BANCA D'ITALIA
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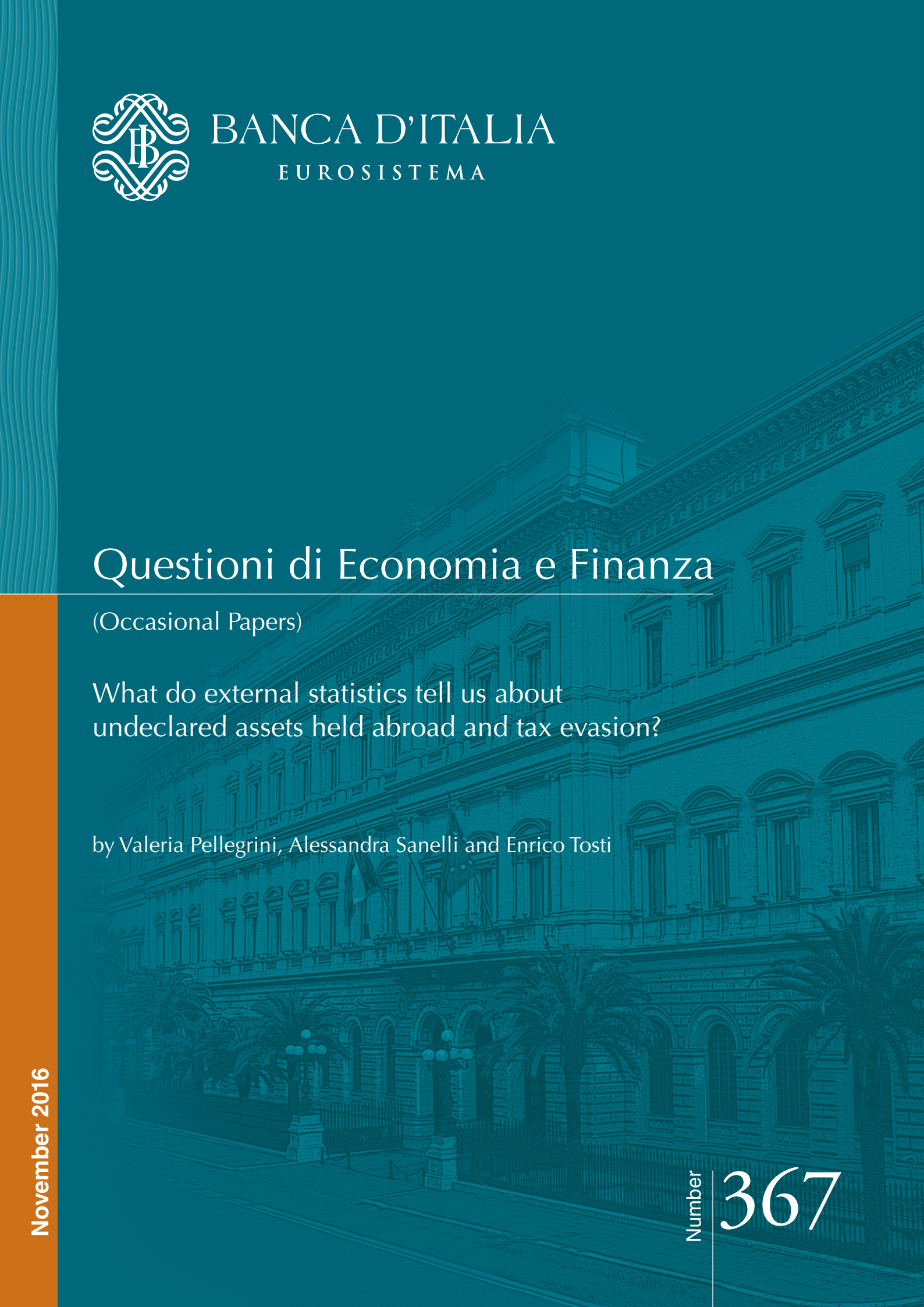

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The series is available online at www.bancaditalia.it .

ISSN 1972-6627 (print)
ISSN 1972-6643 (online)

Printed by the Printing and Publishing Division of the Bank of Italy

WHAT DO EXTERNAL STATISTICS TELL US ABOUT UNDECLARED ASSETS HELD ABROAD AND TAX EVASION?

by Valeria Pellegrini*, Alessandra Sanelli** and Enrico Tosti***

Abstract

The analysis of international investment position and balance of payments statistics suggests that foreign assets held abroad are greatly underestimated. This paper has three main goals. First, it examines the role played by tax havens in tax evasion. Second, it estimates unreported capital to range globally between $6 trillion and $7 trillion at end-2013, on the basis of mirror statistics on portfolio securities and on cross-border deposits of non-banks. Third, it estimates the portion of tax evasion connected to the underreporting of foreign assets to range between $20 billion and $42 billion a year over the period 2001-2013 for capital income tax, and between $2.1 trillion and $2.8 trillion at end-2013 for personal income tax. The estimate for personal income tax is based on the assumption that the entire stock of unreported capital outstanding at end-2013 was made up of income that had escaped income tax. Finally, the paper gives a critical assessment of the strengths and weaknesses of the recent policy responses to international tax evasion.

JEL Classification: H26, F21, F23, G15.
Keywords: tax evasion, tax haven, international investment, foreign investment, multinational firm, offshore, foreign assets, under-reporting.

Contents

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1. Introduction[1]

All over the world, individual investors and business entities escape or reduce domestic taxes by hiding or shifting their income and wealth abroad, particularly in offshore financial centers (OFCs) and tax havens. The adverse consequences of international tax evasion and avoidance have been widely recognized, both for developed and developing countries. Following the global financial crisis in 2008, governments' determination to fill the "international tax gap" arose in response to the deterioration in budget deficits. Policy-makers' attention to this phenomenon grew remarkably: enhancing information exchange between national tax authorities, seen as the best policy option to counter international tax evasion, became a high priority in policy makers' agendas.

Anecdotal evidence (lastly, the "Panama Papers" case) and results of national offshore compliance initiatives reveal that the amount of undeclared assets held offshore and of the related international tax gap is significant. In 2007, the OECD estimated the value of assets held offshore lied in the $5-$7 trillion range (Owens, 2007). However, because of the very nature of international tax evasion, which is based on non-reporting and concealment, there is a lack of relevant data on the phenomenon. Consequently, till now only a few attempts to quantify its actual dimension have been made, the most recent and well known being that of Zucman (2015).

Detailed information on the potential magnitude of the international tax gap and on the role played by OFCs and tax havens in this respect would help policy makers to evaluate the impact of international tax cheating on domestic tax systems of both developed and developing countries, and hence to assess the potential value and effectiveness of measures aimed at reinforcing international tax audit activities.

This work aims to contribute to the knowledge of the phenomenon using balance of payments statistics and a wide range of other external statistics at a global level. It has three main goals. First, we examine how tax havens are used as hubs in international financial transaction. Second, we estimate the amount of underreported foreign assets held as portfolio investments and bank deposits by individual investors, with reference both to the global and Italian level. Third, for both levels we calculate a plausible order of magnitude of the tax evasion linked to the undeclared assets. Finally, we analyze strengths and weaknesses of the recent policy responses to the international tax evasion linked to the unreported capital held abroad.

The paper is structured as follows. Section 2 compares the different definitions of tax havens and describes the channels more commonly used to transfer capital to these countries in order to avoid taxes; it also provides signals and statistical evidence – such as asymmetries and inconsistencies in external statistics – that confirm the existence and relevance of the phenomenon.

Then, in Section 3, we estimate the amount of the two main components of undeclared assets held abroad: portfolio investments and cross-border deposits. The estimate is mainly based on the comparison of mirror statistics on portfolio assets and liabilities coming from the Coordinated Portfolio Investment Survey (CPIS) conducted by the IMF and on the analysis of further information derived from several international databases (namely, BIS locational statistical on cross border bank deposits of non-banks). The results show that at a global level the stock of unreported foreign assets, for portfolio securities and deposits at end-2013, is estimated to range between $6 and $7 trillion. The estimate refines and updates previous work by Pellegrini and Tosti (2011, 2012) and Sanelli (2008); the latter refers to bank deposits.

In Section 4 we estimate a potential range of the capital income tax evasion linked to undeclared financial assets held offshore by individual investors (both directly or through intermediate controlled entities, such as trusts, foundations, shell companies, etc.). Then, we provide an estimate of the

[1] The authors wish to thank Gian Maria Milesi-Ferretti for the provision of the Extended Wealth of Nations II database (EWN II). A special thanks to Riccardo De Bonis, Thomas Neubig, Julian Alworth, Roberto Sabbatini, Roberto Tedeschi and the participants to the conference "The Bank of Italy's Analysis of Household Finances. Fifty Years of the Survey on Household Income and Wealth and the Financial Accounts" held in Rome on 3-4 December 2015 for helpful suggestions. The authors are solely responsible for any errors. The views expressed are personal and are not the responsibility of the Bank of Italy.

potential scale of the personal income tax evasion affecting the undeclared capital held abroad, assuming that it wholly represents income that escaped personal income taxes in the investor's residence country when originally earned. Over the period 2001-2013 annual capital income tax evasion is calculated to range between $20 and $42 billion; assuming that the overall stock of unreported assets outstanding at end-2013 refers to earned income that escaped personal income taxes, the resulting evasion of personal income tax can be estimated between $2.1 and $2.8 trillion. The estimate of tax evasion builds on a methodology already used in previous unpublished papers (Sanelli, 2004 and 2008) and is made first on a global level, distinguishing between the two sets of OECD and non-OECD countries, and then with a specific focus on the Italian case.

Section 5 provides a critical assessment of the recent policy initiatives undertaken at global level to fight tax evasion. In this respect, in spite of the impressive progress towards information exchange, areas of opacity still remain: persisting difficulties in the identification of ultimate owners, non-reciprocity ad non-automaticity of some agreements of information exchange, problems of timeliness in the implementation, and possible loopholes in the information reporting provisions.

Finally, Section 6 concludes; an Appendix contains in-depth analyses of some specific technical issues.

2. Undeclared capital held abroad and the role of tax havens: signals from external statistics

In this section, we deal with the role played by tax havens and OFCs with respect to international financial flows. As previously done by several authors − see, for example, Gravelle (2015) and Zucman (2015) − we first analyse the different definitions of tax havens and describe the role played by these countries or jurisdictions. Then, we look into existing inconsistencies in cross-border positions and transactions in balance of payments and other statistical sources to find evidence of undeclared foreign financial assets and of the role of OFCs in helping individuals and corporations to channel capital abroad and evade or avoid taxes.

Under the commonly shared definitions, tax evasion refers to illegal behaviours, i.e. illegal non-payment or underpayment of taxes, usually resulting from the making of a false declaration or no declaration at all, or a false claim for inexistent expenses or offset against income legally declared to a tax authority. On the other hand, tax avoidance consists of seeking to minimize a tax bill without deliberate deception (which would be tax evasion) but contrary to the spirit of the law. It involves the exploitation of loopholes and gaps in tax and other legislation in ways not anticipated by the law. A great deal of tax avoidance activity involves cross-border transactions.

As underlined by Gravelle (2015), the dividing line between the two types of tax cheating activities is not always straightforward and the two phenomena often overlap (see par. 2.1). Generally speaking, tax evasion is more common among individual investors, professionals and small business entities and is often linked to the use of narrowly defined tax havens, while tax avoidance is typically carried out by large business entities, often with significant cross-border activities, and may entail the use of narrowly and broadly defined tax havens.

The actual scale of the revenue losses arising from both types of tax cheating activities is very difficult to estimate. In the following sections, we concentrate on an estimate of undeclared financial assets held abroad – either directly or through interposed entities – by individuals and of the related revenue losses arising from personal and capital income tax evasion (par. 4.2). Although recognizing the relevance of the phenomenon, we do not provide any estimate of tax avoidance. A few authors have tried to estimate this latter stream of tax cheating; for example, see Gravelle (2015), Zucman (2014) and OECD (2015b).

In this section, we analyse the main channels for the creation of unreported capital abroad, namely in OFCs. Preliminary, we define tax havens and OFCs and explain how we identify them with reference to tax evasion by individuals.

2.1 Tax havens and offshore financial centers: definitions and main features

Tax havens are usually defined as countries or territories that try to attract foreign capital through a combination of low or no taxation, advanced communication facilities, stable political environment, reliable legal systems and a high degree of confidentiality for financial data, namely those on beneficial ownership of bank accounts, company shares, trusts and other interposed entities. Another recurrent character of tax havens is the lack of exchange of information with tax administrations of other countries and the possibility to establish legal entities with little or no economic activity.[2]

The high financial secrecy, enhanced by the possibility to establish different types of legal entities that are used as interposed vehicles to further protect the confidentiality of financial data, is particularly relevant when looking at the use of tax havens for tax evasion purposes by individual investors. For this reason, starting from this definition, we identify a list of tax havens (see table in Appendix A) as a reference for the estimate of personal and capital income tax evasion by individual investors (section 4).[3] The list consists of 60 countries and is obtained by combining information derived from several existing lists;[4] if there is convergence of most of the different lists in classifying a country as a tax haven, the country is included in our list.

The tax haven characters identified above are often found in OFCs. According to the most common definition, OFCs are jurisdictions attracting a high level of financial activity with non-residents, often in currencies different from that having legal tender in the jurisdiction. Usually, banks and other financial institutions operating "offshore" enjoy exemption from a wide range of regulations normally imposed on "onshore" institutions. Not all OFCs are tax havens. However, quite often tax haven features, such as strict bank and financial confidentiality and low or no taxation, are used by OFCs to attract foreign investors, and particularly to promote their private asset management industry. For this reason, and considering that official statistics often make reference to OFCs rather than to tax havens, in the rest of the paper we will refer to tax havens as OFCs.

2.2 Channels for the transfer of capital to offshore financial centers

Transfers of financial capital to OFCs are often unreported. Therefore, they give rise to anomalies in external statistics. In most cases, the financial wealth booked in OFCs ultimately belongs – either directly or through a chain of interposed entities (such as trusts, foundations, shell companies, etc.) – to individual investors, often high net worth individuals. The methods used to transfer financial capital in OFCs may vary; the most common channels are:

- **cash transfers**: the archetypical case of undeclared foreign asset creation is the transfer of cash across national borders (i.e. smugglers crossing the border physically); these transfers, that

[2] Economists often use broader definitions of tax havens that include any low-tax country with a goal of attracting capital, or simply any country that has low or non-existent taxes. In this latter respect, tax haven features may be found even in high tax countries, for example when they provide selective tax reductions, namely for foreign companies or companies dealing mostly with cross-border activities. Cases of this selective tax reductions can be found also in the euro area, e.g. in Luxembourg, the Netherlands, Ireland, Cyprus and Malta. In the United States, Delaware and Nevada provide specific company structures that allow anonymity of shareholders and often no taxation at the company level. This broad definition of tax havens seems especially relevant when looking at tax avoidance schemes, which often make use of gaps and inconsistencies arising from the interaction of different countries tax systems to exploit tax reduction possibilities.

[3] For the purposes of estimating the bank deposit component of unreported capital we make reference to a sub-list of tax havens made by countries or jurisdictions (identified in col. 2 of Table A.1 in Appendix A) that report data to the BIS.

[4] Namely, we consider the following lists: Gravelle (2015); the first tax haven list released by the OECD in 2000, that identified non-OECD tax havens on the basis of lack of an effective exchange of information on request, low or zero rate of taxation on mobile income, absence of a requirement that the activity performed in the jurisdiction by foreign investors be substantial; lack of transparency; the OECD list of April 2009, that identified countries not committed to the standard of exchange of information on request or that had not yet implemented the standard; the 2015 update of the OECD list, always referring to countries non-compliant or partially compliant with the exchange of information on request; the IMF lists of countries classified as OFCs in 2000 and 2007; the Financial Secrecy Index list of countries from Tax Justice Network; the EU list of tax havens, that reports countries and jurisdictions included in the tax haven lists of EU countries at December 2014.

mostly take place between countries that are geographically close to each other, are never declared in statistics;

- **misinvoicing of services and goods**: misinvoicing involves manipulating the price, quantity, or quality of service or goods on an invoice so as to shift capital illicitly across borders (for example acquisition of fictitious consultancy services from a colluding counterpart or overpricing actual service provisions). These transactions generally involve the use of entities based in foreign countries which impose only limited restrictions on business activities within their jurisdiction, and little or no income tax;
- **transfer of funds or direct payments to offshore entities or bank accounts**: in some cases individuals who run small businesses or provide professional services may ask clients to make payments directly on offshore bank accounts.[5]

In addition to the channels identified above, the unreported capital held abroad is usually increased by the **return earned on the investment** of the same capital, which in most cases is not repatriated to the investors' residence countries.

Regardless from the channel chosen to move funds abroad, exports of capital carried out by individuals and linked to tax cheating are probably more frequent than those carried out by corporations and other business entities with cross-border activities. Since corporations are subject to more regulatory checks (accounting standards, etc.) than individuals, corporate tax evasion would often entail falsification of documents, bankruptcy, etc., and hence be classified as tax fraud in most countries. Therefore, it is likely that in the case of corporations outright tax evasion is less common than for individuals, even though when it takes place the amounts may be much greater.

