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**The Tobin Tax in the 21st Century:
Financing Development & Promoting International Financial Stability***

*This paper is a modified, international version of Spratt (2005) *A Sterling Solution*,
and has been prepared for: TAX, POVERTY AND FINANCE FOR DEVELOPMENT
CONFERENCE, Essex University – 6 / 7 July 2006

Introduction

The purpose of this paper is to consider whether the Tobin tax still has the potential to make a contribution to international development in the 21st century, and to analyse in detail how such an international tax would work in practice in today's international financial system.

What is often overlooked is that the Tobin tax has two potential developmental applications. The first is its revenue raising function, where a currency transaction tax (CTT) set at a relatively low rate could provide substantial additional funds for international development purposes. The second, in contrast, is not designed to raise revenue *per se*, but rather to 'short-circuit' speculative attacks on the currencies of primarily middle-income developing countries, and therefore obviate the need for these countries to build up and maintain very large reserves of foreign exchange as an 'insurance policy' against speculative attacks, and the damaging developmental consequences they produce. A key question to be addressed is therefore, which if any of these two options is likely to have the most significant developmental impact, or would it be possible and desirable to implement both forms of CTT at the national, regional or global level?

With regard to the first CTT form described above, it has become increasingly apparent that the UN's Millennium Development Goals (MDGs) are not going to be met by 2015 without substantial additional financing. This is despite the new resources pledged by the G8 at last year's Gleneagles summit.

This funding gap has increased attention on alternative sources of income: often called 'innovative sources of finance'. Various proposals have been on the table at various times in this respect, each seemingly with its own national champion. Although there has been some discussion of deriving revenue from a currency transaction tax (CTT) to date, the idea has stalled because of the wide assumption that to be feasible and effective a CTT would have to be universally implemented and universally enforced.

However, this paper argues that a CTT does not necessarily need to be universally adopted: any country, or group of countries could implement it unilaterally, or it could be implemented universally at the global level. As we shall see, this has been made possible by developments in the international financial markets in general, and domestic and cross-border payments and settlement systems in particular. Crucially, this appears to hold for both forms of CTT described above, suggesting that policy-makers have a wider range of options in this area than is commonly supposed.

What are the changes that have occurred that have increased this range of options, however?

The foreign exchange (FX) market has historically been a rather ad hoc affair, which is surprising considering its sheer scale. Over recent years, however, this has changed considerably. In particular, technological advances have replaced contracts agreed by phone, with correspondence using the internet. This has greatly increased the speed and efficiency of the market, bringing big gains to market participants in terms of both costs and the higher turnover.

These developments have also enabled domestic large value payments systems (LVPS) to become increasingly interlinked, facilitating automated transfers of funds at a speed and of a size that was previously unimaginable. Moreover, domestic LVPS have established formal, cross-border linkages with the establishment of the continuous linked settlement (CLS) Bank, which now settles almost half of all global FX transactions.

Major financial institutions would clearly not want to give up these benefits. However, it is exactly the interdependence that has been described - in combination with the common

technical platforms and communication systems that are now used - that makes a CTT feasible today.

Common communication and messaging systems make it possible to identify foreign exchange transactions wherever they occur. Interdependent and interlinked LVPS make it possible to efficiently collect the CTT and make avoidance extremely difficult. Finally, the huge benefits that financial institutions have obtained from organising the system in this way could not be retained if a CTT were to be seriously avoided. A CTT at a very low rate and with negligible impact is a fractional cost in comparison with these benefits. Similarly a CTT set at an extremely low rate (possibly zero) in normal circumstances, but rising sharply in periods of market turbulence, would provide a strong disincentive for financial institutions to launch speculative attacks on currencies, but would have no financial impact on their FX operations in normal circumstances. No bank would give up the benefits they obtain from participation in today's international payment and settlement systems to avoid either of these forms of CTT.

As well as demonstrating the feasibility and cost effectiveness of the proposal, this paper gives an estimate of the annual global tax take, which could be obtained if the CTT were set at very low rates. For example, we estimate that a 0.005% CTT would raise approximately US\$ 24.2 billion per year, while a rate of 0.01% would yield annual global revenues of around US\$47 billion.

The rest of this paper is structured as follows. Section 1 describes why a CTT is needed in the context of additional funding to meet the Millennium Development Goals (MDGs). Section 2 provides some background on the history and schools of thought on currency transaction taxes, and distinguishes between a revenue raising CTT and one designed to short-circuit speculative attacks. Section 3 discusses recent trends in the global foreign exchange (FX) market. Section 4 examines the developments in domestic and international payments and settlements systems that make a CTT more feasible today than was previously the case. Section 5 explains the proposal in detail, considers the merits of commonly heard objections to the initiative and concludes.

1. *Meeting The Millennium Development Goals: The Need for Innovative Sources of Finance.*

In late 2000 the United Nations published the Millennium Declaration. The document, which was ratified by 189 heads of state, expressed a commitment on behalf of its signatories to address critical global problems of poverty, diseases and underdevelopment in a way compatible with environmental sustainability.

Following the Declaration, eight Millennium Development Goals (MDGs) were formulated, with explicit indicators established for each and a deadline of 2015 set for achievement of all eight goals.¹

The UN General Assembly met in September 2005 to review progress, which to date has been uneven both in terms of the specific MDGs themselves, and the pattern of geographical progress towards meeting them.

In the summer of 2005, the UN Secretary-General, Kofi Annan made these concerns explicit in the UN's progress report on the MDGs:

¹ The MDGs are as follows: Eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and empower women; reduce child mortality; improve maternal health; combat HIV/Aids, malaria and other diseases; ensure environmental sustainability; and, Develop a global partnership for development

If current trends persist, there is a risk that many of the poorest countries will not be able to meet many of them [MDGs]. Considering how far we have come, such a failure would mark a tragically missed opportunity...As I said in my March report: "Let us be clear about the costs of missing this opportunity: millions of lives that could have been saved will be lost; many freedoms that could have been secured will be denied; and we shall inhabit a more dangerous and unstable world."²

These concerns are backed up by the evidence, perhaps most comprehensively set-out in the 2005 report, *Investing in Development: A Practical Plan to Achieve the Millennium Development Goals*³, which was drawn up by 265 of the world's leading development experts and – although positive in some regards – makes for sobering reading in others.

Table 1. Global Progress on the MDGs		
<i>Indicator</i>	<i>1990</i>	<i>2002</i>
GDP per capital (1995 US\$)	1,071	1,299
Headcount poverty (%)	28	21
Undernourishment prevalence (%)	20	17
Under-five mortality (per 1,000 live births)	103	88
Life expectancy (years)	63	65
HIV prevalence (%)	0.5	1.6
Access to improved drinking water (%)	71	79
Access to improved sanitation (%)	34	49
<i>Source: UN (2005a)</i>		

Table 1 details aggregate global progress on the key indicators. As can be seen, there has been positive change on every indicator, with the notable exception of HIV prevalence. However, whilst this aggregate picture is broadly encouraging, it gives a very unrealistic picture of the reality on the ground at the regional and country level.

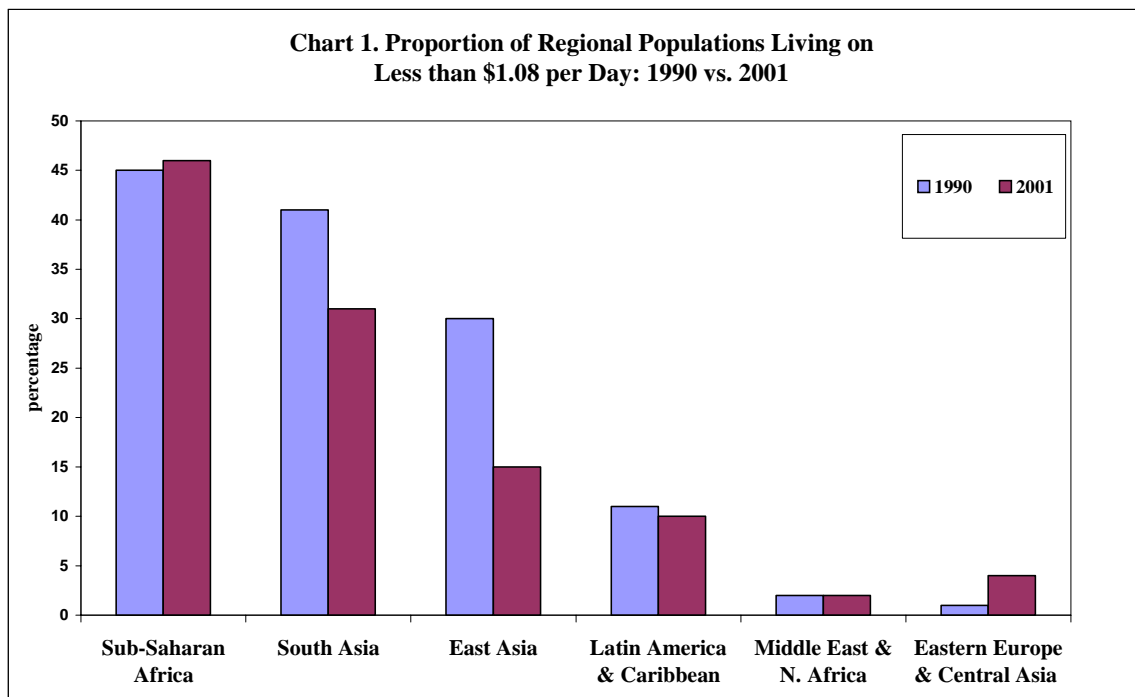
Table 1 shows that the proportion of people living in absolute poverty (measured as those living on less than \$1.08 per day) has fallen from 28% to 21% over the past 12 years. However, as Chart 1 below demonstrates, these global aggregate figures give little sense of the prevalence of absolute poverty in each region: in 2001, the figure for sub-Saharan Africa was more than 45% of the population, whilst the corresponding figure for the Middle East and North Africa, was just 2%. Furthermore, the decline in the global average over the period considered is almost entirely the result of large reductions in poverty levels in East Asia and South Asia, containing the billion plus populations of China and India respectively.

As shown in Chart 1 below, in East Asia, the proportion of the population living in absolute poverty fell from 30% to 15%, whilst South Asia saw a reduction of 10 percentage points, from 41% to 31%. In contrast, Latin America & the Caribbean saw a very small improvement, the situation in the Middle East and North Africa was unchanged, and Eastern Europe and Central Asia saw a significant deterioration. The most alarming region, however, is sub-Saharan Africa, where the proportion of the population living in absolute poverty actually rose from 45% to 46% between 1990 and 2002.

Much of these regional differences can be explained by two factors: economic growth rates and levels of population growth. For example, while India's growth record has been impressive in recent years, the country's population has also increased substantially. In contrast, China's relatively stable population growth has allowed its impressive economic growth rates to feed through into significantly higher per capita incomes. Sub-Saharan Africa has seen the worst of all worlds: low (even negative) economic growth combined with rapid population growth.

