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## **Financing development with global taxes: Fiscal revenues of a currency transaction tax**

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### **Introduction**

Financing for development is an old issue in international affairs. Since 1969, the 22 richest countries grouped in the OECD “donor countries” club committed to dedicate 0.7% of their gross national product to official development aid (ODA). But the promise was never fulfilled and ODA subsided in the eighties and nineties, falling to 0.20% on average in 2000. Worse, maybe as a justification for the disrespect of this promise, the “Washington consensus” held development aid responsible for maintaining poverty in developing countries. Export-oriented development strategy became the new motto in international summits precisely when the world economy was entering into the so-called “global era”. Nothing more symbolises the predominance of the belief in free trade as the right track to development as the decision, at the Fourth Ministerial Conference in Doha, Qatar, in November 2001, by WTO member governments to launch the “Doha Development Agenda”. But because the globalisation process had already widened inequality between countries and inside countries, it was felt necessary to rehabilitate development aid, at least for the poorest countries. Officially, development aid is justified when developing countries do not have the basic material, institutional and social infrastructure to take advantage of free trade and foreign direct investment. The “Millennium Development Goals” (MDGs) declaration was signed in New York in September 2000 with that purpose in mind. The Monterrey conference in March 2002, organised by the United Nations with the participation of the IMF and the World Bank made clear that trade and FDI were the main source of financing for development. It was very difficult at the time to include in the official statements a few words on global taxes as new sources of financing for development. The “follow-up international conference on financing for development to review the Implementation of the Monterrey Consensus” in Doha in 29 November- 2 December 2008 maintained the same priorities but recognised the existence and importance of these “voluntary innovative sources of development and innovative programmes linked to them” including the “PetroCaribe Initiative”

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sponsored by Venezuela. At the same time, the final declaration stresses their “voluntary and complementary nature”. It was the first time that an official international conference acknowledged the existence of “innovative sources” of financing despite the opposition of the United States and some other countries.

Apart from the strong lobbying of NGOs, the main reason is that between the two conferences for financing development, the “Doha Development Agenda” was already a blatant failure while some concrete initiatives to create “innovative sources” of financing for development had been taken. In 2004, a group of countries (Brazil, Chile, Spain and France) with the support of the United Nations Secretary- General launched an initiative to fight hunger and poverty calling on the international community to create new sources of financing for development in order to make progress toward the achievement of the MDG’s. In September 2004, these countries presented to the United Nations in New York a quadripartite report offering a comprehensive range of options for “innovative financing”. On the occasion of the 2005 World Summit, 79 countries endorsed the “New York Declaration on Innovative Sources of Financing for Development” co-sponsored by Algeria, Brazil, France, Germany and Spain. The “Paris Ministerial Conference on Innovative Financing Mechanisms” convened by France in 2006 gave momentum for the creation of a “Leading Group on Solidarity Levies to Fund Development” tasked with exploring such issues (hereafter leading group). This group now includes 55 countries and four observer countries.

The leading group has developed several innovative mechanisms: The “air-ticket solidarity levy financing the international drug purchase facility”, UNITAID; the “International Finance Facility for Immunization”; and a pilot “Advanced Market Commitment for pneumococcal”. These innovative sources of financing are not a substitute for traditional ODA but complementary. On 22 October 2009, a task force was launched to study the feasibility of an international solidarity contribution based on foreign exchange transactions, and more broadly, on securities, to finance development and to help achieve the Millennium Development Goals.

In a sense, these initiatives were a real success and gave a real legitimacy to the civil society and NGOs which had campaigning for more than ten years in favour of global taxes and in particular the currency transaction tax. But the success is mixed. Financial transactions taxes and other global taxes are only considered as sources of financing for development not as instruments of regulation. In a joint article, Bernard Kouchner, the French minister of Foreign Affairs and Christine Lagarde, the minister for the Economy, Industry and Employment made it clear: “we are not proposing Tobin Tax, whose primary objective was to regulate an excessively erratic currency market. No, the aim is to finance development without disrupting financial transaction”<sup>2</sup>.

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<sup>2</sup> “Innovative financing to help development, the idea is gaining ground. For a tax on the global financial sector. By Bernard Kouchner and Christine Lagarde, In “Le Monde”, 2 December 2009, Paris.

In effect, the primary goal of the CTT was the autonomy of economic policy. As J. Tobin said (1996), his proposal made in 1972 and renewed in 1978 « did not make much of a ripple » and “sank like a rock” because most professional economists simply ignored it as they ignore anything coined as an interference with market competition. Since then, the CTT was taken out of oblivion by the chronic crises of globalisation, by the growing inequalities that globalisation has increased, and by the emergence of “global bads” that country-states cannot resolve on their own. In fact, public opinion’s support for the tax swings between the necessity to do something against speculation and financial crises and the urgency to find new funds for financing development and global public goods.

The crisis of the European Monetary System of 1992-93 had clearly shown that the power of speculation overwhelms the power of even rich countries’ central banks. The Mexican crisis of 1994-95 but especially the Asian crisis of 1997-98 were a flat denial that free global finance could contribute positively to development. Quite to the contrary, the public opinion (re)discovered that when investors anticipated a serious economic difficulty, they would take their money out of the country as quickly as possible and leave ruins behind them. These repeated crises had renewed the interest in the CTT, but as J. Tobin says “the interest would then die out when the crisis passed from the headlines” (1996, p 10).

This was not exactly the case with the Asian crisis of 1997-1998. A new social movement, soon to be called “anti-globalisation” by the media, had grown in the meanwhile, and since 1998-99 has turned the so-called “Tobin Tax” one of its major demands among others such as the free trade dispute and the contestation of the WTO, the IMF and the World Bank. In Europe first, then in other continents, NGO’s have been campaigning with some significant success for the CTT has a simple and efficient solution against the noxious activity of financial speculation. During the years 1998-2001, the motivation for supporting the CTT was clearly the need to curb speculation, in line with the preoccupations of J. Tobin himself. In the USA, the burst of the dot.com bubble in March 2000, and then the following Enron financial scandals created resentment against “Wall street” and the idea of “Security Transaction Tax” (STT) (Baker D., Pollin R., Schaberg, M., 2002) was more appealing than the CTT that appeared too abstract and remote. These two taxes are twins and complementary.

But after 2001, the interest for the CTT shifted from speculation to its potential as a generator of revenues. This does not mean that speculation had disappeared from people’s mind, but the dramatic events of the Asian crisis were fading out while another one, poverty, that has always been present, was growing in importance. The year 2001 is certainly not an accident. Governments have more or less admitted that terrorism is built upon poverty and that it was also in their interest to achieve the MDG. The centre of gravity had changed because there were new opportunities on the political agenda to make new progress. In a certain way, the CTT curse – “the interest dies out when the crisis passed from the headlines” - was repeating again, but

not completely, because the CTT sprung up again as a levy for development under the auspice of the leading group.