At the same time, corporations make large use of profit shifting towards low-tax countries and other techniques for tax avoidance purposes. Profit shifting may take place in different ways, including mispricing of intra-firm trade in goods and services, location of intellectual properties in tax havens as well as debt shifting activities towards high-tax countries (for further details, see Gravelle, 2015).

In our view, even if tax avoidance by large corporations is not directly linked to unreported capital held offshore, given the relevance of the phenomenon (Gravelle, 2015 and Zucman, 2015), the complex structures designed to shift profits over the border may significantly contribute to the accumulation of low-taxed profits in offshore jurisdictions. These profits may then further feed unreported capital and the consequent tax evasion by individual investors. In fact, as shown by recent anecdotal evidence (e.g. the "Panama Papers" case, see Section 5) the profits accumulated offshore can be directly credited to offshore accounts opened in the name of interposed entities whose final beneficial owners are individual shareholders, adding to the overall amount of undeclared capital.[6]

Finally, another source of unreported capital held offshore can be the various types of illicit activities in the global underground economy, such as drug and arm trafficking, corruption, fraud, etc. Tax havens and OFCs often provide the level of secrecy needed to conveniently hide and launder the proceeds of these activities.

Thanks to the advances in technological infrastructures, nowadays the undeclared assets held abroad by individuals can be easily managed. The Internet allows individuals to easily open a bank account in the name of a fictitious company located in a tax haven, transfer funds on the account and invest them in securities. If the tax haven does not have an agreement to exchange information on an automatic basis or follows a strict banking secrecy policy, the tax administration of the investor's country of residence has no way to get information on the account. In many cases, the use of multiple layers of entities and complex schemes (including fiduciary accounts and other off-balance sheet transactions, or opaque investment structures, such as trusts, shell companies, etc.) can further reinforce the level of secrecy and opacity, allowing investors to disguise their beneficial ownership

[5] Recent studies by the Financial Intelligence Unit (FIU) of the Bank of Italy analyse the relevance and determinants of wire transfers between Italy and tax havens: see Cassetta *et al* (2014) and Gara and De Franceschis (2015).

[6] Furthermore, to the extent that these profits are neither distributed to shareholders nor reinvested in real activities and that subsidiaries resident in offshore jurisdictions are not subject to strict accounting and reporting rules, the profits can be easily transformed into unreported capital of the same multinational enterprises, often with the use of additional layers of opaque vehicles to increase the level of confidentiality.

behind third persons' names and making it very difficult for domestic revenue agencies to discover the tax evasion.

2.3 Unreported capital held in OFCs by Italian residents: evidence from the outcomes of the 2009-2010 voluntary disclosure scheme

This section describes the outcomes of the 2009-2010 voluntary disclosure (VD) scheme that allowed Italian taxpayers to disclose financial assets and real properties held abroad before December 2008 and not yet declared to the tax administration.

Under the scheme (launched in September 2009) taxpayers were allowed to disclose foreign assets by either repatriating or regularizing them. The first case involved the transfer of the assets or the capital arising from their liquidation to Italy. In the second case, the assets were declared but remained abroad or were repatriated without liquidation.

Upon declaration of the assets, taxpayers were required to pay a substitute tax equal to 5 per cent of the asset value,[7] but no further tax, interest or penalty were due, and the criminal prosecution of tax fraud and tax evasion was excluded; furthermore, taxpayers could keep their full anonymity towards the tax administration. Finally, taxpayers were "shielded" from future tax assessments on the same assets. In consequence of these favorable conditions, the 2009-10 VD led to the disclosure of a significant amount of undeclared foreign assets, about €100 billion, with consequent statistical revisions in the Italian balance of payments and international investment position.

Table 2.1 illustrates the distribution of the repatriated and regularized assets both by type of assets and by location country.

Table 2.1: Distribution of Italian 2009-10 voluntary disclosure (billions of euros or percentages)

Type of asset	A) Repatriations with liquidation	B) Repatriations without liquidation and regularizations	Total C=A+B	D) Percentage of the total	E) Estimate of the original composition by type of asset
Cash	-	5.2	5.2	5.4%	8.8
Bank deposits	38.1	7.7	45.8	47.2%	13.0
Equity securities	0.1	14.1	14.2	14.6%	23.7
Debt securities	1.1	21.2	22.3	23.0%	35.7
Financial derivatives	-	-	-	-	0.0
Other financial assets	-	8.1	8.1	8.4%	13.6
Real estate and properties	-	1.4	1.4	1.4%	2.4
Total	**39.4**	**57.6**	**97.0**	**100.0**	**97.0**
Country of location	**A) Repatriations with liquidation**	**B) Repatriations without liquidation and regularizations**	**Total C=A+B**	**D) Percentage of the total**	
Switzerland	27.7	39.1	66.8	68.8%	
Luxembourg	1.4	6.2	7.6	7.9%	
San Marino	2.4	2.2	4.6	4.8%	
Monaco	2.9	1.5	4.4	4.5%	
Austria	0.9	0.6	1.5	1.6%	
Liechtenstein	0.4	1.1	1.5	1.6%	
Jersey	0.0	1.2	1.2	1.3%	
France	0.5	0.7	1.2	1.2%	
United Kingdom	0.6	0.5	1.2	1.2%	
Ireland	0.0	0.9	0.9	1.0%	
Germany	0.7	0.1	0.8	0.9%	
United States	0.4	0.4	0.8	0.8%	
Singapore	0.4	0.1	0.5	0.5%	
Other countries	1.0	3.0	4.0	4.1%	
Total	**39.4**	**57.6**	**97.0**	**100.0**	

Sources: data on voluntary disclosure scheme reported by banks to the Bank of Italy for balance of payments.

[7] The tax rate rose to 6 per cent for assets declared up to 28 February 2010, and to 7 per cent for assets declared from the 1st of March to 30 April 2010.

Data on column A show that repatriations with liquidation generally involved bank deposits; in fact, in many cases financial assets were liquidated and transformed in deposits before the disclosure. Consequently, data on column B regarding regularizations and repatriation without liquidation reflect more accurately the real distribution of the undeclared assets, showing that they were mainly invested in debt and equity securities.

Therefore the real distribution of the undeclared assets has been estimated (column E of Table 2.1) under the assumption that column A data were broken down like those in column B; the final results show that undeclared assets were mainly invested in portfolio securities (approximately €60 billion) and in bank deposits (€13 billion).

The distribution by country of location of repatriated and regularized capital shows that assets were mainly deposited in Switzerland (68.8 per cent) and to a lower extent in Luxembourg. It should be noticed that the location country does not necessary reflect the debtor country, i.e. the country which issued the securities, but rather the country where the securities were held in custody.

2.4 Global statistical discrepancies in balance of payments and international investment position statistics

In this paragraph, we illustrate some statistical discrepancies in the balance of payments and international investment position (IIP) statistics, which may be considered as evidence of the presence of undeclared capital held abroad. We start by analyzing the consistency between external financial stocks (net IIP) and balance of payments (BP) flows; then we illustrate the statistical discrepancies existing at a global level in balance of payments data.

Evidence of discrepancy: comparison between net IIP and the cumulated current and capital account

An evidence of discrepancy in national BP and IIP statistics is the comparison between net IIP with both the cumulated current and capital account balance and the cumulated financial account balance. We know that, in the theoretical case where errors and omissions in BP are equal to zero, the relation among the main BP balances can be expressed as follows:

$$current\ account\ balance + capital\ account\ balance = financial\ account\ balance$$

Consequently, apart from valuation adjustments, the cumulated current and capital account balance should be closely tracking the net IIP. For most of the major euro area countries, we may assume that, in the long run, valuation adjustments to assets and liabilities grow on average at a similar pace and, therefore, they would roughly offset each other, so that we just cumulated the annual flows of BP.

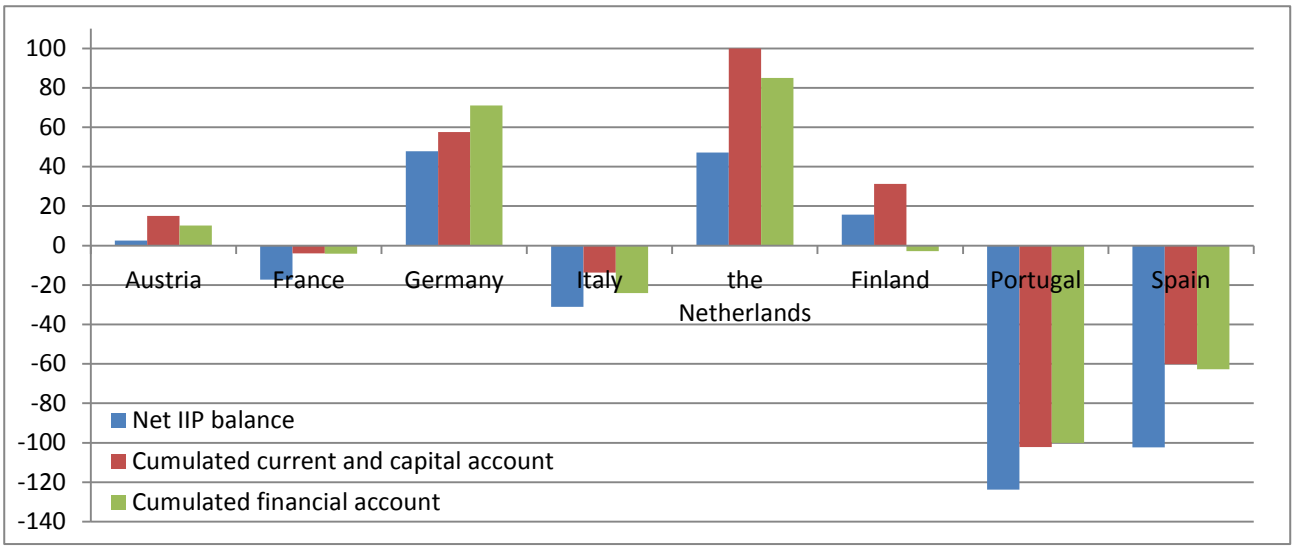
Chart 2.1 shows data in percentage of national GDP: inconsistencies between BP and IIP are quite widespread. The chart reports the net IIP at the end of 2013 and the cumulated balance since 1975 of both current plus capital account and the financial account; the difference between the two cumulated balances is the amount of cumulated errors and omissions.

All countries have an official net IIP worse than what would be warranted on the basis of the sequence of current and capital account balances. In some cases, it is unlikely that valuation adjustments may explain these differences. This discrepancy leads to the dilemma about the overestimation of liabilities versus underestimation of assets. In the case of Italy, the results of the quality and consistency analysis and the outcomes of the control on mirror data made on BP and IIP aggregates do not seem to reveal the presence of significant biases in the current account time series or in IIP components other than portfolio stocks.

Furthermore, the significant amount of negative cumulated errors and omissions that can be observed for Italy and some other countries (Austria, Finland, the Netherlands and Spain) is consistent with the hypothesis of external undeclared assets. Germany and Portugal show positive cumulated errors and omissions, but their net IIPs are in any case worse (less positive or more negative) than their cumulated current and capital accounts; the difference unexplained by errors and omissions may

depend on valuation adjustments or on unreconciled BP and IIP time series, for example when BP and IIP statistics derive from different data sources and/or are not backward revised.

Chart 2.1: Net IIP (end-2013) and cumulated (since 1975*) balances of current and capital account and financial account as a percentage of national GDP



Sources: Extended Wealth of Nations II (January 2015 release; see Lane and Milesi-Ferretti, 2001 and 2007), Eurostat.
Note (*): data on the capital account balance are not available for all countries as from 1975, but this should have a negligible impact.

In conclusion, the hypothesis that the net position reported in official statistics of the main Euro area countries is worse than the real one due to undeclared assets seems confirmed by the prevailing patterns of the observed discrepancies between IIP and BP aggregates. On the contrary, for the United Kingdom and the United States,[8] the cumulated current and capital accounts would indicate a net position significantly worse than the one reported by official statistics.

Evidence of discrepancy: global balance of payments asymmetries

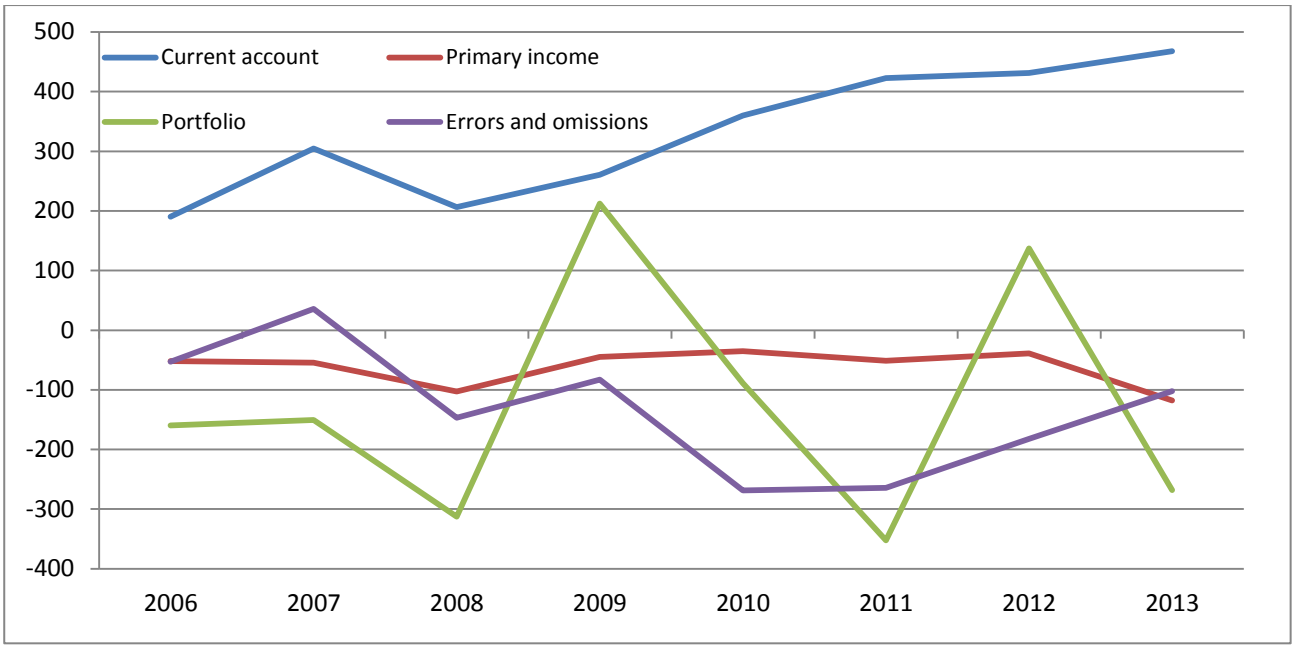
If we sum current account balances across all countries of the world, in case of correct compilation by all countries the total (global balance) should be zero. The same for the financial account. Errors and omissions put a wedge in the theoretical balance. Global balance of payments statistics published by the IMF (according to the 6th Manual) show discrepancies in the direction of negative errors and omissions (Chart 2.2), together with a positive current account balance and negative balances of primary income and (as an average in the period) portfolio investment.

Negative errors and omissions are generally associated with an underestimation of capital outflows; countries tend to overestimate their external liabilities and/or to underestimate their external assets. The overestimation of the external liabilities can be due to an erroneous attribution to foreign investors of, e.g., securities issued by residents and held abroad (and not declared) by resident investors. **Underestimation of foreign assets** seems more plausible as far as systematic under-reporting of

[8] In the case of the United States, several papers (for example, Eichengreen (2011), Habib (2010) and Lane and Milesi-Ferretti (2009)) try to explain this phenomenon (frequently called the "exorbitant privilege"). According to Habib (2010), "one third of this excess return is accounted for by a positive yield differential from investment income and two thirds by capital gains. At least as regards yields from the investment income, other major issuers of international currencies, such as Japan and Switzerland, enjoy positive differential returns almost similar to those of the United States. The euro area however does not enjoy a yield privilege similar to other issuers of international currencies" (page 31). Lane and Milesi-Ferretti (2009) focus their attention on residual adjustments (i.e. unrecorded financial flows, mis-measured stock positions, or mis-measured capital gains): "a good proportion of the residual adjustment could well reflect unrecorded financial flows, especially in the portfolio category" (page 197).

assets held abroad is concerned; it may be a major cause of the discrepancies observed between global assets and liabilities.

Chart 2.2. Global discrepancies in balance of payments: balances of current account, capital account and portfolio investments and errors and omissions (billions of dollars)



Sources: International Monetary Fund (global statistics).

3. The estimation of the undeclared capital held abroad

"*One coincidence is just a coincidence. Two coincidences are a clue. Three coincidences are a proof*" wrote Agata Christie.