² UN (2005a:2)

³ <http://www.unmillenniumproject.org/reports/index.htm>



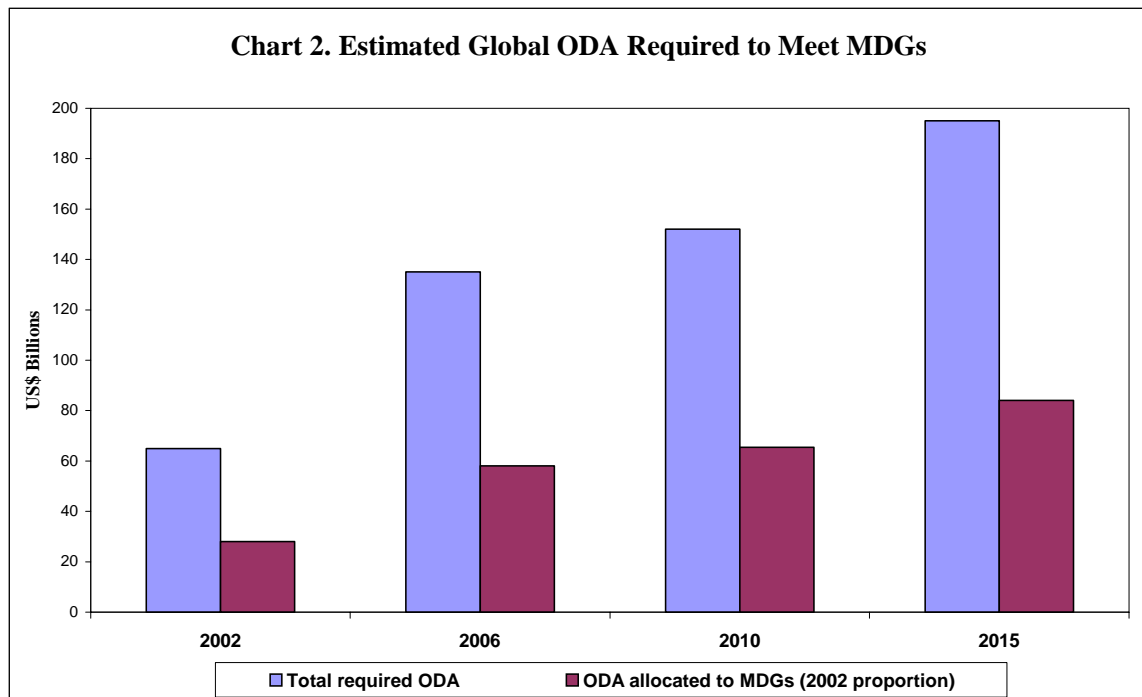
Source: UN (op. cit.)

Indeed, the situation in sub-Saharan Africa is such that, on current trends, few if any of the MDGs have a realistic chance of being met. It was concerns of this kind that motivated the Make Poverty History campaign in 2005, and which contributed to the announcement of modestly increased overseas development assistance (ODA) by the G8 in 2005.

Recognising the crucial importance of accelerating progress if the 2015 deadline were to be met, particularly in Africa, G8 leaders committed to incremental increases in aid budgets – with some setting a deadline to meet the long-standing 0.7% of GDP target – and reductions in the debt burdens of some of the poorest developing countries.

Meeting in Gleneagles, Scotland in July 2005, the Heads of Government therefore agreed to double aid to Africa from \$25 billion per year to \$50 billion by 2010, and to increase total ODA to \$129 billion by the same year.

If fulfilled, these pledges have the potential to accelerate progress on meeting the MDGs. However, even with this additional funding, it is likely that many MDGs will not be met, particularly – though not exclusively – in sub-Saharan Africa. Chart 2 below gives the most authoritative estimate of the total ODA needed to meet the MDGs by 2015. As can be seen, in 2010, required ODA is more than \$150bn, significantly above that promised at Gleneagles – indeed, the figure needed for 2006, is higher than that currently committed to for 2010. Furthermore, in the recent past less than half of ODA has been spent on the MDGs, as depicted with the darker bars in Chart 2. If this trend were to continue, then MDG-dedicated-ODA, would be less than half that required, with clear implications for the world’s ability to meet the development goals.



Source: UN (2005b)

A final issue in this regard relates to the willingness (or ability) of donor governments to honour the pledges made in 2005. The G8 Summit had barely finished before a number of governments began talking of budget constraints and fiscal considerations affecting their ability to honour these pledges. Past experience suggests that it is highly likely that these pledges will become ‘aspirations’. However, even if they were to be fully honoured, the world would still face a significant funding shortfall from that required to meet the MDGs, somewhere in the order of US\$50 billion per year.

Other sources of income are clearly needed, which has led attention to ‘Innovative Sources of Finance’.

In this regard, the greatest impetus has been in support of the International Finance Facility (IFF) - proposed by the UK’s Chancellor, Gordon Brown – wherein future ODA flows would be ‘front-loaded’ through the issue of bonds today by G8 members. The money raised would be used to meet the MDGs now, and the bonds paid through future ODA commitments of the countries concerned. Despite the efforts of the UK government, however, the IFF has not attracted the broad international support that was hoped for.

The UN’s *World Economic and Social Survey 2005* considers various innovative sources of finance options, distinguishing between the proposals in terms of the need for universal adoption, and the speed with which each option could be implemented - thus identifying ‘quick wins’. A full-scale IFF is the primary ‘quick-win’ identified. However, because the IFF initiative has progressed more slowly and with fewer partner countries than originally intended, it is necessary to look seriously at other possible sources of finance such as the currency transaction tax (CTT). In all likelihood a number of innovative mechanisms will need to be employed to bridge the funding gap, and ought to be seen as complementary rather than competitive.

The report classifies the currency tax option as requiring universal adoption, which has long been the accepted wisdom. However, in this paper we argue that a CTT could in fact be implemented individually at the national, regional or at the global level, with the only fundamental obstacle being a lack of political will.

2. A Brief History of (Currency) Transaction Taxes

For most observers, a currency transaction tax (CTT) is synonymous with the work of Nobel Laureate James Tobin. The Tobin tax, as it came to be known, was first proposed in the early 1970s with the aim of discouraging speculation in the FX markets, and therefore reducing exchange rate volatility.

More generally, however, transaction taxes have a long and sometimes distinguished intellectual and practical history. In 1936, John Maynard Keynes proposed that a small transaction tax should be levied on dealings on the London Stock Exchange, where he argued that excessive speculation⁴ by uninformed financial traders increased volatility.

For Keynes, the key issue was the proportion of ‘speculators’ in the market, and his concern that, if left unchecked, these types of players would come to dominate the market.

Speculators may do no harm as bubbles on a steady stream of enterprise. But the situation is serious when enterprise becomes the bubble on a whirlpool of speculation (1936:159).

Interestingly, Keynes was particularly concerned to prevent London going the way of New York, which he saw as a clear example of speculation triumphing over enterprise:

It is usually agreed that casinos should, in the public interest, be inaccessible and expensive. And perhaps the same is true of stock exchanges. That the sins of the London Stock Exchange are less than those of Wall Street may be due, not so much to differences in national character, as to the fact that to the average Englishman Throgmorton Street is compared with Wall Street to the average American, inaccessible and very expensive...The introduction of a substantial Government transfer tax on all transactions might prove the most serviceable reform available, with a view to mitigating the predominance of speculation over enterprise in the United States (1936:159-60)."

Although the UK government did not act on this advice, it might reasonably have concluded that there was no need as a 0.5% tax on stock and bond transactions was then in place, and remained so until 1990.

Although the CTT proposed by Tobin was therefore not an unusual concept in either theoretical or practical terms, it was immediately controversial, and has remained so. Tobin's aim was to ‘throw sand in the wheels’ of the global FX market by disproportionately taxing short-term currency traders with high turnover. He argued that this reduced speculation would lower market volatility by bringing market prices more in line with underlying fundamentals, which drive the behaviour of longer-term – fundamentalist - investors.

Opponents cited Friedman (1953), arguing that speculators act to stabilise markets through rational arbitrage and the provision of liquidity. That is, when prices rise above their fundamental ‘fair value’, rational speculators will sell and drive prices back to their equilibrium level. Conversely, when speculators see prices below this equilibrium level, they will buy thus bidding prices up. Reducing speculation would not therefore reduce price misalignments, but rather would enable them to persist for longer periods.

Those taking the opposite view⁵, however, argue that ‘noise traders’ do not tend to move the market towards fundamental equilibrium but, in fact, do the exact opposite. Consequently, a transaction tax that disproportionately targets such traders – such as the Tobin Tax – would, other things being equal, keep prices closer to their fundamental values by increasing the proportion of traders in the market who base their decisions on underlying fundamentals.

⁴ Keynes distinguishes between ‘speculation’ and ‘enterprise’, with the former being akin to gambling, and the latter a financial transaction serving an underlying economic purpose.

⁵ See Stiglitz (1989) and Summers & Summers (1989), for example.

The evidence on this issue remains inconclusive. For example, Umlauf (1993) concludes that the imposition of a transaction tax increased the volatility of the Swedish stock market. Habermeier and Kirilenko (2001) report similar findings, where the imposition of a securities transactions tax increases volatility through a reduction in the volume of trading. Aliber *et al* (2003) find evidence that transaction costs were positively related to volatility (and inversely related to volume) for four major global currencies between 1971 and 1999. In contrast, using a model based approach, Wei and Kim (1987) find transaction taxes reducing volatility in the FX market, a result confirmed in a separate model developed by Westerhoff and Dieci (2004), which employs a behavioural finance approach to the issue.

Interest in the idea of the Tobin Tax grew substantially in the 1990s, largely due to the increased incidence of financial crises in general and currency crises in particular. ‘First generation’ currency crises models⁶ typically saw currency crises as resulting from policy inconsistencies within the countries affected, which prompted rational investors to initiate a run on the currency. That is, they were primarily the ‘fault’ of the countries affected. For many, however, these explanations often did not seem to accord with the facts of crises, with the result that ‘second-generation’ crisis models were developed.⁷ These models stressed the self-fulfilling, herd-like nature of many currency crises, with the role of speculators being key: market actors did not simply respond to changing fundamentals; their behaviour itself shaped those fundamentals. Changing this behaviour would therefore alter the frequency with which crises occur.

Most commentators came to view the second-generation models as being more reflective of the real world, which raised hopes that the Tobin Tax could reduce the incidence of these developmentally damaging events, by influencing the behaviour of speculators. However, this view was countered by the observation that, in many such events, speculators are betting on forcing a devaluation from a fixed exchange rate peg, where ‘success’ might see the currency devalued by 10% or 20%. In the face of potential profits of this magnitude, a small CTT is no disincentive.

This flaw in the original concept was effectively addressed in Spahn (1996), where a two-tier structure was proposed. Under normal market conditions, a minimal (perhaps zero) ‘transaction charge’ would apply to all currency transactions. However, this charge would be augmented by an ‘exchange surcharge’, which would only come into effect when the exchange rate moved outside a predetermined range. In these circumstances, a very high rate of tax would apply to transactions in the affected currency, which would act as a severe disincentive to currency speculators, who would no longer be facing a ‘one-way’ bet. In effect, the Spahn proposal would short-circuit speculative attacks. Indeed, as Spahn argued, in practice the exchange surcharge might never be invoked, since speculators seeing the exchange rate approach the level at which it would become operational would adjust their behaviour to avoid being caught by the tax.

As highlighted above, there is therefore not one Tobin Tax, but two. The Spahn proposal is the most developed example of one of these. Here the aim is not to raise tax revenue, quite the opposite. Indeed, such a system could be said to have failed if it did raise substantial sums. To succeed, the short-circuit mechanism should be so effective that it prevents speculative attacks and currency crises, thereby raising little or no revenue. Consequently, such a framework is best suited to middle-income emerging and developing countries, which wish to protect their economies from the highly damaging impacts of exchange rate volatility and financial crises.