But there is certainly another reason why this time the interest will not die out. The present international crisis which broke up in 2008 is the most serious one since the 1930s and it is not passing quickly from the headlines. The first step in 2008 was the bankruptcy of the banking system followed in 2009 by the bailout by the States. In 2010, governments, mostly European, are now the problem. Banks are attacking fragile governments with the money they received from their bailout packages and the flooding of liquidity stemming from monetary policy of “quantitative easing”. Public opinion will not accept easily to make more sacrifices in terms of cuts in public spending and raising income tax while banks and private funds make fat profits with easy speculation. There is reason to believe that call for tighter regulations on banks and speculation will gain momentum. The leverage of the Tobin tax on currency transactions and more broadly of a tax on all financial transactions to curb speculation will then have to be operated.

This is why in this chapter we will study two alternatives. First, the revenue of a very small levy of 0.005%, (i.e. 5 euro cents on €1,000) proposed by the leading group with the only objective of raising revenues to finance development. Second, the revenue of a currency transaction tax of a much higher level, up to 0.1% with the double objective of raising revenues and curbing inflation.

We will rely on previous works (Jetin, Bruno 2007) (Jetin, Bruno 2002) to estimate the fiscal revenues of the CTT using the last BIS data on Foreign exchange markets (BIS 2007). We estimate revenues at the world level and at the regional level (Europe, NAFTA, Latin America and Asia) on the period 2001-2007 according to various hypotheses regarding the evolution of the structure of the foreign exchange market and the elasticity of the volume of transactions. We compare our results with other previous estimations.

## Estimation of the revenues

Estimating the CTT revenues is necessarily a difficult task due to the unavoidable arbitrary hypotheses that must compensate the absence of past experience. Three official reports and at least twelve academic research have realised this exercise (see below table 1). These previous estimations are not presented here in details but we discuss their main hypotheses and methodology in order to justify our own choices.

There are several features that differentiate these previous studies. One can start by discriminating between simple and sophisticated methodology. The simple one consists in taking the annual volume of the world forex market and to multiply it by the tax rate (Cassimon, 2001). This gives very high and optimistic estimations.

The sophisticated methodology assumes that the introduction of the tax will lead to a reduction of the volume of transactions in relation to the prevailing situation according to the nature of the trader: bank, financial customer or non-financial customer (for instance, Belgium and Finnish reports, 2001,) and sometimes according to the nature of the transaction (spot, outright forward and swaps, (see Nissanke, 2004). In our view, it is a perfectly normal and desired consequence since one objective of the tax is to reduce the excessive volume of transactions.

The group of “leading countries” has another approach. Its objective is not to curb speculation but to raise revenues for financing development. It is concerned that a tax higher than the average existing spread between the bid and ask prices will create a so-called “market distortion”. Because the usual spread on main currencies are one to two basis points the proposed tax is set at half a basis point or 0.005%. Some previous studies have calculated revenues of such a tiny rate (Hillman and others, 2006, Kapoor, 2004; Nissanke, 2003; Spahn, 2002). They supposed that because the tax level is very low, there won't be any significant reduction of market volume or tax avoidance.

Our approach is different. Financial markets are inefficient and produce endogenously their own distortions through the emergence of speculative bubbles. These speculative bubbles are based on self-fulfilling expectations such as the belief in a “new economy” in the US in the nineties or in an ever-increasing real estate market in the years 2000. The best way to reduce these distortions is precisely to tax financial transactions at a significant rate so that speculative bubbles cannot gain momentum. We believe that a 0.1% tax is a good starting point to both curb speculation and produce important revenues. In this case, it is necessary to make hypotheses on the reduction of market volume and fiscal fraud. The basic idea is that the higher the tax rate is the higher the reduction of volume is. By the same token, the higher the tax rate and the smaller the geographical coverage is, the higher fiscal fraud is.

TABLE 1: SURVEY OF PREVIOUS REVENUES ESTIMATES

Author	Year of daily turnover	Geographical coverage	Daily turnover (in US dollar billion)	Exempted official trading	Fiscal evasion	Pre-tax transaction costs.	Elasticity	Reduction of volume	Tax rates	Revenues (in US dollar billion)
F. Bismans O. Damette	2007	World	1880	10	20	0.01% to 0.02%	-0.61		0.02%	40
R. Schmidt (2007)	2007	US Dollar, Euro, Yen and Pound sterling	664.8 (US\$), 285 (euro), 127 (yen), 115 (Pound sterling)	None	None	Between 0.0298% and 0.0359%	-0.43	Between 12% and 14.6%	0.005%	28.4 (US\$ only), 33.41(all major currencies)
D. Hillman, S. Kapoor, S. Pratt (2006)	2004	Great Britain, Norway, Euro zone	160.6 (GB) 13.3 (Norway) 350 (euro zone)	None	None	0.01%-0.03%	none	2.5%	0.005%	\$2.03bn (GB), \$167mn (Norway), \$4.43bn (Eurozone)
S. Kapoor (2004)	2004	World Level	1,900			0.01%-0.03%		None	0.005%	10-15
M. Nissanke (2004)	2001	World Level	1,210.0	8%	2%	0.01%	none	5%	0.01%	30-35
						0.02%	none	15%	0.02%	17-19

TABLE 1: SURVEY OF PREVIOUS REVENUES ESTIMATES (following)

Author	Year of daily turnover	Geographical coverage	Daily turnover (in US dollar billion)	Exempted official trading	Fiscal evasion	Pre-tax transaction costs.	Elasticity	Reduction of volume	Tax rates	Revenues (in US dollar billion)
P.B Spahn (2002)	2001	EU level	440.0	none	none	0.01% for banks and 0.02% for customers	none	-15%	0.01% 0.02% with 0.01 % for banks	16.6 20.8
A. Clunies-Ross (2004)	2001	World level	1,210						0.02%	53
D. Cassimon (2001)	1998	World level	2,100 (with derivatives)	10%	None	None	None	None	0.01% and 0.02%	47.25 and 94,5
D. Felix & R. Sau (1996)	1995	World level	1,120	10%	25%	0.1% 0.5% 1%	0.3 to 1.75.	-13% for a 0.05% tax rate, -49% for a 0.1% tax rate.	0.05% 0.1% 0.25%	90 to 97 148 180
P. Kenen (1996)	1995	World level	1,120						0.05% and 0.025% for banks.	90 to 97
J. Tobin (1996)	1995	World level	1,120					-70%	0.1%	50 to 94
J. Frankel (1996)	1995	World level	1,120	-20%				-45%	0.1%	176



TABLE 1: SURVEY OF PREVIOUS REVENUES ESTIMATES (following).

