and financial services sector. It also meant that such firms could benefit from a strategic use of tax planning by locating highly profitable activities in the business and financial services sector in Ireland (through transfer pricing) (Conefrey and FitzGerald, 2010). This possibility had already been available to firms in the manufacturing sector as documented in Honohan *et al.* (1998). The increase in the size of the

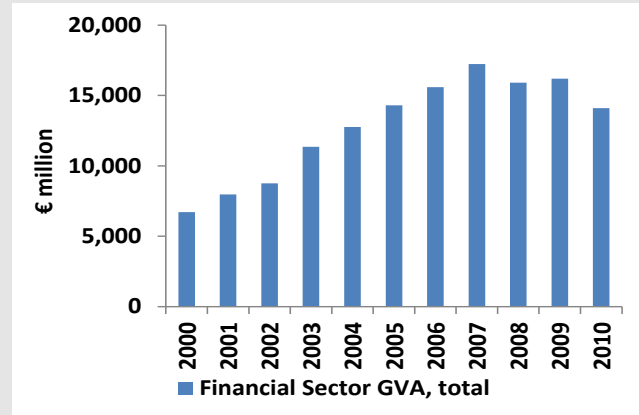
financial sector within the Irish economy means that it is now a key channel through which changes in world trade effect Ireland FitzGerald *et al.* (2008).

Chart 1: Gross value added, financial and insurance activities, per cent of GDP



Source: Eurostat.

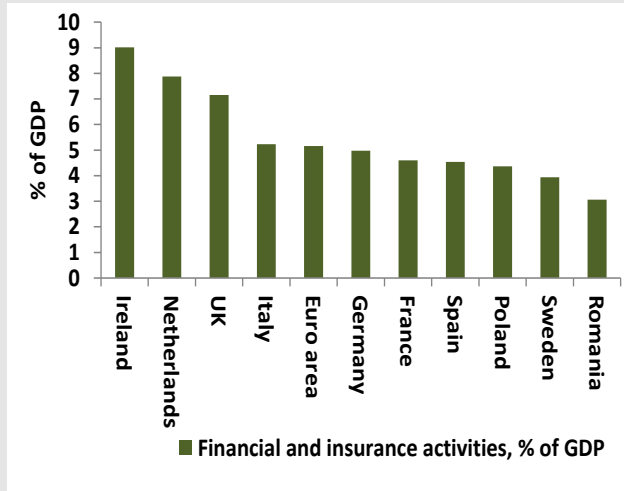
Chart 2: Structure of Irish financial sector, gross value added, euro million



Source: CSO data.

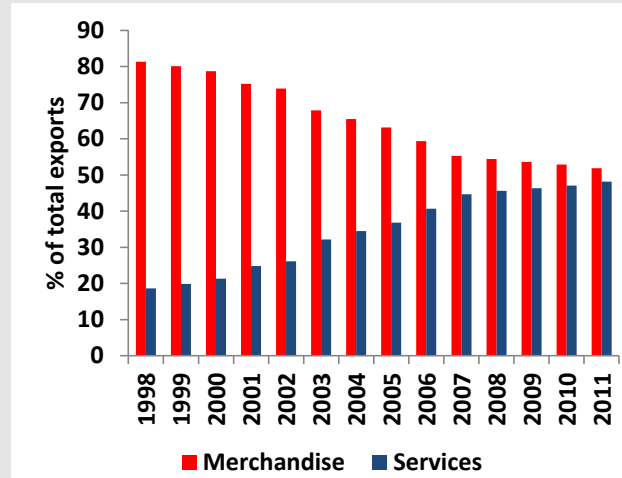
The financial sector’s share of overall economic output in Ireland is around twice as large as that of many other European countries (Chart 3). Gross value added from financial services increased strongly between 2002 and 2007 and amounted to over €14 billion in 2010 (Chart 2). Within the sector, the banking and financial intermediation sector accounts for the bulk of overall GVA. The financial sector contributes a significant share of the growing exports of services from the economy. Exports of services accounted for 16 per cent of all exports in 1998, by 2011 this had risen to almost half of total exports (Chart 4). Within the services sector, financial services and insurance make up around 18 per cent of all services exports (Chart 5).

Chart 3: Gross value added, financial and insurance activities 2010, per cent of GDP



Source: Eurostat.