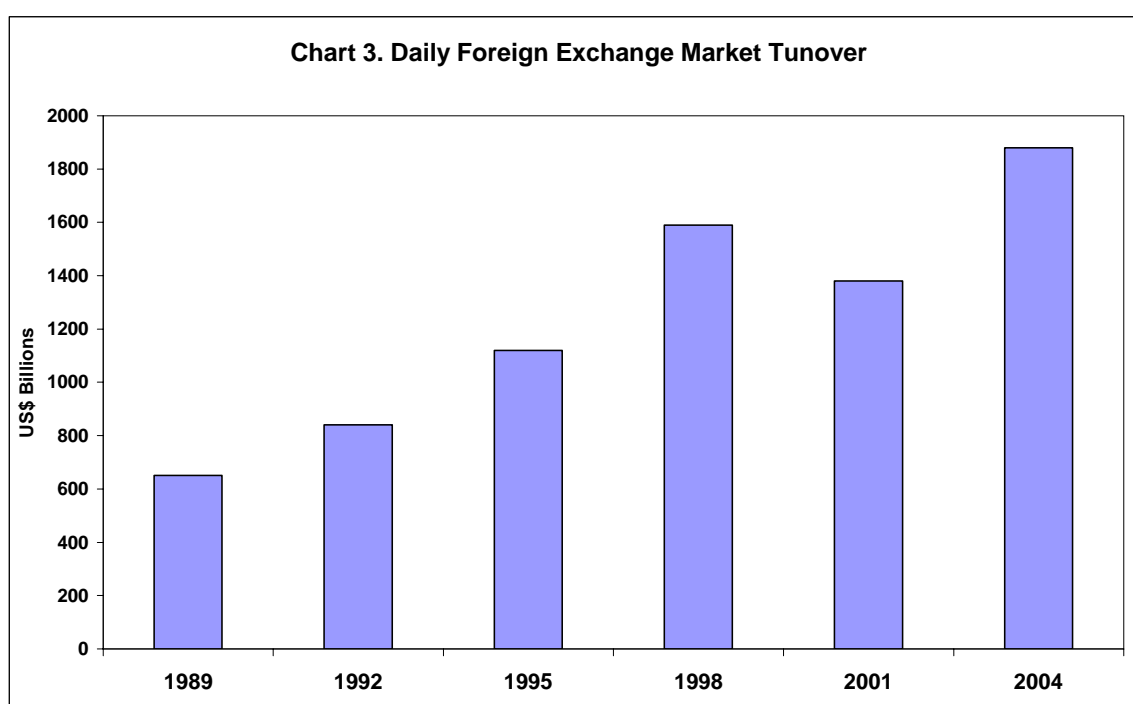
⁶ See Krugman (1979) for the canonical model in this regard.

⁷ See Obstfeld (1986)

The second form of Tobin Tax, however, is quite explicit in its tax raising objectives. This approach is exemplified in Schmidt (2001), where the author demonstrates that, contrary to received wisdom, it is entirely possible for any country, or group of countries, to implement a CTT on their own currency's transactions. Furthermore, although the revenues raised could of course be used for any purpose by the government concerned, it has been historically argued that these should be ring-fenced and used for international development objectives. This approach is therefore suited to developed countries seeking ways to increase aid volume for purposes such as meeting the MDGs.

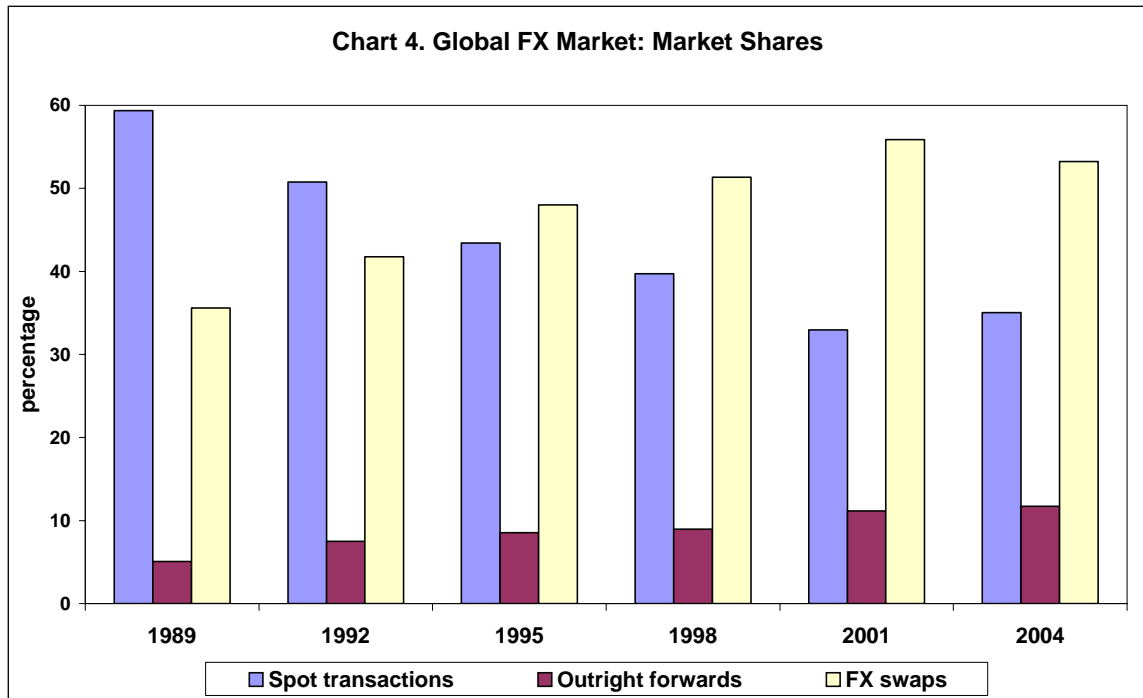
Before describing the proposed approach in detail, the next two sections give a review of broad trends in the global FX market and developments in international payment and settlement systems - trends that are directly relevant to the detailed exposition of our proposal that will follow.

3. *The Global Foreign Exchange Market*



Source: BIS (2005)

In March 2005, the Bank for International Settlements (BIS) released the results of its triennial survey of foreign exchange market activity. The results show that the size of the market continues to grow rapidly, as illustrated in Chart 3 above. Following the fall in daily turnover reported in 2001 – largely the result of the introduction of the Euro, which significantly reduced the number of traded currencies – the upward trend continued. By 2004, global FX markets saw average daily turnover of US\$1,880 billion, which is broadly equivalent to the annual GDP of the United Kingdom.

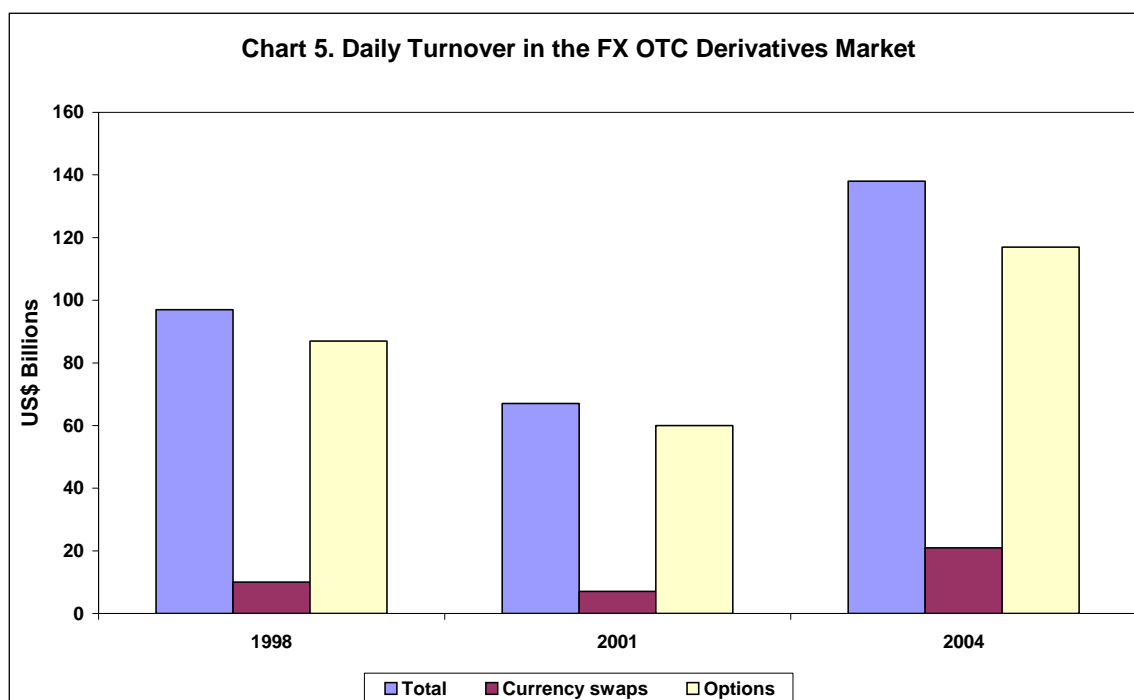


Source: BIS (2005)

Chart 4 breaks down this headline figure into its major components in terms of market share. The biggest change over the period is the relative decline in the importance of the spot market and the increase in the importance of the swap market. However, a closer look at Chart 4 shows this trend reversing between 2001 and 2004, as growth in the size of the spot market accelerated.

Chart 5 shows trends in the OTC FX derivatives market. Although ‘outright forwards’ and ‘foreign exchange swaps’ are classified as OTC derivatives, they are ultimately settled in the ‘traditional’ market. Consequently, the data for these trades are included in the total traditional FX market figures, as shown in Chart 4 above. The derivative figures not included in this section are ‘currency swaps’ and ‘options’, details of which are given below in Chart 7. As can be seen, by 2004, daily turnover equalled \$138 billion, with the overwhelming majority being accounted for by FX options.

Applying the CTT to FX options raises a number of issues, however. First, not all options are ultimately executed, suggesting that the tax could not be levied on this form of transaction. However, this would risk undermining the general effectiveness of the CTT, since traders would naturally gravitate towards the untaxed section of the market, greatly increasing their use of option contracts. To avoid this occurring – and fundamentally to ensure a level playing field – the CTT should therefore also be applied to exercised options. The estimates we provide here for the total annual ‘take’ from the CTT do not include this source, however, as data on the actual proportion of option contracts that are exercised is not easily accessible. However, it is of course reasonable to assume that a reasonable proportion of option contracts are exercised and would therefore be liable for the CTT. Consequently, the figures given for the total global ‘take’ here underestimate the total revenues that would be obtained in practice.



Source: BIS (2005)

This macro overview gives a sense of the sheer scale of the global FX market. However, it says nothing about the mechanics that allow these huge daily transfers of funds to actually occur. For this we must examine developments in domestic and international payment and settlement systems. This is the subject of Section 3.

4. *International Payment and Settlement Systems*

The past two decades have seen major changes in both national and international payment and settlement systems. The most relevant developments, from our perspective, relate to the structure and practice of Large Value Payment Systems⁸ (LVPS), again both nationally and internationally. From the perspective of this paper, it is these changes that make the CTT proposal feasible today in a way that was not the case in the relatively recent past.

The LVPS of any country is fundamental to the smooth functioning of its economy. Consequently, such systems tend to be directly or indirectly owned and operated by the financial authorities of the country concerned, usually the central bank. In the UK, for example, the Bank of England has this responsibility, and describes the importance of this function as follows:

*A payment is a transfer of value between agents. A payment system can then be defined as any organised arrangement for transferring value between its participants. So defined, it is clear that payment systems are fundamental to the functioning of all economies. If transactions are the lifeblood of market economies, then payment systems are the circulation system for these transactions.*⁹

Any LVPS entails inherent risks, which relate to a) the smooth functioning of the system itself – i.e. the efficiency of the ‘plumbing’ – and b) to the behaviour of participants in the system. In particular, a default by any member of the LVPS has the potential to trigger a

⁸ Large Value Payment Systems can be distinguished from large *Volume* systems in that the former typically refer to the wholesale sector, whilst the latter refer to the retail sector.

⁹ Bank of England (2004)

multiplier effect through the system, where the ultimate effect may far outweigh the magnitude of the original default, perhaps even threatening the viability of the entire system.

Much of the reforms to LVPSs that have occurred have been designed to mitigate this ‘settlement risk’, which turns on the timing of payments. Historically, most LVPSs have operated on a Deferred Net Settlement (DNS) basis. In a DNS system, payment orders are accumulated throughout the day, and then typically settled as a block at close of business. Trades are settled on a net basis, thus reducing liquidity requirements on participants in the system, and ultimately the central bank.

Despite these advantages, however, DNS systems do carry particular risks. In particular, settlement risk remains unmitigated until the final net settlement occurs. Up to this point, any participant could default, which given the netted nature of the final settlement, would result in a large proportion of netted trades having to be unwound. The initial default therefore has the potential to trigger further defaults throughout the system, threatening the viability of the entire LVPS. For many, this ‘systemic risk’ inherent in DNS systems had long been unacceptably high, which led directly to the replacement of DNS with Real Time Gross Settlement (RTGS) systems.