The signals from external statistics, such as FDI and services, the outcomes of the VD, the comparison between IIP stocks and BP flows and the global asymmetries suggest that the amounts of undeclared external financial assets may be quite significant and should be mainly invested in portfolio securities and bank deposits. This section presents a methodology to estimate them; for portfolio securities, we build on Pellegrini and Tosti (2011, 2012); with reference to bank deposits, we use an updated and revised version of the methodology used in Sanelli (2008).

3.1 The undeclared foreign portfolio assets

As for the measurement of under-reporting of foreign portfolio assets our approach is mainly based on mirror statistics. In detail, we analyze the discrepancies between assets and liabilities at the level of issuer country and type of financial instruments, and assume that such discrepancies are a good proxy of the underestimation of external portfolio assets. In other words, we assume that data on external liabilities are more reliable than those on foreign assets.

Our approach is independent from any specific mode of capital export; it shifts the focus to the stocks of final financial investments, namely portfolio securities. We consider bank deposits in a subsequent step and do not include other financial assets (e.g. derivatives or life insurance policies). The approach is similar to Zucman (2013) who developed the method in parallel and independently from the authors; the main differences concern the criteria of breaking down, by issuer country and financial instruments, the portfolio assets held by countries that do not publish reliable and detailed statistics on their external assets (mainly OFCs).

The estimation is based on the analysis of mirror data published by the IMF, integrated with other statistical sources in order to widen the coverage.

The source for declared assets is the IMF Coordinated Portfolio Investment Survey (CPIS): starting from 2001, member countries (with the exception of China, Saudi Arabia and some other oil-exporting countries and several OFCs) provide information on the stock of portfolio assets by issuing (debtor) country.[9] As part of the CPIS, two additional surveys regarding securities held as official reserve assets and securities held by international bodies are conducted.[10] The CPIS reports the bilateral positions between investor and issuing countries; the geographical breakdown by issuing country allows us to derive data on liabilities (*derived liabilities*) by country. In formal terms, we define:

A=declared assets, L=declared liabilities, P=derived liabilities.

Underscripts: i=issuing country; j=investor country, t=year (from 2001 to 2013).

Overscripts: E = equities, D = debt.

By aggregating assets declared by all investor countries j in a given issuing country i, we obtain the *derived liabilities* of country i in year t for a given type of financial instrument (E or D) as:

1) $${}_tP_i^E = \sum_j {}_tA_{ji}^E \quad \text{e} \quad {}_tP_i^D = \sum_j {}_tA_{ji}^D$$

The source for declared liabilities is the IIP data for countries reporting to the IMF,[11] which are published on the basis of the same BPM6 rules. Portfolio stocks are broken down by type of financial instrument but <u>not</u> by partner country (investor for liabilities or issuer for assets). In the absence of reporting errors, *derived liabilities* from the CPIS should be less (if coverage by investor country is incomplete) than or equal to the liabilities declared in IIP statistics.

The External Wealth of Nations II (EWN II) is a database developed by Lane and Milesi-Ferretti.[12] It marks an improvement on the official data published by the IMF (CPIS and IIP): it extends the coverage by integrating other sources and estimates, providing information on the stock of assets and liabilities for 211 countries (with different time ranges). Data are broken down by major component of IIP, but due to the dependence on IIP data, unlike the CPIS, it provides no information on the geographical breakdown. In this work, EWN II is used to fill information gaps about countries that do not publish their IIP and/or do not participate in the CPIS.

Merging the three main databases (CPIS, IIP and EWN II). Our database integrates the existing ones so as to increase coverage of data on portfolio assets and liabilities as much as possible. The starting point is the CPIS data on asset stocks (with the breakdown by issuer country),[13] which have been matched with the corresponding portfolio liabilities (with no breakdown by investor country), using the IIP, CPIS (in this case as *derived liabilities*) and EWN II. For each issuing country i and year t we can calculate the difference U between total liabilities (available with no breakdown by investor country) and the sum of the assets issued by country i that investor countries declare:

2) $\forall i,t \quad {}_tU_i^E = {}_tL_i^E - \sum_j {}_tA_{ji}^E$ and the global discrepancy on equity securities is given by: ${}_tU^E = \sum_i {}_tU_i^E$

3) $\forall i,t \quad {}_tU_i^D = {}_tL_i^D - \sum_j {}_tA_{ji}^D$ and the global discrepancy on debt securities is given by: ${}_tU^D = \sum_i {}_tU_i^D$

($i \neq j$; i,j=1,….,n; t=2001,...,2013).

Portfolio liabilities by country, L_i, come from official IIP if available, or from EWN II[14]. If neither source provides information, the liabilities of the issuing country are assumed to be equal to the derived liabilities (from the CPIS), namely:

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[9] Assets are broken down by (at least) equity securities (including shares and investment funds) and debt securities (money market instruments and bonds and notes). Assets are valued at market price at the end of the period; CPIS is aligned with the IMF Balance of Payments and International Investment Position Manual, sixth edition (BPM6).

[10] These statistics are published only at an aggregate level as data are confidential.

[11] Downloadable at: http://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52&ss=1440014571113.

[12] For further details, see Lane and Milesi-Ferretti (2001, 2007).

[13] For some countries, namely Bahrain, India, Kuwait, Latvia, Mexico and Pakistan, some missing data need to be estimated.

[14] In the Appendix B the methodological note describes the few cases in which the *derived liabilities* (from CPIS) are greater than the officially declared liabilities (from the IIP).

4) ${}_tL^E_{i*} = {}_tP^E_i = \sum_j {}_tA^E_{ji}$ and, by definition, the total discrepancy for that country is zero: ${}_tU^E_i = 0$

5) ${}_tL^D_{i*} = {}_tP^D_i = \sum_j {}_tA^D_{ji}$ and, by definition, the total discrepancy for that country is zero: ${}_tU^D_i = 0$.

At this initial stage of the estimation the discrepancy amount to $11.5 trillion (Table 3.1).

Table 3.1: Initial stage of estimation: comparison between global portfolio assets and liabilities
(billions of US dollars or percentages)

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
(A) Assets (including official reserves declared in CPIS)	Equity	5,503	5,071	7,390	9,235	11,097	14,926	18,061	10,410	14,484	16,446	15,186	17,881	21,782
	Debt	7,592	9,411	12,360	14,949	15,721	19,285	22,673	21,760	24,451	25,731	25,682	27,492	28,240
	Total	**13,096**	**14,482**	**19,749**	**24,183**	**26,818**	**34,211**	**40,734**	**32,169**	**38,935**	**42,178**	**40,867**	**45,373**	**50,022**
(L) Liabilities	Equity	6,853	6,365	9,011	11,214	13,456	17,560	21,501	12,896	17,694	20,196	18,979	22,335	26,913
	Debt	9,074	11,113	13,977	16,989	18,156	22,121	26,463	26,101	28,852	30,164	31,132	33,607	34,614
	Total	**15,927**	**17,478**	**22,988**	**28,203**	**31,612**	**39,681**	**47,963**	**38,997**	**46,546**	**50,360**	**50,111**	**55,942**	**61,527**
Global discrepancy (L-A)	Equity	1,350	1,294	1,621	1,979	2,359	2,634	3,440	2,486	3,210	3,750	3,794	4,454	5,131
	Debt	1,481	1,702	1,618	2,041	2,435	2,836	3,790	4,342	4,401	4,432	5,450	6,115	6,374
	Total	**2,831**	**2,996**	**3,239**	**4,020**	**4,794**	**5,470**	**7,229**	**6,828**	**7,611**	**8,182**	**9,244**	**10,569**	**11,505**
Global discrepancy as share of assets	Equity	24.5%	25.5%	21.9%	21.4%	21.3%	17.6%	19.0%	23.9%	22.2%	22.8%	25.0%	24.9%	23.6%
	Debt	19.5%	18.1%	13.1%	13.7%	15.5%	14.7%	16.7%	20.0%	18.0%	17.2%	21.2%	22.2%	22.6%
	Total	**21.6%**	**20.7%**	**16.4%**	**16.6%**	**17.9%**	**16.0%**	**17.7%**	**21.2%**	**19.5%**	**19.4%**	**22.6%**	**23.3%**	**23.0%**

Sources: IMF (CPIS and IIP) and EWN II.

The estimation of the global amount of undeclared portfolio assets

The second step in our process of building the database consists of identifying the critical aspects regarding data coverage and availability.

The addition of further data sources has allowed us to fill a substantial share of the gaps, especially on the assets side. In a few cases, corrections have been made for both assets and liabilities; in the latter case, this is a consequence of adjustments made to eliminate some inconsistencies derived from the comparison of official data.

The work of progressively increasing the level of coverage and the consistency of the database has regarded several countries (or groups of countries): Appendix B contains a detailed description of both the additions and corrections made and the additional data sources found.

In the remaining cases (mainly OFCs, e.g. the former Netherlands Antilles), where portfolio liabilities are not available, they have been assumed to be equal to the corresponding CPIS *derived liabilities*; As a result, no discrepancy referring to the securities issued by these countries can be shown in our data by construction and the global discrepancy can be underestimated.

In Table 3.2 we summarize the final results of the adjustment and integration process.

The difference between assets and liabilities in 2013 amounts to $4.9 trillion, much lower than the one reported in Table 3.1 but still large – and on average equal to 10.2 per cent of total assets in the period.

Table 3.2: Final stage of estimation: comparison between global portfolio assets and liabilities (billions of US dollars or percentages)

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
(A) Assets (including official reserves declared in CPIS)	Equity	5,906	5,457	7,954	9,964	12,057	16,274	20,070	12,061	16,334	18,763	17,491	20,625	24,986
	Debt	8.,140	10,080	13,146	16,035	17,158	21,215	25,231	24,603	27,715	29,415	29,418	31,477	32,487
	Total	**14,047**	**15,537**	**21,099**	**25,999**	**29,215**	**37,488**	**45,300**	**36,665**	**44,050**	**48,179**	**46,909**	**52,102**	**57,472**
(L) Liabilities	Equity	7,048	6,617	9,425	11,766	14,165	18,781	23,493	14,478	18,901	21,474	20,060	23,480	28,000
	Debt	9,072	11,156	14,037	17,086	18,140	22,121	26,366	25,884	28,791	29,868	30,971	33,483	34,381
	Total	**16,120**	**17,773**	**23,461**	**28,852**	**32,305**	**40,901**	**49,859**	**40,362**	**47,692**	**51,341**	**51,031**	**56,963**	**62,381**
Global discrepancy (L-A)	Equity	1,142	1,160	1,471	1,802	2,108	2,507	3,424	2.,417	2,567	2,710	2,569	2,856	3,014
	Debt	932	1,076	891	1,051	982	906	1,135	1,280	1,.076	453	1,553	2,006	1,895
	Total	**2,074**	**2,236**	**2,362**	**2,853**	**3,089**	**3,413**	**4,558**	**3,697**	**3,643**	**3,163**	**4,122**	**4,862**	**4,909**
Global discrepancy as share of assets	Equity	19.3%	21.3%	18.5%	18.1%	17.5%	15.4%	17.1%	20.0%	15.7%	14.4%	14.7%	13.8%	12.1%
	Debt	11.5%	10.7%	6.8%	6.6%	5.7%	4.3%	4.5%	5.2%	3.9%	1.5%	5.3%	6.4%	5.8%
	Total	**14.8%**	**14.4%**	**11.2%**	**11.0%**	**10.6%**	**9.1%**	**10.1%**	**10.1%**	**8.3%**	**6.6%**	**8.8%**	**9.3%**	**8.5%**
Global discrepancy as share of world GDP	Equity	3.5%	3.4%	3.9%	4.2%	4.5%	5.0%	6.0%	3.9%	4.3%	4.2%	3.6%	3.9%	4.0%
	Debt	2.9%	3.2%	2.3%	2.4%	2.1%	1.8%	2.0%	2.1%	1.8%	0.7%	2.2%	2.8%	2.5%
	Total	**6.3%**	**6.6%**	**6.2%**	**6.6%**	**6.6%**	**6.8%**	**8.0%**	**5.9%**	**6.2%**	**4.9%**	**5.8%**	**6.7%**	**6.6%**

Sources: IMF (CPIS and IIP), EWN II, national sources.

Table 3.3 shows the breakdown of the global discrepancies by issuer country and instruments.

Table 3.3 – Major portfolio discrepancy by issuing country (billions of US dollars or percentages)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average share in global discrepancy	Average share in country's liabilities
	EQUITY SECURITIES														
Luxembourg	230	276	357	431	552	609	720	604	716	744	719	771	762	25.2%	27.5%
Cayman Islands	100	122	192	287	367	601	985	797	571	597	504	537	571	21.0%	36.1%
United States	291	213	259	274	181	103	165	46	252	275	337	394	569	11.3%	8.8%
Ireland	37	49	66	81	94	56	113	179	162	180	208	204	203	5.5%	12.2%
Guernsey	28	31	45	65	80	112	157	121	110	119	127	134	125	4.2%	50.7%
Netherlands	3	25	2	3	131	163	175	91	98	90	107	90	48	3.4%	16.8%
Switzerland	83	80	85	94	91	87	75	68	36	57	40	78	48	3.1%	12.2%
Brititish Virgin Is.	15	31	45	50	60	81	110	89	79	81	71	75	87	2.9%	44.0%
Jersey	53	62	63	66	69	107	144	101	58	49	39	30	9	2.9%	42.5%
Japan	18	18	30	39	85	69	77	37	42	48	40	56	112	2.3%	5.9%
Hong Kong	16	14	12	24	27	20	76	36	58	57	47	81	84	1.9%	15.8%
Other countries	267	239	314	387	372	498	625	248	385	413	329	406	395	16.4%	-
Total	**1,142**	**1,160**	**1,471**	**1,802**	**2,108**	**2,507**	**3,424**	**2,417**	**2,567**	**2,710**	**2,569**	**2,856**	**3,014**	**100.0%**	**13.7%**
	DEBT SECURITIES														
United States	253	317	203	296	178	184	142	159	0	0	63	293	379	16.2%	2.9%
France	127	136	116	163	215	120	172	214	186	63	144	196	218	13.6%	8.7%
United Kingdom	29	41	0	4	79	51	83	47	145	68	251	263	180	8.3%	5.4%
Netherlands	24	52	101	111	63	96	85	79	45	25	54	49	39	5.4%	4.8%
Japan	37	25	29	55	26	50	87	93	67	23	90	61	74	4.7%	8.4%
Australia	40	50	44	44	50	55	58	56	47	29	81	77	73	4.6%	10.2%
Italy	26	27	15	10	19	66	114	97	75	29	74	90	50	4.5%	4.6%
Internation. Og.	68	66	63	25	21	0	0	-0	40	4	47	173	159	4.4%	6.7%
Spain	0	13	5	16	16	39	57	63	68	32	69	63	57	3.3%	5.0%
Austria	32	40	35	43	39	33	44	43	35	12	38	45	24	3.0%	9.8%
Germany	0	0	0	0	0	0	9	68	43	21	124	132	53	3.0%	1.7%
Other countries	296	309	281	282	277	213	284	362	324	147	518	564	587	29.0%	-
Total	**932**	**1,076**	**891**	**1,051**	**982**	**906**	**1,135**	**1,280**	**1,076**	**453**	**1,553**	**2,006**	**1,895**	**100.0%**	**5.1%**

Sources: IMF (CPIS and IIP), EWN II, national sources.

As for equity securities, which include investment fund shares, the top five issuing countries (Luxembourg, Cayman Islands, the United States, Ireland, Guernsey) generate on average approximately 70 per cent of the global discrepancy in the period 2001-2013. The relevance of these discrepancies is consistent with the role played by almost all of these countries, as they are frequently the preferred location of investment funds and tend to attract capital from foreign investors. The shares of global discrepancy related to developed countries appear to be erratic in some cases (e.g. the United States), the shares related to OFCs are generally more stable. The observed trends support the hypothesis of discrepancies due to deliberate under-reporting of assets rather than statistical errors.

As for debt securities, the global discrepancy is less concentrated. The top six issuing countries – the United States, France, United Kingdom, the Netherlands, Japan and Australia – sum up on average to more than half of the global difference between liabilities and assets: all of them are developed countries and their relevance in the global discrepancy is proportional with their role as issuers of debt securities (mainly public sector bonds). The volatility is higher for debt than for equity securities; probably in the case of debt securities, statistical errors might explain a non-negligible share of the observed discrepancies.

The last column of Table 3.3 shows the relative weight of discrepancies on the country's own liabilities (declared or estimated). As expected, especially for equity securities, the impact is much smaller for developed countries (the United States, Switzerland, the Netherlands and Ireland) than for offshore countries; for the latter in some cases the discrepancies exceed 40 per cent of the liabilities. It seems that the higher the indicator, the higher the propensity of a country to act as a tax haven. As for debt securities, the percentage weight of discrepancies is generally lower than 10 per cent.

The allocation of undeclared assets to investor countries (and the case of Italy)

Once estimated the global amount of the under-reported assets, we allocate the undeclared amounts to the different investor countries. Namely, we focus on the assessment of the under-reporting for Italy by assigning to it a share of the global discrepancy.

The baseline hypothesis is that country-unallocated liabilities are attributed in proportion to investor countries' shares of the allocated liabilities of each issuing country, as declared in the CPIS data (criterion C1).

