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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. "Trade not aid" became the new motto in international summits precisely when the world economy was entering into the "global era". But because the globalisation process widens 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. 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.

However, between the two conferences, some concrete initiatives to create "innovative sources" of financing for development have 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

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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". Beyond providing financing, these proposals seek to deter "global bads" and encourage "global goods" (Kaul, Inge, Grunberg Isabelle, and Stern Marc A. 1999). 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. This group now includes 54 countries and four observer countries.

This group of countries have 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".

The Doha conference recognised the existence and importance of these "voluntary innovative sources of development and innovative programmes linked to them" including the "PetroCaribe Initiative" 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.

These actions reveal encouraging progress on innovative financing. But they are still modest and fall short of creating a radically innovative source of financing: global financial taxes. The principle of these taxes goes back to J.M Keynes who argued in the *General Theory* that speculation was less active in the London Stock Exchange than in the New York Stock Exchange thanks to the stamp duty on financial transactions. James Tobin revived the idea after the demise of the Breton Woods monetary system in 1971. He thought that a Currency Transaction Tax (CTT) could prevent speculation from destabilising currencies and triggering financial crises. His proposal "sunk in a deep well" at the time but came to the forefront of political debates each time a speculation attack or a financial crisis hit developed or developing countries. Global financial taxes and soon global ecological taxes became one of the major demand of the alter globalist movement in the 2000s. At the origin, the principle of a tax is to reduce a "public bad" (for instance speculation or pollution). But as a tax it also generates fiscal revenues. There is potentially a contradiction between the two objectives. Several contributions have tried to resolve this contradiction, the major one being P.B. Spahn's proposal of a two-tier transaction tax (Spahn, Paul Bernd 1996).

Our proposal focuses on the Currency Transaction Tax and establishes that a trade-off between the two objectives is indeed possible. In a first section, we rely on

an international political economy approach to retrace the evolution of the political debate at the institutional level and its reflection on the concrete proposals made by economists committed with NGOs. In a second section, we update a previous work (Jetin, Bruno 2007) (Jetin, Bruno 2002) to estimate the fiscal revenues of the CTT based on a set of hypotheses and using of the last BIS data on Foreign exchange markets" (BIS 2007). We estimate revenues at the world level and by regions (Europe and Asia) on the period 1989-2007 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.

Section 1: The evolution of the debate on the Currency Transaction Tax (CTT): Curbing inflation or financing development?

The primary goal of the CTT was the autonomy of economic policy. As J. Tobin says, 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 1997-98 Asian crisis. 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 many 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 speculative bubble in March 2000, and then the following

financial scandals created resentment against “Wall street” and the idea of “Security Transaction Tax” (STT) was more appealing than the CTT that appeared too abstract and remote. These two taxes are cousins 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 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.

The debt cancellation campaign, the pandemic of AIDS, the first “world social summit” organised by the United Nations in Copenhagen in 1994, the second one held in Geneva in 1999, then the “Millennium Development Goals” [(2)] decided in New York by heads of government under the auspices of The United Nations again, and finally the “financing for development” summit in Monterrey in 2002, organised by the UN as a follow-up of the Millennium Declaration, caught to the public attention that new stable sources of financing had to be found.

This time it seems that the feeling that “something has to be done” to reach the Millennium Development Goals (MDG) is not dying out. Since 2001, the Official Development Aid (OAD) is increasing again after years of decrease and official “aid fatigue”. 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. This explains why some countries like France and Belgium have passed a law in favour of the CTT, and why some governments like France, Germany, Spain, Brazil and Chile, have officially proposed the creation of “global taxes”, including the CTT, at an international conference organised at the United Nations in New York in 2004. The United Nations itself has not dismissed the “global taxes” as alternatives sources of financing due to the perseverant action of NGOs that insisted to keep them on the agenda.

The necessity to finance global public goods is a new justification to global taxes such as the CTT. Ecological problems such as pollution, green house gases emission, deforestation, biodiversity, are international problems in essence. So is the preservation of natural resources such as pure water. New pandemics affecting human beings like AIDS, but also animals such as foot and mouth disease, and both species like SARS, have reinforced the idea that borders are no longer protections. Emergency aid to the growing number of refugees, victims of war and draught, or

[2)] The Millennium Development Goals were signed by 189 countries in September 2000. 8 objectives have been selected due to be realised in 2015. Among them, reducing by half the proportion of the world population, whose revenue is one US dollar per day, guarantying access to “basic social services”, stopping the diffusion of AIDS and other great diseases like paludism, protecting environment through “sustainable development”, creating world partnership for development.

natural disasters, call for international action. On a different ground, the contagious character of the last financial crises is another example of the international dimension of major problems. When this kind of problem arises at the national level, it is the duty of the State to provide a solution. In rich countries, the State can do it because of the fiscal revenues coming from the various taxes and duties it levies. The common good is the justification to taxes, just as paying taxes is one attributes of citizenship.

At the international level, there is neither state nor taxes. Global taxes managed by international institutions should fill this gap. At the national level, taxes have two functions. They can reduce a problem, like pollution, and generate revenues. At the international level, they should do the same. This raises old and new questions.

The old one is the following. It would be impossible for one policy instrument to tackle two problems. The CTT could not at the same time curb speculation and generate revenues. The more efficient the tax is against speculation, the less revenues are generated or conversely.

The contradiction holds in theory but not in practice. No one imagine that speculation would be reduced to nothing, unfortunately, because it is inherent to private markets. So, the CTT can reduce to some degree speculation and simultaneously generate revenue, like “sin taxes” in the US generate revenues and contain alcoholism and nicotinic without eradicating them. Furthermore, as we shall see below, the original CTT imagined by J. Tobin has profoundly evolved thanks to P.B. Spahn (1995, 2002) and is now conceived as a two-tier transaction tax. A first tier would be an ordinary tax at a very small rate dedicated to revenue generation. A second tier would be a surcharge, at a high rate, to curb speculation. So, there would be actually two instruments for two objectives.

The new question is that if the CTT is now exclusively conceived as a revenue generator, one loses completely its first objective: reducing short-term speculation and increasing national policy autonomy. A balance must found between the two objectives. After the creation of the CTT, learning by doing would help to fine-tune the appropriate rates of the two-tier CTT. But this will be only possible if the two objectives are maintained. Keeping this in mind, we now turn to the estimation of the potential revenues.

Section 2: 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 [3] and at least nine academic research [4] have realised this exercise. These previous estimations are not presented here in details but we discuss their main hypotheses and methodology in order to justify our own choices (see below table 1).

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 (for instance, D. Cassimon). 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, see P.B. Spahn 2002, Ministry of Finance of Belgium and Finland, 2001, for instance) and sometimes according to the nature of the transaction (spot, outright forward and swaps, see M. Nissanke for instance). 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.

Starting from these premises, we diverge with the opponents of the tax, which tend to exaggerate the volume reduction, and also with those supporters that advocate a very tiny ordinary tax in order to minimise as far as possible the reduction of volume, because they wrongly identify volume of transactions and liquidity (S. Kapoor, 2005, 2004; M. Nissanke, 2003; P.B. Spahn, 2002).

The difficulty is double. First it is necessary to make hypotheses concerning fiscal evasion and fraud, with the idea that they will increase with the tax level. Second, it is necessary to estimate the sensibility of the volume of transactions to the tax rate [5], with the same idea that the higher the tax rate, the stronger the reduction of volume. In other terms, the volume elasticity increases with the tax rate.

1. Fiscal fraud is a deliberate act against the law. Fiscal evasion tries to stay on the borderline by creating new financial products that by-pass the law, or by off-shoring trading to countries that do not apply the tax, in particular tax havens. We have seen that our conception of the tax collecting procedure minimises strongly the possibilities of fraud and off-shoring. But with a concern of prudence, we have retained pessimistic hypotheses: The higher the tax rate and the smaller the geographical coverage, the higher fiscal fraud and evasion is.

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[3] Ministry of Finance of Finland (2001), Ministère des Finances de Belgique (2001). Ministère de l'Economie des Finances et de l'Industrie of France (2000).

[4] S. Kapoor (2004), Clunies-Ross A. (2003), M. Nissanke (2003), B. Jetin 2002, P.B. Spahn (2002), R. Schmidt (2001), D. Cassimon (2001), H. Patomäki (2001), D. Felix and R. Sau (1996).

[5] Economists call this sensibility «elasticity». In the present case"volume" elasticity.

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)
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
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	2001	World level	1,210						0.02%	53
H. Patomäki (2001)		World level							0.1%	
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

The French official report (hereafter French report) conjectures that at the world level, fiscal fraud and evasion leads to a reduction of 20% of volume. 20% can be considered a high level and we can suppose like J. Frankel (1996) that it also includes the exemption of official transactions realised by governments, central banks and other public institutions [6]. At the EU level, the French report assumes that the reduction of volume is 30%. At the national level it would be 50%. The Belgium official report (hereafter Belgium report) is a bit more refined. It supposes that the fiscal leakage grows with the level of tax. At the world level, it supposes that some countries (mostly tax havens) refuse to adopt the tax and allow some traders to by-pass the tax. Even if we think that tax havens cannot stay out of reach and can be efficiently retaliated, we will accept in one of our estimates the Belgium report's hypothesis that a minimum of 15% evade the tax, plus (**t** x 100 x 10%), **t** being the tax rate [7].