In an RTGS system, as the name suggests, payments are settled in real time - i.e. as soon as they enter the system, but in gross rather than netted form. Real time settlement is obviously dependent on the participant in question having sufficient funds within the system to settle the transaction. RTGS systems have the key advantage that, unlike DNS systems, settlement risks do not accumulate throughout the day – thereby cumulatively increasing systemic risk – but are settled on a case-by-case basis as they enter the system.

Crucially, trades are settled *simultaneously* in RTGS systems, thus eliminating settlement risk. This is done on either a payment versus payment (PvP) basis, or as delivery versus payment (DvP) for securities transactions.

One disadvantage of RTGS systems, however, is that by settling on a gross rather than a net basis, participants in the system are required to maintain higher levels of liquidity than is the case with DNS systems. This is a trade-off, wherein central banks have had to balance their desire for robustness, with the desire of participants in the system to minimise liquidity requirements and maximise operational efficiency. Concerns over systemic risk clearly outweighed other considerations in the 1990s, however, when RTGS systems became the dominant form of LVPS, first in developed markets, but increasingly in emerging markets also.

The process of developing and refining LVPSs within countries has been greatly facilitated by advances in IT and communication systems. In particular, for nearly 30 years, financial transactions between institutions have been facilitated by the Society for Worldwide Interbank Financial Telecommunications (SWIFT). SWIFT is a cooperative body owned and managed by its members, which are the world’s major financial institutions. Domiciled in Belgium, SWIFT provides secure messaging services between financial institutions. SWIFT also serves the same function in providing messaging between these financial institutions and a) the infrastructure of LVPSs (e.g. CHAPS in the UK, or TARGET in the EU), as well as b) the respective oversight bodies for each jurisdiction (e.g. the Bank of England or the European Central Bank [ECB]).

Originally, SWIFT developed its own system to perform these functions, but developments in telecommunications – notably the worldwide web – have enabled it to move to an internet based service: SWIFTNet. The SWIFTNet FIN messaging service today has more than 7,500 active users in more than 200 countries. The service sends an average of nearly ten million

messages a day, which are divided into ten categories organised as five separate functions. By far the largest of these functions is messages related to payments.

SWIFTNet also provides secure messaging services to the vast majority of major LVPSs globally, as well as to the major international payment and settlements systems, which have been developed in recent years.

The most relevant of these, for the purposes of this paper, is the Continuous Linked Settlement (CLS) system for settling FX transactions. As described above, a key advantage of RTGS systems is that payment is not deferred, but occurs as orders arrive and are settled on a Pvp or DvP basis. That is, both sides of any transaction are settled simultaneously, ensuring that one side cannot execute its side of the transaction and then run the risk of a default by the other party. In foreign exchange markets, however, which almost by definition are cross-border, this is often not possible due to different time zones.

Historically, institutions have tried to mitigate this risk – often called Herstatt Risk¹⁰ - through bilateral and then multilateral netting systems. Examples of the former include FXNet and VALUENet. These bilateral systems enabled pairs of financial institutions to offset concurrent obligations to each other, leaving only each institution's 'net-net' position to be settled. The Exchange Clearing House (ECHO) subsequently extended this function from two participants to a wider group, where each institution's net-net position was settled through a central party. ECHO ultimately merged with the other large multilateral netting system, MultiNet, as it had become clear that, in order to operate efficiently and cost-effectively, multilateral netting systems needed to include a high proportion of significant international banks.

In 1997, however, the G20 announced the plan to develop CLS, so as to eliminate settlement risk in the FX market. ECHO was brought under the CLS aegis in 1998, before being switched off in 1999. ECHO was ultimately stopped due to its relatively high cost, demonstrating that such systems are only viable if operating with very high values and the highest possible proportion of relevant participants. CLS went live in September 2002, and since that point has grown rapidly.

The CLS system – like the national RTGS systems – settles transactions on a Pvp basis, thereby eliminating Herstatt Risk. CLS is linked to all the national RTGS systems, and settles FX transactions during a five-hour window when the time zones of the major RTGS systems overlap. Up until 06:30 CET, members are able to submit settlement instructions to CLS. At 06:30 members receive their final 'pay-in schedule' for the day and pay the necessary funds into their settlement accounts at their respective central banks (which are directly linked to the CLS system). From 07:00 to 09:00 CLS receives funds from its members' accounts and settles all trades across its books, by paying out to settlement members. If trades cannot be settled due to insufficient funds being transferred – thereby preventing Pvp settlement – they are placed in a queue and regularly revisited until settlement is achieved. By midday, assuming no problems, all funds have been dispersed to members.

¹⁰ On 26th June 1974 at 15:30 CET, the German authorities closed Bankhaus Herstatt, a middle-sized bank with a large FX business. Prior to the closure, however, a number of Herstatt's counterparty banks had irrevocably paid Deutsche marks into Herstatt but, as US financial markets had just opened, had not yet received their dollar payments in return. This failure triggered a ripple effect through global payment and settlement systems, particularly in New York. Ultimately, this fed into New York's multilateral netting system, which over the following three days, saw net payments going through the system decline by 60% (BIS, 2002).

CLS participants are also able to take advantage of its 'In/Out Swap' service, which enables them to manage their funding requirements through multilateral netting with other CLS participants.

CLS is owned by around 70 shareholders, which comprise the major international banks that are active in the global FX market. To be a member of the CLS Bank, and therefore be entitled to hold a multi-currency account, it is necessary to also be a shareholder. There are also a larger – and growing – number of third-party members of CLS, who do not hold their own accounts, but are customers of settlement members, who act on their behalf in settling FX trades. In 2004, it was estimated that around 80% of third-party members were banks. However, CLS is becoming increasingly attractive to non-bank financial institutions, and is specifically targeting this market with a number of initiatives.

In particular, through its 'Enhanced Fund FX' programme, CLS has the capability to settle FX trades for both treasury and securities clearing. The CLS expects the next wave of participants to be fund managers working in the pension fund sector, as well as the asset management divisions of banks and insurance companies.

Today, CLS settles about half of all FX trades globally, and 60% of all interbank FX trades. This represents a doubling of market penetration in the past year, and the bank now settles 90% of all its members FX trades. The stated aim of the bank is to settle 90% of all FX trades globally, and if current growth rates continue, it seems likely that they will reach this figure within a few years.¹¹

The ease with which a universal CTT could be implemented at the global level is greatly increased by this, efficient, computer-driven and largely automated interlocking system of payment and settlement systems. As suggested above, all that is lacking to make this a reality is the political will to do it. However, this paper also argues that a CTT could be implemented by any country that chose to do so on a unilateral basis. Taking the UK as an example, Section 5 details how this could occur in practice.

5. Implementing a CTT at the National Level: the UK's Payment and Settlement System.

The UK's payment and settlement system is one of the world's largest, reflecting both the size of the UK economy, and London's role as an international financial centre. In 2003, for example, around £130 trillion passed through the various parts of the system, which is equivalent to 120 times UK GDP. To put this into perspective, around 50% of the UK's annual GDP passes through the UK's payment system on every business day of the year. (Bank of England, 2004)

The Bank of England Act of 1998 sets out the powers and responsibilities of the Bank of England (hereafter "the Bank"). Under the Act, the Bank has statutory power to maintain price stability, and, in conjunction with the other key UK financial institutions (the FSA and HM Treasury¹²) is also charged with:

- Maintaining the integrity and value of the currency;
- maintaining the stability of the financial system, in both domestic and international sense; and,
- seeking to ensure the effectiveness of the UK's financial services sector.

¹¹ From 2004 –2005 the volume of transactions being settled in CLS doubled, for example.

¹² The relationship between these three parties is formally set out in a Memorandum of Understanding (MOU) between them, which establishes the roles each party is expected to perform.

Clearly, maintaining the integrity and efficiency of the payments and settlement system is central to these functions. In the payments sector, the key private sector organisation is the Association for Payment Clearing Services (APACS), which represents the major banks and provides a forum for them to discuss payment issues. APACS is currently comprised of three clearing companies, with each focusing on one aspect of the payment system:

1. CHAPS Clearing Company
2. BACS Ltd.¹³
3. Cheque and Credit Clearing Company.¹⁴

For the purposes of this paper, the Clearing House Automated Payment System (CHAPS) is the most important of these bodies. CHAPS is the organisation through which most high-value wholesale payments are processed, and it operates under an RTGS system, of the form described above. CHAPS provides two different types of clearing: sterling and the Euro. CHAPS sterling moved from a DNS to an RTGS system in 1996, and CHAPS Euro began operations - also using RTGS - in 1999.

CHAPS Euro connects to the European Union's LVPS, which is called TARGET, with the result that members are able to process both domestic and cross-border payments through the CHAPS system. From 2001, both CHAPS systems have been fully integrated, and now operate on a common technical platform run by SWIFT.

For all the UK's clearing systems, there is a two-tier structure similar to that more recently developed by the CLS. That is, direct settlement members hold accounts at the Bank of England, which are credited and debited using RTGS to settle their trades. Indirect, third-party members access the CHAPS system via their links with direct members, much as occurs with CLS Bank.

The Bank plays a pivotal role in each of the UK's payments systems in four main ways. First, it is a member and shareholder of each of the clearing systems, as well as of APACS. Second, it owns and operates the RTGS system upon which the payment and settlement systems rely. Third, the Bank facilitates payment flow in CHAPS by providing intraday liquidity through repo agreements.¹⁵ Finally, given its responsibility for safeguarding the stability of the UK's financial system, the Bank plays an active role in ensuring systemic risks are adequately managed and controlled.

In addition to the three payment systems described, the UK has three separate clearing organisations that deal with securities transactions. These are: (1) the London Clearing House (LCH), which provides clearing services for the London International Financial Futures Exchange (LIFFE); (2) the European Central Counterparty (EuroCCP), which provides clearing services for NASDAQ Europe; and (3) CREST, which is the primary settlement system for UK securities, government bonds and corporate bonds.

CREST is operated by CRESTCo, which assumed responsibility – from the Bank - in 1999 for settling gilts and other sterling debt (CGO), and money market instruments (CMO). CREST has developed increasingly strong links with other securities clearing organisations in

¹³ The BACS system handles electronic payment orders.

¹⁴ As the name suggests, the Cheque and Credit Clearing Company handles paper items such as cheques.

¹⁵ A repo – or 'repurchase' – agreement, is a financial transaction in which a market actor sells securities and simultaneously agrees to buy them back at a higher price at a later time. It is therefore, effectively a means of borrowing money. In a reverse repo agreement, the market actor does the opposite by buying securities and agreeing to sell them back at a higher price at a later date.

Europe and North America, enabling non-UK transactions to be settled in CREST. As a culmination of this process, CREST merged with Euroclear in 2002.

Following the closure of CGO and CMO the Bank is therefore less directly involved with clearing and settling securities based transactions (CPSS, 2003), but obviously retains its overarching oversight function. In addition to overseeing these major UK payment systems, the Bank performs an oversight role with respect to SWIFT. This is considered necessary because of SWIFT's importance to the UK economy: the UK accounts for 17% of all SWIFT messages globally; the highest proportion for any country.

In addition, the Bank owns and operates the RTGS system upon which CHAPS sterling and CHAPS Euro rely, placing it at the heart of the UK's largest and most systemically important payment systems. Finally, in the international sphere, the Bank also has a joint oversight role for the CLS system in conjunction with other major central banks, with the US Federal Reserve having the primary responsibility in this regard.

As with other major central banks, the Bank of England's oversight functions are benchmarked against the *Core Principles for Systemically Important Payment Systems*, produced by the BIS.¹⁶ The fact that the other major central banks also use the Core Principles as a benchmark facilitates smooth and effective cooperation between both the central banks themselves, and the systemically important payments systems that they oversee. The Core Principles therefore provide a 'level playing field', which ensures that systemically important payment systems in different countries are similar enough to enable effective cooperation and interaction between them.

