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1. INTRODUCTION

There is no subject certain to raise the hackles of London bankers more than a financial transaction tax. In terms of unleashing a torrent of abuse, it even edges out the European Commission. No surprise then, at the strength of the reaction to the proposal in September 2011 by the European Commission for an EU wide, 0.1% tax on transactions carried out by financial intermediaries on equities and bonds, and a 0.01% tax on transactions in derivatives.

The traditional response of all powerful industries under pressure, be it the tobacco industry in the 1970s or banking today, is to pursue a strategy of obfuscation. What draws me to this subject is not the "bashing bankers" party, but the disproportionate, inconsistent and disingenuous arguments used by my fellow bankers against this proposal. The purpose of this paper is to provide greater perspective to the issues of revenues, avoidance and economic impact of a financial transaction tax.

Listening to some bankers you would think that a 0.1% tax would usher in nuclear winter. Can the highly paid expertise, innovation, credibility and connectivity of our bankers not compete against a tax of one tenth of one percent? This is the largest sector in the UK, are its fortunes really hanging on such a thin thread. One wonders how much valued added our financial sector can bring if it can be so threatened by so small a tax.

You would also be excused from thinking after hearing some of the responses to the tax, that taxes are an especially poisonous burden on transactions, but the economic and market impact of transaction taxes are no greater than other transaction costs such as trading commissions, spreads, price-impact of trading, clearing, settlement, exchange fees and administration costs which, just ten years ago, were collectively greater than they are today in the equity markets, by the amount of the proposed tax.

If tiny levies on trading activities would cause such damage to the wider economy, investment and jobs, why do the fees and charges by banks and funds on the same trading activities of $100bn in the US and proportionately more elsewhere, not come in for even greater criticism?[2] The impact on the cost of capital of the alleged manipulation by some bankers of the British Bankers Association's LIBOR reference rates, on which $375trn of transactions are priced every day, was for many months greater than the impact of a 0.1% transaction tax. But we will not see the economic and job costs to the wider economy of this manipulation. It will be brushed off as unfortunate, these things happen, and it is good that it is now being put right. Despite the enormity of the tax-payer bailout and consequential impact on the provision of public services, some bankers rail against the economic

1 Chairman, Intelligence Capital Limited, Emeritus Professor of Gresham College and Fellow, London Business School. The ideas presented in this report benefit from conversations and collaboration with a number of people too many to name, but most recently from Professors Stephany Griffth-Jones and Rodney Schmidt.

2 Professor Kenneth French documents that U.S. investors spent an average of 0.67% of the aggregate value of the market each year over the period 1980-2006 in searching for superior returns includes trading commissions as well as the fees charged by mutual funds and hedge funds in his cost measure. See French, K., 2008, The cost of active investing, Journal of Finance 63, 1537-157.

impact of tiny transaction taxes while reaping far greater sums from fees, commissions and dealing profits, some of which appear to be manipulated. The alienation is impressive.

In their zeal to come up with examples of complicated off-shore, off-balance sheet transactions that could potentially evade this tax, some bankers appear to have forgotten that they are a regulated activity and today, supervisors will require capital to be put aside for activities that create risks.

Perhaps most importantly of all, this financial crisis, even more than others, has taught us that while low transaction costs are generally good, it is bad if they get so small that they are no longer any hindrance to activities, that through rapid turnover, give the impression of great citadels of value but turn out to be merely castles in the sky. Moreover, the lower are transaction costs, the greater are gross exposures to net exposures and this gap represents the vulnerability of a financial system to shocks where everyone turns to the exit at the same time abandoning all of their losing trades. Small transaction costs will therefore bring economic benefits as well as genuine economic costs. We examine the net effect of these.

2. HOW MUCH WOULD AN FTT RAISE IN THE EU AND IN THE UK?

According to the EU Commission study, it is likely that a 0.1% Financial Transaction Tax (FTT) levied across the EU on equity and bond transactions and a 0.01% tax on transactions in derivatives will raise over £48bn. Levied across the nine countries that have announced their willingness to proceed on their own, including the largest economies on the continent, Germany, France and Italy, the tax will likely raise £18bn and if levied in the UK, would raise an additional £8.4bn. To put these numbers into context, if the UK Government were to raise £8.4bn through an FTT, it could, instead of tinkering with corporation tax over time, lower it in one swoop to 18% making it the lowest in the OECD, bar Ireland, and as a result make an impressive claim to promote real business. Alternatively, it could scrap the 50% higher income tax bracket many times over, it could avoid all of the £8bn cuts to the education budget or more than double the UK's aid spending.

To determine how much a transaction tax would raise, we need to know how much the demand for transactions in the taxing jurisdiction will fall as a consequence of the tax. If demand for transactions were inelastic to a rise in transaction costs, then the tax take would merely be the product of the tax rate and the number of transactions. This would be a mouth watering £150bn around the G20 countries, but such an outcome is unlikely.