2. 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 the increase of this transaction cost. 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 disturb markets (for instance, (Kapoor, Sony 2004), (Nissanke, Machiko 2004), (Spahn, Paul Bernd 2002) then the interbank pre-tax transaction cost is relevant. It is presently 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 (Spahn, Paul Bernd 2002). In this conception the tax rate is necessarily very close to zero, in the 0.01% to 0.02% range, because a 0.01% tax rate already reaps off half of banks' profit margin.

On the other hand, if one thinks, (like we do but also (Felix, D. and Sau R. 1996), that banks and their professional customers (financial institutions of all kinds and non-financial firms) must 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.

The main argument against our view is that banks will transfer the burden of the tax to their customers, and in particular to non-financial firms and it will hurt cross-border trade and investment more than speculators, contradicting the main objective of the tax (Nissanke, Machiko 2004) and (Davidson, Paul 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

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[6] M. Nissanke (2003, 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.

[7] t is expressed in decimals. For instance, for a 1% tax rate, t = 0.01, and 15% + (0.01 x 100 x 10%) = 25% of the initial volume would escape from the tax (see the Belgium report on page 50).

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 rivalry 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[8] messages offer the possibility of fine-tuning the messaging and settlement charges. An ordering customer can decide to pay these charges, to share 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 applied independently to the wholesale (interbank) and retail markets (other financial and non-financial customers).

This tax rate will be compared with the non-financial pre-tax transaction cost on the retail market. This transaction cost is usually 0.1 % in developed countries according to the Belgium and Finish and French reports. According to D. Felix and R. 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 M. Nissanke and P.B. Spahn as the most plausible and desirable rate.

Regarding the volume elasticity, the only solution is to make hypotheses, as there is no empirical evidence for the foreign exchange markets. Banks and their customers (other financial customers and non-financial customers) can be more or less sensible to the same transaction cost increase. We may suppose that banks have a higher elasticity than the other financial institutions, which in turn have a higher elasticity than non-financial customers due to their respective pre-tax transaction costs. The higher the sensibility of traders is, the higher the reduction of volume.

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

For these reasons, we have decided to follow the methodology employed the official reports of the ministry of Finance of France, Belgium and Finland. These reports are critical of the CTT and their conclusion is that the CTT should not be adopted. By following their methodology, one cannot be suspected of producing over optimistic revenue estimates.

The first estimation follows the methodology of the Ministry of Finance of France. It is the simplest one. It is based on a unique tax rate and the same volume elasticity whatever the agent (banks or their customers) and the nature of transaction (spot, outright forward, swaps and other derivatives). This methodology is the more adapted to the idea that banks and their customers will find a way to share the tax between them. This allows considering the market as a whole and studying the impact on the market of three different elasticities -0.5, -1 and -1.5 [(9)]. In its simplest acceptation, an elasticity of – 1 means that the volume of the forex 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. It is a neutral assumption. When the elasticity is -1.5, one supposes that traders are very sensible and overreact to the increase of the transaction cost. They reduce by -1.5% the volume of their trade when the transaction cost increase by 1%. To the contrary, an elasticity of 0.5% means that traders are not very sensible to the increase of the transaction cost. When this one increases by 1%, they reduce their transactions by only 0.5%.

The second estimation is based on the idea that banks and customers will not share the tax burden between them but that each will pay it in full. In this case it is necessary to take into account differences in elasticity of banks and their customers in accordance with their respective pre-tax transaction costs. On this point we follow the methodology of the two official reports made by the Ministry of Finance of Finland and Belgium which are more or less the same. At the world level, it is supposed an elasticity of -1.5 for banks, -1 for other financial customers and -0.5 for non-financial customers respectively.

To estimate revenues at the EU level, the Belgium report makes the additional assumption that elasticities are higher because traders are faced with more possibilities to trade in other currencies (especially the US dollar) than the taxed currencies. These are the euro, and the other EU currencies such as the British pound, the Swedish krona and the Danish krone. At the EU level, the elasticities are -0.55, -1.1, -1.75.

In this second alternative, we will estimate six 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 new member-states must join the euro area in the near future but due to the lack

[9)] In the 1996 collective book dedicated to the analysis of Tobin tax, J. Frankel, a reckoned specialist of exchange rates and not a declared supporter of the CTT, recalls that any hypothesis concerning the volume elasticity is arbitrary. But he deems an elasticity of – 0.32 linked to pre-tax transaction of 0.1% as reasonable. So, the hypotheses of the French, Belgium and Finnish official reports may considered as more restrictive and not over friendly to the CTT. Frankel, J.A. 1996. "How Well Do Foreign Exchange Market Work?," in *The Tobin Tax: Coping with Financial Volatility*. M. Ul Haq, I.Kaul and I. Grunberg eds. Oxford: Oxford University Press.

of comprehensive data we have not included them in the estimations. Another difficulty is that when they will join the euro area, the volume of their forex transactions will decrease due to the elimination of their transactions with the member-states of the euro area. But it is difficult to anticipate how much the reduction of the volume of their transactions will be. But if taken into account, they would increase the revenue slightly because their joint weight on the foreign exchange market is not very important. Much more significant is the inclusion of the United Kingdom in the estimation because London, with one third of global turnover is the most important market of the world. The fourth estimate regards 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 fifth geographical area estimates the potential revenues of most Asian countries for which data is available. It covers almost all East Asian countries plus India[10]. In fact, it is very close to what is now called ASEAN+4 countries engaged in a process of regional integration (Jetin, Bruno 2008). Finally, we present an estimate of the potential revenues of the NAFTA countries.

In the following, we first present the first set of estimates with the "French methodology" and then the second set of estimates using the "Belgian/Finnish Methodology".

1. Estimates based on unique tax rates and the same elasticity for the whole foreign exchange market.

In order to minimise the possibilities to by-pass the CTT, the tax rate is the same for any kind of transaction (sport, outright forward, swaps and derivatives) and for any economic agent (banks and their customers).

The initial tax base is the global turnover indicated in the triennial foreign exchange survey published by the BIS. 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 current exchange rates rose to the unprecedented record of US$ 3.2 trillion up from US $ 1.9 trillion in April 2004, a 69%. There is no doubt that due to the crisis, the global turnover will fall in 2008 and the subsequent years, like it did between 1998and 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.

For the euro area, the turnover is lower than the combined market turnover of the previous currencies of the countries that decided to create the euro. This is partly due to the elimination of internal transactions between those countries. In April 2007, it reached US $ 1.1 trillion per day to be compared with 659 billion in 2004 and 452 in 2001.

We suppose that the tax rate varies between 0.01 and 0.20% and that the pre-tax transaction cost vary between 0.02% and 0.1% [(11)]. Of course, the combination of a tax rate of 0.20% combined with pre-tax transaction cost of 0.02% and a -1.5 elasticity makes no sense since the market turnover would disappeared. The French

[10] The countries are: China, Hong Kong, India, Indonesia, Japan, Korea, Philippines, Singapore, Taiwan, and Thailand.

[11)] The French report considers pre-tax transaction costs between 0.01% and 0.05%. We have also included the 0.1% level.

report disregards such extreme combinations and also its contrary such as a tax rate of 0.01%, pre-tax transaction cost of 0.05%, and a low elasticity of -0.5 leading to a small reduction of -15%. This is why we only consider plausible combinations with a maximum for the reduction of market volume no superior to two-third of the market. This still leaves ample room for theoretical estimations and a minimum of volume reduction of 15% when the tax rate is 0.01% [(12)].

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 volume elasticity 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, τ the tax rate, **V** is the market turnover before tax, **ev** is fiscal evasion, **k** is the pre-tax transaction cost, and **ε** is the volume elasticity.

What is interesting in this formulae is that the reduction of the market turnover due to the sensibility of traders to the increase of transaction cost is strengthened by the fact that the elasticity, **ε,** is not a multiplier but an exponential, which is more powerful. This means that the reduction of volume is rather overestimated than underestimated, which tends to minimise the revenues rather than increase them.
The tax, "τ" is multiplied by 2 because it leads to a simultaneous reduction of the bid price and an increase of the ask price [(13)]. The French report supposes implicitly that 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. This is the situation studied in the Finnish and Belgium reports (see below the second set of estimations). The French report is thus more severe in this senses and leads to weaker revenues.

Having this in mind we can comment the synthetic results presented in tables 1 and 2 [(14)]. We have distinguished three scenarios, the "**preferred**", the "**intermediate"**, and the "**minimal**" scenario. The **preferred** scenario is based on a CTT rate of 0.1%, a pre-tax transaction cost of 0.1% and a neutral elasticity of -1. It is

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[12)] The matrix of market turnover reduction is obtained by the combination of the tax rate, pre-tax transaction costs and volume elasticity according to the formulae used in each report. These matrixes are presented in annex in table A.3 for the French report and in table A.4 for the Belgium and Finnish reports.

[13)] The buying price (bid price) is the price at which the market is ready to buy the currency. The selling price (ask price) is the price at which the market is ready to sell the currency. By definition, the selling price is always superior to the buying price. Transaction costs are defined as the difference (the spread) between ask and bid prices.

[14)] The detailed results are presented in table A.1. in the statistical annex.

associated with a reduction of market volume of 67% (see table A.3 in annex). It is our preferred scenario because it is close to our conception of the CTT [15]. The **intermediate** scenario is base on a CTT rate of 0.02%, a pre-tax transaction cost of 0.02% and a neutral elasticity of -1. It is also associated with a reduction of volume of 67%. These are stricter hypotheses than the ones found in the central scenario of the French report (2000, annex 3, p 62) for which a tax rate of 0.05%, a pre-tax transaction cost of 0.05% and an elasticity of -1 is considered a "plausible" scenario [16].