To summarise, the last two decades have seen significant changes in the practice of payments and settlement systems globally. As overseeing authorities have sought to reduce settlement risk *and* enhance systemic efficiency, DNS systems have given way to RTGS systems, where – at least domestically – settlement risk is effectively eliminated due to the use of PvP and DvP. In general terms, advances in IT have led to greater uniformity, as heterodox forms have gradually been replaced by a more homogenous approach based on commonly used technical platforms, thereby greatly reducing costs through increased efficiency. Major LVPSs in developed countries are increasingly interlinked and interdependent. They rely on the same – or similar – technological infrastructures, which ensure that this interdependence functions smoothly and effectively. The messaging function pioneered by SWIFT has become central to this process, as economies of scale considerations have made it increasingly sensible for all global players to use the same system.

Internationally, cross-border FX settlement risk – one of the last remaining 'outposts' of settlement risk in the global financial sector – has also been addressed with the launch of CLS, which enables FX transactions in different time-zones to be settled on a PvP basis.

Therefore, whilst the Bank of England – and any other comparable national agency - has responsibility for ensuring the effective functioning of systemically important national payments systems, no country is an island in this regard. Rather, they operate in an interconnected global network of central banks and interlinked national payment systems, and cooperate in the oversight of cross-border payment systems such as CLS.

The next section sets out the case for national and global CTTs in the context of these developments. We shall see how the automation and standard messaging systems described make such a tax feasible, regardless of the number of countries that adopted it. Furthermore,

¹⁶ Of the ten Core Principles, the first addresses legal risks; Principles II-VI cover financial risks; Principle VII deals with operational risk issues, while Principle VIII addresses efficiency in the system; Principle IX covers criteria for system access, and Principle X focuses on governance.

we shall also see how the interdependence that has been described makes avoidance of such a tax extremely difficult. Finally, we shall see how the benefits of the developments described above – in terms of efficiency, cost and systemic stability – outweigh the cost of a CTT set at the a low rate, or one designed to prevent speculative currency attacks. Given this, there would be no realistic incentive for banks and other financial institutions to seek to move outside the existing frameworks in order to avoid the tax, and the larger the group of countries that those to implement a CTT the more difficult avoidance would be. To do so would be hugely expensive, would make previous large capital expenditure on ensuring system compatibility a ‘deadweight’ cost, would reduce systemic efficiency (and increase operational risk) and carry significantly higher operating costs on an ongoing basis.

Importantly, however, to be permitted (by their respective central banks) to exit the interconnected system of payment and settlement systems that have been described, financial institutions would have to build a parallel system that effectively dealt with Herstatt Risk, that was acceptable under Basel 2 and that was compliant with anti money laundering regulations. Such a system could not avoid the CTT proposed here.

6. National and International Currency Transaction Taxes

As detailed in Section 4, the past two decades have seen significant changes in the way FX transactions are settled both nationally (using RTGS systems) and internationally (using the CLS Bank). It has been suggested that these developments have made a unilaterally implemented CTT feasible, which has not always been the case. Schmidt (2000) puts the issue as follows:

“...the infrastructure for settling foreign exchange trades is increasingly formal, centralized and regulated. This is due to new technology, subject to increasing returns to scale, and to cooperation between trading and central banks to reduce settlement risk. Settling a foreign exchange trade requires at least two payments, one of each of the currencies traded. Settlement risk is eliminated when payment obligations are matched and traced to the original trade, and then payments are made simultaneously. The technology and institutions now in place to support this make it possible to identify and tax gross foreign exchange payments, whichever financial instrument is used to define the trade, wherever the parties to the trade are located, and wherever the ensuing payments are made.”¹⁷

To be effective a CTT would need to have the following attributes:

- a) It could be implemented relatively easily and cheaply, using existing market infrastructure and networks.
- b) It would capture the vast majority of transactions participating currencies globally.
- c) It would be set at a low level and would therefore neither distort the market or provide incentives for financial institutions to move outside current systems in order to avoid the CTT.

The rest of this section will provide details of how the approach proposed here meets each of these three criteria, after which Section 6 will evaluate real and potential objections in each of these areas.

6.1. Implementing a national CTT in the UK

Since the launch of the CLS Bank in 2002, a growing share of sterling transactions has migrated to it. Today it is estimated that a little over 50% of all global sterling trades are settled through CLS. Of the remainder, the overwhelming majority are processed through the UK’s CHAPS RTGS systems, which is directly connected to the CLS member banks, and

¹⁷ Schmidt (2000:1)

through this link also connected with the other major national RTGS systems. Furthermore, CHAPS Euro is directly linked to the EU's RTGS system, TARGET.

To be effective, therefore, a UK CTT must be implemented at a number of levels. The most straightforward of these is through CLS Bank. As pointed out above, more than 50% of all sterling transactions are settled in the CLS system, where it would be a straightforward task to identify sterling transactions.

In time it is highly probable that an ever-larger proportion of FX transactions will be settled through the CLS system. The objective of the CLS is to settle 95%¹⁸ of all FX trades globally, which given growth in market share since the bank's launch, does not seem an unreasonable aspiration. Consequently, over time the proportion of FX trades on which a national CTT could be directly levied through CLS is likely to rise steadily. A key driver in this regard is the economies of scale and intra-organisational efficiency gains that can be achieved through a large financial institution moving all of its FX operations to CLS. Growth in new participants to CLS continues apace. Once an institution becomes a participant, however, they face strong incentives to move all of their FX business to the system. This is demonstrated by the fact that, although CLS settles around half of all FX trades globally, it settles around 90% of its members' trades.

Returning to the UK example, having accounted for more than 50% of all sterling FX trades, the CTT must also address the remainder. By far the most important organisations in this regard, is the UK's LVPS – CHAPS. Here, the developments in the LVPS sector that have been described are key to the feasibility of implementing an effective CTT.

CLS was launched with the aim of removing Herstatt risk. A key consideration in this regard, was that this risk had already been effectively removed from domestic LVPSs through the introduction of RTGS systems, and, in particular, the development of PvP and DvP networks. What does this mean in practice?

Domestically, we can imagine a situation where UKBank1 wishes to purchase a UK financial asset from UKBank2. If the sale price is agreed, UKBank1 sends a SWIFTNet message to the relevant LVPS with an instruction to debit its settlement account at the Bank of England, and to credit the settlement account of UKBank2. At the same time, UKBank2 sends a SWIFT message requesting ownership of the relevant asset be transferred to UKBank1. SWIFT then matches the two messages, and after requesting and receiving confirmation from both banks, transfers both the sterling amount and the ownership of the asset. In this instance, both sides of the transaction are in sterling and therefore represent a domestic transaction that does not attract the CTT.¹⁹

Internationally, however, the situation is rather different. Suppose UKBank1 wishes to buy US dollars for sterling. UKBank1 makes an offer to USBank1 (through any of a number of possible channels) and the offer is accepted. As with the domestic example, UKBank1 then sends a SWIFT message to the LVPS requesting it to debit its settlement account at the Bank of England for the appropriate quantity of sterling, and to credit the account of UKBank2 at the central bank (we assume that USBank1 keeps its sterling holdings with an account at UKBank2, which reflects standard international banking practice). At the same time, USBank1 sends a message to its LVPS requesting that the appropriate dollar amount is transferred from its balance to that of USBank2 (again, we assume that UKBank1 keeps its US dollar holdings in an account with USBank2).

¹⁸ See interview with Joseph De Feo, Chief Executive of CLS Bank, 9 September 2004, *FX&MM* magazine.

¹⁹ This stylised example is an adaptation of that used in Schmidt (2001).

In the UK, SWIFT requests confirmation of the trade from UKBank1, upon receipt of which it debits UKBank1's account at the Bank of England, and credits that for UKBank2. Unlike the domestic transaction, however, it is unable to match the message from UKBank1 to another sterling based message in the system. Therefore, although domestically the PvP process requires matching of trades and removes settlement risk, an international FX trade cannot be done on a PvP basis, as each leg of the trade takes place in different domestic LVPSs operating in different time-zones – indeed, it was this particular feature of the international FX market, which first led to the creation of cross-border multilateral netting systems such as ECHO, and ultimately to the launch of CLS bank. A consequence of this feature of modern LVPSs, however, is that the failure to match both legs of a transaction in sterling identifies the transaction as an FX trade, upon which the CTT could be levied.

It is clear therefore that a CTT could feasibly be implemented unilaterally in the UK, and through both CLS and CHAPS would be able to identify the overwhelming majority of sterling transactions undertaken globally. The same is true for any country – or group of countries – that operate a modern payment and settlement system of the kind describe above, which is the case for all developed countries and an increasing number of middle-income developing countries as well. As the stylised example above makes clear, this is to some extent because of the PvP systems in domestic LVPSs, as well as the PvP approach employed by the CLS Bank. The 'fuel' that drives this process and makes it possible, however, is the ubiquity of standardised messaging formats within the financial sector.

A key feature of the various interlinked systems through which sterling FX transactions can be settled is their use of the SWIFTNet messaging system. Importantly, SWIFT also provides messaging services for major electronic FX trading platforms such as FXall, as well as for the major global bilateral and multilateral FX netting systems, past and present.

Within each of the systems in which it operates, SWIFTNet provides secure payment messaging between members through its FIN system and, crucially, has a dedicated message form – the MT300 – which is used to confirm individual FX trades. That is, whether in CLS, CHAPS, TARGET, FXall or a multilateral netting system, an FX trade is confirmed between the counterparties by means of a SWIFTNet FIN MT300 message, or one of its variants.

The MT300 message performs the following functions:

- Confirm the details of a new FX contract between the parties.
- Confirm an exercised foreign currency option
- Confirm the details of an amendment to a previously sent confirmation
- Cancel a previously sent confirmation.

The MT300 message is initially exchanged by or on behalf of the parties that have agreed to a foreign exchange contract. The fact that MT300 messages also provide notification of amendments to contracts and cancellations of previously held confirmation is very important, as it ensures that the CTT is only levied on FX transactions in the form in which they are ultimately transacted. Also, because MT300s confirm individual FX trades, they precede any subsequent bilateral netting process that may occur, after which identifying the individual trades concerned may not be possible.

Within each MT300 message, a number of fields must be completed. Obviously for an FX trade, the currencies concerned and the amounts bought and sold are included here. In the Mandatory Subsequence sections of the MT300 message, the relevant sections are B1 (Tag 32b) for the currency and amount bought, and B2 (Tag 33b) for the currency and amount sold. Consequently, all the information needed to identify FX transactions for any currency is already in place. No dedicated infrastructure would be required.

The MT300 messaging system can therefore capture the lion's share of transactions in the 'traditional' FX market. However, this still leaves the important area of the OTC derivatives market. In one important respect, this market is also covered by the MT300 messaging series, as the bulk of derivatives transactions are ultimately settled in the traditional market. Furthermore, MT300 messages are also used to confirm that FX options have been executed. In this case, MT305 and MT306 are used as messaging formats.

All other FX OTC derivative contracts are contained within the 3rd category of SWIFTStandard messaging formats, which range from MT300-MT341 and from MT350-MT399. As with the spot market, messages require the currency, amount and counterparties to be identified within the message, as well as the facility to amend or cancel contracts.

The next piece of 'plumbing' is to gather relevant messages of this form in a central location, to enable the CTT to be levied. Again, however, we are able to 'piggy-back' upon existing networks by using the SWIFTNet FIN Copy messaging function.

SWIFT describe the Copy service as follows:

The SWIFTNet FIN store-and-forward messaging service includes the option of automatically sending copies of messages to a third party by means of the SWIFTNet FIN copying services. The simple, flexible and secure functionality of FIN Copy and FINInform caters to the diverse needs of the SWIFT community in a broad range of scenarios, such as clearing and settlement, monitoring and reporting and third-party or outsourced services.²⁰

The majority of recipients of SWIFT FIN Copy messages are central banks, as the messages facilitate settlement in the centralised RTGS systems described above. To perform this function, Copied FIN payment messages take the Y-Copy Form, where the message is sent to the central bank – but not the counterparty – in the first instance. Once the central bank has established that the bank initiating the transfer has sufficient funds in its settlement account, the transaction is performed and the message released to the counterparty.

