

Financial Transactions Tax: Panacea, Threat, or Damp Squib?

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Attempts to raise a significant percentage of GDP in revenue from a broad-based financial transactions tax are likely to fail both by raising much less revenue than expected and by generating far-reaching changes in economic behaviour. Although the side-effects would include a sizable restructuring of financial sector activity, this would not occur in ways corrective of the particular forms of financial overtrading that were most conspicuous in contributing to the crisis.

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1. Introduction

Against the background of growing political demands for regulation to curb financial sector excesses, or (to use an out-of-fashion phrase) overtrading, this paper takes a new look at some old and recurrent proposals to tax finance on a much larger scale, especially by taxing transaction flows.

A confluence of events over the past year or so promise to bring the taxation of financial intermediation centre stage.

- First, the severe failures of finance that became evident since 2007, and the perception that uncontrolled and lightly-taxed expansion of financial transactions and financial intermediation are to blame has led to a view that regulation and taxation that have the effect of constraining excesses in finance would be socially desirable.
- Second, growing fiscal deficits in many advanced economies is heightening the search for revenue-raising mechanisms with limited adverse effects on the economy. Because financial taxes are paid in the first instance by large institutions they can seem relatively painless, at least from a political point of view. Besides, especially when one considers the dollar size of potential tax bases—such as total banking assets, or the flow of financial transactions—and hence the apparent possibility of generating a large volume of revenue from a low rate of tax
- Third, growing concerns about tax havens has increased the international political will to work effectively to control and limit flows between advanced economies and tax havens designed for tax evasion, money laundering and other illegal purposes. This will, if made effective, could have the side-benefit of making it more easy to limit the international leakage of the base of any taxes applied to financial intermediaries.

Attracting adherents both on the political right and the left, the idea of placing significant reliance on the taxation of finance, in particular through the taxation of financial transactions, has a long history. Already, there has been a ramping-up of interest in this area.¹

Anticipating this growing interest, the present paper reviews the main issues that arise in considering new proposals for a broad increase in financial sector taxation, especially those centering around the taxation of financial transactions. Transactions taxes have always attracted reformers especially because of their apparently large base (seeming to offer sizable revenue with low deadweight costs) and an apparent simplicity and transparency in their design.

Proposals of this type vary considerably as to the range of transactions that would be made subject to the tax. A relatively sharp distinction is customarily made between a securities transactions tax (STT), a currency transactions tax (CTT), and a bank debit tax.

In his *General Theory* Keynes proposed an STT to reduce destabilizing speculation in equities; Tobin's similar CTT dates from 1972 and had the goal of reducing destabilizing currency speculation. Bank debit taxes have been employed in several countries, especially in Latin America.

The explosive growth in financial derivative transactions over the past quarter century introduces a range of further possibilities. One proposal, which we will look at in greater depth, is for a comprehensive tax on all financial transactions to replace all taxes.

¹ That interest is already growing in this area is exemplified by policy advocacy work such as Baker (2008) and the commentary on this in the New York Times, the Guardian and in blogs; Pisek's (2008) presentation to the European Parliament, as well as websites such as <http://www.apntax.com/> (Edgar Feige's scheme) and <http://www.nationaldebittax.com/> (Leonard Crisp's scheme). Financial transactions taxes are also on the agenda of the UN's Leading Group on Innovative Financing for Development, as discussed below.

We will argue that attempts to raise a significant percentage of GDP in revenue from a broad-based financial transactions tax are likely to fail both by raising much less revenue than expected and by generating far-reaching changes in economic behaviour. Although the side-effects would include a sizable restructuring of financial sector activity, this would not occur in ways corrective of the particular forms of financial overtrading that were most conspicuous in contributing to the crisis.

We begin by looking at the three distinct goals currently driving interest in this type of tax reform: anti-avoidance, efficiency and revenue, before proceeding to consideration of the ideal tax—one which both improves economic efficiency by correcting market failures and negative externalities and also generates a sizable flow of revenue.

2. Anti-Avoidance, Efficiency and Revenue Goals

2.1 Curbs on tax havens will increase the scope for taxation of finance

When funds can easily flow across frontiers, financial assets and their yields cannot easily be taxed. This can usefully restrain onerous and poorly-designed taxation of finance. But it can also result in distortions as, for example, when unremunerated reserve requirements are retained for local currency deposits, but not for foreign currency deposits – a differential which can have the unintended adverse side-effect of promoting deposit dollarization, likely engendering problems of stability. Time and again, one hears that taxes on the financial sector cannot be applied because funds will migrate (cf. Reisen, 2002).

But now, coordinated worldwide action to restrict the movement of financial flows to tax havens has emerged on the policy agenda. Heightened international official concern about the role of tax havens in eroding the tax base of both advanced and developing economies is evident not least from the communiqués of recent G-20

summits.² This is not a new concern (Christian Aid, 2008), and there is little indication that tax havens have had a significant effect in contributing to the financial crisis (Loomer and Maffini, 2009). But the increased awareness of it is indisputable. Here we take this heightened agenda as a given and consider only its broad implications for the financial sector. Regardless of the motivation of such restrictions, if effective, they open to policymakers the possibility of using a wide range of taxes hitherto seen as ineffective and of increasing taxes on others. Good or bad, this would change the landscape of financial taxation.

For, if there is an effective crackdown on tax havens, this could have the effect of closing the bolt-holes that allow tax bases to migrate away from high tax jurisdictions. It is important to recognize that low tax rates are not in themselves a sufficient criterion for designation as a tax haven; exchange of information and transparency issues are also relevant. Nevertheless, the removal of these bolt-holes would have the effect of reducing the elasticity of any tax base that was liable to migrate to a tax haven if subjected to a high rate of tax. This applies to many forms of tax base, but especially to the highly mobile tax bases of the financial sector. With the lower elasticity, the potential revenue would increase, and the distortions on product supply and employment from taxing these bases would decline.

In short, an effective crackdown on tax avoidance would make it easier to introduce new or higher taxes without fear that the tax base will migrate away. Taxes which, because of that fear, have been infeasible to date would become potentially viable.

In addition, offshore financial sectors that are currently dependent on offering a low tax environment would shrink, with specific consequences for the host economies. This is potentially serious for a small number of very small countries (and territories – many of the tax havens of the developing world, including the largest, the Cayman Islands, are in fact dependencies of OECD countries such as the UK).

² “We stand ready to take agreed action against those jurisdictions which do not meet international standards in relation to tax transparency.” – G20 Communiqué April 2, 2009. cf. Owens and Saint Amans (2009).

2.2 *Efficiency:*

(i) Avoiding tax-induced distortions and correcting market failure

Almost all taxes alter some relative price and hence change equilibrium behaviour. Where markets are already efficient, efficient tax design seeks to minimize distorting effects of this type; where there is market failure, the impact of an efficient tax will be to move relative prices in the direction of a socially efficient outcome.

It is well-understood that the financial sector is highly responsive to the design of tax rules. Product design and innovation and location decisions can be heavily dependent on their tax treatment. The effects can be large and rapid. Taking account of efficiency effects is therefore even more important for financial sector taxation than for taxation of other sectors: greater danger of imposing costs, greater opportunity for correcting market failure.

Another feature of the financial system is its great ability to adapt and even make profits from distortions including tax distortions. Sometimes the imposition of a new tax rule generates a business opportunity for financial firms who may then become lobbyists for its retention even if the tax is having a damaging and distorting effect on the rest of the economy. This means that financial sector lobbyists are not a reliable source of information about where financial taxes are creating problems for society. More generally, the interests of the financial sector cannot be considered as paramount in determining optimal financial sector tax design.