AUTHOR	Year of daily turnover	Geographical coverage	Daily turnover (in US dollar billion)	Exempted official trading	Fiscal evasion	Pre-tax transaction costs.	Elasticity	Reduction of volume	Tax rates	Revenues (in US dollar billion)
Belgium Ministry of Finance (2001)	1998	World level and EU level	1500 at the world level, 772.5 at the EU level.	Increasing rate in accordance with the tax rate: from 15% to 25% at the world level. 20.2% to 35% at the EU level.		0.02% for banks, 0.05% for financial institutions, 0.1% for others	-0.5, to -1.5 (world). -0.55, to -1.75 (EU)	From 5% to 100% according to tax rate and elasticity	From 0.01% to 1%	From 19 to 128 (world level) and from 9 to 39 (EU level).
Finnish Ministry of Finance (2001)	1998	World level	1500	20%		0.02% for banks, 0.05% for financial institutions, 0.1% for others	-0.5 non financial customers, -1 financial customers, -1.5 banks	From 5% to 100% according to tax rate and elasticity	0.01%, 0.25% and 1%	71, 102, 177
French Ministry of Finance (2000)	1998	World level	1500	None	20%	0.02% and 0.05%	-0.5, -1, -1.5	-67 % in central estimate	0.01% to 0.20%	50
		EU level	682	None	30%	0.02% and 0.05%	-0.5, -1, -1.5	-67 % in central estimate	0.01% to 0.20%	22
		France	54	None	50%	0.02% and 0.05%	-0.5, -1, -1.5	-67 % in central estimate	0.01% to 0.20%	2

We will follow here the approach of the ministry of finance of France (hereafter French report). This report is critical of the CTT and its conclusion is that the CTT should not be adopted. By following their methodology, one cannot be suspected of producing over optimistic revenue estimates.

The estimate of the volume elasticity poses more difficulty. Those who trade will react to the increase of their transaction cost. This raises questions about the relevant initial transaction cost and their degree of sensibility to its increase. As far as the initial transaction cost is concerned there are two possible options.

On one hand, if one thinks that the tax will be paid by banks only and that the tax must not distort markets (Schmidt, 2007), (Hillman and others, 2006), (Kapoor, 2004), (Nissanke, 2004) (Spahn, 2002) then the interbank bid-ask spread cost is the relevant pre-tax transaction. Spahn (2002) estimates that the spread is 0.011% for the euro-US dollar market, 0.023% for the US dollar/yen market, and 0.021% for the US dollar/GB pound. More recently, R. Schmidt (2007) calculates an average spread of 0.0295% on the euro-US dollar market, 0.039% on the dollar-yen market, and 0.0259% on the dollar-pound sterling market with a weighted average of 0.0298%, i.e. a 2.98 basis point. F. Bismans and O. Damette (2008) also confirms that bid-ask spreads in their Reuters Dealing 3000 database for the euro-US\$, GBP-US\$, CAD-US\$ and JPY-US\$ are in the 0.01-0.02% range. In this conception the tax rate is necessarily very close to zero, in the 0.005% to 0.01% range, because a 0.005% tax rate already reaps off half of banks' profit margin.

On the other hand, if one thinks that banks and their professional customers (financial institutions of all kinds and non-financial firms) will pay the tax, having in mind that in the end the transaction cost has to increase significantly to put sands in the wheels, then the non-financial firm pre-tax transaction cost is a maximum and the relevant reference to judge the impact of the tax<sup>3</sup>. It is usually estimated at 0.1%.

On top of the market distortion argument, the main criticism against our view is that banks will transfer the burden of the tax to their customers and in particular to non-financial firms. This will hurt cross-border trade and investment more than speculators, contradicting the main objective of the tax (Nissanke, 2004) and (Davidson, 1997). Our answer is twofold.

Banks already pass to their customers the charges that they don't want to pay. And it is true that they will also try to pass the CTT cost to their customers. But because of increased competition between banks and the changing relations of forces between banks and their customers due to electronic trading, banks will have to pay their share of the CTT. Thanks to the increasing transparency on electronic platforms, customers are able to compare the quotes offered by banks which include the transaction cost and would include the tax. Customers will be able to choose the most advantageous quotes, and competition between banks will force them to accept to pay part of the CTT in order to offer more competitive quotes.

This effect will happen at the trading site. But there is another possibility at the settlement site.

SWIFT<sup>4</sup> messages offer the possibility of fine-tuning the messaging and settlement charges. An ordering customer can decide to pay these charges, to share

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<sup>3</sup> On this point see Jetin, (2007), Jetin and Denys (2005), Felix and Sau, (1996), Frankel (1996).

<sup>4</sup> SWIFT<sup>4</sup> stands for the "Society for Worldwide Interbank Financial Telecommunication". It is an industry-owned supplier of payment message carrier services. SWIFT not only transfers messages between all agents involved in a foreign exchange transaction, but also executes steps like confirmation or netting, in competition with other specialised firms like electronic platforms or clearing houses. SWIFT is the nervous

them with the beneficiary, or ask the beneficiary to pay them. In case of an interbank transaction, SWIFT offers the same options. The EU has decided that by default the ordering customer should pay these charges (option “OUR” in a SWIFT message). It is thus perfectly possible to use these fine-tuning possibilities to decide that the CTT should be paid entirely by the ordering counterparty (be it a customer or a bank) or that half should be paid by the ordering counterparty and half by the beneficiary counterparty, or whatever other proportion. There is no need for the EU commission to scrutinise every transaction. But if a legal basis exists, the counterparty that feels it is paying an over duly share of the tax could engage in legal action.

To summarise we are faced with two options. At the trading site, competitive forces can decide which share of the CTT is paid by banks and their customers. At the settlement site, there is another possibility for the two counterparties and all the intermediaries to reach an agreement. If there is no agreement, the EU rule applies by default, say equal share for all counterparties.

As a consequence, we present the case of a unified tax rate between 0.005% and 0.1% applied independently to the wholesale (interbank) and retail markets (other financial and non-financial customers). Individuals on the retail market would be totally exempted from the tax for transaction under a pre-agreed amount.