Critics of FTTs argue that transaction taxes will not raise significant sums because transactions are highly sensitive to small changes in transaction costs, which are already quite small. They say the bulk of financial transactions will either disappear, or bankers would find ways of routing them elsewhere to avoid paying taxes. The same critics argue that this would have enormous economic consequences. It does not entirely add up that transactions of great economic value would be snuffed out by the tiniest rise in transaction costs, but it is theoretically possible. It is part of the obfuscation strategy of invoking the fear of the unknown. The

Table 1: Selection of Existing Financial Transaction Taxes

Country	FTT Revenue ($bn)	FTT Rates for different assets				
		Equity	Bonds/Loans	Options	Futures	Capital Levy
Hong Kong	**2.79**	10 basis points				
India	**1.22**	0.25% on stock price; 0.025% on intraday transactions; local stamp taxes may also apply	Local stamp duties may apply	0.017% on premium; 0.125% on strike	0.017% of delivery price	
South Korea	**6.08**	0.5% on value of shares in corporations or partnerships				0.1-0.4% tax on capital formation
South Africa	**1.41**	0.25% of value; new share issues excluded.				
Switzerland	**2**	15 bps on domestic shares; 30 bps on foreign shares.	6-12 bps on bond issuance			1% on share issuance in excess of CHF 1mn.
Taiwan	**3.3**	30 basis points	10 basis points on corporate bond principal	10-60 basis points on premiums.	Up to 0.025 basis points on interest rate futures; up to 6 basis points on stock index and other futures.	
UK	**5.86**	Stamp duty 0.5% on secondary sales of shares and trusts holding shares.		50 bps on strike price, if executed.	50 bps on delivery price	
Total	**22.66**					

Sources: IMF Working Paper 'Taxing Financial Transactions: Issues and Evidence' March 2011 and World Bank GDP data, for all except Taiwan (source: Darvas and von Weiseacker (2010), 'Financial Transaction Tax: Small is Beautiful', who quote figures from the Ministry of Finance). Data is for 2009 for Hong Kong and Taiwan, 2008 for India, South Africa and the UK, and for 2007 for all other countries (South Korea and Switzerland).

problem with this position is that there is plenty of empirical evidence that small transaction taxes, of the equivalent small increases in transaction costs, will not cause a collapse of markets or deviation to new ones.

2.1 ACTUAL EXPERIENCE WITH FTTs TODAY

Every day, significant sums are raised by financial transaction taxes, in dynamic economies, without bringing on armageddon. Seven countries already raise $23bn (£15.3bn) annually through long standing financial transaction taxes. Almost half of this revenue is raised by the UK and South Korea where both have a 0.5% stamp duty on equities and despite both having large and deep derivative markets.

The table above ignores FTTs collected in Brazil reported at £10bn in 2010[3]. If this performance continues, existing FTTs across countries and instruments will be raising $37bn (£25.3bn) per annum.

3 See, Romano (2011).

The table above also ignores transaction taxes that are used to pay for specific, market related, regulatory functions. Except for how the funds are used, these "fees" have exactly the same economic and financial effects as transaction taxes and so the true collection of securities transaction taxes and fees around the world annually is far higher than $37bn (£25.3bn).

The US SEC, the securities regulator, is self-funded by a transaction tax on the volume traded on exchanges. Many who rile against transaction taxes and argue that slight taxes will exact huge disrepair to markets are often unfamiliar with this transactions tax, set at 0.00257%, which raises a not-trifling $1bn (£667m) annually, to fund the SEC. This tax is called "Section 31 fees" after section 31 of the Securities Exchange Act of 1934[4] but whatever it is called, the United States has a financial transaction tax. These fees were raised 50% in 2010 from 0.0017% - without the sky falling in - and are likely to rise again given the additional expenditure at the SEC.

The table above does not show the picture through time. Stamp taxes are old and common[5]. Before the financial crisis when the sector convinced us that nothing should stand in the way of more trading, some of these taxes were taken off or moderated as their yield grew so large as was the case with the US securities tax. More recently, some have been reintroduced. One of the essential lessons from the history of these taxes, is that this is a policy that can be tried and, if it proves too costly, reversed relatively easily and quickly. The US Section 31 fees have been lowered 9 times and raised 7 times since 1934 without stir.

The "revealed preference" from those countries that are raising significant sums is that: (1) tax rates of 0.5% do not appear so high as to cause severe distortions or substantial avoidance and evasion, though as we indicated at the opening, we expect to see some avoidance; (2) there is no evidence that we are at the wrong end of the Laffer curve and that at lower tax rates revenues would rise; (3) in practice, tax rates levied on equity transactions are higher than on bonds by a multiple of 3 or 5 to 1. It is interesting to note that the ratio of equity to fixed-income or foreign exchange fees in clearing houses also range from 5: 1 to 2: 1.

Most stamp duties have been on equity instruments. In the past, taxing bonds was a little more fraught than taxing equities, principally because bonds were traded over-the-counter, bonds were bearer instruments and there was no register of owners and short-dated bonds were a form of cash. However, the universal trend towards trade-reporting, greater registered ownership under anti-terrorism finance and anti-money laundering rules and now central clearing and settlement, makes the taxing of bonds more similar to equities. That said, since bond markets have lower volatilities, lower elasticities and lower trading spreads it could be argued for a lower rate than is appropriate for equities rather than the same rate. The EU Commission already accept the principal of differentiating the taxes for different securities in regards to derivatives.