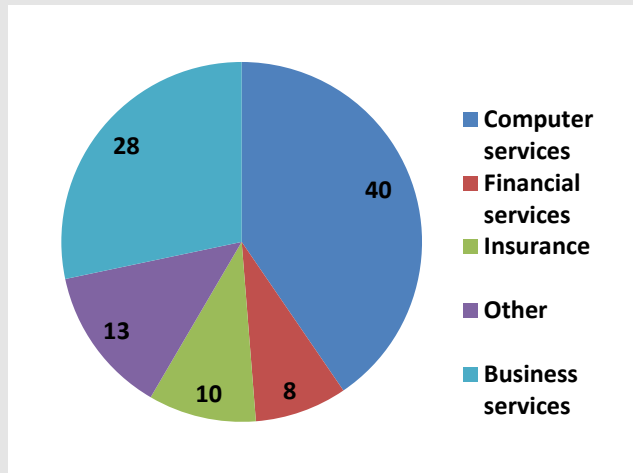
Chart 4: Exports of goods and services



Source: CSO National Accounts and Balance of Payments data.

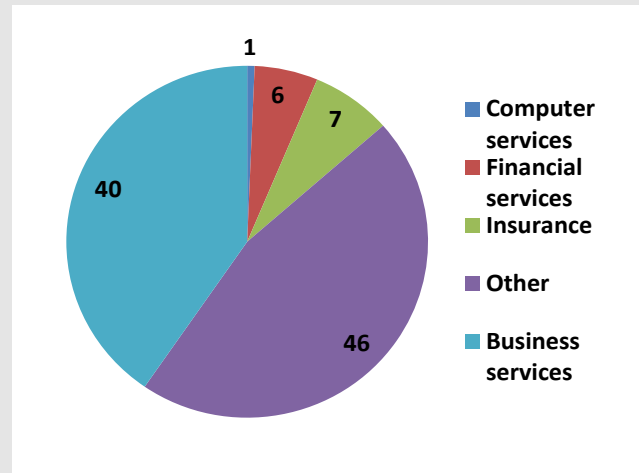
However, in the case of business and financial services the gross export and import flows are both very large so that the contribution of net exports from this sector, while positive, is not as significant as the gross export numbers would suggest. For example, exports of insurance services in 2011 amounted to €7.6 billion while imports totalled almost €6 billion (Charts 5 and 6). The scale of the gross export and imports of business and financial services make it difficult to determine the precise impact of this sector on real economic activity. Nevertheless, Chart 2 shows the steady increase in gross value added from the financial sector over time while the sector also accounts for an important share of total employment.

Chart 5: Services exports, shares



Source: CSO Balance of Payments statistics.

Chart 6: Services imports, shares

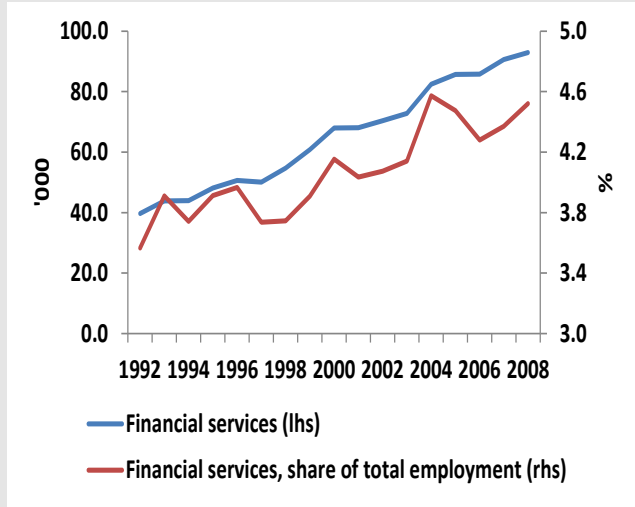


Source: CSO Balance of Payments statistics.

The growth in output and exports of financial services has contributed to an increase in employment and the sector today accounts for around 5 per cent of total employment (Chart 7). Although no official data exist for direct employment in the IFSC, according to estimates in Accenture (2010), there were over 32,000 people employed in the IFSC in 2009 which amounts to around a third of total financial services employment. As shown in Chart 8, banking and funds accounted for over two thirds of this total.

Corporation tax is the fourth largest source of tax revenue as shown in Chart 9. IFSC designated companies and the broader financial services sector accounts for a significant share of overall corporation tax revenue and this share has increased over time. Data from the Department of Finance on the estimated breakdown of the yield from corporation tax from various sectors of the economy indicate that the share of overall corporation tax revenue paid by IFSC companies increased from 12 per cent in 1994 to 17 per cent in 2009. The data also show that, in spite of the reduction in the tax rate over the period, tax revenue from companies in the business and financial services sector (other than IFSC companies) also increased over this period.

Chart 7: Employment, financial intermediation



Source: CSO Quarterly National Household Survey.