What we call the "**minimal**" scenario is the market-friendly one: a very small CTT rate of 0.01%-0.02%, a pre-tax transaction cost of 0.02% and weak volume elasticity of -0.5. The assumption of a weak 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 29% when the tax rate is 0.01% and 42% when the tax rate is 0.02%. This "minimal" scenario reflects the choices made by authors like P.B. Spahn, M. Nissanke and S. Kapoor but with a much stronger reduction of volume.

The two scenarios are not necessarily contradictory and can be reconciled if the 0.01%-002% 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) for whom the tax rate could reach 0.25% at the end of the process.

At the world level, the revenues in 2007 in the preferred scenario can be estimated at US$ **214** billion in 2007. It is huge revenue and a 71% increase from the US $ **125** billion potential revenue for 2004 (see table 2 and figure 1). These amounts of revenues are sufficient to go beyond the financing of the Millennium Development Goals. Figure 1 shows that a very high tax rate of 0.2% raises only marginally higher revenues. The reason is that at such a high rate, the volume of the market shrinks. This is why a 0.1% tax rate can be considered a maximum and a more efficient rate.

It shows that a universal treaty creating the CTT, together with other global taxes [17] have a real potential to financing development and global common goods. Even in the case of the "minimal scenario" revenues would be significant. A 0.01% tax would raise US$ 45 billion in 2007 US$ up from 27 billion in 2004. A 0.02% tax would generate US$ 74 billion in 2007 up from 43 billion in 2004. But one can see that these good results are very dependent on the record level reached by global foreign exchange market in 2007. The global turnover of the foreign exchange market has increased a lot since 2001(see figure 1). A return to the level reached in

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15) The CTT has to goals: curbing speculation and generating fiscal revenues. It is a two-tier transaction tax. A standard low 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. Our conception is that the standard tax level must be set around 0.1% to be efficient against speculation. 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.

16) The French report central scenario leads also to a reduction of 67% of market turnover.

17) 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.

TABLE 2: REVENUE ESTIMATES AT THE WORLD LEVEL							
PREFERED SCENARIO							
ELASTICITY OF -1 AND TRANSACTION COST BEFORE CTT = 0.1%							
TAX LEVEL	**1989**	**1992**	**1995**	**1998**	**2001**	**2004**	**2007**
0.01%	11	14	19	25	20	31	54
0.02%	19	24	34	43	34	54	92
0.05%	33	42	56	75	60	94	161
0.10%	43	56	75	100	80	125	214
0.20%	52	67	90	120	96	150	257
INTERMEDIATE SCENARIO							
ELASTICITY OF -1 AND TRANSACTION COST BEFORE CTT = 0.02%							
TAX LEVEL	**1989**	**1992**	**1995**	**1998**	**2001**	**2004**	**2007**
0.01%	7	8	11	15	12	19	32
0.02%	9	11	16	20	16	25	43
0.05%	11	14	19	25	20	31	54
0.10%	12	15	20	27	22	34	58
"MINIMAL" SCENARIO							
ELASTICITY OF -0.5 AND TRANSACTION COST BEFORE CTT = 0.02%							
TAX LEVEL	**1989**	**1992**	**1995**	**1998**	**2001**	**2004**	**2007**
0.01%	9	12	16	21	17	27	45
0.02%	15	19	27	35	28	43	74
0.05%	27	34	46	61	49	77	131
0.10%	39	51	68	90	72	113	194
NOTE: METHODOLOGY OF THE FRENCH MINISTRY OF FINANCE (2000). AUTHOR'S CALCULATIONS							

2001 or even 2004 would produce much smaller and insufficient revenues. Because of the crisis, this will be probably the case for the next future at a time when those revenues will be much needed. This is the reason why we think that higher tax rates are preferable.

These estimates are rather conservative but closed to M. Nissanke's (2003) estimates of 17-19 billion for 0.01% CTT and 30-35 billion for a 0.02% CTT for the year 2001, despite a notable difference in methodology (18). If the preferred scenario (a 0.1% tax rate) was applied, the revenues of the tax could easily finance the US $ 50 billion deemed necessary by the World Bank to achieve the Millennium Development Goals (hereafter MDG). In fact, it could be possible to go much beyond the access to minimal basic needs and the reduction of poverty by two. It would be possible to finance a "big push" to boost development. It is important to notice that even the "minimal scenario" (revenues from 45 to 74 billion) would cover the cost of the MDG. This "minimal scenario" lies on a favourable assumption of a low volume elasticity of -0.5. In the intermediate scenario, which is based on a higher volume elasticity of -1, revenues fall in the range of US $ 32 to US $ 43 billion (19) in 2007, i.e. between 64% and 86% of the MDG financial needs.

[18] M. Nissanke (2003) applies different tax rates according to the nature of the transaction and the nature of the market - wholesale and retail. The French official report uses a unique tax rate. She assumes that the reduction of volume is 5% when the tax rate is 0.01% and 15% when the tax rate is 0.02%, while we assume a reduction of volume of 29% and 42% respectively.

[19] Remember that the intermediate mixes the same elasticity as in the privileged scenario, i.e. -1, and pre-tax transaction cost of 0.02% considered by P.B. Spahn and M. Nissanke.

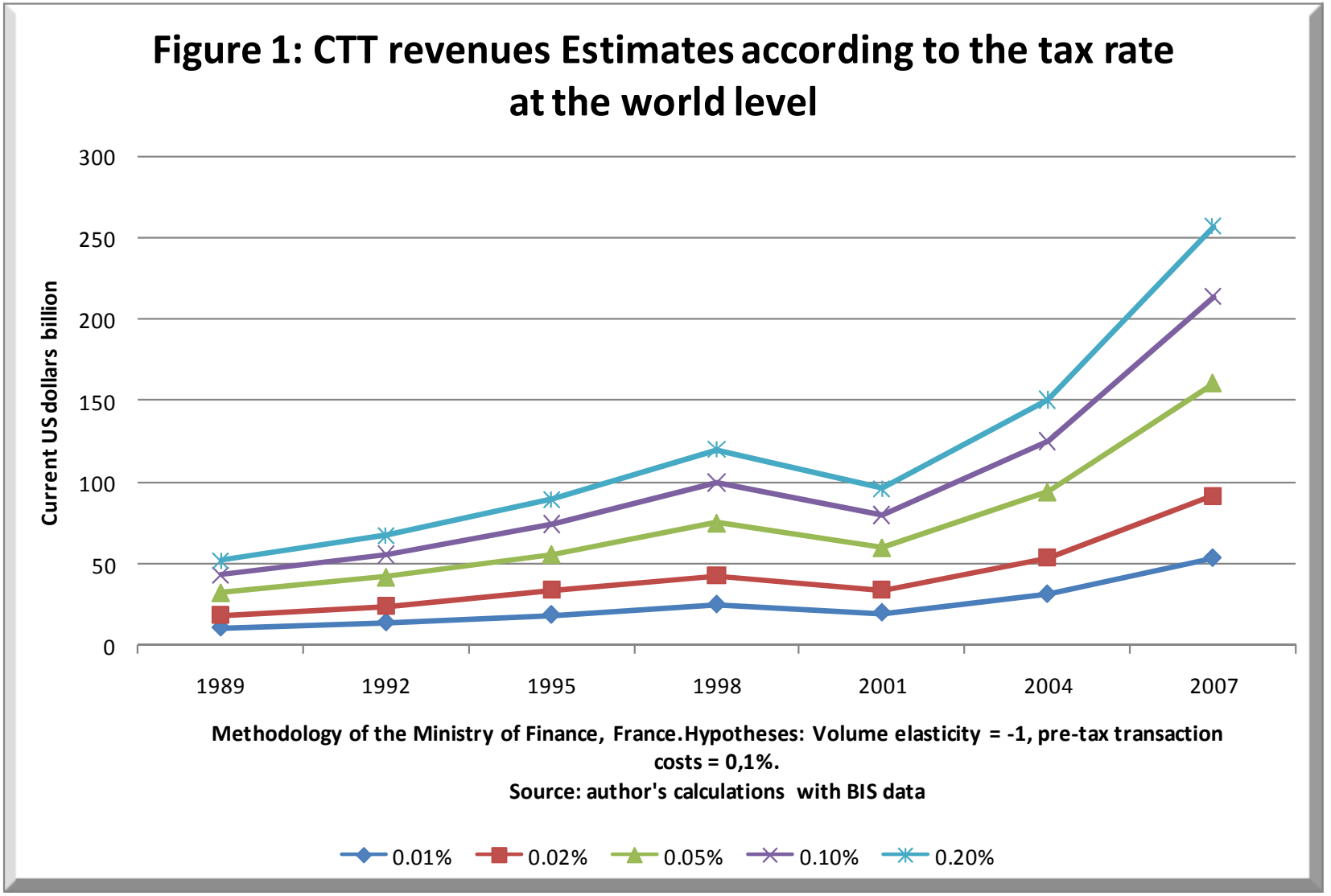
Figure 1: CTT revenues Estimates according to the tax rate at the world level
Current US dollars billion
300
250
200
150
100
50
0
1989
1992
1995
1998
2001
2004
2007
Methodology of the Ministry of Finance, France.Hypotheses: Volume elasticity = -1, pre-tax transaction costs = 0,1%.
Source: author's calculations with BIS data
0.01%
0.02%
0.05%
0.10%
0.20%

A cautious conclusion of this first series of estimates at the world level is that in terms of financing efficiency, the minimal scenario is not enough. If we want to be sure that sufficient money is raised, a tax rate of 0.1% should be the objective.