2.2 ESTIMATING THE IMPACT OF THE PROPOSED TAX

The impact of a transaction tax on the demand for a transaction is the same as any other transaction cost, such as clearing and settlement, trading

4 Under Section 31 of the Securities Exchange Act of 1934, self-regulatory organizations (SROs) -- such as the Financial Industry Regulatory Authority (FINRA) and all of the national securities exchanges (including the New York Stock Exchange and the American Stock Exchange) - must pay transaction fees to the SEC based on the volume of securities that are sold on their markets. These fees recover the costs incurred by the government, including the SEC, for supervising and regulating the securities markets and securities professionals.

5 The first stamp tax was first devised in the Netherlands in 1624 after a public competition to find a new form of tax.

commissions, dealers spreads, price impact of trading, fund management fees etc. Indeed, the economic impact of the State raising £8.4n from transactions is the same as the economic impact of the banks, brokers, mutual funds and hedge funds raising $8.4bn of revenues from trading with end-users[6]. Yet the same banks and fund managers that complain loudest about financial transaction taxes hurting the market, make considerably more from transacting with their clients.

The economic impact of a transaction tax is also the same as if dealing spreads (the difference between the purchasing price and selling price of an instrument) were to widen by the equivalent amount, or were to return to a level greater than current levels by the amount of the tax. Spreads were 0.1% greater than current levels in the most liquid markets as recently as ten years ago – see the progress of spread decline in the US market in table 2.

In order to estimate revenues, a number of studies have tried to determine the price elasticities for one country imposing a transaction tax[7]. An early issue of contention was what we mean by transaction costs. Critics like to compare financial transaction taxes with trading spreads or dealer commissions which are now quite small - one or two basis points - for the markets with greatest turnover, though they were higher by the amount of the proposed FTT just ten years ago, see table 2. However, as Professor Kenneth French (2008) observed, these costs are a small fraction of the total costs behind a transaction. If we were to read in the newspapers that a mutual fund buy shares in BP, before this transaction was authorized by an investment committee of paid professionals, there would have been research and administrative costs, during the transaction there would be dealer costs and afterwards clearing and settlement costs, custody and reporting costs. The decision to buy BP shares is based on an investment view that investors in the fund would make a return after all of these costs have been taken into account. Recently, pension fund trustees have complained that all of the costs fund managers deduct over and above fund management fees, are very substantial. If fund management fees are also added to these the client's costs total transaction costs are in excess of 0.67%[8] per annum. Measured against total transaction costs, the proposed 0.1%, FTT is less than 10% of total transaction costs.

Studies of dealing-related costs, excluding research, administrative and managers fees, but including commissions, spreads, clearing and settlement costs indicate that the elasticities of demand for equities of a rise in transaction costs are in the region of 0.25 to 1.65, averaging around 0.6. This implies that a 1% rise in transaction costs (including taxes) will lead to a 0.6% fall in volume. Given that we are not including all transaction costs this is likely to be an over-estimate of the elasticity.

These point estimates of elasticities are also likely to be an over-estimate of the effect of very modest rises in transaction costs. Below a certain size of transaction costs, the level of general uncertainties, including the likelihood of the asset price changing during the transaction period, means that there comes a point where the gains from a further reduction in administrative transaction costs bring little benefit. It is noteworthy that spreads have not really moved over the past ten years despite advances in trading technologies. The investment literature generally shows