This approach uses all the detailed information provided by the CPIS. It implicitly assumes that investors resident in any given country allocate the unreported foreign wealth to the same portfolio assets used for the investment of declared wealth, or that investors that do not report (in full or in part) their wealth have the same portfolio allocation of investors that report all their wealth. This criterion takes into account the level of foreign portfolio assets (and thus it properly weights the financial openness of the investor country), as well as the preference of each investor country for a specific combination of issuer country/financial instrument.

Accordingly, it attributes a higher propensity to under-report portfolio assets to the major investors in securities issued by countries for which high discrepancies between declared and derived liabilities are observed (Luxembourg, the Cayman Islands, etc.); no under-reporting is attributed to the countries (e.g. China and Arab oil exporters) which do not participate in the CPIS and for which assets have been estimated.

As a robustness test, we compare the allocation made according to declared financial wealth with that obtained on the basis of each country share of world GDP (an economic variable available for almost all countries; criterion C2). This criterion concentrates the allocation of undeclared assets according to the size of "real" economic activities and each country income level rather than the share of declared foreign financial investments. It does not take into account the saving propensity of investors nor the country financial openness.

Therefore, under criterion C1 shares are calculated for each combination of issuer country, type of financial instrument (equity and debt) and reference year. In general, we define the under-reporting to be attributed to an investor country j in the year t as follows:

6) ${}^{j}_{t}U = (\sum_{i} {}_{t}K^{E}_{ji} \cdot {}_{t}U^{E}_{i} + \sum_{i} {}_{t}K^{D}_{ji} \cdot {}_{t}U^{D}_{i})$ ($0 \leq K \leq 1$; $i \neq j$; i,j=1,….,n; t=2001,...,2013).

The shares ${}_{t}K^{E}_{ji}$ and ${}_{t}K^{D}_{ji}$ are calculated as follows:

C1) $\forall i,t \quad {}_{t}K^{E}_{ji} = \frac{{}_{t}A^{E}_{ji}}{\sum_{j} {}_{t}A^{E}_{ji}}$ and ${}_{t}K^{D}_{ji} = \frac{{}_{t}A^{D}_{ji}}{\sum_{j} {}_{t}A^{D}_{ji}}$ for $j \in \{CPIS\}$.

Under criterion C2, we have:

C2) $\forall i,t \quad {}_{t}K^{E}_{ji} = {}_{t}K^{D}_{ji} = \frac{{}_{t}GDP_{j}}{\sum_{r} {}_{t}GDP_{r}}$ (r,i=1,….,n; t=2001,...,2013).

The table contained in Appendix C reports the shares of the global discrepancy attributed to five major euro area countries (France, Germany, Italy, the Netherlands, Spain), calculated with both criteria.

We are aware of the fact that using the "reported foreign portfolio wealth" and "GDP" criteria to attribute unreported capital to each investor country (or to each group of country, e.g. OECD and non-OECD) can be misleading, due to the other possible determinants of unreported capital held abroad. In fact, the investors' propensity to hide capital abroad could reflect, among other things, the general level of tax evasion in their residence countries, but also the presence and size of other illicit activities; it could be affected by a wide number of factors, not only the level of the tax burden, but also political instability, the level of corruption, the economic and financial development, the country financial openness, geographical proximity and historical links with OFCs, etc.. The anecdotal evidence seems to confirm that unreported capital outflows from developing countries could be higher compared to the amounts suggested by their incidence on global reported financial wealth and on world GDP.[15]

Even though some attempts to allocate offshore wealth on the basis of data published by public sources in some OFCs have been made (Zucman, 2013), accounting for all the relevant factors requires deeper analysis and the availability of more statistical data on the owners of unreported assets, if possible collected on a "*beneficial ownership*" basis. Therefore, it is a topic for future research.

The attribution of unreported capital to each investor country may also be affected by factors of discontinuity for countries – such as Italy – that adopted voluntary disclosure schemes over the period under analysis. We took this circumstance into account for Italy to estimate the amount of unreported capital at the end of 2013 that we used for the calculation of personal income tax evasion. Namely, we took into account the impact of the repatriation of capital due to the voluntary disclosure scheme (VD) of 2009-2010. The effects of the VD weaken the assumptions of proportionality underlying the two attribution criteria before mentioned, so we started from the stock of undeclared assets estimated by the end of 2008 before the repatriation of capital; at end-2008 the unreported capital estimated as the average of the estimates based on criteria C1 and C2 amounted to €133 billion (Pellegrini and Tosti, 2011).[16] This amount was reduced by the (estimated) portfolio securities disclosed through the VD (€56 billion); the remaining stocks have been revaluated for changes in prices and exchange rates and

[15] According to the Boston Consulting Group Report on global wealth (2015) − which contains data on the overall financial wealth of households across 92 countries accounting for more than 99 percent of global GDP in 2014 −.in 2014 the global amount of wealth held offshore (including cash deposits, listed securities held either directly or through investment funds, and life and pension assets) equalled $11 trillion and represented 5.8 percent of total wealth. The 2016 Report substantially confirms the prevalence of the "new world" over the "old world" in the offshore wealth allocation.

[16] This estimate, calculated by Pellegrini and Tosti in their previous work, was based on the CPIS data which did not include the statistical revisions on the time series subsequently introduced to take into account the amounts brought to light with the VD; the statistical data before the revisions reflected the original situation at end 2008 and hence might be a better basis for the estimates. For this reason the estimated amounts of undeclared assets at end 2008 indicated in this paragraph slightly differ from those reported in table C1 in Appendix (calculated on the basis of the updated time series).

increased to take into account the outflows of undeclared capital which took place in the following years.

The estimation of these outflows is based on the persistent negative errors and omissions recorded in the Italian balance of payments, which are assumed to be mainly linked to unrecorded investments in foreign assets. A share of the cumulated errors and omission in the four years following the VD (2010-2013) has been taken as a proxy of external portfolio undeclared assets. The percentage share applied reflects the weight of portfolio assets in the Italian IIP, on average about 38 per cent of the total for the non-banking sector. Errors and omissions in the same period amounted to €60 billion, so about 23 billion (38 per cent of €60 billion) could be considered as an estimate of "new" acquisition of undeclared external portfolio securities. All these calculations lead to an estimation of undeclared portfolio assets at end-2013 amounting to €124 billion.

As a term of comparison, we estimated the amount of undeclared portfolio assets at end-2013 with an alternative method. In this case, we assumed that after four years the effects of the VD could be neglected; consequently, we considered that the amount of the undeclared assets by Italian investors was proportional to the relative financial/economic weight of Italy. Applying criteria C1 and C2 to the global discrepancy at end-2013 as reported in Table 3.2 ($4.9 trillion), an average of them amounts to €136 billion at end-2013. This alternative estimation was higher but not so different from the one mentioned above (€124 billion). Table 3.4 shows the breakdown by financial instrument of the two estimates. In par. 4 the more conservative estimate has been taken into account as a basis to calculate tax evasion on the undeclared capital held abroad.

Table 3.4: Estimate of undeclared portfolio foreign assets broken down by financial instrument held at end-2013 by Italian investors (billions of euro)

Method used for the estimation	Type of financial instrument		
	Equity securities	Debt securities	Total
Adopted method	102	22	124
Alternative method as a term of comparison	96	40	136

Sources: IMF (CPIS and IIP), EWN II, national sources.

3.2 Cross-border deposits of non-banks

As for cross-border bank deposits, the analysis of BIS Banking Locational Statistics provides interesting indications on the potential existence of large amounts of undeclared assets.

The BIS publishes on a quarterly basis the cross-border deposit liabilities of banks established in the main countries (45 reporting countries), broken down by sector (banks and non-banks) and country of residence of the foreign holders. Since under-reporting of assets by the banking sector is expected to be a marginal phenomenon, the analysis focuses on cross-border deposits of the non-banking sector.

As we know, investors take advantage of tax havens to hide capital abroad and frequently register their foreign deposits in the name of fictitious holding companies (or through complex chains of intermediate entities) located in tax havens that guarantee opacity on the ownership structures. In such cases the BIS statistics record deposits of the non-banking sector held in all reporting countries by residents of OFCs. In other cases, when investors prefer to locate undeclared bank deposits directly in tax havens that guarantee bank secrecy, BIS statistics record deposits of the non-banking sector held by residents of non-OFCs in banks located in OFCs.[17]

[17] This latter circumstance may also reflect the use of trusts, shell companies, or other interposed entities established in non-offshore countries (e.g. the State of Delaware in the US).

Table 3.5 shows the geographical breakdown of cross-border deposits of non-banks by both investor and reporting country; the percentages observed for OFCs (at end-2014, respectively, around 22 per cent and 27 per cent) are much higher than OFCs' incidence on world GDP and even higher than those of major countries. Consequently, they are consistent with the hypothesis of the existence of large amounts of undeclared bank deposits held by investors who benefit from tax havens. Anyway, it is difficult to estimate to what extent these stocks are really related to under-reporting of assets and tax evasion, as a large part of them might be generated by the real economic activities of OFCs (insurance companies, collective investment funds, etc.).

Table 3.5: Distribution of cross border deposits vis-a-vis non-banks (billions of US dollars)

By country of the investor

Year	Offshore countries*		United States		United Kingdom		Germany		France		Italy	
	amount	%	amount	%	amount	%	amount	%	amount	%	amount	%
2001	511	19.4%	631	24.0%	240	9.1%	129	4.9%	66	2.5%	44	1.7%
2002	604	19.9%	794	26.1%	294	9.7%	149	4.9%	74	2.4%	48	1.6%
2003	765	20.1%	913	24.0%	435	11.4%	214	5.6%	106	2.8%	55	1.4%
2004	935	20.8%	1,045	23.2%	590	13.1%	246	5.5%	137	3.0%	65	1.5%
2005	966	20.9%	1,108	24.0%	644	13.9%	243	5.3%	122	2.6%	49	1.1%
2006	1,220	20.8%	1,336	22.8%	959	16.4%	287	4.9%	130	2.2%	57	1.0%
2007	1,440	19.6%	1,766	24.1%	1,106	15.1%	324	4.4%	171	2.3%	59	0.8%
2008	1,369	19.9%	1,798	26.2%	876	12.7%	304	4.4%	170	2.5%	58	0.8%
2009	1,314	20.3%	1,677	25.8%	792	12.2%	312	4.8%	168	2.6%	66	1.0%
2010	1,273	18.5%	1,939	28.1%	883	12.8%	367	5.3%	162	2.4%	48	0.7%
2011	1,251	18.2%	1,660	24.2%	964	14.0%	361	5.3%	205	3.0%	49	0.7%
2012	1,425	19.8%	1,608	22.3%	954	13.2%	412	5.7%	218	3.0%	72	1.0%
2013	1,405	18.7%	1,646	21.9%	1,038	13.8%	420	5.6%	212	2.8%	72	1.0%
2014	1,539	21.7%	1,436	20.2%	887	12.5%	323	4.5%	163	2.3%	63	0.9%

By country of location of the reporting bank

Year	Offshore countries*		United Kingdom		United States		France		Germany		Italy	
	amount	%	amount	%	amount	%	amount	%	amount	%	amount	%
2001	1,155	43.9%	459	17.4%	183	7.0%	63	2.4%	307	11.6%	15	0.6%
2002	1,307	43.0%	554	18.2%	210	6.9%	73	2.4%	334	11.0%	23	0.8%
2003	1,493	39.3%	751	19.7%	406	10.7%	88	2.3%	387	10.2%	28	0.7%
2004	1,585	35.2%	963	21.4%	598	13.3%	101	2.2%	423	9.4%	36	0.8%
2005	1,642	35.5%	1,025	22.2%	557	12.1%	110	2.4%	373	8.1%	40	0.9%
2006	2,003	34.2%	1,259	21.5%	841	14.4%	139	2.4%	407	7.0%	47	0.8%
2007	2,545	34.7%	1,686	23.0%	972	13.2%	176	2.4%	445	6.1%	46	0.6%
2008	2,554	37.1%	1,412	20.5%	928	13.5%	147	2.1%	397	5.8%	57	0.8%
2009	2,375	36.6%	1,418	21.9%	792	12.2%	139	2.1%	311	4.8%	63	1.0%
2010	2,373	34.4%	1,592	23.1%	812	11.8%	141	2.0%	302	4.4%	58	0.8%
2011	2,084	30.4%	1,602	23.3%	935	13.6%	144	2.1%	290	4.2%	60	0.9%
2012	2,011	27.9%	1,676	23.3%	1,026	14.2%	444	6.2%	311	4.3%	52	0.7%
2013	1,972	26.2%	1,652	21.9%	1,173	15.6%	479	6.4%	353	4.7%	94	1.2%
2014	1,903	26.8%	1,588	22.3%	1,273	17.9%	507	7.1%	266	3.7%	74	1.0%

Source: BIS Locational Banking Statistics.

Note (*): Offshore countries are those classified as such by the BIS (see column 3 in Table A.1, excluding those not in bold).

In order to obtain a more comprehensive picture of the external financial wealth not reported in the statistics of the investors' countries, we add to the amount of unreported portfolio assets, as estimated in par. 3.1, a share of the cross-border bank deposits held by non-banks, as reported in BIS Locational Statistics. Namely, we include both a share of the cross-border deposits held in OFCs by non-banks (no matter where they are resident) and a share of the cross-border deposits held in non-OFC countries by the non-banks resident in OFCs.

We assume that the share of those bank deposits (hereafter, SI), which refer – either directly or through any type of intermediate vehicle – to *households*, i.e. to *individual investors* is between 1/3 and 2/3 of the total. This assumption is necessary to exclude from the estimate cross-border deposits of non-banks that belong to other sectors, such as non-financial companies or non-bank financial entities (insurance companies, securities brokers, other financial intermediaries) and that are made for genuine business reasons.

In the absence of direct information on the sectorial breakdown in BIS statistics,[18] the 1/3-2/3 range is identified through an analysis of available data on the distribution of bank deposits among different categories of owners, as reported in a number of public sources, as follows:

- the Bank of England publishes data on bank deposits held in Jersey, Guernsey and the Isle of Man: according to these data, on average 65 per cent of bank deposits of non-banks held in these three OFCs belongs to individuals.[19] Consequently, assuming 2/3 as a maximum value for SI may be realistic;
- the Swiss National Bank publishes data on the sectorial breakdown of domestic bank liabilities. The data – which include liabilities of banks established in Liechtenstein − show that more than 57 per cent of the bank deposits of non-banks belongs to individuals;[20]
- the ECB monetary statistics show that in the Euro area over the last decade individuals held on average 55-60 per cent of the overall amount of bank deposits of non-banks.[21] Since these data mainly refer to domestic deposits, they may overestimate the value of SI. For all these reasons we consider as a lower-bound equal to 1/3 for the value of SI;
- the defined range for SI seems to be consistent also with the data published by the Banque Centrale du Luxembourg on the sectorial breakdown of bank deposits held by non-residents in Luxembourg: over the period 2001-2015, the share of deposits held by individuals is between 24 and 40 per cent for euro area residents and between 25 and 33 per cent for residents in other countries.[22]

Table 3.6 shows the estimates of undeclared assets in cross-border bank deposits held by individuals.

Table 3.6: Share of cross-border deposits of individuals (billions of US dollars)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Deposits held in OFCs	1,155	1,307	1,493	1,585	1,642	2,003	2,545	2,554	2,375	2,373	2,084	2,011	1,972	1,903
Deposits held in non-OFCs by OFC residents	385	471	654	818	797	1,019	1,265	1,219	1,155	1,104	1,148	1,371	1,490	1,502
Total	*1,540*	*1,779*	*2,147*	*2,403*	*2,439*	*3,022*	*3,810*	*3,774*	*3,530*	*3,477*	*3,233*	*3,382*	*3,462*	*3,406*
Estimation of deposits held by individuals														
Minimum: total*(1/3)	513	593	716	801	813	1,007	1,270	1,258	1,177	1,159	1,078	1,127	1,154	1,135
Maximum: total*(2/3)	1,027	1,186	1,431	1,602	1,626	2,015	2,540	2,516	2,353	2,318	2,155	2,254	2,308	2,270

Source: calculations on BIS data (Locational Banking Statistics).

[18] The BIS only provides, since 2013, a breakdown of cross-border liabilities vis-à-vis non-banks between non-financial entities (which include households, non-financial companies, central and local governments, insurance and pension funds) and non-bank financial entities. However, since many reporting countries do not give this breakdown yet, the share of unallocated liabilities is quite high, making the data useless for the purpose of our estimate.

[19] Table C5.1 of the Bank of England Monetary and Financial Statistics, August 2015. The data include bank deposits held by residents of the three OFCs in domestic banks. However, since these deposits amount to a significant share of the total, it is likely that they are actually deposits by non-residents made through vehicles established in the same OFCs. For this reason, we include these deposits in the calculation.

[20] Table 1J of the Swiss National Bank Monthly Bulletin of Banking Statistics, September 2015.

[21] Table 3.1 of the Monthly ECB Statistical Bulletin, September 2015. The other categories of holders are non-financial corporations, non-bank financial institutions, insurance and pension funds, central government.