At the **Euro area** level (see figure 2), with in our preferred scenario [20], the revenue could amount to US $ **67 billion in 2007**, up from 38 billion in 2004, i.e. a 76% increase. This is a very important amount of money at the disposal of the EU to finance global commons goods and development. The euro area on its own has the possibility to alleviate substantially the sufferings of developing countries by financing more than 100% of the MDG. Notice that a 0.05% raises US$ 50 billion. This would be enough to finance the MDG.

In the minimal scenario [21], revenues are between the US $ **14 and US $ 23 billion**, that is 20% and 33% of the preferred scenario [22] and only 28% and 46% of the financing of the MDG (see table 3).

Table 3: Revenue estimates in the euro zone

Preferred scenario:

Elasticity of -1 and pre-tax transaction cost of 0,1%

TAX LEVEL	1998	2001	2004	2007
0.01%	11	6	10	17
0.02%	19	11	16	29
0.05%	33	19	29	50
0.10%	44	26	38	67
0.20%	53	31	46	80

Intermediate Scenario

Elasticity of -1 and pre-tax transaction cost of 0,02%

TAX LEVEL	1998	2001	2004	2007
0.01%	7	4	6	10
0.02%	9	5	8	13
0.05%	11	6	10	17
0.10%	12	7	10	18

Minimal Scenario

Elasticity of -0.5 and pre-tax transaction cost of 0,02%

TAX LEVEL	1998	2001	2004	2007
0.01%	9	5	8	14
0.02%	15	9	13	23
0.05%	27	16	24	41
0.10%	40	23	35	60

Note: methodology of the French Ministry of Finance (2000).
Author's calculations

[20] The privileged scenario is: tax rate = 0.1%, pre-tax transaction costs = 01% and elasticity = -1.

[21] The minimal scenario is: tax rate = 0.01% - 0.02%, pre-tax transaction costs = 01% and elasticity = - 0.5.

[22] For 2001, our estimates of the « minimal » scenario is US $ 4 billion for tax rate of 0.01% and US $ 9 billion for a tax rate of 0.02%. This is much lower than P.B. Sphan's estimates for the same year: US $ 16.573 billion for a tax rate of 0.01% and US $ 20.8 billion when the tax rate is 0.02% with 0.01% for banks. The difference of methodology and in particular the more severe hypotheses of the French report concerning the tax base and the elasticity explains this important difference.

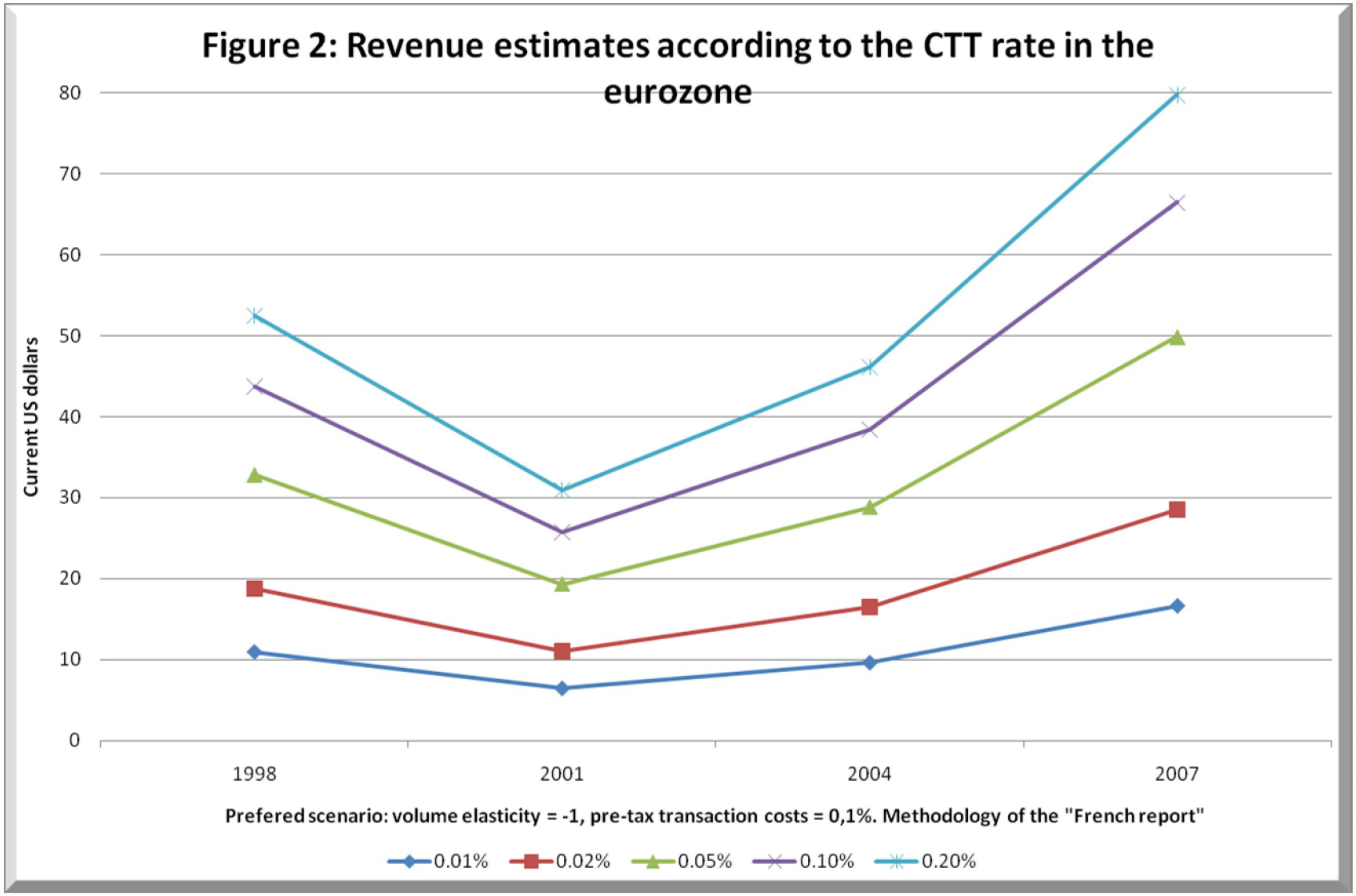
Figure 2: Revenue estimates according to the CTT rate in the eurozone
Current US dollars
80
70
60
50
40
30
20
10
0
1998
2001
2004
2007
Prefered scenario: volume elasticity = -1, pre-tax transaction costs = 0,1%. Methodology of the "French report"
0.01%
0.02%
0.05%
0.10%
0.20%

And this holds only under the favourable condition that the volume elasticity is -0.5, because if traders are more sensible and the elasticity is neutral, i.e. -1, the revenues are only respectively, **US $ 10 and 13 billion** (intermediate scenario). This means a contribution to the MDG financing of respectively of only 20% and 26%. This does not mean that we underestimate the importance of these reduced revenues.

According to UNESCO "the world should spend US$ 7 billion more during the 10 years to come to give basic education to all children. This is less than what is spent every year in the USA in cosmetics or in ice cream in Europe". And the same document ads that "according to a World Bank study, in 1990, a one year extension of the average duration of education in a country could lead to a 3% increase of its GDP" [(23)]. Other figures deserve to be mentioned. A preparatory document to the first United Nations conference on « financing for development » shows that it would be necessary to dispose of a budget of US$ 8 to 9 billion per year to finance properly humanitarian emergency aid to be compared with a present UN budget of US$ 5 billion. Extra 3 to 4 US$ billions need to be found [(24)]. These examples are sufficient to justify the creation of the CTT. And one can hardly imagine how a tiny tax rate of 0.01% (0.0001) could lead to the disappearance of the present foreign exchange market.

In summary, even the "minimum" scenario would be a gigantic step forward. But our point is that it is indeed possible to do much better.

2. **Estimates based on a specific tax rate for banks, financial customers and non-financial customers** [(25)].

The major difference in this new estimation is that now we take into account the differences in pre-tax transaction costs on the wholesale and retail markets with the implicit idea that the tax burden will not be shifted between banks and their customers. It is a complete change from the previous methodology because the hypotheses concerning the reduction of market volume are much more restrictive. The disappearance of the market is reached much more quickly than in the previous methodology in particular for banks.

The pre-tax transaction cost of banks, financial customers and non-financial customers is supposed to be respectively 0.02%, 0.05% and 0.1%. Because banks have very low initial transaction costs, it is assumed that they are very sensible to the increase of these transaction costs and therefore their volume-elasticity is high: -1.5. For the same reasons, the elasticity for financial customers (insurance companies, hedge funds, mutual funds and others) is supposed to be -1, and the volume elasticity for non-financial customers (productive firms) is supposed to be -0.5. At the world level, fiscal evasion varies from 15% to 25% according to the tax rate. But fiscal evasion is assumed to increase up to the range of 25.2% to 40% at the euro area level and in other regions considered (Asia, NAFTA) (see table A.6 in annex). The

[23)] UNESCO, Facts and figures, 2000, Institut de la statistique. www.unesco.org

[24)] « High Level Panel on Financing for Development-Recommendations and Technical Report », United Nations, A/55/1000, 26 June 2001. www.un.org/esa/ffd/ODA-Sub-index-.htm

[25)] These estimates follow the methodology used by the Ministry of Finance of Belgium (2001) and Finland (2001) for the period 1989-2004.

relative market share of banks, financial and non-financial customers is taken from the BIS survey [26].

The formula used is of the same kind as the one found in the French report with the following significant differences: It is supposed that those who trade don't make round trip on currencies but single transactions. And the elasticity effect is taken as the difference to one [27].