This tax rate will be compared with the interbank pre-tax transaction rate and the non-financial pre-tax transaction cost on the retail market. The latter is usually 0.1 % in developed countries according to the Belgium and Finish and French reports. According to Felix and Sau, (1996) the final transaction cost charged to customers includes the whole chain of transactions, searching costs and risk premiums. For these reasons the pre-tax transaction cost can reach 0.5% to 1%. But again, with a concern of prudence, we retain a tax rate of 0.1%, i.e. five to tenfold the rate preferred by Nissanke and Spahn as the most plausible and desirable rate.

Regarding the elasticity of foreign exchange volume, Rodney Schmidt estimates the elasticity of volume of the US dollar-Yen spot market for the period 1986 to 2006 and finds that “ a rise in the spread of one percent leads to a fall in the transaction volume of -0.43 (Schmidt, 2007). F. Bismans and O. Damette (2008) use several econometric tests to quantify the elasticities of volume. Using the Engle and Granger methodology, they found that an increase of 1% in transaction costs lead to a decrease of market volume of -0.61% for the euro-US\$ pair, a decrease of -0.55% for the GBP-US\$ pair or a decrease of -0.3% for the Canadian dollar-US\$ pair (see page 199). Another test based on SURE estimations<sup>5</sup> gives smaller coefficients of elasticity: -0.33% for the euro-US\$ pair, -0.36% for the GBP-US\$ pair, -0.23% for the CAD-US\$ pair. Interestingly, the authors explain the low value of the Canadian dollar by the low trading of this currency pair meaning that this type of transactions would be less sensitive to one or two basis point currency transaction tax. As in the previous test, the results for the JPY-US\$ pair are not significant. Finally, using a panel cointegration model, they find that the overall elasticity considering the whole foreign exchange market is -0.61. The value of the estimated overall elasticity of volume is thus higher than the one calculated by R. Schmidt but lower than the values retained as hypothesis in the official reports which range from -0.5 to -1.5.

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system of foreign exchange and other financial markets. For more details, see B. Jetin and Lieven Denys (2005).

<sup>5</sup> Seemingly Unrelated Regression Equation (SURE). See Bismans and Damette, 2008 p 200.

These estimates may be adapted for the key currencies (US\$, yen, euro and Sterling pound) but probably to low when one considers other currencies in particular those of developing countries which are much more volatile because their economy is more fragile and subject to macroeconomics shocks. We may also expect that for higher tax rates, the reduction of market transactions will be higher too.

To be sure that the elasticity of volume is not underestimated we will use the value calculated by Schmidt (-0.43) as the lowest hypothesis, the value calculated by Bismans and Damette (-0.61) as the intermediate hypothesis and -1 as the highest value. An elasticity of  $-1$  means that the volume of the foreign exchange market decreases by 1% when the transaction cost increases by 1%. In other terms the reduction of volume is proportionate to the increase of the transaction cost.

The “leading group” is considering a unique tax of a very low level, half a basis point. To estimate the potential revenue of such a tiny tax, but also of higher levels of taxation we will follow the methodology employed in the French report<sup>6</sup> which is precisely based on the hypothesis of a unique tax while the Belgium and Finish reports are based on different levels of taxation according to the nature of the counterparty (dealers, other financial customers and non-financial customers)<sup>7</sup>. To minimise the possibilities to by-pass the CTT, the French report also considers the same tax rate whatever the nature of transaction (spot, outright forward, swaps and other derivatives). This methodology considers the market as a whole and is the most adapted to the idea that banks and their customers will find a way to share the tax between them.

We will estimate the revenues of several different geographical areas. The first is the CTT revenue at the world level. The second estimates the revenue in the hypothesis that the CTT is adopted by the euro zone only. The third estimates the revenue of the 15 EU member-states (the euro area plus the United Kingdom, Denmark and Sweden) before the last wave of integration of new member-states. The inclusion of the United Kingdom in the estimation has a major impact because London, with one third of global turnover is the most important foreign exchange market of the world. The fifth estimates the potential revenues in the case of the European Union after the inclusion of new member-States for which data is available (see annex 2). This area is called the EU 24. The sixth estimates the potential revenues in the case of Switzerland and Norway joining the CTT area, even though they are not members of the EU. Again, the impact is significant due to the importance of the Swiss forex market. The seventh geographical area estimates the potential revenues of most Asian countries for which data is available. It covers almost all East Asian countries plus India<sup>8</sup>. In fact, it is very close to the so-called called ASEAN+4 countries engaged in a process of regional integration (Jetin, Bruno 2009). The eighth estimates the potential revenues of the NAFTA countries and the seventh those of Latin American countries for which data is available, in particular Brazil.

The initial tax base is the global turnover indicated in the triennial foreign exchange survey published by the BIS. We use data at April 2007 exchange rate on

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<sup>6</sup> The French report is critical of the CTT and its conclusion is that the CTT should not be adopted. By following this methodology, one cannot be suspected of producing over optimistic revenue estimates.

<sup>7</sup> For estimates based on the Belgian and Finish methodology see Lieven Denys and Bruno Jetin (2005).

<sup>8</sup> The countries are: China, Hong Kong, India, Indonesia, Japan, Korea, Philippines, Singapore, Taiwan, and Thailand.

a net-net basis divided by two to avoid double counting and overestimation of the revenues<sup>9</sup>. Some precisions on the use of these data are necessary. These data deal with transactions made in the relevant currencies: US dollar, euro, Sterling Pound, yen, etc. We have attributed the transactions in US dollar to the USA, transactions in euro to the euro zone, transaction in yen to Japan, etc. This is not correct in the strict sense because these currencies are international currencies meaning that transactions in US dollars against euros can be made in Hong Kong for instance. But because the currency transaction tax would be collected at the settlement site, even transactions in US dollars against euros made in Hong Kong have to be settled in the end in the real time gross settlement systems of the USA and of the euro area<sup>10</sup>. So the approximation can be accepted. The problem is nearly non-existent for non-dominant currencies because their international use is marginal. Transactions in Brazilian real are essentially done in Brazil. On the other hand, these data do not include transactions realised in a country in other currencies: for instance, transactions in France of US dollars against Sterling Pound. It would be better to include them but these data are not available on a net-net basis and therefore overestimates the results<sup>11</sup>.

The latest survey available at the time of this report was published in December 2007 for the activity of April 2007 (BIS 2007). The average daily world turnover in traditional foreign exchange markets at 2007 exchange rates rose to the unprecedented record of US\$ 3.2 trillion up from US \$ 1.97 trillion in April 2004, i.e. a 63% increase. There is no doubt that due to the crisis, the global turnover will fall in 2008 and the subsequent years, like it did between 1998 and 2001, after the Asian financial crisis of 1997-98. This reminds us that the CTT potential revenues are very sensible to the evolution of the overall economic activity as is the case with any tax revenue. The turnover of the different geographical zones is presented in table 2.