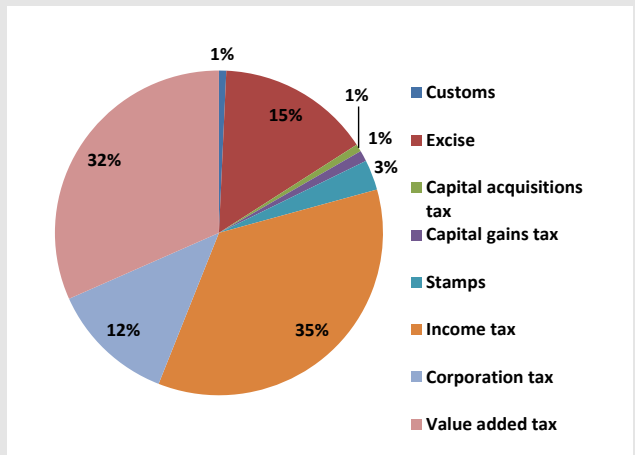
Chart 8: IFSC employment

	No. of employees
Banking	10,121
Insurance	4,011
Funds (incl. asset management)	10,560
Corporate treasury	200
Asset financing and leasing	614
Payments	3,000
IT and services	1,562
Professional services	2,638
Total	32,706

Source: Accenture.

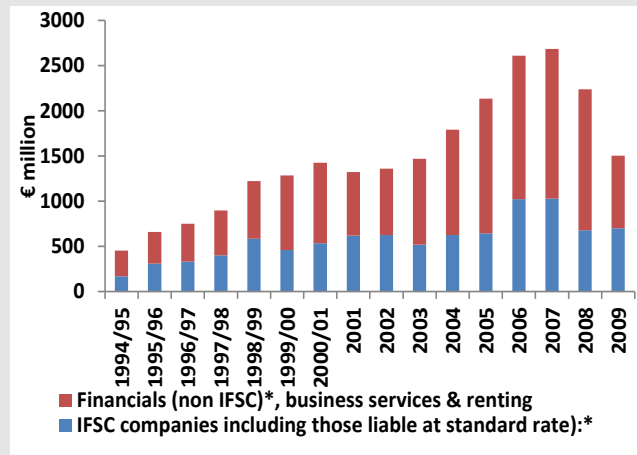
Corporation tax yield from financial sector IFSC companies amounted to almost €700 million in 2009 while €800 million was paid by non IFSC financials. The total corporation tax yield from IFSC and non IFSC financials has averaged over €900 million per annum since 2000 (Chart 1010).

Chart 9: Tax receipts by tax head, 2010



Source: Revenue Commissioners.

Chart 10: Tax revenue



Source: Department of Finance and Revenue Commissioners.

To summarise, the financial sector has grown in size and importance over the past decade and now accounts for a sizeable share of overall output, exports, employment and tax revenue. While the

imposition of a FTT in Ireland will raise revenue directly, the extent to which the tax reduces output and hence existing corporation tax revenue in the financial sector needs to be considered to assess the overall impact of the tax.

Net revenue impact

In assessing the potential overall net revenue impact of the financial transactions tax, there are a number of factors to consider. Firstly, the amount of revenue likely to be generated directly by the FTT versus the direct loss of revenue arising from the abolition of stamp duty on transactions in stocks and shares following the introduction of the FTT. Secondly, the offsetting reduction in financial sector output and tax revenue following the introduction of the tax including considerations of the amount of activity which could migrate following the introduction of the tax, the potential use of FTT revenue to reduce other taxes and the impact on EU budget contributions by the state.

According to the Commission's proposal²³ the introduction of the FTT would require the abolishment of other taxes such as stamp duty. As detailed below, Irish stamp duty is paid at a rate of 1 per cent for stocks and marketable securities, this is a higher rate than the FTT rates (minimum of 0.1 per cent or 0.01 per cent depending on the instrument) but has a much smaller scope as stamp duty is paid on purchase of Irish registered equity only. The net receipts from Irish stamp duty from 2005 to 2010 are shown below.

Table 10: Irish stamp duty receipts from equity

Category of charge	2005	2006	2007	2008	2009	2010
	€m	€m	€m	€m	€m	€m
Stocks, shares, etc.: transfers, composition duty on transfers	324	406	609	419	208	182
Gross Domestic Product (GDP) at current market prices	163,462	178,297	189,933	179,990	160,596	155,992
Stamp duty as a per cent of GDP	0.2	0.2	0.3	0.2	0.1	0.1

(Extract from the Revenue Statistical Report for 2010, Table SD1 and CSO National Income and Expenditure Accounts, 2011)

The estimates presented in section 5 indicate that the proposed financial transactions tax could directly raise between €490 and €730 million in additional tax revenue for the exchequer. As shown in Table 10,

²³ EU Commission Proposal for a Council Directive on a common system of financial transaction tax and amending Directive 2008/7/EC, September 2011, page 16.

stamp duty on financial transactions amounted to almost €182 million in 2010 or around one fifth of total revenue from stamp duty. This revenue will be foregone following the introduction of the FTT offsetting between approximately 24 to 38 per cent of the potential revenue gain from the FTT. The abolition of stamp duty could produce some offsetting gains by increasing the volume of transactions and reducing the cost of capital for domestic firms.