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

τ the tax rate is thus not multiplied by 2. As a consequence, the reduction of volume due to the elasticity is inferior to the one observed in the French report [28]. In this sense, the Belgium and Finnish methodology is more favourable to the revenue estimate, but in compensation it is based on lower pre-tax transaction costs for banks which account for the majority of transactions, and lower tax rates.

The results are presented for the world level in **table 4** for 2007. We can see that the tax base of the banking sector decreases stiffly and that the limit of two thirds of volume reduction is reached at the 0.02% (see the column for the banking sector for the 0.02% tax rate in table 4). At this level, the revenue paid by banks is **US$ 20.7 billion**. At the 0.04% tax rate, the revenues paid by banks increase to **22.5** billion the revenue, but at the cost of the disappearance of 80.8% of the market. There is indeed a bell-form of the revenue curve generate by banks (**see figure 3**). Increasing the tax rate beyond 0.04% is counterproductive because revenues begin to decrease due to the elasticity effect. There is therefore a trade-off between the volume of transactions of the banking sector and the maximisation of revenues generated by banks. A good compromise between efficiency and feasibility is to fix the tax rate at **0.02**% for the banking sector and get revenues of **US$ 20.7 billion**.

But table 4 and figure 3 show that it is not necessary to make such a compromise for their financial and non-financial customers. At a 0.1% tax rate, the reduction of volume is exactly two-third for financial customers and only 29.1% for non-financial customers.

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[26] These relative sector shares vary according to the geographical coverage and we have calculated them accordingly using BIS data. We have used table E.1 in BIS surveys because it gives "net-net" data while the Belgium and Finnish reports have relied on table E.8 in BIS survey that presents "net-gross" data. It is not a detail because it introduces major differences in the market share of banks and customers. For a detail presentation of data used, see the methodological annex.

[27] The formula used in the Belgium and Finnish reports is never given explicitly anywhere to the contrary of the French report. One can only found in annex the matrix of decreases of market volume due to the elasticity effect. So we had to reconstitute the formula by approximation. But in the end we get the same results so we are sure that the formula found is the good one. The matrix of decreases of market volume is presented in table A.4. In the annex, so that the reader can check that the formula and the revenue estimates are exact.

[28] See in annex tables A.3 and A.4 for a comparison of matrix of volume reduction for the two methodologies.

TABLE 4: Revenue estimates using the methodology of the Ministry of finance of Belgium and Finland.				
WORLD LEVEL IN 2007	TOTAL	NON-FINANCIAL SECTOR	OTHER FINANCIAL INSTITUTIONS	BANKING SECTOR
ELASTICITY		-0,5	-1	-1,5
Transaction cost before tax in %		0,1	0,05	0,02
Share of volume before tax in %	100	17	40	43
CTT Rate in %	*Fiscal evasion in %*	*Endogeneous reduction of volume in %*	*Endogeneous reduction of volume in %*	*Endogeneous reduction of volume in %*
0,01	15,1	4,7	16,7	45,6
0,02	15,2	8,7	28,6	64,6
0,05	15,5	18,4	50,0	84,7
0,10	16,0	29,3	66,7	93,2
0,15	16,5	36,8	75,0	96,0
0,20	17,0	42,3	80,0	97,3
0,25	17,5	46,5	83,3	98,0
0,50	20,0	59,2	90,9	99,2
0,75	22,5	65,7	93,8	99,6
1	25,0	69,8	95,2	99,7
CTT Rate in %	*Annual Revenue in US $ billion*	*Annual Revenue in US $ billion*	*Annual Revenue in US $ billion*	*Annual Revenue in US $ billion*
0,01	**49,7**	11,0	22,7	15,9
0,02	**80,7**	21,1	38,9	20,7
0,05	**137,2**	47,0	67,8	22,3
0,10	**190,5**	81,0	89,8	19,7
0,15	**225,8**	108,0	100,5	17,3
0,20	**252,7**	130,7	106,6	15,5
0,25	**275,3**	150,5	110,6	14,2
0,50	**350,5**	222,6	116,8	11,0
0,75	**395,7**	272,0	115,7	8,0
1	**432,3**	309,0	115,6	7,8
Source: BIS Triennal Forex Survey for data, Belgium and Finnish reports (2001) for methodology. B.Jetin's calculations.				

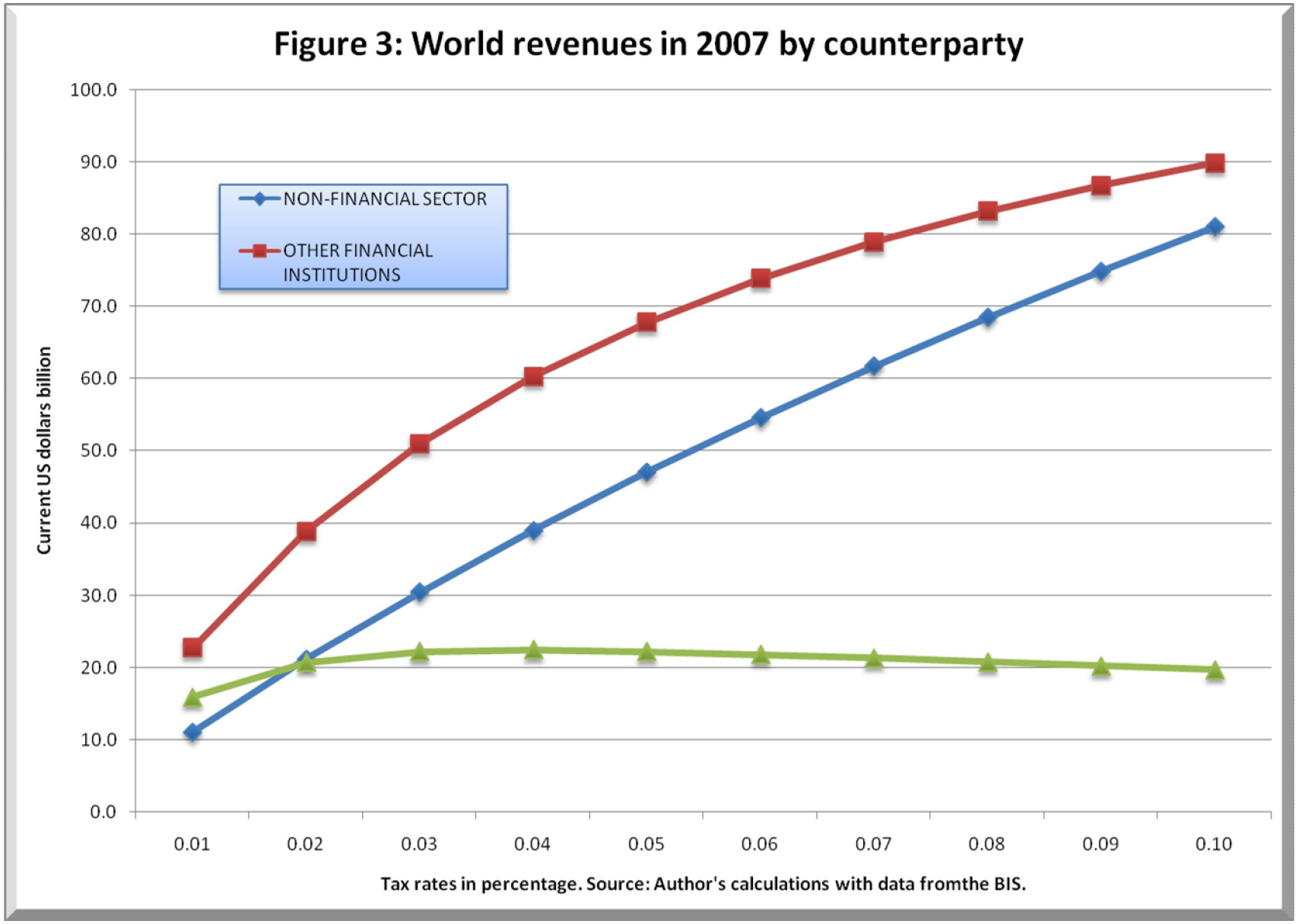


Figure 3: World revenues in 2007 by counterparty
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Current US dollars billion
NON-FINANCIAL SECTOR
OTHER FINANCIAL INSTITUTIONS
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
Tax rates in percentage. Source: Author's calculations with data fromthe BIS.

These last ones would not be hurt too much. At this level of taxation, the two kinds of customers generate respectively **US$ 89.9 billion** and **US$ 81 billion**. The total revenue generated by banks and their customers would therefore reach: 20.7+89.9+81 = **US$ 191.6 billion** at world level in 2007 [(29)]. This has to be compared with US$ 214 billion that a unique tax rate of 0.1% would produce at the world level.