	2001	2004	2007
<b>World</b>	1,420	1,970	3,210
<b>Euro zone</b>	341,2	394,0	593,5
<b>EU 15</b>	478,6	603,8	892,5
<b>EU 24</b>	483	612	913
<b>EU 15 +Switzerland &amp;Norway</b>	539,7	680,4	1036,2
<b>NAFTA</b>	581,5	896,7	1473,9
<b>ASIA</b>	173,3	226,8	381,2
<b>LA</b>	4,3	4,7	7,9
<b>Brazilian real</b>	2,9	3,3	5,8

**Source BIS triennial Central Bank Survey 2007, table D.5, p 50.**

<sup>9</sup> "Double-counting arises because transactions between two reporting entities are recorded by each of them and are therefore reported twice to the BIS. To derive a representative measure of the overall market size, it is necessary to halve those transactions that are being collected twice". (BIS, 2007, p 44). See annex 2 for more details.

<sup>10</sup> On this point see Jetin and Denys (2005), p 100-102.

<sup>11</sup> We have used these data called net-gross by the BIS in previous work but we have shifted to net-net data in this chapter precisely to avoid double counting and overestimations of revenues at regional levels.

The euro area is a good starting point for the adoption of the CTT. Transactions in euro reached US\$ 593 in 2007 i.e. 8.5% the world level. One can see that the turnover of the 15 member countries of the European Union is 50% higher than the turnover of the euro zone. This is due to the inclusion of the Sterling pound. The turnover of the EU 24 increases by a mere 2.2% the turnover of the EU 15 and the adoption of the euro by the new member states will reduce this slight difference to insignificant level in the future. By contrast, the turnover of the EU 15 plus Switzerland and Norway is almost double the euro turnover and represents 32% of world total. It is therefore decisive to apply the CTT at the largest possible European level. The NAFTA turnover is the biggest one (46% of world total), due to the predominance of the US dollar while Asia turnover amounts to 12% of the world total thanks to the yen and the Hong Kong dollar. By comparison, Latin America turnover is small. This is explained by the weakness of most Latin American currencies<sup>12</sup>. The strongest one is the Brazilian real which accounts for around 73% of the Latin American turnover.

We suppose that the tax rate varies between 0.005% and 0.1% and that the pre-tax transaction cost vary between 0.01% and 0.1%<sup>(13)</sup>. We only consider plausible combinations with a maximum for the reduction of market volume of around two-third of the market<sup>(14)</sup>. This still leaves ample room for theoretical estimations

The amount of the annual revenue is given by the application of the tax rate to the tax base. The tax base is calculated by subtracting to the market turnover the reduction of volume due to fiscal evasion and to the elasticity of volume according to the following formulae used in the French report:

$$R = 250 \times \tau \times V \times (1 - ev) \times \left(1 + \frac{2\tau}{k}\right)^\varepsilon$$

Where **R** is the revenue, 250 the number of business days per year,  $\tau$  the tax rate, **V** is the market turnover before tax, **ev** is fiscal evasion, **k** is the pre-tax transaction cost, and  $\varepsilon$  is the volume elasticity.

The variable **ev** combines fiscal evasion and tax exemptions of official transactions. Official transactions are estimated at 8% of total transactions by Nissanke (2004)<sup>(15)</sup>. We suppose that when the tax rate is very low (0.005%) and

<sup>12</sup> Data for some Latin American countries such as Venezuela, Ecuador, Bolivia, Paraguay and Uruguay among others are missing. But this does not change much the Latin American turnover because transactions in the currencies involved are small.

<sup>13</sup> The French report considers pre-tax transaction costs between 0.01% and 0.05%. We have also included the 0.1% level.

<sup>14</sup> The matrix of market turnover reduction is obtained by the combination of the tax rate, pre-tax transaction costs and volume elasticity.. The matrix is presented in annex 1.

<sup>15</sup> Nissanke (2004, p 23) "assumes that the share of official transactions carried out by monetary authorities in global turnover is about 8%". Because she retains a very low tax rate of 0.01% to 0.02% the incentive for tax evasion through migration and asset substitution is also low. On the whole, the possible leakages amount to 10% of total turnover and are deducted from the tax base as non-taxed instruments. In this regard our assumption that for higher tax rates a leakage of 20% may include exempted official transactions is not abusive.

applied at world level, fiscal evasion is very low and set at 2%. So, on the whole, for a tax rate of 0.005% tax exemptions and fiscal evasion reduce the tax base by 10%. We then hypothesise that fiscal evasion increases when the tax rate increases and when the tax is applied at the regional or country level. At world level, fiscal evasion and tax exemptions varies from a minimum of 10% when the tax rate is 0.005% to a maximum of 16% when the tax is 0.1%. For Latin America,  $\epsilon_v$  varies between 10% and 26.5% for the respective tax levels (see annex 3 for details).

The tax, " $\tau$ " is multiplied by 2 because it leads to a simultaneous reduction of the bid price and an increase of the ask price. The French report supposes implicitly that the trader makes a round trip, for instance sells the euro and then buys it a few minutes later. This is precisely what J. Tobin had in mind when he conceived his tax. The arbitrageur, "jobbers" and other speculators are those who make frequently round trips on currencies. They would pay the tax twice. Hence, the reduction of volume due to the sensibility of traders to the increase of transaction cost is stronger than if we focus on traders that don't make round trips but single transaction: buy or sell but not buy and sell in a short interval. In this case, traders pay only once the tax. The reduction of volume due to the sensibility is much weaker for the precise reason that transaction costs increase less.

Having this in mind we can comment the synthetic results presented in tables 2 and 3. We have distinguished two scenarios, the "**leading group**" and to make things clear, the "**Tobin tax scenario**".

What we call the "**leading group**" scenario is the market-friendly one: a very small CTT rate of 0.005%, a pre-tax transaction cost of 0.02% and weak volume elasticity of -0.43 or -0.61. The assumption of a small elasticity is coherent with the choice of a very small tax rate. The forex market should not be disturbed by such a tiny tax rate, and the market turnover should remain more or less stable. In effect, the reduction of market volume is 16% when the tax rate is 0.005% and the elasticity -0.43 and 23% when the elasticity is -0.61% (see annex1).

The "Tobin tax" scenario is close to our conception of the CTT. It has two goals: curbing speculation and generating fiscal revenues. It is a two-tier transaction tax. A standard tax, when speculation is not intense. A high prohibitive tax which is triggered automatically when the foreign exchange rate gets out of a pre-defined band of fluctuations of the daily exchange rate <sup>(16)</sup>. Our conception is that the standard tax level must be set around 0.1% to be efficient against speculation. It relies on the hypotheses that pre-tax transaction cost is 0.1% and a neutral elasticity of -1. It is associated with a reduction of market volume of 67% (see annex 1).