6 French (2008) – see footnote 2.

7 For a recent review of the results of these studies, see McCulloch and Pacillo (2010).

8 French (2008) – see footnote 2.

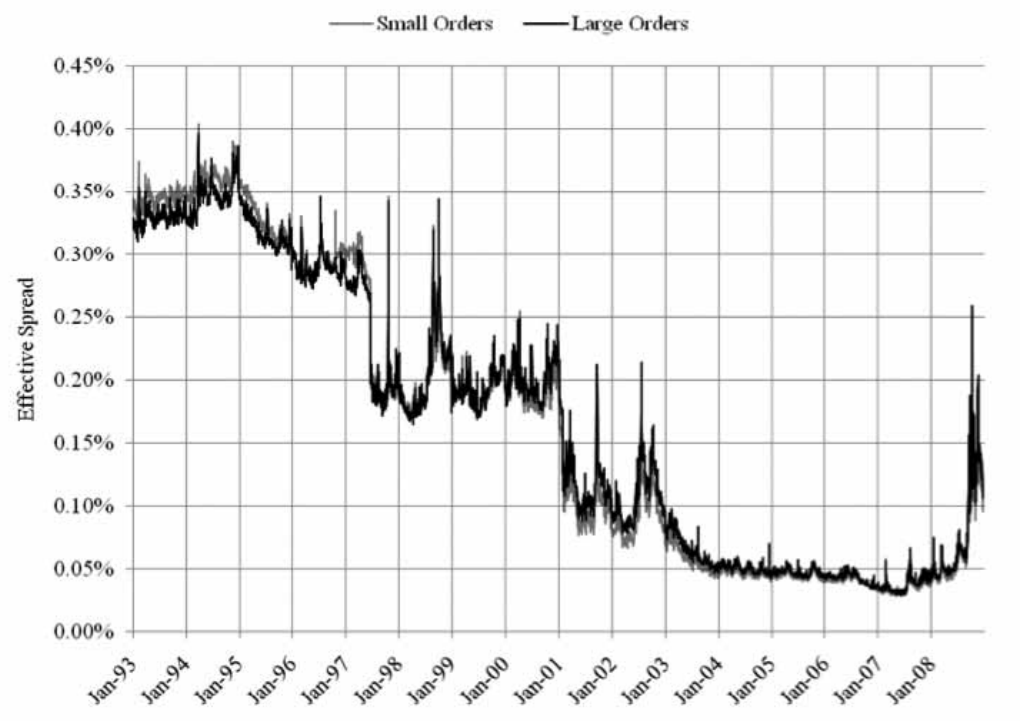

Table 2: Dealing spreads for small and large equity trades in the US equity market (where spreads are smaller than in other markets).

that where nothing else changes, small changes in the short-term cost of capital, like the ones we are discussing here, have little impact on investment demand[9].

The revealed preference across countries with existing FTTs and the empirical analysis suggests that the a 0.1% tax would have a modest impact on demand, ranging from 5% to 15% in different markets, and would therefore, despite its low level, yield significant sums. Based on a survey of this evidence and further observations above, the EU Commission's estimate that €57bn per annum could be raised if all EU countries adopted a 0.1% securities tax for equities and bonds and a smaller 0.01% tax for derivatives appears highly reasonable.

3. WHY CRITICS ARE WRONG THAT THE UK WOULD LOSE UNDUE BUSINESS OVERSEAS

Capturing the tax paid by residents and non-residents on buying or selling instruments *issued by issuers resident in the country* will be easy with very limited opportunity for avoidance or evasion. This would represent over 50% of tax revenues in most jurisdictions.

Stamp taxes are paid by anyone - residents and non-residents, corporates or individuals - on the transfer of ownership of a resident security. Where "stamp taxes" are due[10], a non-taxed and therefore non-stamped financial transaction cannot

9 For an interesting study on the elasticities of investment in general to transaction taxes where the potential for substitution is high, see "Taxes, the Cost of Capital, and Investment: A Comparison of Canada and the United States." Kenneth J. McKenzie and Aileen J. Thompson, April 1997.

10 Stamp taxes have a long tradition in many countries including Malaysia, Netherlands, Ireland, Israel, UK and the US.

be legally enforced, and there can be no registered change of ownership to local or foreign buyers until taxes are paid to, and stamped by the authorities. Non-enforceability of contract is a very high consequence of non-compliance with the stamp duty. It is particularly so where registered owners of assets are due to receive certain benefits and rights like voting at shareholder meetings, dividends, interest coupons, rights issues, buy-outs etc. These stamp taxes are collected at settlement where change in registered ownership takes place. (They are a levy on the transfer of legal ownership, not on transactions per se and so the compliance of brokers around the world, in New York or Beijing is not necessary).

In order for the authorities to tax a transfer of ownership, the register of owners has to be held in their jurisdiction and hence the issuer of certificates of ownership (shares) would need to be locally incorporated. It is possible for companies to jump ship and incorporate somewhere else, but the same argument could apply to changes in corporation tax and much larger differences in corporation tax between jurisdictions have proven sustainable. Within the OECD, corporation tax rates vary from 12.5% to 40% and even when the extremes of Japan and Ireland are removed there are still differences of 5% or more that prove sustainable despite the footloose nature of enterprise today. Moreover, this tax has an indirect impact on the cost of capital for companies as it is paid directly by resident and non-resident investors in the secondary markets whose tax payment is highly variable depending on the frequency of trading.

Stamp duties are nigh on impossible to avoid. A Chinese investor, using a French bank in New York, to buy a UK security will still have to pay the tax because otherwise he will not receive legal title to the security and could not receive any dividends, rights and claims and his contract to buy the shares would be unenforceable in the relevant jurisdiction. This is too high a risk for investors to take – no pension fund trustee would take such a risk. Taxing by residence of issuer is therefore far more effective with very limited scope for evasion which is why stamp duties on financial transactions already raise over USD$23bn (£15.3bn) per year. And, critically, it is so hard to avoid that a very high proportion of those paying these taxes are in fact non-resident of the country imposing the tax – in the case of the UK it is estimated that 40% of the Stamp Duty Reserve Tax on UK equities is paid by non-UK-residents.

The 0.5% Swedish financial transaction tax that was introduced in January 1984, on the purchase or sale of an equity security by a Swedish resident, collected through Swedish brokers, was fatally flawed as it was not a stamp tax on the transfer of ownership, but was levied on residents buying a local share and collected by local brokers. It could be avoided by a resident buying overseas an untaxed foreign security where the security was a holding of a share local to the tax payer. The tax was relatively high and there were easy, untaxed, substitutes for Swedish securities. Avoiding the tax was a high-return, low risk venture and so many Swedes routed their purchases through London entities that presented themselves as overseas buyers of Swedish stocks. Swedish brokers felt particularly hard done by as their business had merely switched to foreign brokers. Despite raising over $1bn per year, the Swedes scrapped this tax because of the iniquity that only half were paying it.