The previous section described the contribution of the financial sector to overall economic activity in Ireland. The calculations in section 5 took into account the direct impact on potential FTT tax revenue of relocation and tax avoidance. The relocation of activity would also have important indirect effects on the financial sector by reducing output and hence existing tax revenue from a range of sources. The task of assessing the potential scale and nature of activity which could leave Ireland following the introduction of the financial transactions tax is subject to much uncertainty. Nonetheless, by examining the structure of the various subsectors which comprise the financial sector, it is possible to identify areas of activity which are particularly mobile and therefore could be more likely to relocate following the introduction of the FTT as opposed to sectors and activities within the financial sector which have strong links to the Irish economy and could be considered less likely to move abroad as a result of the tax.

Insurance accounts for around one-fifth of financial-sector output and since the FTT as currently proposed will not apply in this sector in terms of direct insurance transactions; there should not be any first round impact on output or activity as a result of the tax. However, insurance companies will be liable for FTT in respect of their asset management and hedging activities, the extent of which will depend on the frequency of trading. The impact will depend upon the business model of individual undertakings and particular products offered. The sector as whole employs around 9,000 people.

Turning to banking and financial intermediation, as outlined earlier in this section this sector accounts for the bulk of total financial sector GVA. The banking sector consists of three distinct groups with varying potential for moving operations abroad. The Financial Measures Programme banks are strongly linked to the Irish economy and available funding sources within Ireland and, with public shareholdings, are least likely to move activities abroad to avoid the tax. The largest banks in the other non-IFSC banks category have local business models dependent on the Irish economy but as part of much bigger corporate entities. Finally, foreign-owned IFSC banks generally have more limited direct lending relationships to Irish firms and could be considered the group most likely to move out of the country following the introduction of the tax should it materially impact their business model. However with the bulk of financial intermediation GVA

accounted for by the first two groups, the exit of IFSC banks in the third group is likely to have a smaller impact on GVA than the exit of institutions in the other two groups. The relocation of IFSC banks could still entail a significant loss of employment, wage income and corporation tax revenue. The five largest credit institutions in this group in terms of employment, whose activities in Ireland are not closely related to the Irish economy, together employ around 3,000 people. For all institutions, there is no major impediment to setting up offices outside the EU to avoid payment of the tax on at least some transactions.

Services auxiliary to financial intermediation is the third sub sector which makes up overall financial services. Fund management and security broking accounts for the bulk of the GVA of this sector. The funds industry consists of various groups of funds – money-market, bond, equity, hedge, mixed, real estate and a small number of funds that do not fit these categories. According to Central Bank data, Ireland accounts for around one third of all money market funds domiciled in the euro area while the figure for investment funds excluding money market funds is 13 per cent. Activity within Ireland is largely accounted for by fund administration and trustees.

The investment-fund industry is organised through a range of entities and structures, often in different jurisdictions. Assessing the effect of FTT on the fund industry in Ireland is complicated as establishing which entities and which transactions would be liable for the tax under the proposal is unclear. The different elements of the fund industry include:

- The fund itself - a singular legal entity, often located in an offshore jurisdiction e.g. BVI, Cayman Islands;
- The investment manager - the company who makes investment decisions and is typically based in London, New York or Geneva;
- The custodian/trustee - an institution that has legal responsibility for the holding the securities and managing cash, often located in Ireland; and
- The administrator - an institution that values the investments and processes subscriptions and redemptions for investors, and is often located in Ireland.

For the purposes of applying the FTT from an investor perspective, while an investment fund is considered the financial institution, the administration firm is responsible for processing subscriptions and redemptions. The administration firm could be the entity within the fund structure which is best placed to

collect the taxation levy. If funds moved outside of the EU to avoid the payment of FTT, it is unclear if their relationship with the Irish administration firm would remain.

The structure and nature of the fund management activities carried out in Ireland suggest that the sector is less firmly embedded in the Irish economy than other areas within financial services such as banking which have strong links to the Irish economy. The relocation of funds industry activity to another jurisdiction could have an impact on numbers employed if investment manager or legal entity domicile relocation also led to migration of fund administration. Although the fund management and administration sector accounts for a small share of overall financial sector GVA, it is very significant in terms of employment with an estimated 10,000 people at work in the sector. The five largest fund administration firms employ 4,400 people.

There are a number of important caveats to this analysis. First, assessing the likely behaviour of various sectors in response to the proposed tax change is extremely difficult as individual firms will make their decision to stay in Ireland or relocate based on a range of factors. These would include legal considerations as well as an assessment of whether the benefits of locating in Ireland (corporation tax regime, availability of skilled labour, regulatory environment and other factors) outweigh the costs, including the additional potential costs associated with the FTT. Second, the estimates presented above provide a lower bound on the likely impact on the financial sector and the economy of the introduction of the FTT. In addition to the direct loss of output which could result from the introduction of the tax, a full analysis would need to take into account second round effects such as the loss of revenue from income tax, corporation tax, and the increase in unemployment which would result from the relocation of activity abroad.