For our purposes, however, the simpler T-Copy form, where the copied message is released to the central bank at the same time as to the counterparty, is closer to what is needed. A problem with both Y and T Copies, however, is that they are automatically triggered regardless of the type of message. The ideal template, however, is the FINInform, where copied messages are triggered to the central bank depending on either the identity of the parties or, crucially, the type of message sent.

A key aspect of the proposal is therefore to establish a SWIFTInform messaging service, which is triggered by the sending of an MT300-MT399 FX trade confirmation message, in either the spot or the OTC derivatives market. In this instance, a copy of parts of the message – currency, volume and counterparties – is automatically sent to the responsible national agency (usually the central bank) for every FX transaction involving its own currency. As with all aspects of the proposed approach, this process would be automated.

The next aspect of the proposal considers how, when in receipt of this information, the CTT would be collected.

²⁰ See, *FIN Copy and FINInform: The SWIFTNet FIN copying services* at: <http://www.swift.com/>

6.2. Collecting a CTT & Preventing Avoidance

Once identified in the manner described above, collecting the CTT would be a relatively straightforward process. To be able to participate in the CLS system, financial institutions must hold an account with the CLS Bank. However, in practice, members of CLS actually hold their accounts within their own central banks. These accounts can then be credited and debited in accordance with their liquidity requirements for CLS Bank. To collect the CTT from the CLS system, therefore, the tax could be directly taken from the relevant accounts, perhaps being transferred to another central bank account held by the national tax collecting agency in question.

Similarly, in order to be a member of a national LVPS, a financial institution must hold a settlement account at the central bank. Therefore, once the tax to be paid is identified and traced to the LVPS member, it too can be transferred from the relevant settlement account held at the central bank.

As with the majority of everyday operations in both CLS and CHAPS, this process would be entirely automated. The SWIFT messaging system in general – and the FINInform Copying function in particular – is also completely automated on a day-to-day basis. Consequently, though the relevant systems would have to be slightly modified to facilitate tax identification and tax take from the appropriate centrally held accounts, the changes would be relatively minor. Furthermore, once the fixed, start-up costs were met, the marginal cost of operating the system would be very low.

Direct members of both CLS and most national LVPS are relatively few in number, with a significant proportion of all trades being undertaken by members on behalf of their third-party customers. Whilst these market participants would not be directly taxed, they would be affected by the CTT, which would be directly reflected in the spread charged them by CLS/LVPS members in exchange for executing their FX business.

The remaining FX trades undertaken outside this system – by corporations, for example - would still be identified by use of the SWIFTNet messaging service described. Furthermore, these trades would be settled by correspondent banks on behalf of the underlying corporate. These correspondent banks would hold accounts with the central bank, CLS, or both. Consequently, such trades would ultimately also incur the tax.

On average SWIFT messages cost approximately £0.067 each. CLS settles 100,000 transactions a day, which is about half of all FX trades. To capture the entire FX market, therefore, we have 200,000 messages a day, which equates to a cost of £13,400 per day, or around £3.5 million per year. If we assume the same running cost for central banks to set up their own systems to manage this inflow of information, we reach a little over £7 million, or US\$12.75 million, as the annual running costs.

7. Estimates of Annual Revenue Potential of National, Regional and Global CTTs.

In terms of determining the appropriate rate for the CTT, the primary concern is not with maximising revenue *per se*, but with striking a balance between raising sufficient revenue to make a contribution to meeting the MDGs, and with avoiding significant market distortions under normal conditions.

Table 3, illustrates the annual revenue raising potential of a CTT for individual countries as well as at the global level. For comparative purposes, estimates are given for a tax set at 0.005% (i.e. half of one basis point) and for 0.01% (or one basis point)

Table 3: Annual CTT Revenue potential (US\$ billions)		
Country	0.005%	0.01%
USA	10.744	20.936
Eurozone	4.304	8.388
Japan	2.493	4.858
UK	2.071	4.035
Australia	0.748	1.457
Switzerland	0.589	1.148
Canada	0.571	1.114
Other	0.410	0.526
Hong Kong	0.455	0.887
Sweden	0.345	0.672
Norway	0.216	0.420
Korea	0.194	0.378
Denmark	0.197	0.383
Singapore	0.160	0.311
Mexico	0.122	0.237
South Africa	0.143	0.279
New Zealand	0.102	0.200
Russia	0.058	0.113
Poland	0.079	0.154
India	0.059	0.115
Taiwan	0.050	0.097
Hungary	0.035	0.069
Thailand	0.035	0.068
Brazil	0.028	0.054
Czech Republic	0.025	0.048
Chile	0.019	0.037
Malaysia	0.015	0.029
Totals	\$24.267	\$47.015

As can be seen, the estimate for a CTT implemented universally at the 0.005% level would be US\$24.26bn, while a 0.01% CTT would yield something in the order of US\$47bn.

As well as the ‘traditional’²¹ FX market, however, the proposal is that the CTT should also be levied on the OTC FX derivative market trades not included in the traditional market estimates – i.e. currency swaps and FX options, with the overwhelming bulk being accounted for by the latter. Indeed, in order to capture the highest possible proportion of trades, and to prevent market participants leaving the traditional market for untaxed derivative market in order to avoid the CTT, it is essential that the full derivative market is covered within the framework.

As with the traditional FX markets, FX option contracts, if executed, require a transfer of payments and trigger a specific SWIFT message. As with the description above, therefore, such payments can be identified using the same SWIFTNet FINInform messaging, and taxed directly through settlement accounts held at the relevant central bank. Given uncertainty over the proportion of FX options that are ultimately executed, however, we do not include this source of revenue in our total estimate of the CTT’s annual ‘take’.

These estimates incorporate the assumption that the implementation of a CTT has an impact upon volume traded, though given the extremely low level of the tax, the impact is likely to be negligible. However, in order to err on the side of caution, we assume a 5% reduction in the volume traded at the 0.01% rate, and a 2.5% reduction for the 0.005% rate. The 5% figure is based on a report written for the UN on the revenue raising potential of currency transaction taxes (Nissanke, 2003),²² which assumes a 0.01% rate.

²¹ FX spot transactions, outright forwards and foreign exchange swaps.

²² Some of the fall in volume could reflect a migration to stock exchanges, where FX deals can be executed by trading stocks denominated in different currencies. This practice already occurs to some extent, though its potential growth is limited. However, traded stocks are also settled in centralised systems of the kind described in this paper, and could therefore be brought within the ambit of the CTT relatively easily.

In terms of the impact of the tax, this will be widely spread throughout the international financial system.

Bank	Market Share
Deutsche Bank	17%
UBS	12.5%
Citigroup	7.5%
HSBC	6.4%
Barclays	5.9%
Merrill Lynch	5.7%
JP Morgan Chase	5.3%
Goldman Sachs	4.4%
ABN Amro	4.2%
Morgan Stanley	3.9%

Although relatively few large international banks dominate the global FX market – as shown in table 4 - the trades are ultimately undertaken for the wide range of clients of these banks – for example, CLS estimate that an average of 200,000

separate transactions are settled every day, which gives some sense of the number of ultimate participants in the global FX market, suggesting an average trade size of \$9 million. Consequently, the CTT will be passed on by the major international banks to their clients in the form of a slightly higher spread so that the impact of the CTT will be dispersed throughout the FX system, with minimal impact on any one institution.

7.1. Incorporating the Two-Tiered Spahn Option

As we have seen, there are two possible forms of CTT. The first has been described in detail above, however, how - if at all - does Spahn's two-tier option fit into this framework? The first point to reiterate is that the two versions of the CTT are designed to achieve different objectives. The first is simply a means of raising revenue for international development, and therefore needs to be levied at a low rate so as to avoid unduly impacting upon the FX market. The second, in contrast, is not designed as a revenue-raising tool, but rather as a means of preventing speculative attacks on currencies. Clearly, therefore, the former is more suitable for developed countries, while the latter is more suited to middle-income developing countries.

Given this, one obvious means of combining the two forms of CTT would be to implement the revenue-raising version in developed markets and the two-tiered version in middle-income developing countries. However, would this be compatible with the framework for identifying and collecting the tax that has been described? In short, the answer is yes. Indeed, it is the use of standardised SWIFT messaging, in particular, that makes this possible. As described above, any SWIFT message contains a number of 'field's that must be filled in. These relate to counterparties, the type of transaction, and so on. However, another field for FX transactions also requires the exchange rate which has been agreed to be entered, and it is this that enables the two-tiered option to be incorporated into our structure. In a recent assessment of the feasibility of implementing a CTT at the European level, Jetin & Denys (2005:113) explain the point as follows:

Another very important point is the presence of field 36 (exchange rate): We have precisely here the technical instrument necessary to implement the two-tier CTT when a customer orders a foreign exchange transaction. If the exchange rate included in the message is outside the band on the date and time of the transaction, then the surcharge is applied to the ordering or beneficiary institution according to pre-agreed rules. This validates technically the Spahn proposal in a very simple way.

With Spahn's proposal, the 'exchange surcharge' only comes into effect once the exchange rate moves beyond a certain predetermined range. The rate in normal times could therefore be set at zero, rising to punitive rate automatically, once exchange rates move beyond the agreed

range. This movement will be immediately captured and identified by the SWIFT messaging system, allowing the tax to be collected in an identical way to that described above.

Of course, there is no reason why the two versions of the CTT need be mutually exclusive. That is to say, it would be entirely possible to have a revenue raising CTT (set at 0.01%, for example) coupled with an ‘exchange surcharge’ that kicked-in once currencies breached the agreed range. In some relatively stable developed markets this would not occur very frequently of course, if at all. For middle-income developing, however, the higher levels of volatility that their exchange rates are subject to would be greatly reduced – and possibly eliminated – by the known existence of an ‘exchange surcharge’ that would come into effect when triggered by extreme exchange rate volatility.

Such a combination might offer the best of all worlds. Large sums could be raised annually for development purposes, whilst damaging exchange rate volatility would be greatly reduced or eliminated. Volatility of this kind is extremely damaging for developing and emerging economies. Indeed, international financial stability has been rightly described in terms of global public goods. The greater stability that the two-tiered CTT would bring to global FX markets would therefore bring major benefits to developing economies, and also to developed markets whose currencies experienced irrational speculative attack or are subject to unjustified levels of volatility.

To summarise, we have seen how developments in international payment and settlement systems, have resulted in an interrelated global network, which is ‘lubricated’ by common technological and communication systems. It is precisely this highly interdependent network that makes it feasible today to unilaterally implement a CTT. In order to avoid producing market distortions, we have shown that a tax set at the level of one basis point on all FX transactions – either nationally, regionally or globally – is feasible and highly efficient means of significantly increasing the global funds available for making progress on the MDGs.

Some broad estimates of the likely annual revenues that would be raised through the CTT have been produced, suggesting that a maximum global figure in the region of \$47 billion if all countries were to implement. When compared with the estimated running costs of the system given in Section 6.2, it is clear that the cost of administration and collection of the duty would be minimal, maximising the amount available for international development purposes.

Finally, it has been shown that the two-tiered version of the CTT is fully compatible with our proposed framework, and brings the significant additional benefit of sharply reduced global exchange rate volatility and a means of ‘short-circuiting’ speculative attacks on currencies.

Clearly, if the CTT were to be introduced globally, avoidance would not be an issue. The only way that financial institutions could avoid the tax would be to presumably move to a different planet, but it is likely that the shortage of customers would prevent this from being an attractive option. However, discussions of the feasibility of unilaterally implementing a CTT have produced considerable scepticism.

The next section will therefore deal with questions that are often raised in relation to the proposed unilateral CTT.