[22] Table 11.12 of the Monetary Policy Statistics, Banque Centrale du Luxembourg, September 2015.

4. Estimate of international tax evasion on undeclared portfolio assets and cross-border bank deposits

4.1 Previous estimates of international tax evasion or offshore financial assets

In spite of the abundant anecdotal evidence on cases of tax evasion connected with offshore investments, to the best of our knowledge only a few authors have attempted to estimate its possible order of magnitude.

Given the hidden nature of unreported external assets, statistics on international financial flows (and stocks) often suffer from under-reporting or misreporting of transactions. Furthermore, even when the potential amount of the unreported foreign capital is somehow quantified, the size of the actual tax evasion related to it depends on many factors, including the original source of the capital (i.e. labour or business income, inherited wealth, etc.), the type of activity it comes from (e.g., commercial *vs* professional activities), the type of taxes applied by the investor's residence country, the period of time the unreported capital has been held abroad, etc..

As a consequence, any attempt to estimate the potential magnitude of the tax evasion related to unreported capital held abroad, both on a global and on a national basis, relies on strong and sometimes oversimplified assumptions. For the same reasons, exercises of this kind often concentrate on a subset of the tax evasion linked to unreported capital rather than on its overall amount. Most studies try to assess the potential amount of the taxes evaded in the investors' residence countries on the capital income earned on the investment of the unreported capital; this capital income is usually kept abroad and goes undeclared to the tax administration just as the capital from which it arose. To the best of our knowledge, none of the previous studies on this topic tries to calculate the amount of the tax evasion directly related to the unreported capital, i.e. the taxes originally evaded in the investor's residence country when the capital was earned in the form of labour or business income and not reported to the tax authorities, or was inherited or received as a donation. These latter taxes can be personal income taxes, but also social security contributions, VAT, business taxes, etc.; in the case of inherited wealth, they can be inheritance and gift taxes, wealth taxes, etc..

In a recent work, Zucman (2015) estimates tax evasion on annual capital income, together with wealth and inheritance tax evasion on a global level; overall, Zucman's estimate − calculated on the basis of the stock of financial assets held offshore by residents of all countries at the end of 2013 − amounts to $190 billion.

Gravelle (2015) reports that for the US international capital income tax evasion by individuals estimated by the US Senate Subcommittee on Investigations ranges between $40 and $70 billion a year.[23] Always with reference to the US, Avi-Yonah (2007) presented an assessment of international tax evasion by US residents in a public hearing at the US Senate Finance Committee: starting with a rough estimate of $1.5 trillion of offshore assets held by US residents and assuming an average rate of return of 10 per cent and a tax rate of 33.3 per cent, he estimated an annual amount of tax revenue losses due to capital income tax evasion equal to $50 billion.

In 2005 the non-governmental organization Tax Justice Network (TJN) published a briefing paper (Tax Justice Network, 2005) estimating that on a global basis the annual capital income tax evasion on funds held offshore by high net worth individuals equalled about $250 billion. The estimate was based on an evaluation of the assets held offshore by such individuals, which were found to be approximately $11.5 trillion by crossing BIS data on cross-border bank deposits with data on offshore wealth from other sources. Then, international tax evasion was calculated applying to the amount of offshore assets a rate of return of 7.5 per cent, and an average tax rate of 30 per cent on the resulting income of $860 billion. The TJN estimate was revised and updated in 2012, with more conservative assumptions: starting from an amount of offshore financial wealth of $21 trillion and assuming an annual return of 3 per cent and the same average tax rate of 30 per cent, the amount of capital income tax evasion was calculated at a global level at $189 billion per year (Tax Justice Network, 2012).

[23] U.S. Senate Subcommittee on Investigations, *Staff Report on Dividend Tax Abuse*, September 11, 2008, quoted in Gravelle (2015).

4.2 Estimate of international tax evasion by individuals: methodology and results

Starting from our estimate of undeclared external assets (portfolio securities and bank deposits) belonging to households, we calculate a possible range of values for annual capital income tax evasion.

Then we consider a different hypothesis, i.e. that the stock of unreported financial assets at the end of 2013 is wholly made up of income that escaped personal taxes when originally earned as income in the investors' residence countries. On the basis of this hypothesis, we calculate a possible range of personal income tax evasion linked to the undeclared assets. Given the lack of detailed data and qualitative information on the most relevant aspects of the phenomenon, the estimate is necessarily based on a number of assumptions and simplifications, as described below.

Hypothesis 1 – Undeclared assets held abroad mostly belong to individual investors

For the purposes of our estimate, we assume that most *undeclared assets held abroad belong to individuals*, either directly or through different types of vehicles.

While corporate tax evasion certainly exists, corporations and other large business entities are much more prone to resort to international tax avoidance than to tax evasion (see section 2).

The assumption that tax evasion linked to unreported assets held abroad is entirely due to individuals, which might appear unrealistic at first sight, looks more likely if one considers that, even when the taxes evaded in the first instance relate to closely held corporations, the profits are distributed – sooner or later, either directly or through a chain of intermediate entities – to individual investors.[24] Hence, one can assume that our estimate also includes a share of unreported capital that initially arose as business profits earned through closely held corporations and were subsequently distributed to individual shareholders.[25]

As far as the two datasets that we use as a basis for the estimate of tax evasion are concerned, we assume that (factor A, Table 4.1):

- all undeclared portfolio assets are ultimately held by individuals. As for the estimation of the geographical breakdown of such undeclared assets, we use the two criteria above mentioned (allocation according to criteria C1 and C2 ; see par. 3.1), and a third simply based on the mean of the two;
- in the case of cross-border bank deposits of non-banks, the share held abroad by individuals (either directly or through all kinds of vehicles) is comprised, on average, between 1/3 and 2/3 (see par. 3.2). The geographical breakdown of this component is based on each country's incidence on world GDP (criterion C2).

Hypothesis 2 – Rate of "non-compliance"

We make a further assumption with reference to the possible rate of "non-compliance", i.e. the share of unreported financial assets belonging to individuals that give rise to tax evasion.

Capital income tax evasion. For the purposes of estimating the annual *capital income tax evasion*, we assume two different measures of "non-compliance" for the two groups of foreign assets (portfolio securities and bank deposits) identified above.

In the case of undeclared *portfolio assets* we assume a rate of "non-compliance" of 90 per cent (factor B in Table 4.1). In this case, as stocks only represent unreported assets, it is quite likely that the full capital income arising from the same assets escapes taxation in the investors' residence countries. However, given that tax declarations are not always used to fill gaps in financial and balance of

[24] Since closely held corporations are normally under the control of one or a few shareholders, from a tax standpoint they simply represent a shield for the shareholders, who often use the corporation to reduce or differ personal taxes.

[25] Additional reasons that justify our assumption to consider undeclared assets mostly belonging to individual investors are that in the case of individuals non-tax reasons to hold foreign bank accounts are usually less relevant than in the case of corporations that operate in an international context, and that only a few countries (among others, France, USA and Italy) impose requirements for the reporting of foreign bank deposits by individuals and hence it can be easier for this type of subjects to hide capital abroad. Finally, as already mentioned above (see par. 2.2), even the profits originally earned by large multinational companies can be distributed offshore to individual investors and give rise to undeclared capital held abroad and hence to personal and capital income tax evasion.

payments statistics, we allow for a small share of capital income on the unreported assets being declared to tax authorities and subject to taxes.

With reference to *cross-border deposits* held by households, given that they may both represent reported and unreported assets, we assume a lower rate of "non-compliance", comprised in a range between 60 and 80 per cent, which seems reasonable on a judgmental basis given our focus on deposits held in OFCs or by OFC entities (section 3.2). This range seems consistent with the data published by the Swiss tax administration with reference to the application of the Agreement with the EU on the taxation of savings income.[26]

According to the agreement, Switzerland applies a withholding tax on interest paid to EU residents. However, investors have the option to authorize the bank or other financial institution to provide the information regarding the savings income to the tax authorities of their home countries, instead of accepting the withholding tax. Data on the amount of interest reported to EU tax authorities by the Swiss tax administration show that over the period 2005-2014 the percentage of interest for which investors chose information reporting instead of the withholding tax went from around 20 per cent between 2005 and 2009 up to 55-70 per cent in 2013 and 2014. It is likely that over the last few years EU investors holding assets in Switzerland may have re-arranged their investments in ways that allow them to escape the application of the Savings Agreement altogether (for instance by using interposed shell companies or trusts based in OFCs, not subject to the provisions of the Agreement).

Therefore, it seems reasonable to assume a range of "non-compliance" that goes from a minimum of 60 per cent to a maximum of 80 per cent, close to that implicit in the data for the early period of application of the Savings Agreement, when the re-arrangement process had not fully taken place.[27]

Personal income tax evasion. For the estimate of personal income tax evasion on the *unreported assets of individual investors*, i.e. tax evasion "on the principal", we consider the stocks held at the end of 2013 and apply to these stocks the same rates of "non-compliance" indicated above for the calculation of capital income tax evasion (factor B in Table 5.1).

Table 4.1: Synthesis of the first two estimation hypothesis

Type of foreign asset	A) Stocks of unreported assets held abroad by individual investors	B) Share for the estimate of capital income tax evasion ("*rate of non-compliance*")
Portfolio securities	Unreported assets estimate (100%)	90%
Cross-border bank deposits	A range between 33.3% and 66.6% of: deposits held by OFCs in all BIS reporting countries + deposits hold by residents in non-OFCs in BIS reporting OFCs	60%-80%

Hypothesis 3 – Tax evasion is estimated with reference to annual capital income taxes over the period 2001-2013 and personal income taxes at the end of 2013

We assume that the *unreported assets held abroad by individuals* – as calculated above – give rise to*:*

- tax evasion on the yearly return in the investors' residence countries;
- evasion of personal income taxes in the investors' residence countries when the unreported capital originally arose (tax evasion on the "principal").

Capital income tax evasion. We assume that over the period considered (2001-2013) the annual return of the unreported financial assets held by individual investors consistently escapes taxation in investors' residence countries. In fact, since the assets have not been declared, the probability of detection of tax evasion on the annual yield are close to nil. Consequently, investors face

[26] The data can be retrieved on the website of the Swiss Federal Tax Administration at: https://www.estv.admin.ch/estv.

[27] The Swiss data show that the rate of income declaration varies greatly from one country to another. For instance, while in the case of Germany and the UK it increased respectively from 22-29% in 2005 to 82-86% in 2014, for Italy and France it was always quite low, going respectively from 1-2% in 2005 to 22-42% in 2014.

no or very low risks in not declaring and not paying taxes on the capital income. At the same time, they have an incentive to evade, since declaring the income could lead to possible assessments on the underlying assets by the tax administration of their country of residence. For the calculation of the annual capital income, we consider effective rates of return for each category of assets (i.e. shares, bonds and bank deposits).

Once determined the capital income, we calculate the amount of capital income tax evasion by applying the correspondent top tax rates (for deposit interest, bond interest and dividends). Namely, we consider the top rates applicable on each of the three categories of proceeds in three sets of countries (Italy, OECD, non-OECD), either in the form of final withholding taxes or as personal income taxes (Table 4.2). The choice of top rates arises from the assumptions that the unreported assets belong to taxpayers in the top income bracket, that the proceeds arising from those assets represent the top slide of taxpayers' income, and that all the possible exemptions and tax reliefs have been already exploited.[28] As to the choice of tax rates for the three groups of countries, we use the statutory tax rates in the case of Italy, while for the rest of the world we use GDP-weighted average tax rates, separately for the OECD and a set of non-OECD (mostly developing) countries.[29]

Table 4.2: Tax rates used for the estimate of capital income tax evasion (percentage points)

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bank deposits	Italy	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	20.0	20.0
	OECD[1]	34.4	34.5	34.3	34.3	34.4	34.5	34.5	34.2	34.2	34.7	34.7	34.9	34.9
	Non-OECD[1]	10.1	9.7	9.7	9.5	9.3	8.9	8.4	7.8	7.6	7.9	7.6	7.0	6.6
Equity securities	Italy	29.2	29.3	29.3	29.3	28.3	28.6	28.7	28.7	28.7	28.9	30.6	34.3	34.3
	OECD[1]	44.4	43.8	34.1	27.8	26.8	26.9	26.5	24.2	24.1	24.9	25.5	26.3	30.1
	Non-OECD[1]	15.4	15.6	15.3	15.2	14.9	14.6	14.5	14.5	14.8	14.5	14.6	14.9	15.1
Debt securities	Italy	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	16.3	16.3
	OECD[1]	34.4	34.5	34.3	34.3	34.4	34.5	34.5	34.2	34.2	34.7	34.7	34.9	34.9
	Non-OECD[1]	9.8	9.3	9.3	9.5	9.6	9.5	9.3	9.1	8.4	8.7	8.5	7.8	7.3

Source: authors' calculations on data from OECD tax database, IBFD Tax Research Platform, national tax administrations websites, IMF (for GDP).
Note (1): GDP-weighted averages.

Personal income tax evasion. When looking at how the unreported capital held abroad at a given point in time has been originated, it is likely that the annual capital income explains a significant percentage of the overall amount of the assets, namely in cases where the original transfer was made thirty or forty years before. Viceversa, for assets recently transferred offshore the lion's share of the assets value consists of income that escaped personal income taxes in the hands of the individual taxpayers before (or at the moment when) it was originally transferred abroad.

When looking at the overall amount of undeclared assets held offshore at the end of a given year, we can only make arbitrary and general assumptions on how this amount has been generated over time (new personal earnings that escaped personal income tax when originally earned, inherited wealth, accumulated capital income, capital gains etc.). Depending on these assumptions, the results of the estimate of offshore tax evasion can vary.

In order to give a possible scale of the phenomenon, we assume that the whole amount of the undeclared assets held offshore at the end of 2013 represents earned income that escaped personal income tax when originally earned (instead of capital income taxes, inheritance or gift taxes, etc.).

[28] We do not consider that the overall amount of capital income tax evasion in the investors' residence countries can be reduced by possible withholding taxes applied in source countries. In fact, in most countries source withholding taxes are not applied on bank deposit and bond interest. As far as dividends are concerned, we assume that the structures used for the investment, which often involve interposed entities based in tax havens, allow investors to avoid withholding taxes at source.

[29] Since historical data on tax rates are not available for deposit and bond interest, for these categories we use a proxy of the average tax rate calculated on the basis of available data, mostly referred to the years 2012-2015.

Therefore, on the one hand we do not consider the fact that the outstanding stocks may be higher than the amounts that originally generated tax evasion because they have been growing year by year with accumulation of accrued capital income (included in the above estimate) and, in some cases, with realized capital gains (almost always taxed with lower rates compared to those applied on earned income) or unrealized capital gains (often not taxed at all).

On the other hand, we do not consider either that the stocks of unreported assets at the end of 2013 do not include the amounts illegally repatriated, consumed or transformed in non-financial investments, that also escaped personal income taxes and should therefore have been included in the estimate of tax evasion. Since the effects of such factors cannot be easily quantified, for the purposes of the estimate we assume that they substantially counterbalance each other and, consequently, do not take them into account.

We focus on personal income taxes since we consider offshore assets held by individual investors. We are aware of the fact that other taxes and contributions can be due, both when the income is earned (e.g. VAT, social security contributions, etc.) or afterwards (on a yearly basis for wealth taxes).[30] Furthermore, other taxes and duties can be due on the transfer of the capital from one beneficiary to another (inheritance and gift taxes, registration taxes, stamp duties, etc.).

However, since making assumptions on these other taxes would simply add uncertainty to the estimate, we have chosen to focus exclusively on personal income tax evasion,[31] i.e. on a subset of the potential overall amount of tax evasion linked to unreported offshore assets.[32] At the same time, since we consider that the overall amount of the offshore assets held abroad at a given point in time (end-2013) is made up of capital coming from income that escaped personal income taxes, our estimate of personal income tax evasion can be considered as the maximum amount of that specific subset of tax evasion linked to unreported assets.

As in the case of capital income tax evasion, also for the estimate of personal income tax evasion we assume that the undeclared income that has been transformed into unreported assets represents the top slice of investors' income, and that it belongs to high income individuals, normally subject to the top personal income tax rates. This assumption allows us to use top personal income tax rates (GDP-weighted averages), referred to OECD countries and a set of non-OECD countries, as in the case of capital income tax evasion.

For Italy, we use the top personal income tax rate for 2013. Since over the period 2001-2013 average top tax rates have been quite stable for the different sets of countries considered, applying the 2013 tax rates for the calculation of personal income tax evasion should not bias significantly our estimate compared to the hypothesis of assuming that the offshore assets were originally transferred abroad and escaped taxes at the rates prevailing in a given year of the same period.

Table 4.3: Top tax rates on personal income (percentage points)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Italy	45.9	46.1	46.1	46.1	44.1	44.6	44.9	44.9	44.9	45.2	48.6	48.6	**48.6**
OECD[1]	47.5	46.7	45.1	44.8	44.1	43.5	43.5	43.7	43.8	44.4	44.8	45.3	**46.7**
Non-OECD[1]	31.8	31.7	31.6	31.3	30.9	30.8	30.4	30.4	31.6	31.4	32.0	32.6	**34.1**

Source: authors' calculations on data from OECD tax database, IBFD Tax Research Platform, national tax administrations websites, IMF (for GDP).
Note (1): GDP-weighted averages.