Recognizing this, but perhaps underestimating the role of a healthy financial system in underpinning sustained economic growth, there was a tendency until fairly recently for the financial sector in different countries to be subjected to distorting taxes and quasi-taxes such as unremunerated reserve requirements, transactions taxes, taxes on gross interest receipts or payments, prohibition on the deduction of incurred but not realized loan losses³ and the like. At that stage, economists concentrated most of

³ Until recently, the dominant interpretation of IFRS has been that such losses could not even be reported in a bank's accounts, let alone deducted from revenue before the calculation of taxable income.

their financial sector taxation to advice to developing country policymakers on the need to remove the most distorting taxes.

Subsequently, two factors made national authorities more alert to the distortions that financial sector taxes could introduce into the economy. The first of these factors was growing awareness of the systemic importance of the financial sector in underpinning and accelerating economic growth: that implied that distortions to this sector could be especially damaging to economic welfare on a broad front. The second factor was the rapid increase in financial globalization which had the effect of increasing the elasticity of financial sector responses to any given tax, as financial tax bases simply migrated abroad.

Now the pendulum has swung beyond its midpoint. No longer satisfied with merely achieving tax neutrality, policymakers are again paying attention to the corrective potential of taxation. Like the perceived need for ramped-up regulation, this responds to the conspicuous failures and excesses exposed by the financial crisis.

Can the design of tax policy be used actively to realign financial sector activity in line with social welfare of the economy as a whole, for example, reducing systemic prudential risks? After all, if finance responds powerfully to price and rate of return incentives, the job of the regulator is eased if tax-inclusive prices and returns faced by financial firms correspond to the social costs and benefits of the relevant activities and products.⁴

(ii) Transactions taxes, market volatility and mispricing

In years gone by, the main focus for use of corrective taxation in the financial sector had been excessive asset price and exchange rate volatility, and possible sustained

⁴ In parallel to new thinking on tax policy, there has been much current discussion of the incentive effects of other aspects of government financial policy. For instance, under asymmetric information (moral hazard and adverse selection), the incentive effects of alternative intervention and bail-out strategies by the authorities can matter a lot. Good design of such strategies exploits these incentive effects to achieve an improved overall outcome as financial firms adjust their behaviour to take account of the altered probability of being bailed-out. Tax policy can be seen as aligning financial firm behaviour in dimensions that are less sensitive to strategic failure behaviour, but instead relate to the more predictable aspects of financial firms' activities.

“mispricing” of financial assets (or deviations from fundamental equilibrium prices) resulting from short-term speculative flows.⁵

Keynes, focusing on mispricing in securities markets, argued for an STT on these grounds. This idea has been subjected to a variety of empirical tests which do indeed suggest, not surprisingly, that an STT has consequences, not least through lowering the price of assets which by their nature are likely to be traded frequently (Bond et al. 2006). But it remains quite unclear from this literature whether an STT would increase or decrease volatility. After all, speculation in a liquid market can be stabilizing, and this turns out to be possible in practice as well as in theory.

The original Tobin tax (CTT) proposal was to put “sand in the wheels of finance” to inhibit speculative cross border flows in foreign exchange markets, again with the aim of reducing volatility and mispricing. Here again it is unclear whether such a tax would indeed be stabilizing.

Close analysis of the minute-by-minute microstructure of the foreign exchange market reveals that most foreign exchange transactions (spot and forward) have nothing to do with speculation, but are instead undertaken to hedge risk and ensure liquidity.⁶ (The same would be true of interest rate swaps.)

This observation, which can probably be extrapolated to markets whose microstructure is less well understood, provides a very strong additional reason why transactions taxes might not stabilize markets. As will be mentioned later, this alternative perspective on the motivation for the bulk of transactions in securities markets has implications for revenue also.

(iii) Transactions taxes and complex derivatives

⁵ Formal theoretical models such as that of Westerhoff and Dieci (2006) confirm that there are theoretical reasons to believe that such a tax could be stabilizing if introduced in all relevant markets (no tax havens).

⁶ Evidence on this point from the literature on market microstructure is provided by Mende and Menkhoff (2003). That this consideration undermines the “corrective tax” case for a financial transactions tax has been acknowledged by radical economists such as Grahl and Lysandrou (2003). On the other hand, Galati and Melvin (2004) is representative of observers who continue to assign medium-term speculative and hedging motives to the bulk of foreign exchange market transactions.

Following the collapse of the mortgage-backed securities market and its knock-on effects on the rest of World's financial and economic systems, asset price volatility has been somewhat overshadowed as a target for policy by comparison with imprudent or reckless lending and especially the use of over-complex financial derivatives as a means of apparently reducing risk while actually increasing it. Regulation of contract types and agent reward structures has been the focus of much policy attention here, but a tax solution – even if partial – could also be considered. The question is, what workable tax rule could be brought into play as a useful complement to regulation, by adapting incentive structures so as to ensure that they better aligned to social welfare in this area, and hence act as corrective taxes, reducing the adverse impact of market failures?

2.3 Revenue

The financial sector has long been a reliable revenue source for governments – even though from time-to-time (as at present) bank failure events have triggered large fiscal outlays to limit depositor losses and protect the smooth functioning of the payments system. Revenue raising has been the objective of most of the financial transactions taxes that have been brought into effect, especially the bank debit taxes of Latin America.

(i) Revenue from CTT

As mentioned above, the Tobin CTT tax was originally conceived of as a corrective tax, but it has increasingly been seen as a suitable revenue source for development assistance.⁷ Because of the concentration of foreign exchange trading in just a few international financial centres (according to the latest BIS survey, fully three-quarters of traditional foreign exchange market transactions are conducted in just 6 centers: UK, US, Switzerland, Japan, Singapore and Hong Kong), proponents of the Tobin tax as a revenue source have seen it chiefly as being international in its revenue goals, and not suitable as a source of national revenue (Spahn, 2002). Of course, another

⁷ The influential Leading Group on Innovative Financing for Development (<http://www.leadinggroup.org>), which was founded “after the Paris Ministerial Conference on Innovative Development Financing Mechanisms in 2006” and comprises 55 countries, together with IFIs (including the World Bank) and NGOs, has been looking at the CTT, and notes that it would generate “stable and predictable flows.” France and Belgium have already committed to the adoption of a CTT provided all of the other member states of the EU also adopt one.

problem with getting national revenue from the tax is the fact that unilateral tax increases on foreign exchange dealings are likely to result in considerable base migration.

Despite earlier proposals for a CTT tax of as high as 1 per cent, a consensus had emerged in the literature by the mid-1990s that 0.1 per cent should be regarded as a ceiling on CTT rates beyond which they would reduce liquidity too much, thereby deterring international trade (Nissanke, 2004).⁸ Nissanke examines the revenue potential of rates in the region 0.01% to 0.02%, which she believes would reduce transaction volumes only modestly and generate worldwide annual revenue in the range USD 17-30 billion (on the basis of 2001 transactions).⁹ Interestingly, Mende and Menkhoff (2003) claim that sorting the Tobin tax proposals by their date of issue reveals that the suggested rates have become lower and lower over time. Spratt's (2006) version of this tax has a rather comprehensive base said to be over €100 trillion covering all spot and derivative foreign exchange transactions, but he proposes a very low tax rate of just 0.005% designed to raise about €5 billion for development assistance. At this rate the tax should evidently have no very little effect on speculative flows; it does not have a corrective objective.