A final consideration in assessing the likely overall macroeconomic impact of the FTT is the potential for revenue recycling. Previous studies on the macroeconomic impact of taxation (FitzGerald *et al.* 2004) have found that economic activity can be increased if the revenue from the tax instrument is recycled through a reduction in income taxes. The FTT would have the effect of shifting the burden of the tax from labour towards capital. In a small open economy such as Ireland, where labour is particularly mobile and labour costs are a large component of international competitiveness, this tends to improve economic performance. However, in the case of the proposed financial transactions tax where the amount of revenue raised directly is likely to be small and significantly offset by the loss of revenue from stamp duty, the potential for revenue recycling is likely to be low.

In the context of revenue recycling options, the Commission has proposed that two thirds of the revenue from the FTT be used to fund Member States' contributions to the EU budget which are based on their Gross National Income (GNI). For Ireland, the Commission estimates that revenue from the FTT could be used to fund €534 million of Ireland's GNI contribution to the budget by 2020.²⁴ The FTT would not reduce Member States' contributions to the EU budget but rather could provide a source of revenue to fund part of Member States' EU budget contribution thereby freeing up resources elsewhere.

In summary, the estimates presented in this section indicate that the net revenue gain for Ireland from the introduction of a FTT, while positive, is likely to be modest. These estimates are subject to much uncertainty given the wide range of estimates of elasticities and the difficulty in assessing the degree of mobility of financial sector firms, and the likely extent of tax avoidance. While the FTT has the potential to directly yield between €470 million and €730 million in additional revenue annually, the need to compensate for the loss of stamp duty receipts (€207 million in 2009) reduces the revenue gain significantly. In addition, it is possible that some firms could choose to leave Ireland in response to the tax which would result in a reduction in financial sector output, employment, and existing corporation tax revenue. The analysis suggests that the firms with the highest propensity to migrate following the introduction of the tax are likely to be in the non-banking sectors which account for the smallest share of gross value added. Nevertheless, the relocation of even a small number of large IFSC banks or fund administration firms which would result in a loss of corporation tax revenue and an increase in unemployment could offset the initial increase in revenue from the FTT.

²⁴ See: <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/12/300&format=HTML&aged=0&language=en&guiLanguage=en>
Details on the calculation of the revenue estimate for Ireland are not provided.

Section 7: Alternatives to FTT

Given the scale of the costs relating to the current financial crisis in Ireland and elsewhere, the desire for policy tools and measures to make financial systems safer, and ensure that their services are 'socially useful', taxation of the financial sector is likely to remain on the agenda of EU Member States for the foreseeable future. This section first reviews some alternative proposals that have been discussed among the official sector and those suggested by

In this respect, a FTT is only one of the possible taxes of this type. Other forms of taxation, linked for example to total assets of financial firms, or to the value added of financial firms, have also been proposed recently. Two broad options were considered by the Commission, a Financial Activities Tax (FAT) and a FTT. A FAT is based on the activities of a financial institution or entity. In contrast to a transaction based tax, an FAT tax base is composed of both wages and profits, and in some cases, supernormal profit or economic rent. It has some desirable features such as it may deal with the direct consequences of excessive risk taking.

The Commission's impact assessment notes that both are technically feasible but the choice of one over the other is essentially a trade-off among the different objectives pursued and would also depend on the specific design features of the tax. According to the Commission, both options have the potential for raising significant tax revenues from the financial sector, although to a potentially greater extent for the FTT. The assessment did note however that the FTT comes with a higher risk of relocation or volume decline in transactions, especially with respect to frequent short-term transactions. Furthermore, both options could be expected to have small but non-trivial effects on GDP, as calculated by the Commission services and on employment, with the negative effects of the FTT likely to be somewhat higher.

French Financial Transaction Tax Proposal

As proposed on 29 January 2012, the French FTT is similar in design to the UK and Irish stamp duty. It does not have the same scope as the proposed Commission FTT. The proposed tax is limited to the following:

- Acquisition of French-listed equity with a market cap of €1bn (tax rate at 0.1 per cent);
- Acquisition certain types of sovereign CDS contracts²⁵ (tax rate at 0.01 per cent); and
- High frequency transactions – see Appendix A for definition (tax rate at 0.01 per cent).

²⁵ The proposal refers specifically to sovereign CDS trades where the no underlying sovereign debt is held by the institution conducting the trade. This is colloquially referred to as a 'naked' sovereign CDS trade.