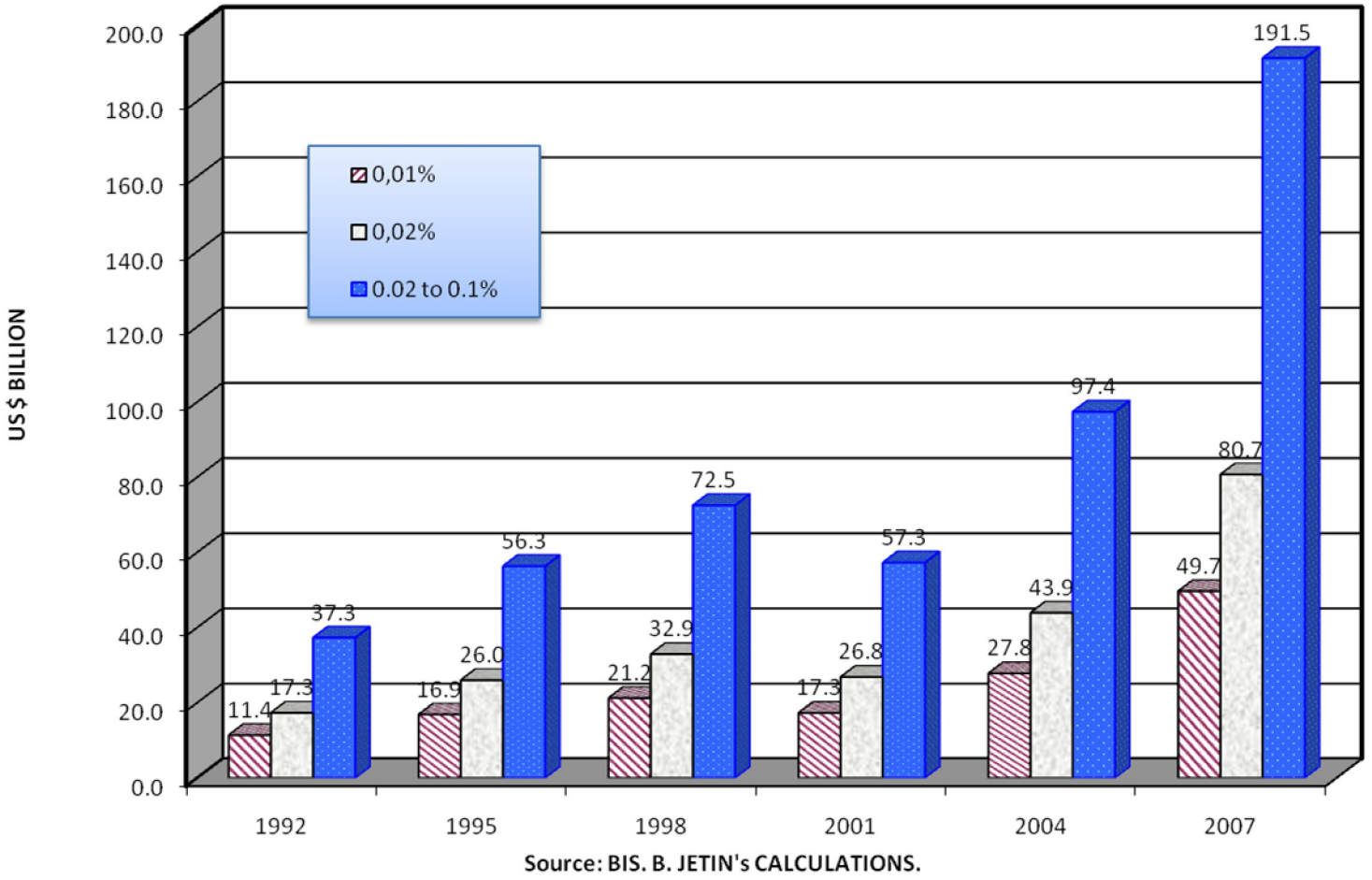
Of the 191.6 billion generated by a 0.02% tax (for banks) to 0.1% tax (for their customers), banks would pay 10.8% of the total, financial customers 44.9% and non-financial customers 42.2%. In other terms customers bears nearly 87% of the tax burden for a share of market turnover of 57%. This result may be considered a paradox for those of think that banks must pay the major share of the tax burden. The rationale is that banks supposedly are more speculative than their customers which are surprisingly exonerated for any speculative activity. In fact, insurance companies, hedge funds, mutual funds and even pension funds and multinational firms are also engaged in speculative activities and must be taxed as such.

If we apply the same compromise across time, we can see in **figure 4**, that world revenues fluctuate according to the fluctuations of market turnover. This reminds us that global taxes are not as stable as ODA financed by national budgets and cannot be considered as the main source of financing for development but as supplementary sources of financing. Nonetheless, if the CTT had been created since 1992, it would have provided on average US $ 85.4 billion each year on the period 1992-2007 (for 0.02% and 0.1% tax rate). Since 1998, the world revenues are on average more than US$ 100 billion a year. Again we can observe the leverage of a CTT as a source of financing. In this regard, smaller rates are deceptive. A 0.01% single rate would have generated no more than US $ 24 billion on average on the 1992-2007 period, and a single tax rate of 0.02%, US$ 38 billion. It is clearly not enough and it is possible to make better.

At the **European level**, the picture is a bit different for several reasons. First, the relative turnover market share of banks from the euro zone is 3% lower than at the world level. In 2007, banks accounted for 39.1% down from 49.5% in 2004. Other financial institutions accounts for 41.9% of total turnover, up from 34.8% and non-financial customers for 19% up from 15.8 % in 2004. This plays in favor of the tax revenues because customers by hypothesis have lower volume elasticity than banks. Second, the set of hypothesis is not exactly the same. Volume elasticities and fiscal evasion are higher because the geographical coverage is smaller. We have considered three alternatives. A CTT adopted at the euro area level only, then at the EU 15 and finally an enlargement to Switzerland and Norway

[29)] If a unified tax rate of 0.1% had been applied, revenues would have been 1 billion lower at 190.6 billion (see table 4). This shows that a 0.02% tax for banks instead of a 0.1% is a better compromise to maximise revenues.

Figure 4: Revenue Estimates of the CTT according to the tax rate at the world level.



Source: BIS. B. JETIN's CALCULATIONS.

We begin by presenting the results at the **euro area** level for 2007 (see **table 5** for detailed results and **figure 5** below for the evolution between 2004 and 2007).

As we can see, the annual revenue for a unique 0.1% CTT rate at the euro area level in 2007 would be theoretically **US$ 56.9 billion** that is about 10 billion less than the US$ 67 billion estimate obtained with the methodology of the French report (see table 3 above). But again, we note that at such a rate the banking activity has shrunk to almost nothing, 4.3% of its initial volume. If we apply the same compromise, a 0.02% tax rate for banks and a 0.1% for customers, the revenue would be **US$ 58.3 billion**, 1.4 billion more [(30)]. **We can thus consider that revenues in the range of 57 and 67 billion can be deemed as plausible for the euro area for the year 2007.** This shows that the euro zone has a great potential to generate massive revenues. In comparison, the 0.01% and 0.02% render US$ 15.2 and US$ 25 billion.

This estimate can be considered as robust due to the severity of the hypotheses retained. The market turnover for 2007, US$ 1.139 billion is the total forex turnover of the euro area net of local and cross-border interdealer double counting [(31)] to the contrary of the data used by the Ministry of finance of Belgium and Finland, which did not eliminate cross-border interdealer double counting [(32)]. The volume elasticity is higher for the euro area than at the world level for each sector. In particular, the volume elasticity for banks amounts to 1.75 leading to a stronger reduction of volume, -50.8% for the very tiny tax rate of 0.01%, that is one basis point, or in other term, one cent of euro for each banknote of 100 Euros. And finally, we have assumed a higher fiscal evasion, from 25.1% up to 40% than the one found in the Belgium and Finnish report to estimate the revenues at the EU level (20.2% to 35.0%, see op cit, page 56), because the euro area is smaller.

In 2004, the revenues would have been US$ 29.3 billion with a market turnover of 659 billion against 1.139 billion in 2007, (see figure 5 below).

[30)] Customers would still pay 0.1%. Financial customers would generate 26.2 billion of revenues and non-financial customers, 27.2. Added to the 4.8 billion paid by banks, it sums up to US$ 58.3 billion. To fully respect our self-imposed rule regarding the upper limit of the volume reduction of two thirds, we should have retained a 0.8% tax rate for financial customers. But to keep things simple, we have opted for a 0.1% rate for financial customers even if it corresponds to a 70.1% reduction of market volume (see table 5 below).

[31)] See table E.1 of the BIS 2007 triennial forex survey, in the statistical annex. We have chosen "net-net" data, which is in accordance with the aggregated data presented in tables B.1 and B.2, page 4 and 6 and 7 of the BIS Survey. This is important to calculate the share of each counterparty at the European and euro area level.

[32)] These reports used the E.8 tables in the BIS triennial survey, which presents what the BIS calls "net-gross" data. Net-gross data overestimates the market share of the banking sector, especially in Europe.

TABLE 5: Revenue estimates according to the Belgium Ministry of Finance.				
EURO ZONE LEVEL IN 2007	TOTAL	NON-FINANCIAL SECTOR	OTHER FINANCIAL INSTITUTIONS	BANKING SECTOR
ELASTICITY		-0,55	-1,1	-1,75
Transaction cost before tax in %		0,1	0,05	0,02
Share of volume before tax in %	100	19,0%	41,9%	39,0%
CTT Rate in %	*Fiscal evasion in %*	*Endogenous reduction of volume in %*	*Endogenous reduction of volume in %*	*Endogenous reduction of volume in %*
0,01	25,2	5,1	18,2	**50,8**
0,02	25,3	9,5	30,9	70,3
0,05	25,8	20	**53,3**	88,8
0,10	26,5	**31,7**	70,1	95,7
0,15	27,3	39,6	78,2	97,6
0,20	28,0	45,4	83,0	98,5
0,25	28,8	49,8	86,1	98,9
0,50	32,5	62,7	92,8	99,7
0,75	36,3	69,2	95,3	99,8
1	40,0	73,3	96,5	99,9
CTT Rate in %	*Annual Revenue in US $ billion*	*Annual Revenue in US $ billion*	*Annual Revenue in US $ billion*	*Annual Revenue in US $ billion*
0,01	**15,2**	3,8	7,3	4,1
0,02	**24,6**	7,3	12,3	4,9
0,05	**41,4**	16,1	20,7	4,6
0,10	**56,9**	**27,2**	**26,2**	**3,5**
0,15	**67,0**	35,7	28,39	2,9
0,20	**74,2**	42,6	29,22	2,4
0,25	**80,1**	48,4	29,55	2,2
0,50	**98,3**	68,1	29,00	1,1
0,75	**107,6**	79,7	26,82	1,1
1	**112,4**	86,7	25,06	0,7

Source: BIS Triennial Forex Survey for data, Belgium and Finnish reports (2001) for methodology. B.Jetin's calculations.