(ii) Revenue from STT

Securities transactions taxes (STT) are now as likely to be advocated for their revenue potential as for any dampening effect on speculation. That of Schulmeister et al. (2008) is quite comprehensive for wholesale transactions, applying to spot transactions for stocks and bonds, and derivative transactions (both exchange-traded and over-the-counter -- OTC). On the other hand, they consider low tax rates, ranging from 0.01% to 0.1% of the transaction value. This results in projected revenue yields of up to about 1% of GDP for Austria, France, Italy, Belgium and the Netherlands; 2% in Germany and 13% in the UK. In the latter two countries, exchange traded derivative transactions are important, elsewhere the bulk of the revenue comes from OTC transactions. Schulmeister do not appear to include cash withdrawals from the banking system as part of their base.

⁸ This reflects the fact that spread in the wholesale interbank foreign exchange market are well below 0.1 per cent.

⁹ Spahn (2002) proposed a rate of 0.01% for a projected annual revenue of €17 billion (based on 2001 data).

More comprehensive financial transactions taxes, such as Feige's (2001) APT (discussed further below) have even larger ambition, including, in Feige's case, the replacement of all existing sources of tax revenue.¹⁰

(iii) Bank debit taxes

The transactions taxes that have actually generated the biggest revenues in practice have had a much more limited base. The most important of these have been in Latin America, where they have generally been introduced for revenue purposes. Their history is somewhat chequered (Coelho et al., 2001; Kirilenko and Summers, 2003; Baca-Campodónico et al., 2006). Revenue from the Latin American bank debit taxes has varied widely, but has typically been of the order of 1 per cent of GDP. The highest revenue achieved in relative terms was the 3.4% of GDP reached in Ecuador's short-lived ICC (1999-2000), was, however, creditable against income tax for which it been intended as a replacement.¹¹

The biggest bank debit tax in absolute terms, Brazil's unpopular CPMF ("check tax"),¹² dating back to 1993, had levied a charge 0.38% (originally 0.25%) on all withdrawals from checking accounts and raised as much as USD 10 billion per annum or about [4%] of total government revenue. This tax expired in December 2007 (though another transactions tax IOF was retained, albeit subject to modifications during 2008).¹³

¹⁰ Crisp proposes a ½% rate on USD 1,000 trillion of bank payments (said to apply to the US in 2002), for a revenue of \$5 trillion comfortably in excess of twice current tax revenues.

¹¹ Analysing the transactions taxes of Argentina, Brazil, Colombia, Ecuador, Peru, and Venezuela, Baca-Campodónico et al. (2006) find that revenue decreases over time and that the rate of decrease is a direct function of the rate of the levy,

¹² CPMF stands for Contribuição Provisória sobre Movimentação ou Transmissão de Valores e de Créditos e Direitos de Natureza Financeira. For a critique of the effects of this tax see Albuquerque (2006).

¹³ Older forms of revenue tax such as the stamp duty on cheques in the US and the UK and the Bank Account Debit tax in Australia were not applied at proportional rates. (For example, the Australian tax was €0.15 on amounts up to \$100, but only \$2 on any amount of \$10,000 or more). The US and UK stamp taxes on checks were at a fixed amount per check, regardless of the face value. Lastrapes and Selgin (1997) examine the US check tax during the early to mid 1930s, concluding that it led to "about a 15 percent increase in the currency-demand deposit ratio, and about a 12 percent decline in the M1 money stock." (pp. 859) Importantly for the present discussion, transaction size substantively increased while the number of transactions significantly decreased.(p.868 and footnote 43). Revenues were only about half of what had been hoped for (see their footnote 39). As with the annual charge of €40 on a credit or debit card applied by Ireland, taxes that are not proportional to the value of transactions are inherently limited in their revenue potential and need not be considered further here.

The much higher tax rate of 1½% was imposed by Venezuela in its bank debits tax of 2007, but was limited to debits on behalf of enterprises (with individuals exempt) (Salon, 2007).

Colabella and Coppinger (1996) were more ambitious for the revenue of their WXT bank debit tax. Its base was to be limited to non-debt generating withdrawals from banks, but they proposed the rather implausibly high rate of tax of 5% on this base, easily sufficient in their view to compensate for the abolition of all other taxes.

Interestingly, not all bank debit taxes have had a revenue purpose. The Indian Banking Cash Transactions Tax (BCTT) of 2005-9, imposed at a rate of 0.1% on *cash* withdrawals from banks, was said by the Finance Minister to have “served a very useful purpose in enlarging the information system of the Income Tax Department.” Its withdrawal was attributed to the relevant information being available through “other instruments introduced in the last few years”; it had yielded little more than 0.01% of GDP.

2.4 *Win-win*

One of the great attractions of any corrective tax is the potential to generate a “double-dividend”: reducing the social bad and generating revenue. This has long been a goal of tax reformers whether focused on improving society’s health through taxes on tobacco or improving the environment and limiting global climate change with a carbon tax. To an extent, the double-dividend may be elusive not least because a tax on a social bad that eliminates the bad has likely¹⁴ destroyed its own base.

That the double-dividend is also a goal of current financial taxation reformers is well-evidenced in their writings.

While the CTT was originally proposed by Tobin in 1972 as a means of dampening destabilizing currency speculation, it received renewed interest from the revenue

¹⁴ Though not necessarily, if non-linear tax schedules are permitted.

perspective in the 1990s reflecting, in Nissanke's (2004) view, not only "growing recognition that there is an urgent need for creating a new international financial architecture governing cross-border capital flows in the face of the repeated severe financial crises", but also "its potential to serve as an important source of finance for 'global public goods'".

However, numerous authors point out that speculative attacks on a currency peg might not be deterred by a small CTT rate suitable for raising steady revenue.¹⁵ In the words of Mende and Menkhoff (2003), a low Tobin tax will not curb speculation, and a high rate will significantly reduce liquidity.

For STTs also, reformers see a double-dividend. Thus Baker (2008) remarks:

A modest financial transactions tax could easily raise an amount equal to 1% of GDP, or \$150bn a year at present. This is real money – enough to finance a 10% across-the-board reduction in the income tax. A tax of 0.25% on a stock trade or 0.02% on the purchase of credit default swap will have no measurable impact on productive financial transactions, but will likely put a serious dent in speculative activity.

As mentioned above, the capacity of the tax to deal with the particular social bad being targeted in that quotation is somewhat questionable: a securities transactions tax may actually worsen price misalignments and volatility. However, the objective of a double dividend has obvious attraction.

Sharp falls in the stock prices of banks and other vulnerable firms during 2008 prompted a critique of short-selling in the equity market and price spikes in the credit default swap market, to the point where it was suggested that manipulation of these markets had contributed to the bankruptcy of some firms.

¹⁵ Cf. Nissanke (2004), Spahn (2002). The latter advocates adoption of a time-varying CTT rate could be adopted according to which the tax rate would jump (through a type of trip-wire mechanism) when the currency regime was under pressure.

3. Could a transactions tax have stemmed excesses leading to the recent crisis?

However, volatile prices and short-term speculation have taken a back seat in current discussions about financial market failure, being replaced by concerns about (i) the valuation and rating of structured financial products, especially collateralized debt obligations (CDOs) constructed directly or indirectly from portfolios of mortgage-backed loans (Coval et al., 2009), and (ii) the misallocation of risk, and possible market manipulations associated with credit default swaps (CDS).