The tax does not apply to other derivative or bond trades. The rates imposed are the same as the Commission's proposal, with an exemption for market makers. Also the focus of the tax is on French registered equities and certain types of sovereign CDS contracts rather than on the location/establishment of the financial institution. If approved, the taxes should be effective as of 1 August 2012, with the exception of the tax on sovereign CDS, for which no date is fixed in the draft legislation.

At present, there is no uniformly agreed definition of high frequency trading (HFT) across the EU. The French proposal defines HFT as in Appendix A. In the event that all EU Member States agree a definition of HFT, a similar tax may be applicable as an alternative.

Stamp duty

Considering the precedence set by existing stamp duty regimes, an EU wide stamp duty may be one way forward for EU member states. This alternative was recently mentioned by the German Finance Minister as part of alternative proposals such as a Financial Activities Tax and tighter regulation of high frequency trading.²⁶

Currently Irish stamp duty is charged on the purchase of Irish registered and listed companies irrespective of the exchange/listing on which the shares are traded, with the exception of ADRs. The proposed FTT is charged if the financial institution is established in the EU. With the removal of stamp duty, it is possible that Irish shares could be traded in other EU member states not agreeing to the proposal or outside of the EU and pay neither a stamp duty nor the FTT. One suggestion could be to amend such a proposal to the effect that stamp duty could be charged on the purchase of Irish shares in cases where the FTT does not apply.

Regulation

It is notable that the primary objective of the FTT is to limit potential undesirable market behaviour and to ensure the functioning of the internal market, rather than to raise revenue from financial institutions. Alongside the objectives, it is worth noting the existing activities of the Commission to amend the EU Markets in Financial Instruments Directive (MiFID) to MiFID II and the Markets in Financial Instruments Regulation (MiFIR), and to amend the EU Markets Abuse Directive (MAD) to MAD II and the Markets Abuse Regulation (MAR). These may be more appropriate instruments to meet these objectives than a financial

²⁶ Barker, Alex, 2012, "EU looks at stamp duty to settle tax impasse." Financial Times, 13 March.

transaction tax. It is also worth noting that there is a proposal to restrict the activities of trading, (as opposed to HFT) as part of the amendments to MiFID. This proposal is not yet finalised. This may also be a viable alternative to taxation. Similar to the US FATCA proposals, fines and penalties could be applied where activity is seen to disrupt the efficient workings of the market.

Other supervisory measures include measures to limit some of the more undesirable aspects of high frequency trading such as temporary circuit breakers where a minimum execution time is required for trading in adverse market conditions or a wider application of resting periods between trades at all times. At the level of the financial system as a whole, effective supervision and financial surveillance based on adequate disclosure of positions relating to 'crowded trades', combined with the deployment of appropriate macroprudential tools to dampen property and credit cycles can directly address concerns related to financial imbalances within economies.

Possible exemptions to consider for the current proposal

As part of the evaluation, the Bank has considered some ways in which the existing proposal could be tailored in order to be constructive. These suggestions include:

Scope of tax

The tax proposal could be amended to exclude secondary sovereign debt markets, repo markets, and potential consideration could be given to grandfathering provisions for the tax as applied to short and long term financing markets for banks and other financial institutions.

Intermediary relief

As discussed in section 3, consideration of intermediary relief may contribute to orderly functioning of the financial markets.

UCITS redemptions and subscriptions

As the dealing in UCITS units often involves private households, these transactions could be added to the list of excluded instruments, especially considering that under the current proposal, individuals could be held jointly and severally liable for the tax.

Recalibration of the rate

Considering the impact on intermediaries and business models, the uncertainty surrounding the impact of the tax could be reduced through a recalibration of the rate.

Section 8: Conclusions

Overall, the Bank's analysis suggests that the net gain in tax revenue for Ireland as a result of the introduction of the proposed financial transactions tax is likely to be modest and significantly offset by the loss of stamp duty revenue. There are also caveats to the estimates of likely revenue yield estimation relating to the data available and various aspects of the Commission's proposal. In terms of possible effects on the financial system, certain parts of the financial system could be significantly impacted. This depends crucially both on the final form and geographical scope of the tax, and the reaction of financial firms to this which is unclear at present.

This is because agreement has not yet been reached by EU Member States on the form and scope of the transaction tax proposed by the Commission. Suggestions and proposals by various member states have led to further discussion which has not coalesced into a firm way forward on this issue. Clarity on these elements will assist in further evaluation of the effects on the Irish financial system and on taxation revenue.

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Appendix A: DEFINITIONS

1. Beneficial ownership

“beneficial owner refers to ultimate beneficial owner or interest by a natural person. In some situations, uncovering the beneficial owner may involve piercing through various intermediary entities and/or individuals until the true owner who is a natural person is found. With respect to corporations, ownership is held by shareholders or members. In partnerships, interests are held by general and limited partners. In trusts and foundations, beneficial owner refers to beneficiaries, which may also include the settlor or founder.”