There are two ways to stem this leak. First, if it were a "stamp tax", then the tax resident masquerading as a foreign resident, would still be liable for the tax when buying the local share. This would have substantially plugged the hole in the case of Sweden. But secondly, residents could be further liable for the tax on the purchase or sale of any security and therefore even buying foreign securities, irrespective of whether their underlying holdings were local securities or not, would not be a way of avoiding the tax. This would reduce the incidence of avoidance significantly and would also capture foreign issued derivative instruments on local stocks. There will still be those who try to evade the tax by establishing themselves up overseas, which they can also do to avoid many other taxes where evasion exists but not enough to undermine income tax, corporation tax and capital gains taxes. But this is not only illegal, it is also costly. Setting up, illegal, parallel structures to trade overseas instruments and then to find illegal conduits to return funds when required, is not costless or risk-free. It is not a cost or risk that institutional investors, regulated or publicly listed entities - the bulk of investors in stocks and bonds - could carry. Even without an FTT, internal revenue agencies in the US, UK, Germany, France, Spain and elsewhere are cracking down on residents who hold assets abroad and do not declare any tax liabilities they may have. Moreover, new regulatory requirements we spoke of before, in particular for mandatory reporting of all trades, on or off exchanges, make evasion through non-reporting harder than before.

3.1 DERIVATIVES, CONTRACTS FOR DIFFERENCES AND LONDON

It is often argued that if there were a tax on transacting financial instruments, market participants would switch to the derivatives market where the tax could not be levied because derivatives are invariably not issued by the issuer of the underlying security. The footloose nature of derivatives would then lead the largely London-based derivative market to decamp to another untaxing jurisdiction, carrying jobs and GDP. The threat of decamping is often used by companies and industries to lever less taxes and regulation but as this last financial crisis has taught us the long-term, wider, consequences of giving in to such threats are likely to outweigh the benefits.

From a tax raising perspective, if the taxes are due if either the instrument or the investor is resident, then investors resident in London would still pay the tax whether the market had stayed in London or moved to Timbuktoo. There would be a loss of revenue from non-residents if the market went elsewhere and perhaps jobs and GDP. But would the market decamp in response to a one hundredth of one percent tax? Are the benefits of a concentration of liquidity, expertise, connectivity and an overall favourable fiscal environment in London not worth that? If not, one wonders what is the benefit of having this business? And if the people and institutions stayed, but trades were merely booked somewhere else, then the loss of jobs and GDP would be slight and regulators would consider the operation risky if it created on-shore liabilities from off-shore activity, and would impose a capital requirement on the activity, eroding the benefit of avoiding the tax. It is therefore unlikely

that the derivatives market would execute their threat to decamp. We will return to the issue of jobs and GDP later.

3.2 COMPLEX DERIVATIVES WOULD BE NO PLACE TO HIDE FROM AN FTT

It should be noted that instruments which are not-taxed and are therefore not legally enforced, could not be considered eligible for central clearing by a clearing house. This is of crucial importance today and represents one of the ways in which financial transaction taxes are far more feasible than before, even for derivative instruments. One of the responses to the financial crisis by the G20 and the Financial Stability Board is a regulatory requirement that all exchange traded instruments, including equities, bonds, derivatives and all vanilla over-the-counter transactions such as credit default swaps, must be centrally cleared. Instruments held by financial institutions that are not centrally cleared will incur a capital adequacy requirement[11] - that could far exceed suggested levels of transaction taxes.

The consequences therefore of holding non-taxed instruments, in terms of loss of legal certainty, higher counter-party risk, loss of gains from netting in a clearing house, and the cost of higher capital adequacy requirements for holding them, are quite substantial. It is estimated that over 70% of OTC credit derivatives will be centrally cleared and those that are not, are highly bespoke complex contracts that the clearers don't want to clear because they are so specialized and are therefore unlikely to be frequently traded. Of course even the non-centrally cleared instruments would be subject to the tax and the derivative contract would be unenforceable if the contract were not stamped. It is important to note that even if one investor were prepared to take all of the risks – for the sake of saving a small fraction of one percent - they would then have to find another, equally prepared to do so, so as to exit from their investment with a return. Non-compliance would be a high-risk venture.

3.3 IMPLEMENTATION ISSUES

Given all that we have discussed above, it would be important for the Financial Transaction Tax to be levied in two complimentary, but separate ways, first, as a tax on the transfer of legal ownership of locally issued securities. No special mechanisms are needed to implement this. The revenue authorities can establish automatic electronic stamping of certificates where there are automatic electronic payment schemes and these are likely to be established by payment settlement agents. This is already in place in many countries. The UK SDRT is mechanically paid to the UK tax authorities by the investor, through settlement agencies connected to the clearinghouses – which for a long-time were physically in Belgium.