The two scenarios are not necessarily contradictory and can be reconciled if the 0.005% rate is conceived as an "introductory" rate due to increase to the 0.1% rate across a phase-in period, like envisaged by D. Felix and R. Sau (1996).

Results at world level are presented in table 3. We can see that in 2007 revenues in the leading group scenario varies between US\$ 28 billion and US\$ 30 billion when the elasticity of volume is respectively -0.63 and -0.43.

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<sup>16)</sup> For more details, see Spahn, Paul Bernd. 2002. "On the feasibility of a tax on foreign exchange transactions." Federal Ministry for Economic Cooperation and Development.: Bonn., Jetin, Bruno and Lieven Denys. 2005. ""Ready for Implementation". Technical and Legal Aspects of a Currency Transaction Tax and Its Implementation in the EU." 238. World Economy, Ecology and Development e.V. (WEED): Berlin., Jetin, Bruno. 2002. *La taxe Tobin et la solidarité entre les nations*. Paris: Descartes & Compagnie.

These results are quite comparable with Schmidt's results (US\$ 33.4 billion) and Bismans and Damette (US\$ 40 billion) and members of the leading group itself (US\$ 33 billion). Our results are slightly lower because of the more stringent hypothesis made on fiscal fraud and tax exemptions. Table 3 shows that in 2001 and 2004, revenues in 2007 US dollars would have been much lower, between 12 to 13 billion in 2001 and 17 to 19 billion in 2004. This reminds us that revenues fluctuate a lot with market turnover and that a half a basis point tax can only generate modest revenues, much too small to finance development needs.

This is clearly not the case with the "Tobin tax" scenario. Revenues can be estimated at US\$ **225** billion in 2007 up from 138 billion in 2004 and 99 billion in 2001. These are huge revenues sufficient to go beyond the financing of the Millennium Development Goals. It would be possible to finance a "big push" to boost development and finance the cost of the mitigation of global warming.

It shows that a universal treaty creating the CTT, together with other global taxes <sup>(17)</sup> have a real potential to financing development and global common goods.

In the euro zone, revenues can be estimated between US\$ 5 to US\$ 6 billion in 2007 when a 0.005% tax is applied and US\$ 36 billion when a "Tobin tax" style of 0.1% is adopted (see table 4). It shows again that revenues would be small if the euro area was to adopt a 5 cents tax for every 1000 euro transactions. The results do not change significantly for the "leading group tax" when larger areas are considered in Europe, but they do for the "Tobin tax". In the case of the EU 15, revenues would be respectively US\$ 8 billion and US\$ 58 billion (see table 5). For the EU 24, they would be respectively 8-9 billion and 60 billion (see table 6), and if the EU 15 plus Switzerland and Norway were to adopt the currency transaction tax, revenues would be respectively 9-10 and 70 billion (see table 7). So at most, the revenues of 0.005% tax could US\$ 10 billion while a "Tobin Tax" could raise US\$ 70 billion, i.e. roughly the equivalent of the MDGs today.

Revenues in Latin America would be much smaller. A 0.005% tax would produce between 83 and 89 millions of US dollars while a "Tobin Tax" would produce 580 million (see table 8). Most of the revenues would come from Brazil which has the biggest foreign exchange market turnover in Latin America (not counting Mexico). A half-basis point would produce in Brazil US\$ 51-55 million and a "Tobin tax" US\$ 354 million (see table 9), 61% of total Latin America revenues. These revenues would be welcome but clearly insufficient to finance the social and economical projects that Latin America needs. This proves that the currency transaction tax, as a financing source, is viable if only it includes rich countries. In Asia revenues are much higher because the region includes big financial centres such as Tokyo, Hong Kong and in Singapore. Revenues would be in the range US\$ 3-4 billion and US\$ 25 billion. This quite substantial and shows that contrary to Latin America, Asia could produce substantial revenues on its own to finance regional projects to produce common goods. Finally, we look at revenues in NAFTA. They would be around US\$ 13-14

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<sup>17)</sup> The CTT is not the only global tax that could be mobilised to finance development and global commons. Detailed analysis on global taxes can be found in B. Jetin (2003) and Landau, Jean-Pierre. 2004. "Rapport au Président de la République du groupe de travail sur les nouvelles contributions financières internationales." Paris.



billion for the 0.005% tax and US\$ 96 billion for the “Tobin tax”, i.e. 43% of world revenues. NAFTA, thanks to the US dollar, would be the major source of financing.

## **Conclusion**

This chapter has focused on the potential revenues that a currency transaction tax could produce. By choice, we have not addressed important topics such as, the interest of the CTT in the regulation field, how it could be adopted, implemented and managed. We have analysed these problems in other previous works (Jetin, Bruno 2003) and (Jetin, Bruno and Lieven Denys 2005). Instead we have focused on the potential revenues of the tax. We have used the latest estimations of the elasticity of volume in order to get the most accurate results. Of Course these are still rough estimations due to the uncertainty of several assumptions. But we think that these estimations are useful to judge the leverage of global taxes for financing development and global common goods.

Table 3: revenue estimates at the world level, 2007 US\$ billion.			
"Leading group" scenario 1			
Tax rate	2001	2004	2007
0.005	13	19	30
0.01%	22	31	51
0.02%	38	52	85
0.05%			
0.10%			
"Leading group" scenario 2			
Tax rate	2001	2004	2007
0.005	12	17	28
0.01%	20	27	45
0.02%	31	43	70
0.05%			
0.10%			
"Tobin tax"			
Tax rate	2001	2004	2007
0.005	15	20	33
0.01%	25	35	57
0.02%	43	60	97
0.05%	75	104	170
0.10%	99	138	225
Source: author's calculations with data from the BIS. Notes: the "leading group" scenario 1" hypotheses are: elasticity of volume = -0.43 and pre-tax transaction cost = 0.02%. The "leading group scenario 2" hypotheses are: elasticity of volume = -0.61 and pre-tax transaction cost = 0.02%. The "Tobin Tax scenario" are: elasticity of volume = -1 and pre-tax-transaction costs = 0.1%			