The OECD also notes that “...the term did not have a precise meaning in the law of many countries”
OECD (2011, p. 5)

2. Economic Substance

“The economic substance of a transaction or arrangement is determined by examining all of the facts and circumstances, such as the economic and commercial context of the transaction or arrangement, its object and effect from a practical and business point of view, and the conduct of the parties, including the functions performed, assets used and risks assumed by them.”

OECD (2010, 9.170)

3. High Frequency Trading

According to the new French legislation, high frequency trading transactions are taxable when the following conditions are met:

- a) acting as principal;
- b) the number of orders cancelled or amended in one day exceeds a certain threshold; this threshold will be fixed by future regulations but it should not be less than two-third of orders;
and
- c) securities traded are equities within the meaning of art 212-1 A of the financial and monetary code (Landwell & Associés 2012).

Appendix B: TRANSACTION DATA ASSUMPTIONS

1.1 Assumptions Overview

All calculations are based on information that is provided in Transaction Reports by authorised MiFID reporting firms. Firms' Transaction Reporting is based on a 'self-assessment' obligation and thus this exercise is entirely dependent on firms for the accuracy and completeness of their returns.

While the Bank is confident that the calculations made and methodologies used in this exercise are accurate and appropriate, they have been applied to the warehouse of data resulting from Transaction Reports and thus, it is possible that the true figures for the collection of FTT could be higher or lower than those resulting from this exercise.

1.2 Reportable Transactions

The reportable transactions reflect the data received by the Central Bank of Ireland as part of the requirements of the European Communities (Markets in Financial Instruments) Regulations, 2007, and Commission Regulation (EC) No.1287/2006 of 10 August 2006 implementing Directive 2004/39/EC.

An investment firm that executes a transaction in financial instruments:

- a) That are admitted to trading on a regulated market;
- b) That are admitted to trading on a multilateral trading facility (MTF) operated by a market operator;
- c) The value of which are derived from, or which are otherwise dependent upon, debt or equity instruments admitted to trading on a regulated market or an MTF operated by a market operator;
- d) The value of which are derived from, or which are otherwise dependent upon, indices of financial instruments admitted to trading on a regulated market or an MTF operated by a market operator;
- e) Shall report details of the transaction to the Central Bank of Ireland, whether or not executed on a regulated market or an MTF operated by a market operator.

This obligation applies to transactions executed in financial instruments on the following:

- a) The Main Market of the Irish Stock Exchange
- b) The Enterprise Securities Market (ESM)
- c) The Global Exchange Market (GEM)
- d) All EEA Regulated Markets and
- e) All Multilateral Trading Facilities (MTF) where the MTF is operated by a market operator.

The transaction reporting obligation will apply to trades whether executed on or off the market. The “Reporting Firm” refers to the investment firm who is required to report financial transactions under the above MiFID legislation.

1.3.1 Non Reportable Transactions

The following financial undertakings are not transaction reportable and therefore do not form part of the figures provided.

- a) Transactions in commodity, interest rate and foreign-exchange derivatives
- b) For Alternative Instrument Identifier (AII) transactions i.e. exchange traded derivatives (The underlying asset may be equities, bonds, indexes, baskets of equities etc.), the underlying notional is not reported. The number of transactions reported provides an indication of the volume of such transactions²⁷.
- c) Collective Investment Undertaking subscriptions and redemptions
- d) Repo trades (including traditional equity stock loans)
- e) Internal transactions i.e. transactions entered into within the same authorised entity, where there is no change of beneficial ownership of the financial instruments.

1.3.2 Transactions which are excluded

- a) Spread bet trades do not qualify as a ‘financial transaction’, as defined in the proposal
- b) Primary market transactions are excluded according to the proposal. These are not reported
- c) Credit default swaps as the data quality on the number of transactions is less reliable.

1.4 Details of data presented

- a) The data is annualised from January to December of 2008 until 2011.
- b) Transactions reported by local Irish Reporting Firms only are presented. That is all transactions executed by branches located in this State where the service is provided within the territory of this State as these are reported to the Central Bank of Ireland. Other transactions executed by branches are reported to the home Member State competent authority, unless the branch elects to report to the Central Bank of Ireland.

²⁷ Transactions in derivatives admitted to trading on a regulated market where the ISIN is not the industry method of identification must be identified using six separate mandatory elements which are collectively known as the Alternative Instrument Identifier (AII).