CDOs

Interestingly, the failures in this structured finance market have little to do with frequent trading, or with complex sequences of transactions such as would be discouraged by a transactions tax. The complexity is largely in the combination of and reallocation of contractual claims, rather in the payments themselves. Even though derivatives transactions represent the bulk of financial transactions, a comprehensive financial transactions tax would have no appreciable impact on the construction and sale of mortgage-backed securities and their derivatives. These are typically buy-to-hold securities and certainly are not sufficiently liquid to be repeatedly traded on a minute-to-minute basis as are foreign exchange and major financial indices. The major problem with these assets relates to the fact that so many of them (“about 60 per cent of all global rated structured products were AAA-rated in contrast to less than 1 per cent of corporate issues”, and these ratings were highly sensitive to assumptions notably about likely default correlations of the underlying assets and about the likely default rates on underlying securities, both of which were grossly underestimated by the rating agencies (Coval et al., 2009).

With a high proportion of structured finance products that had initially been rated AAA having been downgraded to junk status, investors lost confidence in this market. By late 2008 the structured finance market had virtually closed down, with almost no new issues, and specialists did not expect it to reopen for years. Evidently, then, no tax could have a further corrective effect in discouraging issues.

Nor was there ever much revenue potential in these securities. Quarterly issuance of them peaked in 2006-7 at around USD 100 billion per quarter. As primarily buy-and-

hold securities, the transactions tax revenue from the primary issue would be a high fraction¹⁶ of the total lifetime tax revenue from that issue – a mere USD 10 million for the peak quarter (assuming a tax rate of 0.01 per cent).

CDS

The relatively sudden emergence of the credit default swap market starting in the late 1990s has been identified as a significant contributor to the growing distortions of the credit market during the following decade (Tett, 2009). By 2008, the gross amount of debt insured through CDS was thought to exceed USD 60 trillion,¹⁷ though many of the contracts were back-to-back and resulted in negligible net risk. The net amount of CDS-insured debt may not have exceeded USD 15 trillion. These amounts have subsequently declined. Even on this net amount, the flow of premia was only a fraction of the sums insured (especially considering that most of the debt insured was highly rated. Indeed, the first CDS contracts entailed annual premia of just 0.02 per cent of the nominal amount insured. Riskier debt of course carries a much higher premium. Even on the sovereign debt of some European Union countries, CDS premia have approached 400 basis points (4 per cent) at times during the recent crisis.

The critique of CDS as a destabilizing force is two-fold. First, it is argued that these contracts served to transfer risk from those who wished to shed not to those able to absorb it, but to those who didn't understand it – or alternatively to those who did understand it as a tail risk which would be passed to the taxpayer (as indeed it was in the case of the failed insurance company AIG). This refers mainly to the primary market and not to repeated trading in the secondary market. Second, it is argued that this market can be manipulated because of the thinness of the secondary market¹⁸ in CDS or because the volume of insurance bought on particular names greatly exceeds the volume of their debt outstanding. By operating in both the primary market for a company's debt and in the CDS market, a manipulative investor could make money by driving the company into default. This refers mainly to trading in the secondary market, though not necessarily repeated trading.

¹⁶ Transactions data on CDOs is not collected by the BIS.

¹⁷ The BIS half-yearly estimate of the nominal value of outstanding Credit derivatives (most of them CDS) peaked at USD 58 trillion at end-December 2007. At that date, the gross market value of the contracts was USD 2 trillion, a figure which jumped to USD 5 trillion by the end of 2008 because of the movements in premia and hence in the replacement values of each of the outstanding positions.

¹⁸ Transactions volume on CDS is not collected by the BIS.

This double critique of CDS as destabilizing the financial system is not unproblematic. Clearly these instruments could also be used – and were – as a way of spreading and distributing risk in a stabilizing way also. Arguably, if subjected to certain administrative controls and traded only in well-organized exchanges, these instruments could be strong force for stability. However, even if one granted the premise that CDS have been destabilizing and need to be discouraged, it would be hard to argue that a transactions tax applied at a low rate would be effective in reducing the damage.

After all, a transactions tax applied only to the actual premiums paid would of course have no effect on secondary market trading, and indeed a standard transactions tax applied to CDS premium payments would have negligible effects both in revenue and market behaviour.¹⁹ Applying a transactions tax to the nominal volume of debt insured would be more promising from the revenue point of view but, at the much-less-than-one-per-cent levels envisaged for a standard transactions tax, would not have much effect on the two efficiency problems mentioned for CDS – wrong ultimate holder and market manipulation.

Correcting agent incentives

There is of course a broader critique of finance which rightly points the finger at distorted incentive structures for agents. This would include both traders and other operational officers of financial intermediaries and of CEOs and other senior staff who should be supervising operations and ensuring that the institution is set on a prudent course. Tax structures could be used to alter the incentive profile of senior staff, but so far attempts to design such structures have not been successful. For example, the cap since 1993 of USD 1 million on tax deductibility (for the firm) of senior directors' remuneration seems to have had little effect (Rose and Wofram, 2002). Clearly, while transactions taxes could have a significant effect on the profits of various lines of business that could indirectly affect the incentive structure facing

¹⁹ If the average premium on USD 60 trillion is 50 basis points, a 0.01 per cent transactions tax would probably not discourage many of these transactions, but would generate only USD 50 million in annual revenue.

individual traders and CEOs, they could not easily be fine-tuned to achieve the desired re-alignment of the private incentives of these individuals with public goals.

These considerations cast doubt on the potential for achieving a double-dividend coming from a financial transactions tax that would somehow discourage the accumulation of toxic debt, while still yielding sizable revenue.

4. Some statistics on the starting base of a comprehensive transactions tax

Data on financial transactions (as distinct from financial stocks) has been growing rapidly in the past decade or so, but are still rather patchy.

Payments transactions

Payments data, covering both the number and the aggregate value of payments is available on an annual basis for some 13 countries in the so-called CPSS Red Book.²⁰ Data is shown separately for different payments methods employed by nonbanks, such as credits, direct debits, cheques, e-money payment transactions, and card transactions of different types. Interbank transactions through the major automated clearing systems are also shown.

In 2007, aggregate payments of nonbanks reported in the Red Book came to USD 479 trillion, with USD 2459 trillion in interbank payments. Adding these two together gives us a round figure of USD 3000 trillion in payments. Since this is almost one hundred times the aggregate GDP of the countries included in the Red Book,²¹ it becomes clear why it could seem superficially plausible that a very small tax rate – a fraction of one per cent – might generate almost all the revenue any government could need.

Interestingly, though, there is a sizable variation across countries in the ratio of payments transactions to GDP, varying – for the most recent year available, i.e. 2007,

²⁰ CPSS, (2009), The first cross-country publication including statistics on payments systems covered the Group of 10 industrial countries and Switzerland and referred to 1977-78. Since then, an annual survey, now conducted under the auspices of the Committee on Payment and Settlement Systems, has expanded and deepened its coverage but added only two additional countries (Hong Kong and Singapore), as well as the Euro zone, to the original 11.

²¹ The ratio is actually 89 for 2007, and varies between 75 and 89 in the period 2000-2007

from 36 times in Italy and 55 times in Sweden (2006) to 129 in the US and 147 in Hong Kong (even though the Hong Kong data only includes interbank transactions (Figure 1). This is not merely a function of whether or not the country hosts a global financial centre: Germany and France also have multiples in excess of 100, while Singapore is the fourth smallest country.

The wide variation suggests that payments transactions may not be stable in response to influences such as the imposition of a transactions tax. The volatility over time in the ratio is also sizable in some countries (Figures 2, 3; Tables 1, 3), with a coefficient of variation as high as 40 per cent in Switzerland – though it is likely that much of that is attributable to some institutional or definitional changes.