Secondly, an FTT on foreign securities, at the same rate as for local securities would be required to be paid by residents in their annual tax declaration of investment activity. In countries that have capital gains tax on security sales the information required to calculate the transaction tax is already declared. Additionally, there is often a withholding tax on dividends to foreign residents and so there is a substantial incentive – far greater than the tax – to declare the transaction in order to receive a tax rebate from the foreign tax authorities. New reporting requirements on all

11 The Communique, issued after the G20 meeting in Pittsburgh in September 2009, states: "all standardized OTC derivatives contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end-2012 at the latest"…"OTC derivatives contracts should be reported to trade repositories," and "Non-centrally cleared contracts should be subject to higher capital requirements."

transactions in G20 countries and new scrutiny on assets in other locations will by itself make avoidance and evasion costly and risky.

The combination of a Stamp Duty that is hard to avoid on local securities, and a wider FTT on international securities that may be theoretically easier to evade through non-reporting, but only at the expense of withholding tax rebates, and complex, costly, illegal and financially inefficient ring fencing of local and resident portfolios, would be more effective than either a Stamp Duty alone or a wider FTT alone. In this case the belt benefits from the braces.

4. THE IMPACT OF AN FTT ON GDP[12]

The EU Commission tried to estimate the impact on GDP of a 0.1% FTT levied across the EU on equity and bond transactions and a 0.01% tax on transactions in derivatives. The economic model they used converted the FTT into an increase cost of capital and measured the GDP impact of that higher cost of capital. Prior to adjusting for any mitigating elements of using this model, the initial output of the model was a potential GDP loss of 1.76%. Critics of the FTT have latched on to this number and equated it in the UK with a loss of approximately 1.76% of the workforce or 500,000. This is a highly disingenuous conclusion, as the Commission later moderated this figure to -0.5% to take into account a number of mitigating factors and more recently, having adjusted for the reality that UK and other European companies are not generally funded through the primary issuance of new equity, they have further revised down this figure to -0.2%[13].

Considering other mitigating factors to the model output, such as the inability of the model to tackle differences in the incidence of the transaction tax caused by the different holding periods of the investor - the average pension fund turns over only half of its portfolio every two years and so the increased cost of long-term capital may be considered to be considerably lower than if primary issues were purchased by high-frequency traders - these mitigating factors push the impact on GDP to -0.1% or less. Mechanically converting this to UK jobs in the same manner as before would produce a figure of 29,000 or less, but not 500,000.

But even this analysis is dangerously incomplete on a number of grounds. First it doesn't assume fiscal neutrality: it assumes we take the revenues, dig a hole in the ground and put them there. What would happen to the overall cost of capital if revenues from the FTT were used to lower corporation tax on profits by 10 percentage points? Given that in the UK in particular, that 40% of the existing stamp duty is paid by non-residents, it is likely that if the revenues of an FTT were used to reduce the taxes paid on profits by residents, that the net effect could be to lower the cost of capital in the UK, thereby boosting employment. It is certainly the case that many of the countries that do have FTTs have not been growth laggards: South Korea, Hong Kong, India, Brazil, Taiwan, South Africa and Switzerland.

4.1 IMPROVING FINANCIAL STABILITY & RESILIENCE

If the FTT reduces certain financial market distortions and thus systemic risk, it can – by reducing the risk of future crises - lead to significantly higher long-term growth. There is here

12 This section borrows heavily from my work with Professor Stephany Griffith-Jones who contributed by far the greater portion of insight, analysis and interpretation.

13 Based on most recent EC and BIS data, the sources of financing of companies are assumed by the Commission to be primary equity issuance (10%), retained earnings (55%), and debt (35%). The share of debt securities in total debt of nonfinancial corporations could be estimated at about 15% (or about 5% of total financing). As we discussed above, this mitigating factor is now incorporated into the second version of the model, see again Lendvai and Raciborki, op cit. This implies the growth effects of FTT are now down to -0.2% of GDP.

a parallel with the argument, made, for example, in the paper by Miles (2011), from the Bank of England's Monetary Policy Committee, arguing for higher capital adequacy requirements for banks and modeling that part of their impact as positive for growth as it reduces systemic risk and therefore the probability of future crises. Crises clearly always lead to periods of substantially lower or more often, significantly negative growth (for eight centuries of empirical evidence on the link between crises and lower growth, see Reinhart and Rogoff, for a recent assessment of the negative effects of the European crisis on UK median income, see IFS, 2011, and below).

We are clearly not arguing that on its own, the FTT would reduce the risk of crises, as prudent macroeconomic policies, and effective financial regulation as well as supervision, have the major role to play in crisis prevention, but it may have a role to play.

4.2 BOOMS TO CRASHES

It is tempting to consider financial crashes as relatively random events of piracy, but in reality financial crashes invariably follow financial booms and the bigger the boom, the deeper the crash. One of the big issues in crisis prevention, therefore, is limiting the size of booms. In their seminal work in this area, Olivier Blanchard and Larry Summers, showed that booms can get large and become self-sustaining if there is a pre-ponderence of "noise traders" in the market. They postulated that there were broadly two kinds of traders, one that they called "fundamental traders" who seek value and would tend to be sellers during booms, when financial prices rise above historical metrics of value, as well as buyers in crashes. Finding value is a long-term endeavour and can lead to many short-term losses. Consequently the other kind of traders are "noise traders" that focus on trends. Rather than stubbornly selling into a boom, they will buy and benefit in the short-term. But the more buying there is in a boom the longer the boom and greater the fall. The more noise traders there are, Blanchard and Summers showed, the more likely we will get misalignments in markets (up and down) and consequently, the more savage are the adjustments back.