Hypothesis 4. Capital income is calculated on the basis of average rates of return for each asset class

[30] Wealth taxes are not applied by most countries; therefore, adding them in an estimation exercise would have negligible effects on the final result.

[31] Even when the offshore assets come from inherited or donated wealth, it is likely that the wealth originated from income that escaped personal income taxes in the hands of the deceased or donor.

[32] For OECD countries, in 2013 personal income taxes represented, on average, 25% of total tax revenues (source: OECD, Tax Revenue Statistics 2015). The incidence of the PIT is generally lower in non-OECD countries.

In order to determine the annual amount of capital income arising from the stock of undeclared capital we consider average annual returns for each category of assets − bank deposits, debt securities and equity securities (including mutual funds). We estimate yearly interest rates on bank deposits by gathering IMF (deposit rate per annum) and ECB data (for European countries)[33] and calculating weighted averages by using BIS data on stocks; in addition to the weighted averages we also consider a range between the first and the third quartile (Table 4.4).

As for the proceeds of portfolio securities, we estimate, from balance of payments and international investment position data published by IMF, average income rates R^i_{jt} from external portfolio assets, separately for equity (consisting mainly of shares of collective investment funds) and debt securities (i); the portfolio investment income (not including capital gains) in year t of country j, F^i_{jt}, are divided by the corresponding portfolio external asset stocks (average of year t) $(S^i_{jt-1} + S^i_{jt})/2$, according to the following formula:

$$R^i_{jt} = \frac{F^i_{jt}}{(S^i_{jt-1} + S^i_{jt})/2} \qquad (i\text{=equity or debt}, \ t\text{=2001,…2013}, \ j\text{=1……n}).$$

We use three-term moving averages of such rates of returns to reduce the effects of the variability of stocks (the denominator), which are end-year values. In fact, these estimates may be biased by the fluctuations of market prices which affect the values of external stock assets, as international investment position data are valued at the market price (theoretically, average rates should be calculated using nominal values, but the data are not available).[34] Similarly to cross-border bank deposits, we consider not only weighted averages but also a range between the first and the third quartile.

Table 4.4: Interest rates and dividends (percentage points)

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Bank deposits	Mean	2.7	1.9	1.6	1.4	1.5	2.3	2.9	2.6	1.4	1.2	1.4	1.2	1.0
	p25	1.7	0.4	0.5	0.2	0.5	1.4	2.1	0.4	0.1	0.2	0.2	0.1	0.5
	p75	3.6	2.7	2.2	2.0	2.0	2.8	3.7	3.9	2.0	2.3	2.6	2.3	1.6
Equity securities	Mean	1.9	1.9	1.9	1.9	2.0	2.1	3.0	3.0	3.0	2.5	2.7	2.8	2.6
	p25	1.3	1.3	1.4	1.6	1.7	1.9	2.5	2.3	2.2	1.7	2.0	2.1	2.0
	p75	2.3	2.2	2.2	2.1	2.2	2.4	3.4	3.5	3.4	2.8	2.9	3.0	2.9
Debt securities	Mean	4.6	4.3	3.8	3.8	3.9	4.2	4.6	4.4	4.0	3.6	3.4	3.3	3.1
	p25	3.3	3.1	2.8	2.9	3.2	3.7	4.0	3.8	3.4	3.2	3.1	3.0	2.8
	p75	5.2	4.8	4.4	4.2	4.4	4.7	5.0	4.8	4.4	3.9	3.7	3.6	3.3

Source: authors' calculations on IMF and ECB data.

Frequently, these estimated rates of return might be lower-bound biased, since the numerator only includes paid capital income (and reinvested earnings), while the denominator also includes unrealized capital gains; instead, during periods of downward trends in financial market prices, unrealized capital losses tend to overestimate rates of returns. Furthermore,– tax evaders can generally rely on the expertise of portfolio management consultants, so the average income generated by hidden assets may be higher than that earned on declared assets. On the other hand, in many cases tax evaders

[33] Downloadable, respectively, from http://data.imf.org and http://webdiss.bancaditalia.it/sabc/. For IMF data, deposit interest rate is the rate paid by commercial or similar banks for demand, time, or savings deposits, but the terms and conditions differ by country. As for ECB data, we took into account interest rates on deposits held by households and non-financial corporations with agreed maturity up to 1 year or redeemable at notice up to 3 months; the choice was based on the similarity with IMF interest rates relative to European countries.

[34] Alternative estimates on average rates of portfolio securities (particularly, shares of mutual funds) have also been based on dividend rates calculated on a subset of data from the Centralized Securities Database, a database managed by the European Central Bank and used by European balance of payment compilers to compile portfolio statistics on a security-by-security basis. These alternative estimates fall within the ranges reported in the table 4.4 and, in the majority of cases, are quite close to the upper bound values.

have to pay a fee as "cost of the secrecy", which reduces their net income on hidden assets. These effects may compensate each other and so the rate earned on declared foreign assets may be taken at least as a proxy for the rate earned on undeclared foreign assets.

The estimation results

Capital income tax evasion. We obtain a set of estimates of the annual capital income tax evasion over the period 2001-2013 depending on the rates of non-compliance and the rates of return above mentioned. For the sake of simplicity, we report only three of them in Table 4.5 – the lowest, the highest and the medium – separately for OECD and non-OECD countries and at a global level.

Table 4.5: Estimates of international tax evasion on capital income (billions of US dollars)

			2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Mean
OECD (incl. Italy)	Bank deposits	High	8.5	7.6	7.5	7.8	7.6	13.1	21.9	23.0	11.1	12.6	12.5	11.0	8.1	*11.7*
		Medium	4.1	3.1	3.2	3.0	3.3	6.6	11.2	8.8	4.1	4.4	4.3	3.8	3.4	*4.9*
		Low	1.5	0.5	0.6	0.3	0.7	2.4	4.6	0.9	0.2	0.4	0.3	0.2	0.9	*1.1*
	Equity securities	High	9.8	9.5	9.4	8.9	10.3	13.1	24.1	16.2	16.7	14.7	15.6	18.7	21.2	*14.5*
		Medium	7.4	7.3	7.4	7.5	9.0	11.5	20.8	13.4	13.7	12.0	12.8	15.4	17.5	*12.0*
		Low	4.9	4.9	5.3	6.0	7.6	10.0	17.6	10.4	10.2	8.6	9.4	11.5	13.1	*9.2*
	Debt securities	High	13.3	14.4	10.7	11.7	11.4	11.2	14.7	15.6	11.9	4.5	14.1	17.7	15.7	*12.8*
		Medium	9.9	10.8	8.2	9.3	9.4	9.6	12.9	13.6	10.6	3.9	12.9	16.1	14.2	*10.9*
		Low	6.5	7.2	5.5	6.8	7.3	8.0	11.1	11.5	9.1	3.4	11.6	14.7	12.7	*8.9*
	Total	**High**	**31.6**	**31.5**	**27.6**	**28.4**	**29.3**	**37.4**	**60.6**	**54.8**	**39.8**	**31.8**	**42.3**	**47.4**	**45.0**	***39.0***
		Medium	**21.5**	**21.2**	**18.7**	**19.9**	**21.7**	**27.7**	**44.9**	**35.8**	**28.4**	**20.3**	**29.9**	**35.3**	**35.0**	***27.7***
		Low	**12.9**	**12.6**	**11.5**	**13.1**	**15.7**	**20.5**	**33.3**	**22.8**	**19.5**	**12.4**	**21.3**	**26.4**	**26.7**	***19.1***
NON-OECD	Bank deposits	High	0.5	0.3	0.3	0.3	0.4	0.6	1.1	1.0	0.5	0.6	0.7	0.6	0.4	*0.6*
		Medium	0.2	0.1	0.1	0.1	0.2	0.3	0.5	0.4	0.2	0.2	0.2	0.2	0.2	*0.2*
		Low	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1	*0.1*
	Equity securities	High	0.4	0.4	0.5	0.6	0.7	1.0	2.2	1.8	1.9	1.8	1.9	2.3	2.4	*1.4*
		Medium	0.3	0.3	0.4	0.5	0.6	0.8	1.8	1.4	1.5	1.3	1.3	1.5	1.6	*1.0*
		Low	0.2	0.2	0.2	0.4	0.5	0.6	1.5	1.0	1.0	0.8	0.7	0.8	0.9	*0.7*
	Debt securities	High	1.2	1.2	0.8	0.9	0.8	0.7	0.9	1.1	0.7	0.2	0.9	1.1	1.0	*0.9*
		Medium	0.7	0.6	0.5	0.6	0.6	0.5	0.7	0.9	0.6	0.2	0.8	1.0	0.8	*0.6*
		Low	0.2	0.2	0.2	0.3	0.3	0.4	0.6	0.6	0.5	0.2	0.7	0.9	0.7	*0.4*
	Total	**High**	**2.0**	**1.9**	**1.6**	**1.8**	**1.9**	**2.4**	**4.2**	**3.9**	**3.1**	**2.7**	**3.5**	**4.1**	**3.8**	***2.8***
		Medium	**1.2**	**1.1**	**1.0**	**1.2**	**1.3**	**1.7**	**3.1**	**2.6**	**2.2**	**1.8**	**2.3**	**2.7**	**2.6**	***1.9***
		Low	**0.5**	**0.4**	**0.4**	**0.7**	**0.8**	**1.1**	**2.2**	**1.7**	**1.5**	**1.0**	**1.4**	**1.7**	**1.7**	***1.2***
TOTAL	Bank deposits	High	9.0	7.9	7.8	8.2	8.0	13.7	22.9	24.0	11.6	13.2	13.2	11.6	8.5	*12.3*
		Medium	4.4	3.2	3.3	3.2	3.5	7.0	11.7	9.2	4.3	4.6	4.6	4.0	3.5	*5.1*
		Low	1.6	0.5	0.7	0.3	0.8	2.6	4.9	0.9	0.2	0.4	0.3	0.3	1.0	*1.1*
	Equity securities	High	10.2	9.9	9.9	9.4	11.1	14.1	26.3	18.0	18.6	16.6	17.6	21.0	23.6	*15.9*
		Medium	7.7	7.5	7.8	8.0	9.6	12.3	22.7	14.7	15.1	13.3	14.0	16.9	19.1	*13.0*
		Low	5.1	5.1	5.5	6.4	8.1	10.6	19.0	11.4	11.2	9.4	10.1	12.3	14.1	*9.9*
	Debt securities	High	14.4	15.6	11.5	12.6	12.2	12.0	15.6	16.7	12.6	4.7	15.0	18.8	16.6	*13.7*
		Medium	10.6	11.5	8.6	9.9	9.9	10.1	13.6	14.5	11.1	4.2	13.7	17.1	15.0	*11.5*
		Low	6.8	7.4	5.7	7.1	7.7	8.4	11.6	12.2	9.5	3.6	12.3	15.5	13.4	*9.3*
	Total	**High**	**33.6**	**33.4**	**29.3**	**30.2**	**31.3**	**39.8**	**64.9**	**58.7**	**42.9**	**34.5**	**45.8**	**51.4**	**48.8**	***41.9***
		Medium	**22.7**	**22.3**	**19.7**	**21.0**	**23.0**	**29.4**	**48.0**	**38.4**	**30.6**	**22.1**	**32.2**	**38.0**	**37.6**	***29.6***
		Low	**13.4**	**13.0**	**11.9**	**13.8**	**16.5**	**21.6**	**35.5**	**24.5**	**21.0**	**13.4**	**22.7**	**28.1**	**28.4**	***20.3***

Source: calculations by the authors (see text).

Based on the hypotheses highlighted above, we find that at the global level the annual amount of capital income tax evasion ranges, on average over the period 2001-2013, between $20 and $42 billion). Compared to the $127 billion obtained by Zucman (2015) for 2013, or with the $189 billion estimated by Tax Justice Network (2012), even our highest value for the amount of capital income tax evasion for the same year ($49 billion) is much lower.

The difference with Zucman's estimate is almost exclusively due to the use of quite different rates of return, given the similar amount of unreported financial assets used as a starting point for the estimate (between $6,100 and 7,100 billion in our case; $7,600 billion for Zucman): Zucman uses a single rate of return equal to 8 per cent, whereas we use significantly lower rates, in the range of 0.5-3.3 per cent.[35] As for the Tax Justice Network estimate, which uses a rate of return quite similar to ours (3 per cent), the difference is almost entirely due to the larger estimated amount of unreported capital ($21 trillion vs. $7.1 trillion).

Personal income tax (PIT) evasion. Also for the estimate of personal income tax evasion on end-2013 stocks we obtain a set of values depending on the different ranges of the above mentioned hypotheses. Again, for the sake of simplicity we report only three of them in Table 4.6 – the lowest, the highest and the medium. We also report the average top PIT rates relating to 2013 used in the calculations.

At global level, the amount of personal income tax evasion on the stock of unreported capital at the end of 2013 ranges from $2.1 to $2.8 trillion; the average is about $2.5 trillion and represents about 3.3 per cent of world GDP. Both in terms of absolute values and with respect to the incidence on GDP, our estimate shows that the revenue losses due to offshore tax evasion are higher in the OECD area than in non-OECD countries. This is partly a direct consequence of the criteria that we have used for the attribution of unreported capital to the different countries, that combine GDP and, for portfolio assets, financial wealth indexes. However, the difference is also due to the fact that top PIT rates are generally higher in OECD countries than in developing countries.

Table 4.6: Estimates of personal income tax evasion on the stock of unreported assets at the end of 2013 (billions of US dollars or percentages)

		Tax evasion (min)	Tax evasion (max)	Tax evasion (average)	A) End-2013 stocks	B) Held by households	C) Unreported	Min/ max
OECD (incl. Italy) **2013 GDP-weighted tax rate: 46.7%**	Equity securities	1,016	1,127	1,072	2,543	2,543	2,289	1,813
	Debt securities	615	636	625	1,486	1,486	1,337	2,720
	Deposits	234	643	416	2,692	907	544	408 1,307
	Total	1,866	2,406	2,113	6,721	4,936	4,171	4,941 4,435
	Total in % of OECD GDP	*3.9%*	*5.0%*	*4.4%*	*14.0%*	*10.3%*	*8.7%*	*10.3% 9.3%*
NON-OECD **2013GDP-weighted tax rate: 34.1%**	Equity securities	109	193	151	471	471	424	396
	Debt securities	123	139	131	409	409	368	594
	Deposits	40	107	70	770	257	154	115 370
	Total	273	439	353	1,650	1,137	946	511 964
	Total in % of non-OECD GDP	*1.0%*	*1.6%*	*1.3%*	*6.2%*	*4.2%*	*3.5%*	*1.9% 3.6%*
TOTAL	Equity securities	1,126	1,321	1,223	3,014	3,014	2,713	2,209
	Debt securities	739	774	757	1,895	1,895	1,705	3,314
	Deposits	275	750	486	3,462	1,164	698	524 1,677
	Total	**2,139**	**2,845**	**2,466**	**8,371**	**6,073**	**5,117**	**5,453 5,399**
	Total in % of world GDP	*2.9%*	*3.8%*	*3.3%*	*11.2%*	*8.1%*	*6.8%*	*7.3% 7.2%*

Source: calculations by the authors (see text).

[35] The same reason, i.e. the use of lower rates of return, also explains part of the difference of our estimate from those made by other authors, recalled in par. 4.1.

Estimate of international tax evasion for Italy

In the case of Italy, on average over the period 2001-2013 annual capital income tax evasion ranges between €0.40 and €1.4 billion, with an average value of €0.8 billion (Table 4.7); these values compare with an average amount of annual tax revenues from the taxation of financial proceeds of around €11.8 billion. In practice, this means that if all the tax evasion on financial income earned on assets held abroad were eliminated, Italy could increase the related tax revenues by 3.4-12 per cent. In terms of incidence on GDP, capital income tax evasion represents between 0.03 and 0.08 per cent.

Table 4.7: Estimates of international tax evasion on capital income for Italy (billions of euro)

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Mean
Bank deposits	High	0.4	0.3	0.3	0.3	0.3	0.5	0.7	0.8	0.4	0.4	0.5	0.3	0.2	0.4
	Medium	0.2	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1
	Low	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Equity securities	High	0.6	0.6	0.6	0.6	0.8	0.9	1.2	0.7	0.7	0.7	0.8	1.1	1.1	0.8
	Medium	0.3	0.3	0.4	0.4	0.6	0.6	0.9	0.5	0.5	0.5	0.6	0.8	0.8	0.5
	Low	0.2	0.1	0.2	0.2	0.3	0.4	0.6	0.3	0.3	0.3	0.4	0.5	0.5	0.3
Debt securities	High	0.3	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2
	Medium	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Low	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	**High**	1.3	1.1	1.0	1.0	1.3	1.5	2.1	1.6	1.2	1.3	1.4	1.6	1.5	1.4
	Medium	0.7	0.6	0.6	0.6	0.8	0.9	1.3	0.8	0.7	0.7	0.8	1.0	1.0	0.8
	Low	0.3	0.3	0.3	0.3	0.5	0.5	0.8	0.3	0.3	0.3	0.4	0.6	0.6	0.4

Source: calculations by the authors (see text).