Turning to non-interbank payments transactions, the aggregate value ratio to GDP for the reporting countries is *much* lower at under 15. Furthermore, the figure for the UK – 77 – is a wide outlier, certainly reflecting its status as a financial centre and likely especially reflecting London’s dominant role in the foreign exchange market.

Removing this outlier reduced the aggregate value ratio to GDP to under 9.

Suddenly, one realizes that a bank debit tax which does not apply to interbank transactions and is applied at a small rate simply cannot raise current levels of revenue. Even if transactions were completely insensitive to the rate of tax, the required minimum tax rate to replace all other taxes and cover government expenditure jumps from an average of less than 0.5% to over 3% (Table 2).

These points are further elaborated in the Appendix.

Derivatives transactions

What of other financial transactions? Spot foreign exchange transactions worldwide in 2007 can be estimated at about USD 250 trillion, based on grossing up the daily average figures in the BIS triennial survey for that year. Presumably, these spot foreign exchange transactions are already counted in the payments transactions data of the CPSS. That would also be true of outright securities purchases and sales.

But not all of the large and growing volume of derivative transactions are included in payments transactions as to their full national value, as settlement for these is

generally on some form of net basis. If the scope of a general transactions was extended to derivatives also, and applied to their full nominal value, this would expand the base of the tax considerably.

Data on over-the-counter transactions in foreign exchange and interest rate derivatives are collected on a sample basis for one month every three years from 54 reporting countries (BIS, 2007). More comprehensive data on exchange-traded derivative is also collected from the main organized exchanges (BIS, 2009b, Table 23). Finally every six months the BIS (2009a) collects figures on the outstanding stock of (but not the transactions in) OTC derivatives, including credit and equity-related derivatives not counted in triennial survey.

An overall summary of the transactions data is as follows: Total turnover (nominal value) of futures and options derivatives quoted on organized exchanges came to USD 2214 trillion in 2008. (About two thirds were interest rate futures and rather more than a quarter were interest rate options). Estimated turnover in OTC exchange rate and interest rate derivatives came to USD 1250 trillion, of which two-thirds related to exchange rate contracts and the remainder to interest rate contracts.²² Thus in broad terms, the total turnover of derivatives is of the same order of magnitude as payments transactions, if slightly smaller. Unfortunately, we have no full breakdown of how many of these transactions relate to non-financial firms.

Extending the scope of a general transactions tax from payments transactions to transactions involving derivatives and applied to the total nominal value of the objects of those derivatives about doubles the initial base of the tax.

As discussed in the next section, the elasticity of the base of tax on derivatives to the tax rate may, however, be much higher.

²² In contrast, the stock of OTC exchange rate related derivatives is only one-eighth that of interest rate derivatives. The exchange rate derivatives have a much higher ratio of turnover to end-period stock, probably reflecting in part their very short median maturity and the microstructure of this market discussed above.

5. Impact on behaviour and on the base

The base of a transactions tax is likely to be very elastic in response to a tax. The top of the Laffer curve might be reached at a surprisingly low level.

Mende and Menkhoff (2003) have argued rather convincingly that even a very small tax would dramatically alter the way in which wholesale participants in the foreign exchange market operate. Drawing on a specialized literature which studies the microstructure of the foreign exchange market (cf. Lyons, 2001), they point out that the strategy of the typical bank participant involves buying and selling foreign exchange as if it was a hot potato. Their goal in this is to minimize the risk that they are uninformed about a change in prospects. For that reason they will not want to accumulate a significant stock. They report as an example a bank with a median open position of about USD 2 million, which nevertheless trades about USD 50 million per day. It is inconceivable that a strategy necessitating such frequent trading would survive even a very small transactions tax. Instead, banks would deal in the market in some entirely different way.

A similar argument could apply also to the microstructure of trading in the interest rate derivatives market. Take interest rate swaps, which account for over two-thirds of the OTC turnover in interest-rate related derivatives. Although invented to allow corporate borrowers to lock in a long-term interest rate even though they had borrowed at floating rates, use of interest rate swaps has “since grown into one of the most useful and liquid derivatives markets in the world...used across the fixed-income markets to manage risks, speculate, manage duration and lock in interest rates (Pimco, 2008).” Indeed, swap rates are now in some respects a more important indicator of bond market conditions than Treasury Bill rates.

It seems impossible in this context to fully decompose the multiple uses of such derivatives in hedging and assuming risk. We can conjecture that such a multi-function instrument traded with such low transactions costs will have a very high elasticity of demand with respect to these costs.

This view is reinforced by a reading of the theoretical and empirical literature on securities market microstructure in general. This literature which emphasizes the way in which the pattern of price quotations and trading can be influenced by modest differences in flow of information and the organization of the market (for example in some markets informed traders place quantity orders, whereas in others the wholesale liquidity providers post prices at which they are prepared to trade).

Formal models illustrate how, when new information arrives, whether from the flow of orders received by specialist traders, or otherwise, the required adjustments in the optimal portfolio (of any class of assets) both of informed and uninformed investors can be very considerable (cf. O'Hara, 2003). However, different assumptions about the way in which information arrives in the market, how it is distributed and the way in which the market is organized, have very different implications for the volume of trading and how it varies. There can also be multiple equilibria with higher volumes of trading associated with lower spreads and higher social welfare (see for example Biais et al., 2005, pp.225-227). This could explain the way on which trading volume clusters at certain times of the day.

If the continuous flow of information in the market necessitates repeated re-adjustments of dealer inventory and portfolio rebalancing, the imposition of a transactions tax could, for example, lead to market arrangements shifting from continuous trading to a periodic "call". This might not cause much welfare loss, but substantially lower revenue from the tax.

Even setting aside the high end financial market transactions, the distorting effect of a transactions tax can be significant even if it referred directly only to real sector transactions. Other consequences – for the way in which wages are paid: cash or credit, or in the degree to which suitcases of cash are carried physically across borders – could also have damaging side-effects.

Ignoring the effects on financial intermediation, Suescún (2004) models the cascading of a transactions tax through the production process and "disregards its effect on financial intermediation" and thus the resulting effects, showing that deadweight loss calculations are sensitive to the modelling of economic growth.

Although deadweight costs for a given tax rise with the square of the tax rate, it is fallacious to suppose that different taxes can be ranked as to their deadweight costs by reference only to the rates of tax. The elasticity of the tax base also matters. A low rate of tax applied to a very elastic market could result in more costly distortions of that market than results from a higher rate of tax applied to a market with lower elasticity.

6. Concluding remarks

Although conditions are better than ever for the introduction of a broad-based financial transactions tax, expectations for such a tax are likely to be disappointed. Even if the bolt-hole of tax havens to which transactions might migrate is effectively shut-off, neither the revenue nor the efficiency gains hoped-for by big picture tax reformers are likely to materialize.

The tax base, whether measured by the total value of automated payments transactions, or broadened to include the gross nominal value of derivatives transactions is certainly large. But much of the base is strikingly concentrated in a small number of countries. This reflects the dominance of multiple technical transactions among wholesale financial market participants as they manage the risks of acting as market makers in foreign exchange and securities trading. The volume of such transactions would collapse with the imposition of even a small transactions tax undermining its potential to generate sufficient revenue to replace all other taxes as has been hoped-for by some.

Market-makers would change their method of handling risk in any of a variety of ways that would sharply reduce the volume and total value of transactions. To the extent that these alternative risk management procedures left the market makers with higher risk, spreads in these markets would increase and liquidity (as measured for example by the degree to which large trades could be absorbed without moving prices) would decline.