- c) All available ON Exchange and OFF Exchange transactions are included.
- d) All securities that are traded by the Irish Reporting Firms, irrespective of the competent authority responsible for these securities and irrespective of the venue at which they are traded are included.
- e) The consideration figures for Shares/Equities and Debt Instruments/Bonds are included.
- f) For some OTC derivatives, the volume (quantity) figure is used for the calculation, instead of the value transacted (consideration). This is because some OTC Derivatives i.e. Swaps are reported with zero consideration, while for others, i.e. Warrants, the consideration reported is much smaller than quantity. It is assumed that the quantity figure in such instances is the same as the notional amount.
- g) One of the requirements of this analysis was to differentiate between debt instruments and equity instruments. A transaction report does not provide this distinction. To classify Debt Instruments therefore the ISO 10962²⁸ *Instrument Type Classification of Financial Instruments* is used.
- h) If the reporting firm and the counterparty reporting firm are the same, the assumption is made that they are trades between an institutional client and the reporting firm. This assumption treats trades between different accounts of the same reporting firm as two occurrences for transaction tax purposes.

1.5 Inconsistent reporting

As previously stated all calculations are based on information that is provided in transaction reports by authorised MiFID reporting firms. Firms' transaction reporting is based on a 'self-assessment' obligation and thus the exercise is entirely dependent on firms for the accuracy and completeness of their returns. As part of this exercise some data quality issues were identified and these transactions were modified to a more correct format, for example some data was entered under the wrong heading or an incorrect unit of measure was used. The figures were manually amended and included in the final calculation.

2. Scenario Analysis

Due to differences in the interpretation of the proposed legislation, two possible scenarios are provided. Scenario 1 is based on advice obtained from the Irish Revenue Commissioners. Scenario 2 is based on the interpretation of the Markets and Stockbrokers Supervision Division of the Central Bank. Both Scenario 1 and Scenario 2 provide an aggregated figure for Irish Reporting Firms.

²⁸ ISO 10962 International Standard, Securities and related financial instruments — Classification of Financial Instruments (CFI code) (2001)

Table 11: Scenario 1 - Volume				
	Trading in listed companies (Equities)	Bond trading	OTC derivative trading	Exchange-traded derivatives
	<i>Volume €billions</i>	<i>Volume €billions</i>	<i>Volume €billions</i>	<i>No. of transactions</i>
2008	566	391	13	41,857
2009	316	481	93	2,202,508
2010	402	225	330	2,647,044
2011	556	138	214	1,938,253

Table 12: Scenario 2 - Volume				
	Trading in listed companies (Equities)	Bond trading	OTC derivative trading	Exchange-traded derivatives
	<i>Volume €billions</i>	<i>Volume €billions</i>	<i>Volume €billions</i>	<i>No. of transactions</i>
2008	695	403	14	41,857
2009	401	664	93	2,202,508
2010	501	240	330	2,647,044
2011	655	150	215	1,938,253

Table 13: Assumptions underlying calculation of volume data based on Transaction Reports from Irish reporting firms as per scenario 1 and 2

Example	Trading Approach	Description of Trade		Additional Information	No of Transactions as per Scenario 1 (Revenue)	No of Transaction as per Scenario 2 (MSSD)	Description of Calculation
		Buy Side	Sell Side				
1	Proprietary Trading	Irish Investment Firm A	Irish Investment Firm B		2	2	As both sides of the trade are local reports, no charges apply.
2	Proprietary Trading	Irish Investment Firm A	Non - Irish Investment Firm		1	1	As only one side of the trade is a local report, a charge applies.
3	Trading for Client Accounts	Investment Firm A	Institutional Client D of Investment Firm A	Investment Firm A is acting as a principal	2	2	As the client is deemed to be a financial institution, two charges apply.
4	Trading for Client Accounts	Investment Firm A (on behalf of Institutional Client D)	Irish Investment Firm B	Investment Firm A is acting as an agent for Institutional Client D and trading with Irish Investment Firm B	2	3	Scenario 1 assumes that no charge be a local report. Scenario 2 assumes that a charge applies to the institutional client and the two investment firms A and B.
5	Trading for Client Accounts	Investment Firm A (on behalf of Institutional Client D)	Non Irish Investment Firm C	Investment Firm A is acting in an agent for Institutional Client D and trading with a non-Irish Investment Firm C	1	2	As in 4 above except firm C is non-Irish, not charged by Irish revenue.
6	Trading for Client Accounts	Investment Firm A (on behalf of individual/company E)	Irish Investment Firm B	Investment Firm A is acting as an agent for an individual/company E and trading with Irish Investment Firm B	1	2	Scenario 1 assumes that no charge be a local report. Scenario 2 assumes that a charge applies to the individual/company as excluded, only B and C. Investment firms A and B.
7	Trading for Client Accounts	Investment Firm A (on behalf of individual/company E)	Non Irish Investment Firm C	Investment Firm A is acting as an agent for an individual/company E and trading with non-Irish Investment Firm C	0	1	As in 6 above except firm C is non-Irish, not charged by Irish revenue.
8	Trading for Client Accounts	Investment Firm A	Individual/company E, a client of Investment Firm A	Investment Firm A is acting as a principal	1	1	As A is an FI, 1 charge will apply, individuals/companies are excluded.