8. *What are the objections?*

In its modern incarnation, critiques of proposals to unilaterally implement a CTT can be grouped under the following four headings:

- i) If implemented within the CLS, the tax would encourage institutions to leave CLS to less safe, settlement methods, thereby reintroducing Herstatt Risk into the FX market.
- ii) The tax would encourage a return to large-scale netting
- iii) The tax would encourage institutions to move their transactions into the derivatives market to avoid the CTT.
- iv) The tax would encourage institutions to settle their trades outside the jurisdiction of the country implementing the CTT, where it could be avoided.

The remainder of this section will assess the validity of each of these hypotheses in turn.

8.1. Would the CTT encourage a move away from the CLS system?

As has been discussed, the primary reason for establishing the CLS Bank, was to eliminate settlement risk – as manifested with the collapse of Herstatt Bank – from cross-border FX transactions. In this, CLS has been remarkably successful.

Since its launch in 2002, the system has worked virtually flawlessly. By moving to a PvP system in a dedicated settlement window that applies for all participants globally, CLS has removed one of the largest remaining risks in the financial system for its participants. As described in Section 3, this initiative is particularly important given the huge size of the global FX market. Considering the sums involved in daily transactions, the failure of a major international bank involved in the FX market, has the potential to produce a ripple of systemic risk around the world, with unknowable consequences for both individual banks and, ultimately national and international payment and settlement systems.

This concern is serious, however. If the implementation of the CTT by one country, or group of countries, *did* result in existing members leaving the CLS system, or provided a strong disincentive for those considering joining the network, this would have serious consequences. In what follows, however, we shall demonstrate that, ultimately, these fears are unfounded, not least because the CTT would also be levied on transactions outside the CLS system, rendering the issue of leaving CLS to avoid it rather meaningless.

Having said that, even if this were not the case, the hypothesis is incorrect. For this to be the case, the costs of paying the CTT would have to be greater than the benefits which accrue from membership of the CLS system. This is therefore a straight cost-benefit question. How do the two sides of the equation stack up?

Before addressing the costs to CLS members of paying the CTT, we will consider the benefits they derive from CLS membership and, where possible, attempt to quantify these to allow a direct cost-benefit comparison.

CLS members face both fixed and variable costs as a result of their membership of the system. On the fixed cost side, these relate to the cost of developing IT systems, organisational logistics and the training of staff to enable them to function on the system. If a member were to leave CLS these costs would be ‘dead-weight’, and must therefore feature in any sensible cost-benefit assessment. Furthermore, the costs of leaving would effectively double this figure, as the systems and processes put in place would have to be removed and replaced with new systems.

From the variable cost perspective, there are a number of relevant factors that need to be considered.

- First, transaction costs on CLS differ significantly from what was (and remains) the case under any alternatives.
- Second, liquidity requirements/net funding costs also differ significantly under CLS. This is a serious concern for major international financial institutions, and again no assessment of the costs and benefits of remaining within the CLS system can be made without taking this issue into account.
- Third, CLS membership brings differential treatment under the new Basle Capital Accord due to varying risk factors in different settlement systems. Again, an assessment of the benefits and costs to banks in this respect must be incorporated in the analysis.
- Finally, there are a number of less quantifiable factors that will also weigh heavily in any such decision.

8.1.1. Fixed costs of joining CLS

To be a full member (and therefore shareholder) of CLS Bank requires a \$5 million subscription fee. However, as presumably a member/shareholder who wished to leave the system would be able to sell its shareholding – assuming another party wished to buy it – it should be possible to recoup some or all of this upfront investment.

The same does not hold for investment in the internal systems required to operate effectively within the CLS system. For example, upfront investment in IT systems is likely to account for a large part of the potentially dead-weight fixed costs of joining CLS. In 2004, the TowerGroup conducted a survey of financial institutions to assess the costs and benefits of CLS participation. In terms of fixed costs, there results were reported as follows:

The Tower Group (the financial services IT research and consultancy) has estimated the total spending by settlement members, user members and third parties for changes and enhancements to existing IT applications to be approximately US \$183 million between 1999 and 2003. This expenditure will be similar to that for the euro and Y2K in the sense that it is a one-off cost for related enhancements. Given that the top 25 member banks, who will market CLS services globally, are likely to spend up to US \$5 million on IT applications, one has to question whether there is an alternative.²³

Clearly, such investment is a one-off and is specific to the system needs of CLS. That is, if a bank were to leave CLS, the systems they had developed – at a cost of up to \$5 million per bank – would not be compatible with any potential alternatives. Therefore, not only would the \$5 million be effectively lost, but also IT systems would have to be fundamentally changed to be compatible with another system, at considerable additional costs.

Third-party participants in CLS obviously face lower fixed costs, though it is reasonable to assume that these would not be negligible. Furthermore, third-party participants directly benefit from the larger up-front costs incurred by full settlement members, without which they would have no access to the benefits of the CLS system.

By the middle of 2003, CLS Bank had approximately 50 direct settlement members, and 70 third-party members. If we therefore assume an average up-front investment of \$4 million for the top 25 member banks, and an average \$2 million investment for the remaining 25 members, we can assume that third-party participants have incurred upfront investment costs relating to IT systems of approximately \$0.5 million each. These are not negligible sums, particularly for some of the smaller third-party players. However, if they were to leave the CLS this would be lost, and further investment would be required to engineer new IT systems.

²³ See <http://www.gtnews.com/payments/clsreport.cfm>

8.1.2. Variable cost differential of CLS participation vs. alternative systems

Prior to its launch, proponents of the CLS system argued that, despite the relatively high up-front investment costs, participants would see benefits in terms of lower variable – or operating – costs. For the purposes of this paper, we can divide these into distinct categories:

a) Efficiency gains

For participants in CLS, a key benefit has been the ability to increase FX volume traded, but with the same or even with fewer staff. This was illustrated in the results of a survey by the London-based Z/Yen Research group, which was based on data for 2004.²⁴ The results show that average interbank FX volume increased significantly over the year, whilst average headcount fell over the same period.

The survey demonstrates that participation in CLS has resulted in direct efficiency savings of 32% for participants in the system.

If we assume that, on average, each FX transaction produces clear profit (in terms of the spread) of 1.5 – a reasonable assumption²⁵ - we can estimate the impact of this efficiency saving. The CLS system processes \$2 trillion of trades every day. However, CLS data includes both sides of each transaction, with the result that the headline figure produced must be halved to give an accurate reflection of reality. Therefore, two basis point's worth of \$1 trillion is \$150 million in estimated profit per day. However, as pointed out above, operational efficiency gains within the CLS system enable participants to increase the scale of transactions by 32% with no impact upon operating costs. Consequently, participation within the CLS system offers the opportunity to increase FX profits from \$150 million to \$198 million per day, a system-wide daily profit increase of \$48 million. Taken annually, this amounts to a direct benefit to CLS participants of \$12.48 billion.²⁶

b) Operating Costs

As well as the efficiency gains described, the same survey provides data on the impact of CLS participation on average inter-bank transaction costs for FX trades. In the non-CLS interbank market, for example, the average internal cost of processing an interbank FX trade is \$3.70. Within the CLS system, however, the cost falls to just \$1.30, a saving of \$2.40 per trade.

On average, CLS bank settles 200,000 trades every day. However, as with its value data, it is necessary to halve this figure to get a true picture. Applied to 100,000 daily trades, the efficiency gains described therefore represent a daily saving to participants of \$240,000, or \$62.4 million per year. By October 2005, CLS had approximately 550 participants, including banks, non-bank financial institutions and investment funds. Clearly some banks will benefit far more than this, particularly the key settlement members who are processing the largest quantity of trades in the system. However, for comparative purposes, it is useful to consider the savings (and costs) on an average basis.

c) Liquidity/Net Funding Costs

In domestic RTGS systems, the 'G' stands for gross rather than net. Whilst CLS trades are also settled in gross form, they are *funded* on a net basis. The benefits this produces are described as follows by CLS:

²⁴ See <http://www.zyen.com/> for full copies of this survey.

²⁵ In 2002, for example, spreads in inter-bank wholesale markets were 0.023% for the US dollar/yen transactions and 0.021% for the US dollar/UK pound. (Spahn 2002).

²⁶ Here and throughout we assume 260 trading days per year.

By providing Settlement Members with a multilateral net position on which to base necessary daily funding rather than gross transaction-by-transaction funding, CLS reduces necessary funding by over 90%.²⁷

This feature of the CLS system brings real financial benefits to participating banks, which we assume fund 10% of their net funding requirements in the interbank market.²⁸ The 10% figure is the average funding gap faced by major UK banks from 2000-2003, which we assume is a reasonably accurate reflection of the global situation. The funding gap represents the difference between the banks' total deposits and total lending.²⁹ This shortfall must be met by external borrowing, either domestically or overseas. Clearly, a bank's activities in the domestic loan and international FX markets are very different. However, at a group level, a liquidity saving (in terms of a 90% reduction in net funding requirement for CLS financing) frees up group-wide liquidity for other functions. The result is a reduction in the funding gap, and therefore a decrease in the quantity of funds that must be externally raised to support the bank's activities. The size of this reduction therefore directly reflects the reduced liquidity requirement resulting from CLS membership.

The CLS bank's 550 members execute an average daily value of \$2 trillion through CLS. Gross funding would therefore necessitate the entire \$2 trillion being available for settlement – unlike the previously halved data, however, this is an accurate reflection of the real situation, since both parties to the transaction would, in the absence of any pre-settlement netting, be required to provide the full quantity as liquidity.

By reducing the net funding requirement by 90%, however, the system only requires \$200 billion to be made available, a saving to CLS participants as a whole of \$1,800 billion per day in liquidity. If we assume that, on average, 10% of this would have been financed externally, the figure 'saved' in this regard becomes \$180 billion per day. To fund this daily at today's LIBOR rate of 2%, would cost \$2.6 billion over the course of a year (the 2% being an annualised rate and assuming 260 trading days per year). This therefore represents a saving to CLS participants, which is a direct result of their participation in the system, of somewhere in the order of \$2.6 billion per year.

As with the previous estimate, the savings will clearly be considerably higher for the largest participants with the greatest number of trades. However, the savings are perhaps most relevant when viewed at the level of the entire CLS system.

d) CLS & Basel 2

Under the new Basel Capital Accord (Basel 2) the regulatory capital that banks are required to hold with respect to their loans will vary according to the creditworthiness of the counterparty. For the Basel Committee on Banking Supervision (BCBS), settlement risk is an important risk factor in this regard. It has been suggested that financial institutions that settle FX transactions through CLS, and have therefore eliminated settlement risk, will attract lower capital charges than institutions that do not use the system. Specifically, the Accord will ultimately levy a capital charge on FX trades where both legs are not settled on the same day – the CLS system was specifically designed to overcome this Herstatt risk and so CLS participants' trades will not be subject to this charge.

At the time of writing, however, no final decision had been taken on this issue, and it is therefore not possible at this stage to quantify the impact. It is clear from publications of the

²⁷ See, *About CLS*: <http://www.cls-group.com/>

²⁸ In reality, of course, Banks fund their activities from diversified sources. However, the LIBOR rate offers a reasonable estimate of these sources in the aggregate.

²⁹ See Bank of England (2003) for a detailed review of the funding patterns of the UK banking sector.

Basel Committee, however, that they do intend to level such a charge. The BCBS explains the delay as follows, distinguishing clearly between ‘settled’ FX transactions (i.e. PvP systems such as CLS) and ‘unsettled’ transactions (i.e. those that do not settle simultaneously):

With regard to unsettled securities and foreign exchange transactions, the Committee is of the opinion that banks are exposed to counterparty credit risk from trade date, irrespective of the booking or the accounting of the transaction. Until the treatment of counterparty credit risk has been reviewed further, however, the specification of a capital requirement in this Framework, for foreign exchange and securities transactions, will be deferred. In the interim, banks are encouraged to develop, implement and improve systems for tracking and monitoring the credit risk exposure arising from unsettled transactions as appropriate for producing management information that facilitates action on a timely basis.