And a transactions tax would have little effect in discouraging the activities of the credit default swap market, the market in securitized sub-prime mortgages, or other derivatives-based markets whose malfunction is thought to have contributed to the recent crisis.

Certainly not a panacea, and more likely a damp squib in terms both of revenue and of efficiency gains (and perhaps more likely to result in efficiency losses), financial transactions taxes could be a threat to fiscal stability if overoptimistically seized up as a reason for abolishing more reliable revenue sources.

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Table 1: *Summary Statistics of various transactions - GDP ratios*

Variable	Mean	Std. Dev	Min	Max
Total payments/ GDP	82.2	42.2	6.5	220.7
Nonbank payments/ GDP	21.8	28.4	2.8	112.3

Table 2: *Rate of transactions tax required to generate current revenue (assuming no response of the tax base)*

Variable	Mean	Std. Dev	Min	Max
Tax rate all payments	0.46%	0.44%	0.04%	3.8%
Tax rate nonbank payments	3.24%	2.42%	0.09%	10.7%

Table 3: *Rate of transactions tax required to generate current revenue (assuming no response of the tax base) (All payments taxed) (%)*

	2000	2001	2002	2003	2004	2005	2006	2007
Belgium	0.14	0.14	0.30	0.29	0.29	0.22	0.20	0.15
Canada	0.63	0.54	0.56	0.56	0.56	0.53	0.49	0.47
France	0.42	0.36	0.37	0.38	0.36	0.57	0.53	0.51
Germany			0.64	0.64	0.65	0.60	0.56	0.37
Italy	1.01	1.12	1.12	1.15	1.14	1.01	0.91	1.10
Japan			0.59	0.61	0.58	0.57	0.51	
Netherlands	0.42	0.41	0.42	0.42	0.40	0.41	0.40	0.36
Singapore	0.16	0.15	0.26	0.21	0.24	0.19	0.21	0.19
Sweden	0.49		0.52	0.50	0.54	0.50	0.50	3.79
Switzerland	0.04	0.05	0.04	0.09	0.10	0.10	0.09	0.09
United Kingdom	0.28	0.28	0.31	0.31	0.32	0.34	0.31	0.34
United States	0.24	0.23	0.26	0.26	0.26	0.26	0.25	0.23

Note: The table shows the ratio of government revenue to the total of automated payments in per cent

Source: *International Financial Statistics*. Washington D.C.: International Monetary Fund, 2009a. "Statistics on Payment and Settlement Systems in Selected Countries - Figures for 2007," *CPSS Publications No 86*. Bank for International Settlements, 2009b.

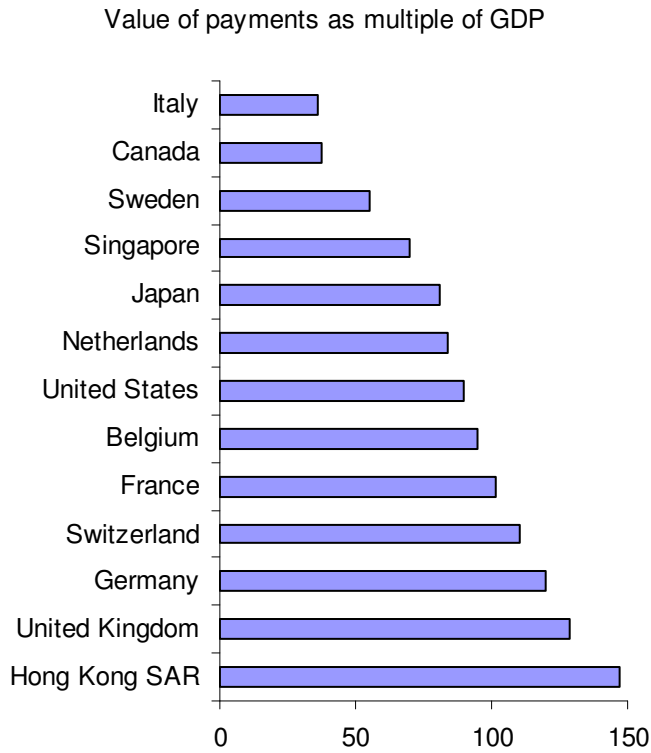


Figure 1: *Nonbank payments / GDP (2006) for all available countries*
Source: CPSS (2009).

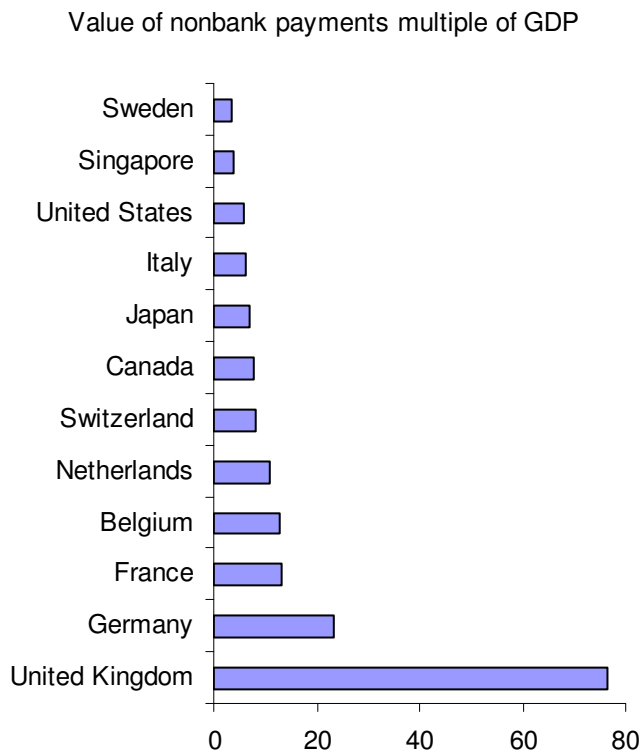


Figure 2: *Total payments / GDP (2006) for all available countries*
Source: CPSS (2009).