We now turn to the revenue estimate at the **EU15 leve**l. We have to add the UK, Sweden and Denmark foreign exchange activity. This means that transactions in UK sterling pound, Swedish krona and Danish krone are also taxed along with the euro. Transactions now amount to **US$ 1714 billion** per day in 2007, a 68% increase in comparison with the euro area market turnover due essentially to the incorporation of the British market. The volume elasticity for each counterparty remains the same, but fiscal evasion is lower. As in the Belgium and Finnish report, it starts at 20.1% when the tax rate is 0.01% and ends at the 35% level when the rate is 1%.

Revenues estimates are presented in **table 6**. A 0.02% tax rate on banks transactions would produce US$ 13.3 billion while 0.1% tax rate on transactions of financial and non-financial customers would produce revenues of respectively US$ 43.9 and US$ 41.7 billion. The total at the **EU 15 level** would amount to **US$ 98.8 billion in 2007**. This result shows once again that the EU has an important role to play in the fight against poverty and in favor of global common goods. If the EU decided it, it could nearly finance on its own the Millennium Development Goals. In **2004**, revenues would have been **US$ 51.5 billion** due to a smaller market turnover of US$ 1016 billion per day.

Adopting the CTT at the EU level would be an important political signal addressed to developing countries. It would be an act of solidarity proving that the European construction can be based on fundamental values and not only on business. Of course, the CTT can be created by the Euro area only. But the political symbol and the efficiency of the CTT would have much more momentum and coherence if the decision was taken at the EU level. It would be a stronger incentive for non-European countries to join in.

If we now think of the potential of a European decision beyond the EU, incorporating also Switzerland and Norway, revenues would not only be larger, but the possibility to avoid the tax would also be reduced further. Switzerland is not only an important European financial centre, but it is also closely linked to EU financial market and to the euro, via its partnership with German banks. The market turnover would now be US$ 1989 billion in 2004 (1149 billion in 2004). We assume the same volume elasticities than before but we suppose that fiscal evasion is now slightly lower. It starts at 17.7% for a 0.01% CTT rate up to 32.5% for a 1% rate.

On this basis, **table 7** shows that a 0.02% rate applied to banks would produce revenue US$ of 18.2 billion in 2007 and a 0.1% applied to customers would produce respectively revenue of US$ 50.1 billion and US$ 55 billion. The total would amount to **US$ 124.1 billion**, i.e. more than two times the official MDG financing needs.

These results are synthesized in **figure 5**, which presents the revenues that could be generated by a CTT based on low tax rate of 0.02% for banks and higher tax rate of 0.1% for their customers. It shows that Europe has a very important role to play.

Finally, we have estimated the potential revenues for ASEAN+4 (ASEAN countries + China, Japan, Korea and India) and NAFTA. The results are presented in **figure 6**. One can see that Asian countries would get US$ 39.6 billion. It is not as much as the other regions because Asia has only three big financial centers, namely Tokyo, Singapore and Hong Kong. The other Asian countries, inclusive China are still small or very small foreign exchange market. Their combined turnover market

amounts to US$ 727.6 billion against a global turnover of US$ 3 trillion. But even these Asian revenues would be useful for financing projects of regional integration and other regional common goods.

The case of NAFTA is quite the contrary. Potential revenues of a CTT so defined would be US$ 158 billion, which is the highest revenue at the regional level. The combined foreign exchange markets of NAFTA countries reach US$ 2.8 billion, the bulk of it being the US one with 2.6 trillion. By comparison, the EU 15 plus Switzerland and Norway would generate US$ 124 billion. Of course, these 158 billion are not so big in comparison with the US$ 700 billion rescue package that the US congress has adopted recently. But still, it would be useful in times of crisis.

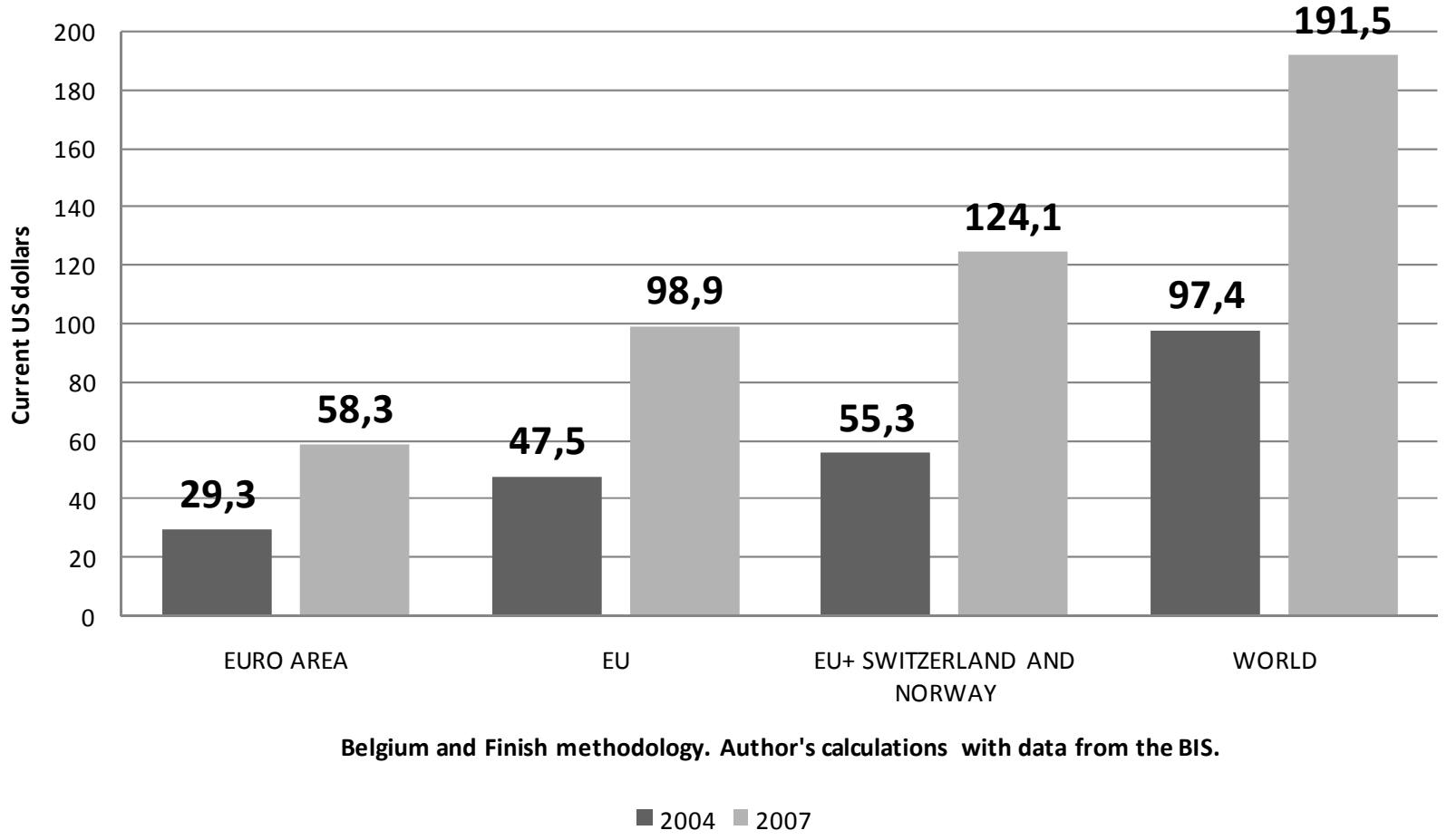
Conclusion

In this paper, we have justified the principle and usefulness of a currency transaction tax. By choice, we have not addressed important topics such as 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. Of Course these are 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 6: revenue estimates according to the Belgium Ministry of Finance				
TOTAL FOREX TURNOVER				
EU ZONE LEVEL IN 2007	TOTAL	NON-FINANCIAL SECTOR	OTHER FINANCIAL INSTITUTIONS	BANKING SECTOR
ELASTICITY		-0,55	-1,1	-1,75
Transaction cost before tax in %		0,1	0,05	0,02
Share of volume before tax in %	100	19,1%	41,5%	39,4%
CTT Rate in %	Fiscal evasion in %	Endogenous reduction of volume in %	Endogenous reduction of volume in %	Endogenous reduction of volume in %
0,01	20,2	5,1	18,2	**50,8**
0,02	20,3	9,5	30,9	70,3
0,05	20,8	20	**53,3**	88,8
0,10	**21,5**	**31,7**	70,1	95,7
0,15	22,3	39,6	78,2	97,6
0,20	23,0	45,4	83,0	98,5
0,25	23,8	49,8	86,1	98,9
0,50	27,5	62,7	92,8	99,7
0,75	31,3	69,2	95,3	99,8
1	35,0	73,3	96,5	99,9
CTT Rate in %	Annual Revenue in US $ billion	Annual Revenue in US $ billion	Annual Revenue in US $ billion	Annual Revenue in US $ billion
0,01	**24,4**	6,2	11,6	6,6
0,02	**48,9**	12,4	23,2	13,3
0,05	**66,3**	25,9	32,9	7,5
0,10	**91,3**	**43,9**	**41,7**	**5,7**
0,15	**107,6**	57,6	45,20	4,7
0,20	**119,2**	68,8	46,54	3,9
0,25	**128,9**	78,3	47,11	3,5
0,50	**158,9**	110,6	46,40	1,8
0,75	**174,8**	129,9	43,09	1,7
1	**183,6**	142,0	40,45	1,1