"High Frequency Traders" and "Noise" traders have much in common. Both hope to get out before the crash gets scary and are focused on (very) short-term returns. Higher transaction costs limits the ability to make high but very short-term returns and will limit the amount of "noise trading". By doing so the FTT would make a contribution to the reduction of severe misalignments and hence the probability of violent adjustments. Relatedly, but separately, in financial crises "gross" exposures matter more than the net as scared investors run for the exit, and financial transaction taxes will reduce the gap between the two and reduce financial vulnerability.

The growth costs of crises are massive. For example, Reinhart (2009) estimates that, from peak to trough, the average fall in per capita GDP, as a result of major financial crises, was 9%. The Institute of Fiscal Studies (2011) has recently estimated that for the UK, when comparing the real median income household income in 2009-2010 with 2012-2013, the decline will be 7.4%. Of course for European countries directly hit by the sovereign debt crisis, like Greece, the decline of GDP and incomes will be far higher, though they are unlikely to approach

the 20% declines witnessed during the Asian financial crisis.

It is possible that all an FTT will do is reduce the amplitude of booms and crashes, but the less severe the misalignments and less violent the adjustments, will reduce collateral damage that will contain risk and uncertainty, boosting productive potential.

Should the FTT for example decrease the probability of crises by a mere 5%, (which is a very low assumption), and the cost of lower GDP growth in the long term due to crises were around 7 %, (consistent with the above estimates), then the positive impact of the FTT on the level of GDP, due to crisis avoidance, could be a +0.35% of GDP. In that case, the net effect of the FTT on the level of GDP would be +0.25 % (if we combine the negative impact estimated by the Commission model of -0.1%, with the positive one just estimated of +0.35%). These are not big numbers but they do imply a positive impact on employment of 75,000 in the UK alone.

4.3 FINANCIAL MARKET LIQUIDITY

Creating disincentives for short-term speculation (as opposed to long-term investment) is considered an attractive feature by many and was one of the arguments used originally by John Maynard Keynes and James Tobin in favour of transaction taxes[14]. Others suggest this might undermine liquidity, but this argument is specious. While high turnover is one symptom of liquidity, financial market liquidity is about diversity: when you want to sell, someone wants to buy because they have a different valuation or investment goal or strategy.

During calm times, when markets are already liquid, high-frequency traders are contrarian and therefore support liquidity, but this is when liquidity is already plentiful. During times of crisis, they try to run ahead of the trend, draining liquidity just when it is needed most, as we saw with the Flash Crash on 6 May 2010. If a transaction tax limits high frequency trading it will provide a bonus in improving systemic resilience, bringing GDP and investment benefits[15].

5. WHO PAYS FOR THIS STABILITY? PENSIONERS?

Commentators often argue that customers will ultimately pay the tax, which is likely to be the case in a highly competitive market where firms are on the edge of breaking even. This is not a good description of the banking industry. In the years outside of banking crashes returns to capital and labour are superior to other industries and so it is possible for part of this tax to be paid by the industry through lower profits. The top 1,000 banks in the world reported collective profits of £540bn in 2008, before collapsing in 2009 and rebounding to £267bn. To preserve market share banks may well decide to swallow a tax that represents in a good year less than 10% of profits. But what of the portion paid by consumers? Not all consumers of financial products will pay equally: long-term investors like pension funds and insurance companies will pay least and short-term speculators like hedge funds or High Frequency Traders (HFT) will pay most. Given that in general, regulatory agencies only allow hedge funds to market to high net worth individuals, this tax will be progressive with banking and hedge fund profits tapped more than pensions.

14 One of the observations of Adair Turner, Chairman of the FSA, shared by others, is that the collapse of transaction costs towards zero facilitated the creation of huge derivative markets balancing on relatively small underlying markets, which made financial systems more vulnerable in a crisis. The optimal level of transaction taxes may be low, but it is not zero.

15 This destabilizing behaviour is well described in "Positive feedback investment strategies and destabilizing rational speculation", J. Bradford de Long, A. Shleifer, L. H.Summers and R. Waldman, Journal of Finance, June 1990.

Table 3: Implied holding periods from stamp duty receipts

Tax year	Value of share purchases as % of average value of UK listed companies	Implied average holding period of companies (months)
2001-2	36	33
2002-3	42	29
2003-4	40	30
2004-5	36	33
2005-6	30	40
2006-7	26	46
2007-8	26	46
2008-9	35	34
2009-10	27	44

Source: UK National Statistics, London Stock Exchange and IMA calculations

According to the data above, the average UK pension fund holds a stock in its portfolio for 44 months or 3.5 years. If we assume then that there is a 0.1% transaction tax for buying and selling and every 3.5 years a pension fund has bought and sold 50% of its portfolio, the average pensions fund would pay transaction taxes equivalent to 0.03%[16]. This compares with annual management and transaction costs of pension fund assets of over 0.69%, which are twenty three times the incidence of the tax.