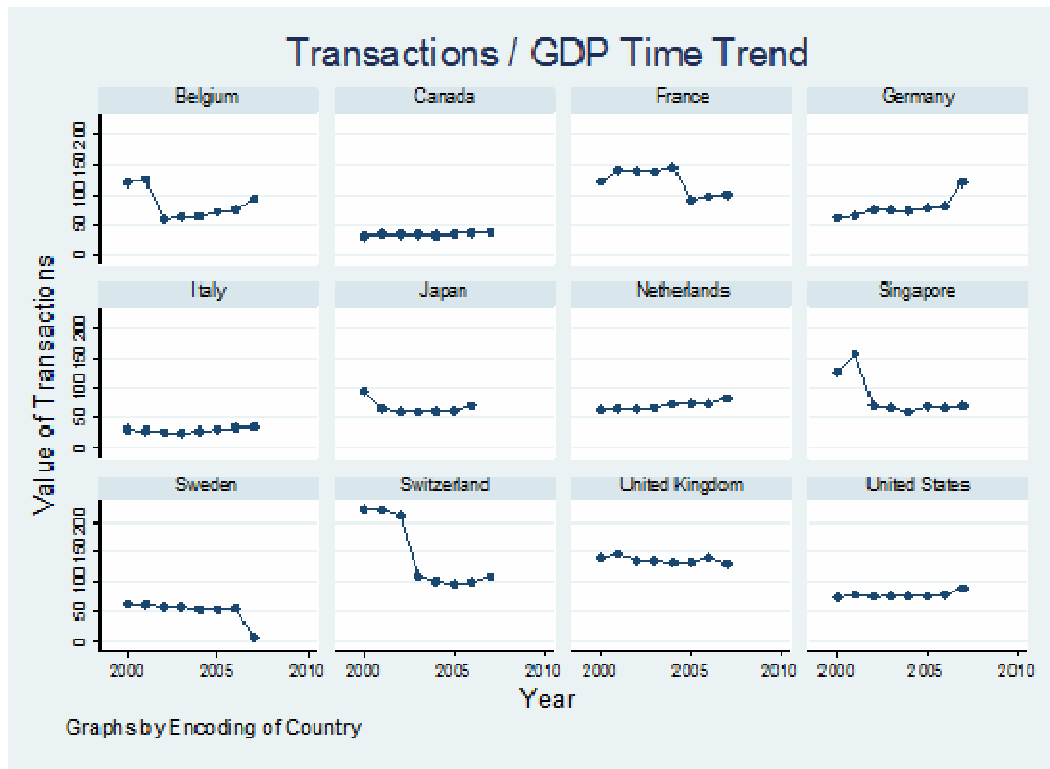


Figure 3: *Payments as % GDP over time*
 Source: CPSS (2009).

Appendix: Calculating lower bound for a unitary tax on automated payments

As a first step to judging the revenue potential for transaction taxes, it is instructive to estimate the ratio of government expenditure to the tax base. If the tax base were insensitive to the imposition of a tax, a transactions tax at this rate would generate enough revenue to pay for all the expenditure. In principle, then, one could imagine all other taxes being replaced by the transactions tax.²³ Therefore we call this rate the minimum unitary transactions tax rate. It is a minimum because it does not take account of the elasticity of the tax base; unitary because it could replace all other taxes. Of course this calculation also neglects other endogenous responses of the economic system to such a drastic change in conditions. It is only a baseline indication of the scale of taxes required.

The tax rate was generated using data from the Bank for International Settlements and from the International Monetary Fund.²⁴ These data were generated by taking the total level of expenditures in a country for a given year²⁵ and dividing this total by a summation of nonbank payment transactions and all intermediation transactions in a country.²⁶

Figure A1 depicts the tax rate needed to cover current general expenditures for selected countries (the data is also shown as Table A2.²⁷ These rates exemplify the different needs across countries. Each nation has different needs and transaction tax bases upon which to tax.

As discussed in the text, the response of interbank payments to even a small transactions tax could be very large. An alternative calculation of the minimum unitary tax excluded interbank payments and this is shown in Table A1 and Figure A3. As is clear, much higher figures are obtained.

Table A1: *Required Rates for Unitary Payments Tax*
Statistics from 11 countries 2000-2007

	Mean	Std. Dev.	Skewness	Kurtosis	Max
All payments taxed	0.46	0.44	5.03	37.6	3.79
Nonbank payments only	3.24	2.42	0.86	3.4	10.7

²³ Although the Feige proposal intended to increase government expenditures by removing indirect subsidies, quantification of the value of indirect subsidies and estimating how many of them will be carried forward into direct subsidies contains too many assumptions to contribute anything meaningful to the debate.

²⁴ All data was calculated in terms of Billions of US Dollars. When exchange rates were needed, the average exchange rate for the local currency to the US Dollar was used for the given year. When fiscal years do not occur within the calendar year, the numbers are assumed to be consistent for cross year comparison so that no adjustments were made. IMF data generally used rows a1 and a2 whenever possible. However, data limitations necessitated the use of c1 and c2 for some nations. Whenever both were available, preference was given to a1 and a2. Occasionally, when both were available for some years, c1 and c2 were used to provide consistency with data obtained for previous years. Data available upon request.

²⁵ *International Financial Statistics*. Washington D.C.: International Monetary Fund, 2009a. line 82

²⁶ "Statistics on Payment and Settlement Systems in Selected Countries - Figures for 2007," *CPSS Publications No 86*. Bank for International Settlements, 2009b.

²⁷ Sweden was dropped due to a significant statistical outlier occurring with 2007 which was not statistically within the valid range. Hong Kong has been omitted from this analysis due to a lack of information about end-user based transactions and government expenditure / revenue.

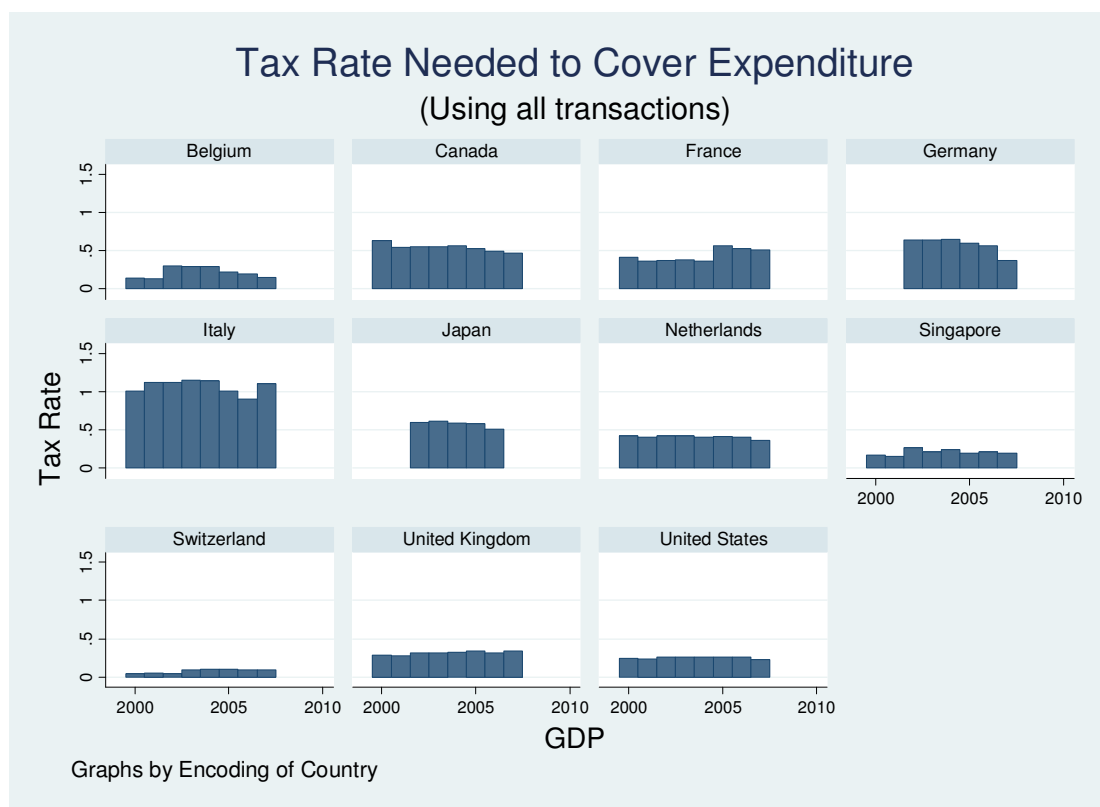


Figure A2: *Minimum unitary tax rates: 11 countries 2000-2007: all payments taxed*

Note: This shows the ratio of total government expenditure to the total value of payments transactions. If transactions were insensitive to the imposition of a tax, this would represent the rate of transactions tax required to yield enough revenue to match government expenditure.