Table 4: revenue estimates in the euro zone, 2007 US\$ billion.			
"Leading group" scenario 1			
Tax rate	2001	2004	2007
0.005	3	4	6
0.01%	5	5	8
0.02%	8	9	14
0.05%			
0.10%			
"Leading group" scenario 2			
Tax rate	2001	2004	2007
0.005	3	3	5
0.01%	4	5	7
0.02%	7	8	11
0.05%			
0.10%			
"Tobin tax"			
Tax rate	2001	2004	2007
0.005	3	4	6
0.01%	5	6	9
0.02%	9	11	16
0.05%	16	18	28
0.10%	21	24	36
Source: author's calculations with data from the BIS. Notes: the "leading group" scenario 1" hypotheses are: elasticity of volume = -0.43 and pre-tax transaction cost = 0.02%. The "leading group scenario 2" hypotheses are: elasticity of volume = -0.61 and pre-tax transaction cost = 0.02%. The "Tobin Tax scenario" are: elasticity of volume = -1 and pre-tax-transaction costs = 0.1%			

Table 5: revenue estimates in the European Union 15, 2007 US\$ billion.			
"Leading group" scenario 1			
Tax rate	2001	2004	2007
0.005	5	6	8
0.01%	7	9	13
0.02%	12	15	22
0.05%			
0.10%			
"Leading group" scenario 2			
Tax rate	2001	2004	2007
0.005	4	5	8
0.01%	6	8	12
0.02%	10	12	18
0.05%			
0.10%			
"Tobin tax"			
Tax rate	2001	2004	2007
0.005	5	6	9
0.01%	8	10	15
0.02%	14	17	25
0.05%	24	30	44
0.10%	31	39	58
Source: author's calculations with data from the BIS. Notes: the "leading group" scenario 1" hypotheses are: elasticity of volume = -0.43 and pre-tax transaction cost = 0.02%. The "leading group scenario 2" hypotheses are: elasticity of volume = -0.61 and pre-tax transaction cost = 0.02%. The "Tobin Tax scenario" are: elasticity of volume = -1 and pre-tax-transaction costs = 0.1%			

Table 6: revenue estimates in the European Union 24, 2007 US\$ billion.			
"Leading group" scenario 1			
Tax rate	2001	2004	2007
0.005	5	6	9
0.01%	7	9	14
0.02%	12	15	23
0.05%			
0.10%			
"Leading group" scenario 2			
Tax rate	2001	2004	2007
0.005	4	5	8
0.01%	6	8	12
0.02%	10	12	19
0.05%			
0.10%			
"Tobin tax"			
Tax rate	2001	2004	2007
0.005	5	6	9
0.01%	8	10	15
0.02%	14	17	26
0.05%	24	30	45
0.10%	32	40	60
Source: author's calculations with data from the BIS. Notes: the "leading group" scenario 1" hypotheses are: elasticity of volume = -0.43 and pre-tax transaction cost = 0.02%. The "leading group scenario 2" hypotheses are: elasticity of volume = -0.61 and pre-tax transaction cost = 0.02%. The "Tobin Tax scenario" are: elasticity of volume = -1 and pre-tax-transaction costs = 0.1%			

Table 7: revenue estimates in the European Union 15 + Switzerland and Norway, 2007 US\$ billion.			
"Leading group" scenario 1			
Tax rate	2001	2004	2007
0.005	5	6	10
0.01%	8	10	16
0.02%	14	17	27
0.05%			
0.10%			
"Leading group" scenario 2			
Tax rate	2001	2004	2007
0.005	5	6	9
0.01%	7	9	14
0.02%	11	14	22
0.05%			
0.10%			
"Tobin tax"			
Tax rate	2001	2004	2007
0.005	6	7	11
0.01%	9	12	18
0.02%	16	20	30
0.05%	28	35	53
0.10%	36	46	70
Source: author's calculations with data from the BIS. Notes: the "leading group" scenario 1" hypotheses are: elasticity of volume = -0.43 and pre-tax transaction cost = 0.02%. The "leading group scenario 2" hypotheses are: elasticity of volume = -0.61 and pre-tax transaction cost = 0.02%. The "Tobin Tax scenario" are: elasticity of volume = -1 and pre-tax-transaction costs = 0.1%			

Table 8: revenue estimates in Latin America, 2007 US\$ million.			
"Leading group" scenario 1			
Tax rate	2001	2004	2007
0.005	43	51	89
0.01%	63	75	132
0.02%	106	126	221
0.05%			
0.10%			
"Leading group" scenario 2			
Tax rate	2001	2004	2007
0.005	40	48	83
0.01%	56	66	116
0.02%	87	104	181
0.05%			
0.10%			
"Tobin tax"			
Tax rate	2001	2004	2007
0.005	46	55	97
0.01%	71	84	148
0.02%	121	145	253
0.05%	211	251	439
0.10%	278	332	580
Source: author's calculations with data from the BIS. Notes: the "leading group" scenario 1" hypotheses are: elasticity of volume = -0.43 and pre-tax transaction cost = 0.02%. The "leading group scenario 2" hypotheses are: elasticity of volume = -0.61 and pre-tax transaction cost = 0.02%. The "Tobin Tax scenario" are: elasticity of volume = -1 and pre-tax-transaction costs = 0.1%			

Table 9: revenue estimates in Brazil, 2007 US\$ million.

"Leading group" scenario 1			
Tax rate	2001	2004	2007
0.005	28	31	55
0.01%	40	45	80
0.02%	68	76	135
0.05%			
0.10%			
"Leading group" scenario 2			
Tax rate	2001	2004	2007
0.005	26	29	51
0.01%	36	40	71
0.02%	56	62	110
0.05%			
0.10%			
"Tobin tax"			
Tax rate	2001	2004	2007
0.005	30	33	59
0.01%	45	51	90
0.02%	78	87	154
0.05%	135	151	268
0.10%	178	199	354

Source: author's calculations with data from the BIS. Notes: the "leading group" scenario 1" hypotheses are: elasticity of volume = -0.43 and pre-tax transaction cost = 0.02%. The "leading group scenario 2" hypotheses are: elasticity of volume = -0.61 and pre-tax transaction cost = 0.02%. The "Tobin Tax scenario" are: elasticity of volume = -1 and pre-tax-transaction costs = 0.1%



Table 10: revenue estimates in Asia, 2007 US\$ Billion.