As with the benefits from lower net funding requirements, the option of holding less regulatory capital is a real benefit to banks, as it frees up valuable group capital that can be employed more productively, and reduces the need for external borrowing to fund group activities. When the new Accord is fully operational, CLS participants will directly benefit from being exempt from this capital charge.

- e) Comparing the quantitative benefits of CLS participation, with the quantitative impact of the proposed CCT.

Table 5 gives estimates of the total quantifiable benefit to CLS participants from their engagement with the system.

Table 5. Estimated Benefits of CLS Participation	
Efficiency gains	\$12.48 bn.
Operating costs	\$62.4 mn
Liquidity savings	\$2.6 bn
Total	\$15.14 bn.

As can be seen, the estimated annual benefit to CLS participants – benefits they would sacrifice were they to leave the system – are in the order of \$15 billion per year. Of the \$47 billion obtainable from a

CTT applied universally at the global level, approximately 50% would be collected from CLS – say \$23.5 billion. However, although this exceeds the savings to CLS members, it is clear that universal implementation of a CTT would eliminate any possibility of avoidance, so that issue of participants facing an incentive to leave CLS does not arise; where would they go?

As the figures in table 3 make clear, however, a CTT introduced unilaterally by any country would not create an incentive to leave CLS, since the tax take would be significantly below the financial benefits that participants enjoy. Indeed, even if the United States were to unilaterally introduce a CTT on dollar transactions this would be so, since the tax take from the CLS system would be around \$10.5 billion, significantly less than the benefits listed above. Furthermore, even if every country except the US were to implement a CTT, the total CLS take would be a little over \$13 billion, again lower than the benefits accruing from participation in the system.

In addition to these variable cost benefits, CLS participants’ decision-making process in this regard would also be affected by the fixed cost investment they have already made. Both fixed and variable cost factors, therefore, clearly outweigh the impact of a CTT set at the level proposed. This is the case for every feasible combination of countries, except for 100% global implementation, where the question becomes irrelevant.

As well as the direct and indirect financial benefits, however, there are a number of other aspects of CLS participation, which, although not necessarily quantifiable, would also provide strong incentives to remain within the system. Furthermore, as pointed out above, even if banks chose to exit from the CLS they would still have to pay the CTT.

f) Assessing the unquantifiable benefits of CLS participation

Beyond the quantifiable benefits described, CLS participants are discovering other advantages, which flow from the increasing sense of the CLS settlement system being the ‘gold standard’ in global FX settlement terms. For example, Reuters trading conversations are beginning to include ‘this price CLS only’ messages, which suggests a price advantage being available for CLS participants.

This is supported by 2005 survey evidence from TowerGroup research, who report that 54% of third-party CLS users have altered their approach to counterparties depending on whether they are CLS participants or not. Specifically, the survey evidence shows that 68% of respondents – who were already third-party CLS users – said they favoured counterparties also within the CLS system, and 47% said they had obtained larger trading lines as a result of their participation in CLS.

Anecdotal evidence of these types of ‘softer’ benefits is steadily accumulating. The quote below from the Director of Transaction Services for a major international bank explains how this produces both benefits of CLS participation, and costs for those choosing not to participate.

Latent business opportunities are emerging because counterparties do not have to worry about settlement limits on every day trades once they are both on CLS. On the other hand, you are starting to see people regularly being turned down on large funding trades because they are not on CLS.³⁰

Another benefit that is emerging but was not necessarily predicted, is the reduced need for market participants to retain expensive Nostro accounts in separate currencies as more and more of their FX business is settled through CLS.

As well as these benefits, there is also the issue of third-party credit ratings. At present, it is not clear if or how the major ratings agencies will differentiate between participants and non-participants in CLS. However, given the elimination of settlement risk enjoyed by CLS users, it seems highly probable that such a differentiation will occur. Clearly, this will have a direct impact on banks’ activities, not least through the terms upon which they can finance themselves.

To summarise this section, it is clear that CLS participation brings both tangible and intangible benefits. On the tangible side, the quantitative benefits of participation far outweigh the costs of a CTT levied at the rate of one basis point. This can be seen at the system-wide level, but is obviously true for individual participants. Clearly, a member bank with a high level of FX trades going through the CLS system will be disproportionately affected by the CTT. However, this cost will be more than offset by the additional financial benefits that this high volume flow brings to the bank. The implementation of a CTT in the CLS system, therefore, would not produce an incentive for participants to move outside of CLS – even if they could avoid the CTT by doing so – as they would become subject to Herstatt Risk.

Furthermore, to be acceptable to central banks (with oversight responsibilities) and compatible with Basel 2 and anti money-laundering regulations, those wishing to leave CLS would have to set up a parallel system with similar features to those described above. Consequently, the CTT could also be levied through any feasible alternative system.

³⁰ Quote from Olaf Ransome, Director Transaction Services & Solutions, CSFB, in *Special Reports: Continuous Linked Settlement*, at <http://www.gtnews.com/payments/clsreport.cfm>

8.2. Would an CTT encourage a return to large-scale netting in the international sphere?

Another issue often raised, is that a CTT would encourage greater use of large-scale netting in order to avoid the tax. Would this be the case?

The obvious first point to make is that such a multilateral netting system does already exist, and it is integral to the CLS system. Furthermore, as we have seen, the benefits to participants in terms of lower net funding requirements are large. This is not, however, an inevitable feature of netting systems. Historical experience has demonstrated that the benefits of such systems become increasingly manifest as the number of participants grows. Consequently, there would be no incentive – rather, there would a real cost – for a small number of banks to exit CLS and set up their own multilateral system. The benefits of netting within CLS could only be replicated if *all* the current participants decided to leave the system.

Given the benefits of CLS participation that have been described, as well as the fixed-cost investment in systems and processes, it is difficult to argue that banks would abandon CLS in order to set-up their own hugely expensive multilateral netting system in order to avoid a one basis point charge on a proportion of their FX transactions.

Even if they were to do so, however, it must be remembered that multilateral netting systems cannot operate in isolation. In particular, given their importance to domestic and international payment and settlement systems, national central banks maintain an oversight role over their activities.

In order to be acceptable in this respect – and capable of smooth interaction with domestic LVPSs - any multilateral netting system must operate as an RTGS using PvP settlement techniques. In this basic respect, central banks therefore have considerable leverage over the activities of multilateral netting systems. No international system of this sort could function without access to national LVPS. As the ‘gatekeeper’ to these systems the relevant central bank therefore has direct leverage over the activities of any multilateral netting system.

As with domestic RTGS infrastructures, multilateral netting systems require efficient messaging between participants to match and net *gross* trades. (Schmidt, 2001) Major multilateral netting systems have therefore been built on technical platforms by the market leader, and virtual monopoly-provider, in this area: SWIFT.

Therefore, just as SWIFT messaging can identify and inform the Bank of England of gross sterling FX transactions in the UK’s CHAPS system, the same would be true of multilateral netting systems.

The question that this raises is whether banks could abandon SWIFT and move to a proprietary messaging system. As with CLS participation, however, this is essentially a cost-benefit decision facing banks. And as with CLS participation, the benefits of SWIFT membership are likely to far outweigh the cost savings from avoiding the CTT.

As with the CLS, full participation in the system requires significant upfront investment in IT systems and processes. For a large financial institution such investment is likely to run into the many millions. Again, to leave the SWIFT system would transform this investment into a ‘dead-weight’ cost, which would be amplified by the need to develop alternative messaging systems at very high cost.

Much of SWIFT’s competitive advantages come from its size, ubiquity and consequent efficiency. A group of banks starting from scratch could not hope to replicate these benefits for the same cost as SWIFT. Again, the financial incentives to remain in the existing system,

would far outweigh the impact of the CTT, and this would be greatly amplified by the huge cost of setting up a parallel system to replace it.

Finally, as has been pointed out, concerns over systemic risk in the FX market are such that any alternative system that was acceptable to central banks – as well as compatible with Basel 2 and money-laundering regulations – would have to be of a form that it could not be used to avoid an CTT.

8.3. Would an CTT encourage much greater use of tax-avoiding derivative products?

The third issue often raised is that the introduction of a CTT would lead to greater use of derivatives in order to avoid the tax. In large part, this objection has already been addressed: by ensuring that the CTT covers both the traditional *and* the OTC FX derivative market - it cannot be avoided by moving activities into the derivative market.

There are a number of other relevant factors in this regard also. First, the CLS Bank is progressively increasing its abilities to settle derivatives contracts within the system. By 2007, CLS Bank will offer a 'complete end-to-end' service for the settlement of cash positions for non-deliverable forward (NFD) contracts, and for FX option premiums.

As with its other services, it is likely that the increased capacity to settle derivative contracts will result in significant cost savings within the CLS system. As we have seen, once an institution starts to participate within the CLS system, it becomes increasingly efficient to settle a high proportion of all their FX business within it. The same will be true for derivatives.

8.4. Would a CTT move derivative activity outside national jurisdictions, and therefore outside the reach of the tax?

As we have seen, it is technically entirely possible for a CTT to be collected on any FX derivative transaction, wherever it occurs – unless it is being suggested that in order to avoid a 0.01% on a small fraction of their FX activities, the world's leading financial institutions would wish to sever all links with the financial systems of today's developed economies.

As with all the issues addressed above, the key question is: why, in purely financial terms, would a major international bank choose to act in this way? There exists today an efficient, profitable, IT-dependent financial infrastructure for FX transaction of both the traditional and derivative form. Much of this activity is made possible (and cost-effective) by standardised messaging and communication provided by SWIFT. To extricate oneself from this system would mean that financial institutions would have to write-off their initial investments and invest an even larger amount setting up an alternative, which would be more expensive to run. Furthermore, as we have seen, there are real financial benefits from participation in large, global networks which exhibit real economies of scale as they grow. Again, financial institutions would have to abandon these benefits, despite the fact that, quantitatively, they far outweigh the impact of any feasible CTT.

Finally, it is just not possible for financial institutions of world-scale to operate in any country's FX and derivative markets in a sustainable manner without the support of its central bank. This support would only be forthcoming, however, if these institutions were operating in a system that reflected best practice in terms of risk management and anti money-laundering. Such a system could not be used to avoid the CTT.

Ultimately, were a CTT to become national law in any major country – or group of countries - financial institutions would have to abide by it, as is the case with all other legal obligations.

Concluding Remarks

The aim of this paper has been to demonstrate that a currency transaction tax could be implemented relatively simply by any country that participates in today's interlinked global payment and settlement system. Furthermore, we have seen that financial institutions would not be able to avoid the tax for a number of reasons.

First, concerns by central banks to minimise systemic risk in the financial system ensures that they retain strong control over the activities of banks operating in their jurisdiction: no bank could operate openly against the wishes of these central banks if it wished to retain access to their markets. And second, even if they could do so, they would not rationally choose to: the financial benefits they receive from participation in the CLS bank and the system of global interconnected payment and settlement systems would outweigh the cost of a CTT of one basis point.

The fact that the structure of identifying and collecting the CTT 'piggy-backs' on existing technologies and infrastructures – not least the SWIFT messaging system – ensures a cost effective tax mechanism, and the use of SWIFT messages that specify the exchange rate for the transaction also makes it possible to implement Spahn's two-tier version of the CTT within the same structure.

Although the revenue-raising version of the CTT appears more suitable for developed countries, and the two-tier version more suited to middle-income developing countries, the two forms of tax are in no way mutually incompatible. Implemented at the global level, a CTT set at one basis point (0.01%) in normal market conditions would raise approximately \$47 billion a year for international development purposes. The incorporation of Spahn's 'exchange surcharge' when exchange volatility becomes excessive is not designed to raise additional funds, but to 'short-circuit' damaging speculative attacks on the currencies of middle-income developing countries.

This combination of substantial annual funds that could make a reality of achieving the Millennium Development Goals, and achieving the global public good of international financial stability would therefore appear to be a 'win-win' proposition from a development perspective.

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