As for personal income tax evasion calculated on the stocks at end 2013, we find that it ranges from €49 to €99 billion, with an average value of €71 billion (Table 4.8). The average annual amount of PIT tax revenues for Italy over the period 2002-2014 was €148 billion. This means that if we assume – for the sake of simplicity – that the assets held offshore by Italian residents were accumulated over a period of ten years (i.e., the maximum length of the assessment period provided by the Italian tax law for assets held in tax havens), then being able to recover all the tax evasion related to unreported foreign assets would lead to an increase of the average annual amount of PIT tax revenues over the same period by 4.8 per cent.

Another interesting term of comparison can be the estimates of the personal income tax gap made with reference to the Italian economy, that do not distinguish on the basis of the place where the unreported income is hidden, i.e. domestically or abroad. The Italian Ministry of Economy and Finance publishes an annual Report on unobserved economy and tax evasion, mainly based on macro-economic data from national accounts.[36] The Report shows that for 2013 the PIT gap – i.e. the difference between the amount of the PIT theoretically due on small businesses and self-employment income on the basis of national accounts data and the actual amount collected – was equal to €28 billion. If we assume that the stock of unreported capital held offshore at the end of 2013 was accumulated over a number of years – e.g., ten as in the example recalled above – a value of annual offshore tax evasion of €7.1 billion (1/10 of the average estimate of €71 billion) can be considered broadly compatible with the overall (domestic and foreign) annual PIT gap of €28 billion arising from the two income sources indicated above (small businesses and self-employment).

Using a methodology based on micro-data (the difference between data on income and wealth collected through the Bank of Italy "Survey on Income and Wealth of the Italian Families" and data from the actual tax returns filed with the Italian Revenue Agency), Marino and Zizza (2012) estimate that in 2004 Italian taxpayers did not report 13.5 per cent of their overall income (of whatever source) for PIT purposes. This result seems, again, compatible with our estimate of personal income tax evasion linked to the capital hidden offshore, namely if we assume that the stock of unreported capital held abroad at end-2013 accumulated over a number of years.

[36] Ministero dell'Economia e delle Finanze (2016).

In percentage of GDP, for Italy the estimate of personal income tax evasion appears slightly higher than for the overall group of OECD countries, namely when we compare the maximum values of the respective estimates. The difference is partly explained by the higher top Italian PIT rate; for the rest, it is due to the criteria used to correct the amount of unreported capital attributed to Italy (par. 3.1).

Table 4.8: Estimates of international personal income tax evasion for Italy (billions of euros or percentages)

		Tax evasion (min)	Tax evasion (max)	Tax evasion (average)	A) End-2013 stocks	B) Held by households	C) Unreported	Min/ max
ITALY **2013 tax rate: 48.6%**	Equity securities	35.2	53.9	44.6	102	102	92	
	Debt securities	6.9	12.7	9.8	22	22	20	
	Deposits	7.3	32.6	17.1	75	25	15	min
					124	83	66	max
	Total	49.4	99.2	71.5	199	149	127	min
					248	207	178	max
	Total in % of Italian GDP	3.1%	6.2%	4.4%				

Source: calculations by the authors (see text).

4.3 Putting international tax evasion in context

In order to shed light on the results of our estimates of international tax evasion on capital and personal income, it can be useful to compare them with some relevant variables. On a global level, we find that the amount of capital income tax evasion may plausibly range between $20 and $42 billion a year, around 0.03/0.06 per cent of world GDP. Personal income tax evasion estimated with reference to the stock of unreported capital at the end of 2013 ranges between $2.1 and $2.8 trillion, i.e. between 2.9 and 3.8 per cent of world GDP.

As to the distribution of personal income tax evasion due to offshore undeclared assets, we find that in terms of incidence on GDP the lost revenues are higher in OECD than in non-OECD countries, again due to the attribution criteria we used for the unreported capital held offshore and the lower PIT rates normally applied in non-OECD or developing countries.

As underlined in par. 3.1, the distribution of unreported offshore assets can differ from that obtained on the basis of our index of financial wealth and GDP. If, for instance, the amount of unreported capital attributable to developing countries were higher, our estimate would be affected in two ways: first, given that average tax rates are usually lower in developing countries, the overall estimate of capital income and personal income tax evasion at global level would be lower; at the same time, in terms of lost tax revenue the effects of unreported capital for developing countries could be much more significant. This hypothesis seems confirmed, to a certain extent, by industry reports, as highlighted in Section 3.1. The larger revenue losses that developing countries could suffer on the basis of a different distribution of offshore assets are even more relevant in terms of impact on the equity of their tax system, given that in these countries the personal income tax usually affects small elites made by higher income taxpayers, who are often able to avail themselves of the offshore facilities. These issues are a topic for future research.

From a different standpoint, it can be interesting to compare our estimates with the outcomes of policy initiatives undertaken at national and international level over the last decade (see below, section 5). In this respect, a first term of comparison can be represented by the data on the application of the EU Savings Directive (EUSD). Since July 2005, fourteen of the offshore jurisdictions listed in Table A.1 apply the withholding tax provided in the Directive or in the related agreements as a

substitute of automatic information exchange.[37] The same OFCs transfer 75 per cent of the withholding tax revenue to the investors' residence countries. Investors holding assets in countries that had chosen to apply the withholding tax can avoid it if they accept that data on their foreign account interest income are exchanged with their country of residence tax administration. Given this framework, it is quite likely that the interest subject to the withholding tax relates to undeclared capital.

Data published by the European Commission show that over the period 2005-2010 EU member states recovered an average amount of tax revenues equal to €560 million a year thanks to the revenue sharing mechanism. Considering the level of the withholding tax, which grew from 15 per cent in 2005 to 20 per cent in 2008,[38] these tax revenues correspond to an average amount of interest income equal to €4.4 billion a year. When compared to our estimate of the annual amount of capital income tax evasion on unreported financial assets (on average $30 billion), these data seem to confirm that the Directive covered a limited amount of capital income tax evasion, both for its limited geographical scope and its application only on capital income arising from debt instruments. In fact, as confirmed by the review on the application of the Savings Directive made by the Commission Services (European Commission, 2012b), the Directive and the related Agreements were widely circumvented through the use of interposed entities based in other OFCs, which were not subject to the provisions.

Other possible terms of comparison can be found in the results of the offshore voluntary disclosure programs that have been launched by many countries over the last years, under the auspices of the OECD (see Appendix E). According to the OECD, over the period 2009-2014 the voluntary disclosure schemes led to the collection of more than €37 billion of tax.[39] Table 4.9 reports a sample of offshore VD schemes in a number of countries, with data on the amount of disclosed assets (if available) and of the recovered tax revenue. It also reports the taxes recovered by the UK under the "regularization of the past" part of the Rubik Agreement with Switzerland (see below, section 5).

When looking at the comparison, it has to be borne in mind, the assets declared under VD schemes may represent only a limited share of previously undisclosed offshore funds; in fact, the actual success of VDs depends on their specific design, but also on external circumstances that may influence the risk perception of being caught for tax evaders, on the level of tax evasion and the amount of undisclosed assets held abroad.

When looking at the actual available data, VDs do not appear to have led to significant results in terms of assets declared or tax revenue recovered, exception made for the Italian ones, whose success might be due, among other things, to the extremely favourable conditions offered to taxpayers (at least in the first two VDs; par. 2.3). The amount of taxes recovered through VDs, ranging between 0.04 and 0.35 per cent of each country GDP, appears to be a small fraction of the potential amount of personal tax evasion linked to assets held offshore, that we have estimated in a range between 2.9 and 3.8 per cent of GDP at a global level with reference to stocks held at the end of 2013.

A further element supporting the idea that VD schemes allowed to recover a very small share of offshore tax evasion is the fact that the amounts of tax revenues recovered referred not only to the personal income tax, but also to possible other taxes due, such as wealth and inheritance taxes, VAT or sales taxes, etc. In addition, they could also include penalties for the non-declaration of offshore accounts and financial assets, particularly in countries (such as the US and Italy) where such declaration was compulsory either for tax or other purposes.[40]

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[37] Some of these OFCs have subsequently decided to exchange information: Belgium (since 1 January 2010); Luxembourg (since 1 January 2015); Guernsey (as from 1 July 2011); Isle of Man (as from 1 July 2011); the British Virgin Islands (as from 1 January 2012), Turks and Caicos (as from 1 July 2012); Jersey (as from 1 January 2015).

[38] The tax rate rose further to 35 per cent as from 1 July 2011. Unfortunately, data for 2011 and subsequent years have not been published by the European Commission.

[39] *OECD releases full version of global standard for automatic exchange of information*, Press release, retrievable at: http://www.oecd.org/tax/oecd-releases-full-version-of-global-standard-for-automatic-exchange-of-information.htm.

[40] For instance, with reference to the US, a report of the Permanent Subcommittee of Investigations on tax evasion found that the vast majority of revenue recovered under the 2009, 2011 and 2012 offshore voluntary disclosure initiatives related to penalties assessed for not reporting foreign accounts under the FBAR (Foreign Bank and Financial Accounts) regulations aimed to combat financial crime and money laundering.

Table 4.9: Results of recent Offshore Voluntary Disclosure Schemes

Country	VD initiative	Reported assets		Tax revenue	
		Local currency	% of GDP	Local currency	% of GDP
ITALY	2001-2003	€ 79 bn	5.68%	€ 2.1 bn	0.15%
	2009-10	€ 104.5 bn	6.51%	€ 5.6 bn	0.35%
	2015	€ 62 bn	3.83%	€ 4.0 bn	0.25%
UNITED KINGDOM	April – June 2007 (Offshore Disclosure Facility)	n.a.	n.a.	£ 509 mn	0.03%
	September 2009 – March 2010 (New Disclosure Facility)	n.a.	n.a.	£ 124 mn	0.01%
	September 2009 - April 2016 (Liechtenstein Disclosure Facility)	n.a.	n.a.	£ 1.1 bn	0.01%
	April 2013 - December 2015 (Special Disclosure Facility for Guernsey, Jersey, and the Isle of Man)	n.a.	n.a.	£ 2.2 mn	0.00%
	Rubik Agreement with Switzerland	n.a.	n.a.	£ 868 mn	0.05%
SPAIN	April – November 2012	n.a.	n.a.	€ 1.2 bn	0.12%
GERMANY	January 2004 – March 2005	n.a.	n.a.	€ 1.4 bn	0.06%
FRANCE	April – December 2009 (Régularisation Woerth)	€ 7 bn	0.36%	€ 1.2 bn	0.06%
	2013 (Régularisation Cazeneuve)	n.a.	n.a.	€ 1.85 bn	0.09%
UNITED STATES	2009, 2011, 2012, 2014 Offshore Voluntary Disclosure Programs	n.a.	n.a.	$ 6.5 bn	0.05%
AUSTRALIA	2014 (Project DO IT 4)	Aus$ 4 bn	0.25%	Aus$ 600 mn	0.04%

Source: National Revenue Services and authors' calculations.

As far as Italy is concerned, the apparent success of the past VD schemes might have been due, among other things, to the fact that taxpayers were allowed to repatriate or simply declare foreign assets by paying only a small substitute tax instead of the actual taxes due at statutory rates, and no fines at all, while keeping their full anonymity towards the tax administration; furthermore, under the VDs taxpayers could escape criminal prosecution for tax-related crimes.

The new VD scheme launched at the beginning of 2015 (see Appendix D) is more comparable with those launched by other countries over recent years. It provides for the payment of all taxes due and interest for late payment, but allows a significant reduction of administrative fines and the exclusion from criminal persecution (except in the case of tax fraud). As of the end of December, 2015, according to data released by the Ministry of Finance the amount of tax revenue recovered reached €4.0 billion. On the basis of these data, the tax revenue recovered through the Italian VD amounts to 0.25% of GDP, and seems to confirm a higher propensity of Italian taxpayers to make use of offshore VD schemes compared to residents of other countries.

5. Policy responses to international tax evasion: are they effective?

Growing concerns about the widening "global tax gap" triggered several policy initiatives since the mid-nineties, mostly led by the OECD and the European Commission. At the same time, the issue attracted the attention of several non-governmental entities, which were mostly concerned about the negative effects of revenue losses on developing countries.

Both the OECD and the European Commission adopted a two-tiered focus: on one hand, they underlined the need to introduce systems aimed at fighting tax evasion linked to the transfer of capital abroad for both individuals and firms; on the other hand, they tried to get member countries to agree on criteria aimed at defining the borders of what constitutes "acceptable" or "fair" tax competition and what tax rules are, instead, harmful and unfairly eroding other countries' tax bases.

With reference to tax evasion related to undeclared capital held offshore, both the OECD and the EU promoted an enhancement of the exchange of tax information between tax administrations, considering this solution as the best policy option. Through the Savings Directive (and the related agreements with Switzerland and other OFCs), starting from 2005 the EU tried to achieve automatic information exchange, considering this the only effective way to fight tax evasion, but had to compromise both in terms of type of income covered – only interest – and in terms of geographical extension. In the OECD context, it was only possible to reach an agreement on information exchange on request as well as the abolition of bank secrecy provisions; the OECD managed to involve in the process many non-member countries – and most OFCs among them – through the Global Forum on Transparency and Exchange of Information, but a shared agreement on information exchange on request was only reached in 2009.

In 2008 the Commission launched a proposal to extend the scope of the Savings Directive and eliminate its main loopholes, mainly linked to the use of structured financial products and offshore interposed entities; it also made pressure on external countries such as Switzerland, Liechtenstein, Monaco, Andorra and San Marino to review the respective agreements containing provisions equivalent to the Directive. After a long discussion which saw the opposition of several member states, the new proposal − containing changes that reflected developments in savings products and developments in investor behaviour − was finally approved in March 2014, but never entered in force: after the adoption of a more comprehensive automatic exchange of information at OECD level (see below), the Savings Directive was repealed and substituted by the more comprehensive Council Directive 2014/107/2014[41] on administrative cooperation in the field of direct taxation (in force since January 1, 2016), which implemented the new OECD standard on automatic information exchange within the EU. The Directive on administrative cooperation has a broader scope compared to the Savings Directive, covering exchange of information not only on interest income, but also on dividends and other types of capital income, and on the annual balance of the accounts producing such items of income.

In the second half of the 2000s a stream of initiatives to counter international tax evasion also came up at national level. The United States, France, Germany and other European countries started to persecute offshore tax evaders in an unprecedented manner and often with new and "unconventional" tools: the UBS case and other similar events put Swiss banks at the core of the US tax and justice authorities' action; Germany paid a Liechtenstein bank employee to acquire a lists of clients of banks in Switzerland and Liechtenstein that had allegedly evaded German taxes; the "Falciani list" released to the French authorities by a former employee of HSBC's Swiss subsidiary and then passed on to the tax authorities of other States allowed fiscal authorities to recover significant amounts of uncollected taxes.

All this pressure gradually led Switzerland, the largest bank secrecy jurisdiction, to adhere to the OECD standard of information exchange on request in 2009 and to review its network of double tax treaties in that direction. At the same time, faced with a growing pressure to release information on an automatic basis, in 2011 Switzerland launched the so called "Rubik" approach. It was an attempt to keep protecting the privacy of bank clients that had always been the pillar of the Swiss financial industry competitive advantage. Under this approach Swiss banks were meant to act as withholding agents for foreign tax administrations on financial income earned on assets held in Switzerland by their taxpayers. This eliminated the need to provide detailed information to the same tax administrations.[42]

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[41] Council Directive 2014/107/EU of 9 December 2014 amending Directive 2011/16/EU as regards mandatory automatic exchange of information in the field of taxation. EU Member States will start exchanging tax information from September 2017 (Austria will start a year later). In parallel, the EU started to review its agreements with some OFCs in order to make them in line with the new standard on automatic information exchange.

[42] The withholding taxes, applied with the rates provided by the tax laws of the client's State of residence, were final taxes, so that no need for information exchange arose for the Swiss-source financial income. The resulting revenue would have

Furthermore, countries that accepted to stipulate the agreement could get a "one-off" amount of revenue as a settlement for past evasion on capital held in Switzerland by their residents before the entry into force of the agreement.

The Rubik approach had undoubted advantages for Switzerland, but big disadvantages for the tax administration of the partner countries, that gave up any chance to access information on the assets held in Switzerland by their residents (who could keep their anonymity); therefore, tax authorities could not get any indices of the potential tax evasion on the capital deposited in Switzerland. This drawback was probably among the reasons that jeopardized the success of the Rubik approach: Switzerland managed to negotiate agreements only with three countries, Germany, Austria and the UK, but only two of them (those with Austria and the UK) were actually ratified and entered into force on January 1, 2013. The other main driver that led to quickly dismissing the Rubik approach by Swiss partner countries was the shift in the general political attitude towards international tax evasion that saw the light after the 2007-2008 financial crisis. The crisis led policy makers to put great political impetus and support on the implementation of national and international transparency rules aimed at reinforcing financial systems and national tax coffers alike.