"Leading group" scenario 1			
Tax rate	2001	2004	2007
0.005	2	2	4
0.01%	3	3	6
0.02%	4	6	9
0.05%			
0.10%			
"Leading group" scenario 2			
Tax rate	2001	2004	2007
0.005	2	2	3
0.01%	2	3	5
0.02%	4	5	8
0.05%			
0.10%			
"Tobin tax"			
Tax rate	2001	2004	2007
0.005	2	2	4
0.01%	3	4	6
0.02%	5	6	11
0.05%	9	11	19
0.10%	11	15	25

Source: author's calculations with data from the BIS. Notes: the "leading group" scenario 1" hypotheses are: elasticity of volume = -0.43 and pre-tax transaction cost = 0.02%. The "leading group scenario 2" hypotheses are: elasticity of volume = -0.61 and pre-tax transaction cost = 0.02%. The "Tobin Tax scenario" are: elasticity of volume = -1 and pre-tax-transaction costs = 0.1%

Table 11: revenue estimates in NAFTA, 2007 US\$ Billion.			
"Leading group" scenario 1			
Tax rate	2001	2004	2007
0.005	5	8	14
0.01%	9	13	22
0.02%	14	22	37
0.05%			
0.10%			
"Leading group" scenario 2			
Tax rate	2001	2004	2007
0.005	5	8	13
0.01%	8	12	19
0.02%	12	18	30
0.05%			
0.10%			
"Tobin tax"			
Tax rate	2001	2004	2007
0.005	6	9	15
0.01%	10	15	25
0.02%	17	26	42
0.05%	29	44	73
0.10%	38	59	96
Source: author's calculations with data from the BIS. Notes: the "leading group" scenario 1" hypotheses are: elasticity of volume = -0.43 and pre-tax transaction cost = 0.02%. The "leading group scenario 2" hypotheses are: elasticity of volume = -0.61 and pre-tax transaction cost = 0.02%. The "Tobin Tax scenario" are: elasticity of volume = -1 and pre-tax-transaction costs = 0.1%			

## Annex 1

Reduction of market volume in percentage according to the tax rate, the elasticity and pre-tax transaction costs.									
Elasticity	-0.43			-0.63			-1		
Tax rate	Pre-tax transaction cost								
	0,02%	0,05%	0,1%	0,02%	0,05%	0,1%	0,02%	0,05%	0,1%
0,005%	<b>16</b>	<b>8</b>	<b>4</b>	<b>23</b>	<b>11</b>	<b>6</b>	<b>33</b>	<b>17</b>	<b>9</b>
0,01%	<b>26</b>	<b>13</b>	<b>8</b>	<b>35</b>	<b>19</b>	<b>11</b>	<b>50</b>	<b>29</b>	<b>17</b>
0,02%	<b>38</b>	<b>22</b>	<b>13</b>	<b>50</b>	<b>31</b>	<b>19</b>	<b>67</b>	<b>44</b>	<b>29</b>
0,05%	<b>54</b>	<b>38</b>	<b>26</b>	68	<b>50</b>	<b>35</b>	83	<b>67</b>	<b>50</b>
0,1%	<b>64</b>	<b>50</b>	<b>38</b>	78	64	<b>50</b>	91	80	<b>67</b>

**Note: the table reads as follows: When the elasticity of volume is -0.43, the pre-tax transaction cost 0.02% and the tax 0.005%, the reduction of market volume is -16%. In bold are reductions of market volume below or equal to around two thirds of the total. Source: Author's calculations according equation (1).**

The French report (2000) considers that the most plausible scenario is based on a neutral elasticity of -1, pre-tax transaction cost of 0.05% and a tax rate of 0.05%. It corresponds to a reduction of market volume of -67%. It means that after the introduction of the tax, the volume of the market would be at one third of its previous level. We have considered a 0.1% tax rate combined with a pre-tax transaction cost of also 0.1%, and a neutral elasticity of -1. This also leads to a reduction of -67% of the volume of the market.

## Annex 2: Market volume and geographical coverage.

To calculate the currency amounts presented below, we have used the currency distribution of foreign exchange turnover at April 2007 exchange rates as a percentage share of average daily turnover presented in table D.5 page 50 (BIS, 2007). This data is on net-net basis, i.e. it is adjusted for local and cross-border double-counting. Each percentage share has been divided by 2 because the sum of transactions in all individual currencies equals 200%. The halved percentage share is then applied to the total "traditional turnover" at April 2007 exchange rates presented in table B.1 page 4. In April 2007, this total was \$3.2 trillion, in April 2004, \$1.9 trillion and in April 2001, \$1.4 trillion. The only exception is for Argentina for which data is only available on a net-gross basis which means that cross-border transactions include double-counting but for very small amounts. The geographical coverage is the following:

The European Union 15 includes all the currencies of all member states before the last enlargement to Eastern and south Europe: the euro, the Sterling pound, the Danish Krone and the Swedish Krona.

The European Union 24 includes the EU 15 plus the following countries: The Polish zloty, the Hungarian forint, the Czech koruna, the Slovak koruna, the Lithuanian litas, the Estonian kroon, the Latvian lats, and the Bulgarian lev.

NAFTA includes the USA, Canada and Mexico.

Asia includes China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Philippines and Thailand.

Latin America includes Argentina, Brazil, Chile, Colombia and Peru.

### Annex 3: tax evasion.

Hypotheses concerning fiscal evasion are arbitrary due to the absence of previous experiences. We have combined several approaches used in the French (2000, see annex 3) and Belgium (2001, see page 50 and following) reports. We fix the minimum of fiscal evasion at 2% when the tax is set at 0.005%. We add 8% for tax exemptions of official transactions. This gives a minimum of 10%. Then, fiscal evasion increases when the tax rate is equal to 0.01% according to the following formula.

At world level:  $15\% + (t \times 100 \times 10\%)$ . t is the tax rate expressed in decimals.

In the European Union 15:  $20\% + (t \times 100 \times 15\%)$

In the EU 15 plus Switzerland and Norway:  $17.5\% + (t \times 100 \times 15\%)$

In the European Union 24:  $20\% + (t \times 100 \times 15\%)$

In the Euro zone:  $25\% + (t \times 100 \times 15\%)$

In Asia:  $20\% + (t \times 100 \times 15\%)$

In NAFTA:  $20\% + (t \times 100 \times 15\%)$

In Latin America:  $25\% + (t \times 100 \times 15\%)$

In Brazil:  $25\% + (t \times 100 \times 15\%)$

Fiscal evasion according to the tax rate and geographical coverage								
Tax rate	World	EURO AREA	EU 15	EU 24	EU+ Switzerland + Norway	NAFTA	LA	ASIA
<b>0,005%</b>	10	10	10	10	10	10	10	10
<b>0,01%</b>	15,1	25,2	20,2	20,2	17,7	20,2	25,2	20,2
<b>0,02%</b>	15,2	25,3	20,3	20,3	17,8	20,3	25,3	20,3
<b>0,05%</b>	15,5	25,8	20,8	20,8	18,3	20,8	25,8	20,8
<b>0,1%</b>	16,0	26,5	21,5	21,5	19,0	21,5	26,5	21,5

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