Table 7: Revenue Estimate according to the Belgium Ministry of Finance				
TOTAL FOREX TURNOVER				
EU 15+ Switzerland and Norway (2007)	TOTAL	NON-FINANCIAL SECTOR	OTHER FINANCIAL INSTITUTIONS	BANKING SECTOR
ELASTICITY		-0,55	-1,1	-1,75
Transaction cost before tax in %		0,1	0,05	0,02
Share of volume before tax in %	100	17,6%	41,6%	40,8%
CTT Rate in %	Fiscal evasion in %	Endogeneous reduction of volume in %	Endogeneous reduction of volume in %	Endogeneous reduction of volume in %
0,01	17,7	4,7	16,7	45,6
0,02	17,8	8,7	28,6	64,6
0,05	18,3	18,4	50,0	84,7
0,10	19,0	29,3	66,7	93,2
0,15	19,8	36,8	75,0	96,0
0,20	20,5	42,3	80,0	97,3
0,25	21,3	46,5	83,3	98,0
0,50	25,0	59,2	90,9	99,2
0,75	28,8	65,7	93,8	99,6
1	32,5	69,8	95,2	99,7
CTT Rate in %	Annual Revenue in US $ billion	Annual Revenue in US $ billion	Annual Revenue in US $ billion	Annual Revenue in US $ billion
0,01	**30,2**	6,9	14,2	9,1
0,02	**60,3**	13,7	28,4	18,2
0,05	**84,2**	29,2	42,3	12,7
0,10	**117,1**	**50,1**	**55,8**	**11,2**
0,15	**138,6**	66,6	62,26	9,8
0,20	**154,8**	80,3	65,79	8,7
0,25	**168,2**	92,2	68,02	8,0
0,50	**210,6**	133,9	70,60	6,1
0,75	**233,3**	160,4	68,55	4,3
1	**249,6**	178,4	67,03	4,1

Figure 5: Summary of Revenue Estimates according to the geographical coverage in 2004 and 2007



Belgium and Finish methodology. Author's calculations with data from the BIS.

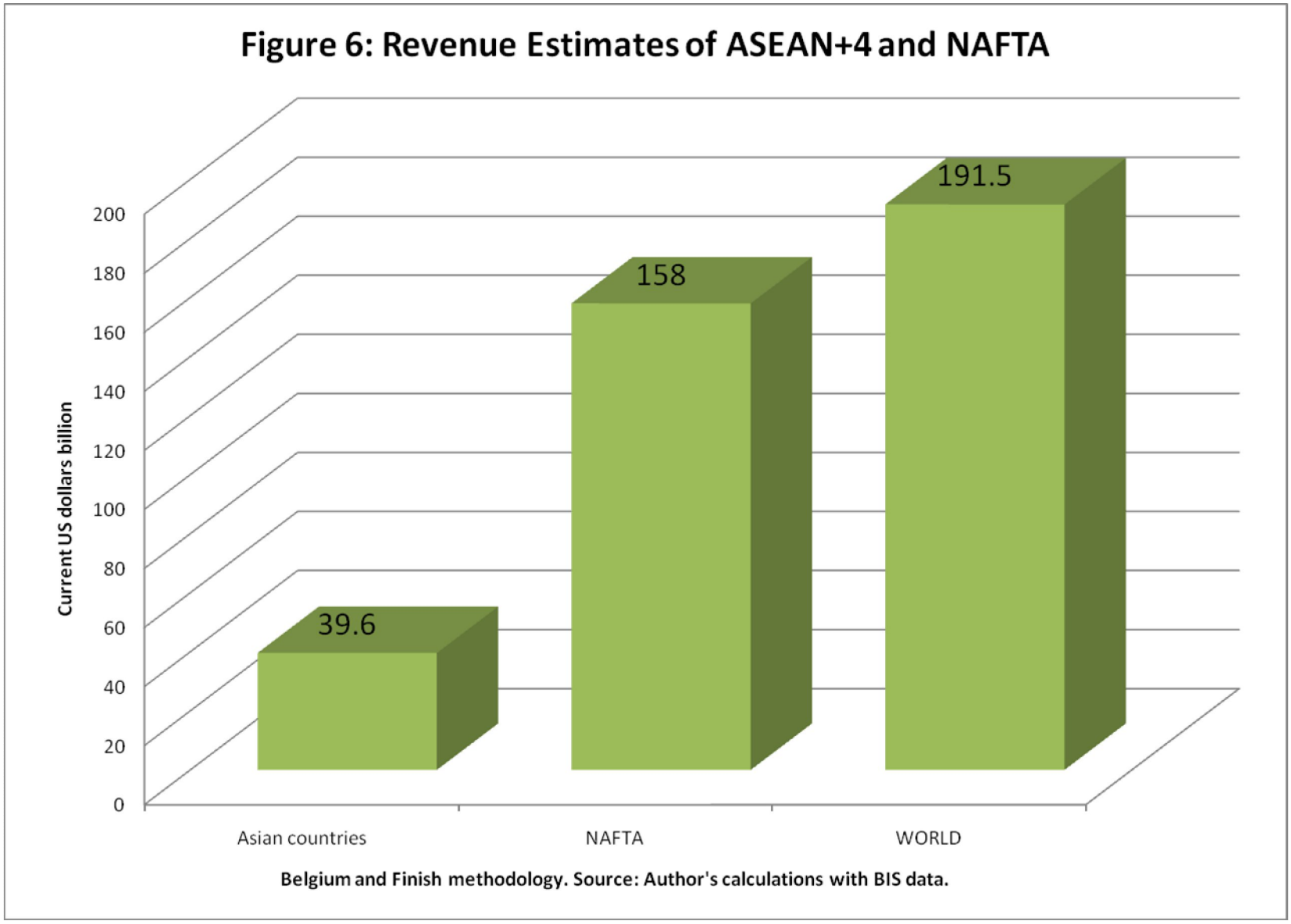


Figure 6: Revenue Estimates of ASEAN+4 and NAFTA
Current US dollars billion
0
20
40
60
80
100
120
140
160
180
200
39.6
158
191.5
Asian countries
NAFTA
WORLD
Belgium and Finish methodology. Source: Author's calculations with BIS data.

ANNEX.

TABLE A 3.3: REDUCTION OF MARKET VOLUMES ACCORDING TO THE TAX RATE, THE ELASTICITY AND PRE-TAX TRANSACTION COSTS. METHODOLOGY OF THE MINISTRY OF FINANCE OF FRANCE (2000).									
ELASTICITY	***-0.5***			***-1***			***-1.5***		
TAX RATE	**PRE-TAX TRANSACTION COST**								
	0.02	0.05	0.1	0.02	0.05	0.1	0.02	0.05	0.1
0.01%	29	15	9	50	29	17	65	40	24
0.02%	42	25	15	67	44	29	81	59	40
0.05%	59	42	29	83	**67**	50	93	81	65
0.1%	70	55	42	91	80	**67**	97	91	81
0.2%	**78**	**67**	55	95	89	80	99	96	91
Note: we have added the 0.02% tax rate and the 0.1% transaction cost. B.Jetin's calculations.									

The French report (2000) considers that the most plausible scenario is based on a neutral elasticity, -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. It is marked in blue in the table.

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. It is marked in green in the table.

In red, are represented combinations where the reduction of the market volume is closed or superior to 90%. These situations are undesirable and can be neglected.

The combination of a high tax rate, 0.2%, with low pre-tax transaction costs 0.02-0.05% and a low elasticity of -0.5 can exist in theory but are highly improbable. It is hard to imagine that traders would not be much more sensible to such an increase in transaction costs. These situations are marked in purple.

TABLE A 3.6. HYPOTHESES CONCERNING THE LEVEL OF FISCAL EVASION ACCORDING TO THE GEOGRAPHICAL COVERAGE AND THE CTT RATE				
CTT Rate in %	EURO AREA	EU	EU+ SWITZERLAND+ NORWAY	WORLD LEVEL
0.01	25.2	20.2	17.7	15.1
0.02	25.3	20.3	17.8	15.2
0.03	25.5	20.5	18.0	15.3
0.04	25.6	20.6	18.1	15.4
0.05	25.8	20.8	18.3	15.5
0.06	25.9	20.9	18.4	15.6
0.07	26.1	21.1	18.6	15.7
0.08	26.2	21.2	18.7	15.8
0.09	26.4	21.4	18.9	15.9
0.10	26.5	21.5	19.0	16.0
0.15	27.3	22.3	19.8	16.5
0.20	28.0	23.0	20.5	17.0
0.25	28.8	23.8	21.3	17.5
0.50	32.5	27.5	25.0	20.0
0.75	36.3	31.3	28.8	22.5
1	40.0	35.0	32.5	25.0
Note: Methodology of the Minisitry of Finance of Belgium for the EU and world level. Own hypothesis and calculations concerning the euro area and the EU+Switzerland and Norway				

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