Ideally, the requisite tax rate would be the same for all countries within the APT tax perimeter. If the tax rate was not the same, then a normally distribution of tax rates would provide a solid foundation for creating the international consensus necessary to implement the multi-national dimension of the APT tax proposal. The Skewness and Kurtosis present in the tax rate using all transactions suggest that the distribution of tax rates for each country-year is not Gaussian.

Nonparametric estimation techniques allow for a more representative depiction of the distribution of tax rate density. Because tax rates are fundamentally continuous, the distribution should be analysed as a continuous variable rather than discrete. Figure 2 depicts the density estimates using an Epanechnikov kernel of the tax rate distribution. This figure shows a non-trivial density building around a transaction rate of 1 percent. This density suggests the possibility, even when using all transactions, of some form of tax-clubs forming due to differences in expenditures.

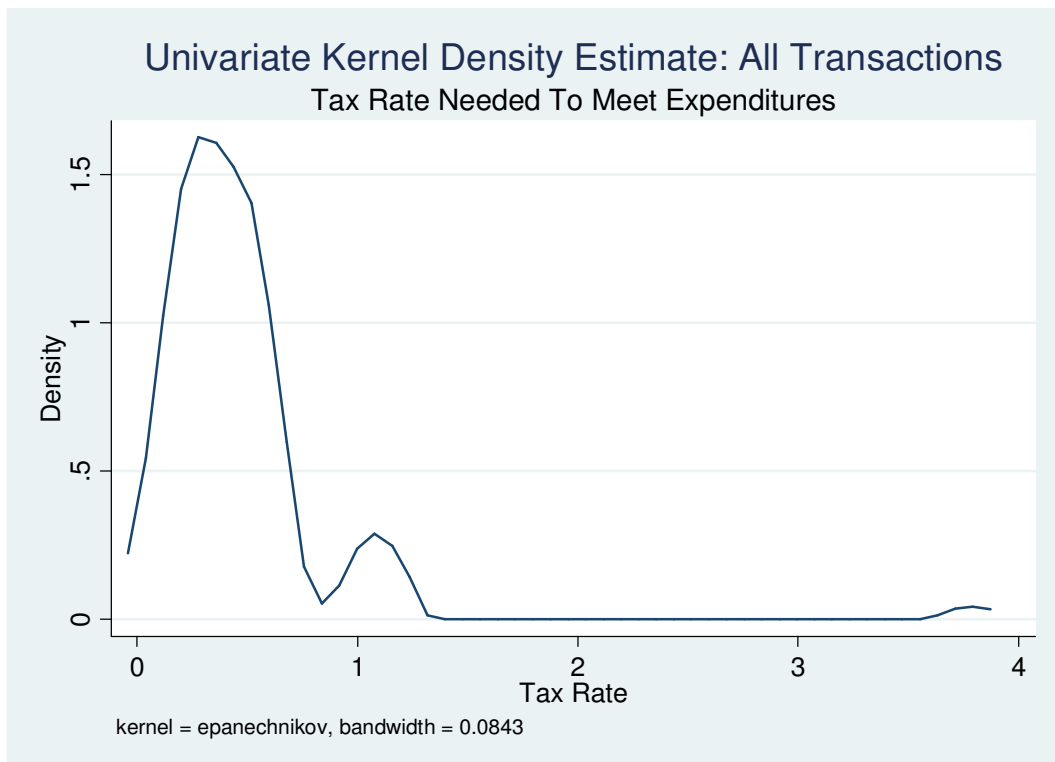


Figure A2: *Smoothed probability density of the minimum unitary tax rates for 11 countries 2000-2007 – all payments taxed*

The distribution substantially changes when one looks at only end-user transactions. Figure A3 represents the distribution of tax rates for county-years relying only on the taxes generated from nonbank (end-user) transactions. This distribution represents a worst-case-scenario where all back-end transactions used for financial intermediation are removed from the tax base.²⁸ Examination of Figure A3 reveals that many of the distortions in the distribution smoothed over. The mean tax rate increased and dispersion widened.

Figures A1 through A3 illustrate the differences between each country in the desired tax rate. This illustrates the difficulties of deploying this proposal on a multinational scale.²⁹ The differences in dispersion illustrate the difficulties which could arise if the financial sector changes its transaction demands based upon the tax. National governments may well find themselves facing revenue shortfalls and a need to increase the tax rate rapidly to cover any decline in revenue caused by arbitrage. The possibility of tax-clubs suggested from the nonparametric kernel density estimates should give pause to policy makers in selecting nations to include in this proposal. Further examination of the circumstances leading to Italy's higher requisite tax rate seems warranted.

²⁸ Recall from the literature review of previous implementations of transactions taxes that many intermediation transactions were removed from the tax base.

²⁹ As recently illustrated, recent statements from policy makers on trying to develop mechanisms addressing tax havens may provide a mechanism to prevent arbitrage caused by rate differences within the APT tax perimeter.

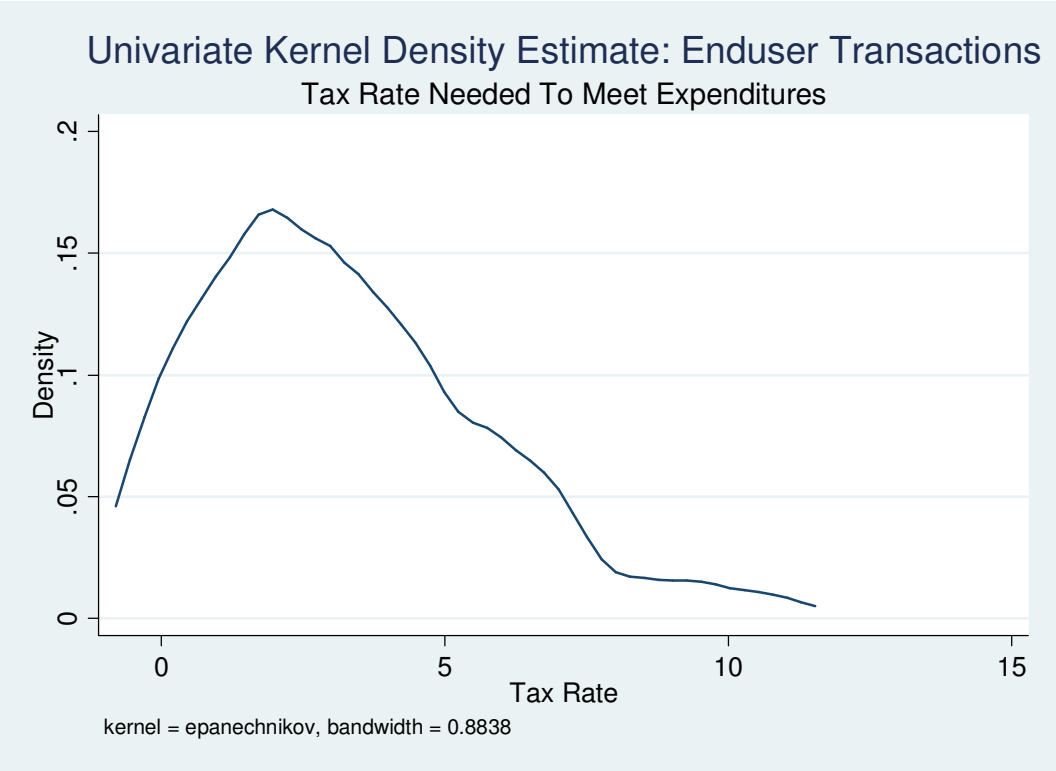


Figure A3: *Smoothed probability density of the minimum unitary tax rates for 11 countries 2000-2007 – only nonbank payments taxed*