A High Frequency Trader turning over its entire portfolio in a day, would pay transaction taxes of 50% per year, or 1666 times more than an average pension fund[17]. Of course, what is more likely to happen, however, is that high-frequency trading falls off dramatically. The cost of financial crashes is as heavy for investors as it is for most others. Stock value declines in crashes are in the region of 33% to 50% and crashes occur on average every 10 years. We point out above that financial crashes have many proximate causes. However, roughly, if a transaction tax of 0.1% reduced the role of "noise traders" which reduced the size of misalignments in markets, which reduced the incidence of financial crashes by just 5%, and this reduced risk and uncertainty boosted returns, then the increased expected return of pension funds would be higher than the 0.03% cost of the tax[18].

The actual equation would have to take into account whether the reduction in the risk of a financial crash increased the long-term return of assets or just altered the return profile over time. It is likely that reduced volatility and therefore uncertainty reduces the need for precautionary behavior and increases the sustainable rate of return, but the essential point is that the cost of the tax will fall least on pension funds, would be marginal compared

16 The rough calculation is (0.001 (tax) x 2 (both sides of the transaction) x 0.5 (half the portfolio) x 0.3 (in one year and not 3.5) x 100) per year.

17 The rough calculation is (0.001 (tax) x 2 (both sides of the transaction) x 1.0 (all of the portfolio) x 250 (every day) per year x 100).

18 The rough calculation is (0.33 (loss given a crash) x 0.05 (reduced likelihood of a crash) x 0.1 (every ten years) > 0.001 x 2 x 0.5 x 0.5).

with returns and if the tax brought benefits in terms of financial stability these benefits are likely to offset these slight costs, boosting pension pots along the way.

6. CONCLUSION

Imposing a 0.1% financial transaction tax on equity and bond and a 0.01% tax on derivative transactions will raise approximately £9bn in the UK and £48bn if extended across the EU. Turnover will fall in response to the tax. Turnover of high-frequency traders will fall most, but this is likely to be a good thing from a financial stability perspective. The total and long-term economic impact of such a tax is likely to be positive, once the tax re-shifts the market, a little, towards longer-term valuations and away, a little, from the dominance of short-term trading. GDP and employment in the UK could be boosted by 0.25% or the equivalent of 75,000 new jobs in the rest of the economy. Turnover of derivative transactions would probably be most affected amongst securities, but it is doubtful that this would mean a shift in jobs from London, more a potential shift in the location of where trades are booked, clipping some of the potential tax revenues, but not by much. If the tax is levied both as a stamp duty on instruments issued in the UK or anywhere else the tax is levied, and also on investors buying non-UK instruments, the potential for avoidance would be slim and the costs of evasion, high.

The strategy of any industry under threat is to obfuscate. It is important, therefore for those trying to find the truth to seek broad perspective. Finance plays an important role in risk taking and economic growth. The objective is not to emasculate finance, but to make it more fit for purpose, more sustainable and more supportive to the economy. Financial history is littered with financial crises. The only safe conclusion one can draw from this history is that the financial sector is not very good at assessing risk and returns. This is not an argument for Statism - Governments are often no better. In booms, financial activity appears to be highly productive and profitable, while in crashes, much past financial activity turns out to have been a mirage. In 2007, the cumulative return of financials in the UK, US and euro area from 2000 was 160%. Just two years later, the cumulative return from 2000 was -25%[19].

These mirages are more easily created and harder to see through, in a world in which transaction costs are tiny. Huge edifices of activity and apparent assets can be built up while spinning rapidly on margins of activity. Before the mirages melt, enormous returns to capital and labour were made on bets that will fail and then tax payers will have to pick up the pieces to ensure the payments system survived: privatized gains and socialized losses.

Net of the bail out, the financial sector's once superior returns have proven to be a mirage and no better than other sectors, which is why other countries with less emphasis on banking have out-performed the UK. This is another inconsistency with the argument that rising transaction costs will destroy GDP growth and cause mayhem; shouldn't falling transaction costs have then fuelled superior GDP growth? Falling transaction costs have not, despite the increased role of finance in the UK, led the UK to outperform less "financialised" economies. Indeed, today, those countries growing most rapidly have immature financial sectors. Perhaps the man was right, a little

19 Andrew Haldane, "The Contribution of the Financial Sector, Miracle or Mirage?", Future of Finance Conference, June 2010. Source: Bloomberg, Credit Suisse/Tremont and Bank of England calculations.

sand in the wheels will help us from straying too far from what is real and sustainable.

There is another long-term positive potential effect on growth of an FTT, noted originally by Nobel Prize winner James Tobin. Extremely high remunerations in the financial sector contribute to attract some of the brightest graduates to financial activity, instead of to industry or commerce, or research on innovation. Should as a result of the FTT, the relative incomes and returns be relatively lowered in boom times, it could encourage a better allocation of our resources with some of these very bright minds moving to activities that could enhance the present and future competitiveness and capital moving to longer-term investments like sorely needed infrastructure for an energy scarce world. People with similar educational qualifications become financial engineers in London and mechanical engineers in Dortmund. The long-term statistics suggest the latter is better for long-run productivity growth. We will not attempt to measure this effect of improving the allocation of human resources, but just note its qualitative positive impact.