The first sign of this new attitude was the approval of the US Foreign Account Tax Compliance Act (FATCA) in 2010. Since 2014 FATCA requires foreign financial intermediaries to identify beneficial owners of US securities in order to report data about US investors to the IRS; starting from 2019, will require the same intermediaries to withhold a 30 per cent tax if the information is not provided.[43] Following the adoption of the FATCA legislation, five European countries (Italy, Germany, UK, Spain and France) took the initiative to negotiate bilateral intergovernmental agreements (IGAs) with the US: the agreements provide for a reciprocal exchange of information on the financial income earned by their own residents in the other country. The IGAs set the basis for the subsequent Common Reporting Standard on Automatic Exchange of Information (CRS on AEOI) approved at OECD level in 2014 under the auspices of the G20, an unconceivable result till just a few years before.

The AEOI calls on governments to obtain detailed account information from their financial institutions and exchange information automatically with other jurisdictions on an annual basis.[44] In line with FATCA, relevant account holders will be identified through *due diligence* procedures aimed at assessing not only the actual beneficial owners, but also their tax residence; in cases of accounts held by entities, a "*look-through*" approach will be applied to identify the relevant "controlling persons". This means that in case of accounts held by entities, financial intermediaries will be required to identify the natural person who exercises control over the entity, if necessary going through the whole chain of possible vehicles and intermediate structures, in a manner consistent with the identification of "beneficial owners" as provided by the Recommendations of the Financial Action Task Force (FATF) on anti-money laundering.

By October 2016, 101 jurisdictions, including almost all financial centers, had committed to implement, by 2018, the Common Reporting Standard (CRS) for automatic exchange of tax information (AEOI); 56 of them – the so-called "*early adopters*" – had committed to activate automatic exchange of information by September 2017. The other countries and jurisdictions were expected to follow in 2018. Developing countries have been invited to join the standard and a series of pilot projects will offer technical assistance to facilitate the move. Five jurisdictions with OFCs (Bahrain, Lebanon, Nauru, Panama and Vanuatu) released their commitment soon after the "Panama Papers" case, which came out in early April 2016 following an enquiry made by the International Consortium of

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been paid back to investors' residence countries. Swiss banks engaged to accept only capital "regularly declared to tax authorities" and in exchange for their tax services obtained an easier access to foreign financial markets.

[43] The starting date for the application of the withholding tax under FATCA, originally set for 2017, was postponed to 2019 in September 2015.

[44] Information exchanged will be all relevant financial information, including account balances, interest, dividends, and sales proceeds from financial assets, taken from accounts held by individuals and entities, including trusts and other arrangements (*look-through approach*). Information will be gathered not only from banks, but also from other financial intermediaries, including insurance companies, certain collective investment vehicles and brokers.

Investigative Journalists, which shed light on the widespread use of offshore companies and vehicles to hide undeclared assets abroad.[45]

Following this latter case, at the G20 summit of April 14, 2016, held in Washington, five European countries (Italy, France, Germany, Spain and the United Kingdom) launched the proposal to develop a new common standard for the automatic exchange of information related to beneficial owners of companies, trusts, and other interposed vehicles. Such new standard should complement the existing AEOI standard on banking and financial information. The G20 mandated the *Financial Action Task Force* and the *Global Forum on Transparency and Exchange of Information for Tax Purposes* to develop and propose possible solutions to improve existing transparency standards, including the availability and exchange of beneficial owners information, and to enhance effective implementation by countries.

A crucial question is whether all these initiatives will be effective in curbing tax evasion generated by offshore assets.

If we look at the results of offshore VD schemes as a possible indicator of the success of recent crackdown initiatives on international tax evasion, we cannot draw clear conclusions. In very general terms, and taking into account the intrinsic limits of such a comparison (par. 4.3), their results appear negligible if compared even to very conservative estimates of the various components of international tax evasion. More importantly, the results of VD schemes do not give any hint about the future behavior of taxpayers, i.e. whether future tax evasion could be reduced (because taxpayers estimate a higher probability of being detected), or will instead increase (because taxpayers think that VD schemes could be repeated in the future and hence find an incentive to continue evading taxes). This latter view is held by Langermayr (2015).

As to the EU Savings Directive, a few studies found that it seems to have acted as a deterrent of tax evasion - both on interest income and on the principal - with reference to capital flows directed towards countries included in its geographical scope. Taxpayers seem to be aware of the fact that their domestic tax administrations are now in possession of information on their financial investments in other EU countries and in certain third countries or jurisdictions. At the same time, however, given the limited geographical scope of the Directive and its application only to interest income, there is evidence of reallocation from debt to equity instruments within the same country, of wide use of intermediate vehicles based in offshore jurisdictions outside the scope of the Directive, which allow avoiding the reporting provisions, and of investors shifting portfolio capital out of countries subject to the Directive to third countries (Johanessen, 2012; Rixen and Schwarz, 2012; European Commission, 2012).

Coming to the current perspective of automatic information exchange, in order to make it an effective tool to counter offshore tax evasion, the implementation process needs to be completed in the larger number of countries in the shortest possible time. Only a truly global and coeval implementation of automatic information exchange can assure that tax evaders do not find any jurisdiction ready to shield their assets. As highlighted by Zucman (2014), if not all countries implement the standard, the incentives for the remaining ones not to do so become bigger. In spite of the great effort that the OECD is putting into this direction, also with the cooperation of national tax authorities and other international organizations, it seems unlikely that a uniform and truly comprehensive framework may arise soon. In addition to the risks stemming from the few jurisdictions with OFCs that have not yet committed to implement automatic exchange, in the longer run there is the possibility that other countries (mostly developing ones), currently outside the net of information exchange, introduce OFCs in their jurisdictions and offer new safe harbours to tax dodgers around the world.

In terms of actual implementation, the OECD standard on automatic exchange of information relies on anti-money laundering rules for the identification of actual beneficial owners and for the application of the "*look-through*" approach in the case of assets held through entities. In the OECD view, this approach should ensure uniformity, since all countries should implement anti-money laundering criteria according to the Recommendations of the Financial Action Task Force. In practice,

[45] On April 3, 2016 the *International Consortium of Investigative Journalists* published the results of an enquiry conducted over more than a year, which shed light on confidential documents held by the Panamian law firm Mossack Fonseca and containing detailed information about more than 214.000 offshore companies established in Panama and other tax havens to hide assets held by residents of all countries.

however, as highlighted by the FATF Report to the G20 on beneficial ownership,[46] many countries, both in the OECD and non-OECD area, are not compliant with the most recent FATF rules, and still lag well behind in their actual implementation. This could seriously undermine the effectiveness of automatic exchange, especially in the case of assets held through entities.

Other possible risks stem from the fact that the OECD standard leaves to national legislators wide margins of freedom in the actual implementation of the provisions, for instance regarding possible measures aimed at ensuring their effectiveness (such as penalties, etc.). Differences in the national provisions and practices implementing the standard could, at least temporarily, jeopardize the level playing field. In all these respects, the peer review process that is being established within the Global Forum on Information Exchange will be of utmost relevance.[47]

Finally, possible sources of ineffectiveness of automatic information exchange may arise due to the position taken by the United States. With reference to the OECD Common Reporting Standard, the US has indicated that it will keep exchanging information pursuant to the FATCA legislation and the related IGAs. However, the FATCA legislation is affected by several loopholes. For instance, under FATCA's implementing regulations, financial accounts can be optionally excluded from disclosure if their balance at the end of the year is lower than given thresholds. These thresholds − that can be as high as $200.000 for US citizens living outside the United States or $250.000 in the case of accounts belonging to entities − may induce investors to try to avoid the provisions regarding information reporting by splitting their offshore capital among different banks or financial intermediaries. In addition, due diligence procedures are less stringent for accounts of less than $1 million that pre-existed the entry into force of FATCA.

Also the non-reciprocity of information exchange under many intergovernmental agreements (IGAs) negotiated by the US may weaken the effectiveness of information exchange. The IGAs can follow two possible models: Model IGA-A, under which the United States agrees not only to receive, but also to provide financial information to the partner country; Model IGA-B, under which it is only the partner country that provides information to the US, but not the other way round. Most Model IGA-B have been negotiated with small jurisdictions or with countries that lack the technical capacity to effectively analyse and use the data for tax assessment purposes. This is often the case in small developing countries, many of which have not committed to implement the AEOI standard; they could have a strong incentive to act as hubs for offshore assets that could be subsequently transferred and invested through US financial intermediaries without any risk of detection. In other terms, the crackdown on OFCs could produce the paradoxical effect of leaving tax dodgers free to hide assets in non-offshore jurisdictions without almost any risk of being detected.

But even under the reciprocal Model IGA-A, the United States will provide to the partner country information only on US financial assets held by residents of the same partner country. Therefore, opening a custody account in Florida to invest in assets other than US securities can be the easiest way to overcome the information exchange provisions altogether. More generally, in spite of the impressive progress towards automatic information exchange, areas of opacity still remain, namely in the field of company registries. Even though the AEOI standard is based on a *look-through approach*, and therefore requires the identification of the ultimate beneficial owner of the assets held with financial intermediaries, to the extent that many OFCs (and some non-OFC countries) still keep strict confidentiality about (or do not even ask the identity of) the real owners of assets held by shell companies, trusts and other types of entities that can be used as interposed vehicles, even the full automatic exchange of financial information will not allow identification of assets held offshore in all cases. A topic for future research could be to assess to what extent the political momentum that has followed the outbreak of the "Panama Papers" case and that has led the G20 to mandate the OECD and FATF to work on the availability of beneficial owner information will actually reduce tax evaders' margins of manoeuvre.

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[46] FATF, 2016.

[47] The Global Forum on Exchange of Information is establishing a peer review process to monitor the effective implementation of the automatic reporting standard.

Definitely, as underlined by Zucman (2014), the implementation of automatic information exchange will probably be effective in limiting tax evasion by the less sophisticated investors, but could not be equally effective for those who are able to use more complex administrative structures, such as shell companies, trusts, etc. (and their number seems to be growing fast). On the other hand, given the relevance that tax avoidance by multinational enterprises may have as a possible source of funds flowing to offshore jurisdictions (par. 2.2), a reduction of the amount of undisclosed assets held offshore could be obtained as an indirect consequence of the success of the OECD and EU action against tax avoidance.[48] However, given that these latter measures will need to be implemented at national level, a process that will probably require years, their full effects will only be seen in the medium term, and provided that in the meantime multinational enterprises do not find other ways to reduce their overall tax bill.

6. Conclusions

The growing volume of international financial transactions over the last two decades has allowed more and more taxpayers to easily escape domestic taxes by hiding their income and wealth abroad, particularly in OFCs with strict banking and financial secrecy rules.

Links and transactions with counterparts and subsidiaries located in tax havens provide individuals and enterprises channels to avoid or evade taxes or to transfer funds abroad. Several signals and statistical evidences lead us to investigate in this direction. The results of the most favourable voluntary disclosure schemes (such as those implemented in Italy) confirm that there are significant amounts of undeclared external assets. The analysis of global data on balance of payments and international investment position reveals significant discrepancies going in the same direction.

External statistics provide useful information to estimate a plausible order of magnitude of under-reporting of financial assets held abroad. As a matter of fact, portfolio mirror statistics can give information about undeclared external assets, even if it has been necessary to fill the informative gaps estimating data for the countries (i.e., some important OFCs and China) that are not compliant with international statistical requirements (Pellegrini and Tosti, 2011 and 2012). Over the years 2001-2013 the global discrepancy between portfolio liabilities and assets (underreporting of assets) declared by the countries is estimated to be equal, on average, to 6.4 per cent of world GDP.

In order to get a more comprehensive view of the potential amount of unreported financial assets held abroad, we also consider a share of cross-border bank deposits, using a methodology based

[48] In 2013 the OECD launched the Base Erosion and Profit Shifting" (BEPS) Action Plan, which was endorsed by the G20 in and finally released in October 2015. The Plan consists of a series of 15 measures aimed at fighting tax planning that makes use of "gaps" in the interaction of different tax systems to artificially reduce taxable income or shift profits to low-tax jurisdictions. The BEPS measures are structured around three fundamental pillars: introducing coherence in the domestic rules that affect cross-border activities; reinforcing substance requirements in the existing international standards, to ensure alignment of taxation with the location of economic activity and value creation; and improving transparency, as well as certainty for businesses and governments. Following the mandate of the G20 in November 2015, the OECD and G20 members have established an inclusive framework which allows interested countries and jurisdictions to work on an equal footing to implement the BEPS measures. By October 2016, 86 countries had joined the framework. In its turn, the European Union has taken several measures against international tax avoidance, endorsing and implementing the BEPS measures, but also adopting specific EU solutions. In March 2015 the European Commission released a Tax Transparency Package, including a Communication aimed at introducing the automatic exchange of information on tax rulings between member states, and a set of other measures aimed at enhancing tax transparency for corporations. In January 2016 the Commission launched an Anti-Tax Avoidance Package, containing a proposal for an Anti-Tax Avoidance Directive, a Recommendation on measures to prevent tax treaty abuse, a proposal for the revision of the Administrative cooperation Directive to implement country-by-country reporting of profits by multinationals and a Communication on an external strategy for effective taxation aimed at ensuring good tax governance in third countries. In July 2016 the EU Council adopted the Anti-Tax Avoidance (ATAD) Directive, which contains limitations to the deductibility of interest, provisions on exit taxation, a general anti-abuse rule, controlled foreign company rules and rules to tackle hybrid mismatches. Finally, in October 2016 the Commission proposed to re-launch the Common Consolidated Corporate Tax Base (CCCTB), a single set of rules to calculate companies' taxable profits of multinational groups in the EU aimed at reducing profit shifting and other forms of corporate tax abuse.

on BIS banking statistics (Sanelli, 2008); overall, we find that undeclared foreign bank deposits may range between $1.1 and $2.3 trillion at end-2013.

We also estimate the potential amount of international tax evasion linked to the unreported assets, on the basis of a methodology developed in authors' previous works (Sanelli, 2004 and 2008). We concentrate on tax evasion carried on by individuals, either directly or through intermediate controlled entities, assuming that the unreported assets give rise both to annual capital income tax evasion on the return and to personal income tax evasion, which refers to the income from which the unreported assets originally arose. The two estimation exercises are made on a global level, distinguishing among OECD and non-OECD countries, and with regard to the Italian case.

According to our estimates, at global level international tax evasion on capital income might range between $20 and $42 billion a year, or between 0.03-0.06 per cent of world GDP. Personal income tax evasion estimated with reference to the stock of unreported capital at the end of 2013 ranges between $2.1 and $2.8 trillion, i.e. between 2.9 and 3.8 per cent of world GDP. With reference to the specific case of Italy, we find that the amount of annual capital income tax evasion, ranging from €0.4 and €1.4 billion, represents between 3.6 and 11.5 per cent of the average annual revenues from the taxation of financial proceeds (around €11.8 billion) and between 0.03 and 0.08 per cent of GDP. Personal income tax evasion estimated with reference to the stock of unreported capital held abroad at the end of 2013 ranges from €49 to €99 billion.

A comparison can be made with the results of the offshore voluntary compliance initiatives that many countries launched over recent years in the wake of the new "transparency" era; according to the OECD, over the period 2009-2014 these led to the collection of more than €37 billion of taxes. However, this amount is not directly comparable with the results of our estimates, given that the assets declared under voluntary disclosure schemes usually represent a (small) share of previously undisclosed offshore funds. Furthermore, the outcome of voluntary disclosure schemes also depends on their specific design (more or less advantageous conditions) and on to what extent taxpayers have the perception of an increase in the risk of being caught due to the changing international context. The perception and assessment of this risk by tax evaders is a core issue in the fight against evasion and it is strictly related to the overall evaluation about the effectiveness and reliability of the measures undertaken at the international level.

Finally, our work summarizes strengths and weaknesses of the recent policy responses to international tax evasion. In our view, even if the current progress towards the implementation of automatic information exchange represents an unprecedented positive result, unthinkable only till a few years ago, tax administrations worldwide still face several risks when dealing with offshore tax evasion.

The automatic information exchange can be an effective tool to counter international tax evasion involving tax havens only if it is fully and consistently implemented at a global level for all types of financial information. A partial ad unsynchronized implementation of these measures may generate advantages for uncooperative countries that could become tax shelters for major investors. Corrective measures should be adopted in order to eliminate these distortive effects. Namely, the fact that there are still many jurisdictions in which it is possible to open shell companies and other opaque vehicles without providing the identity of the shareholders can jeopardize the effectiveness of information exchange. The new mandate to insure transparency of beneficial ownership information given to the OECD by the G20 should hopefully go in the right direction.

Special attention must be paid to the possible shift of tax evasion linked to unreported capital from offshore to onshore countries, due to inconsistencies in the current net of information exchange agreements, such as the lack of reciprocity; furthermore, even more important is the use of data that the tax administration of countries receiving the information are willing and able to make. Briefly, the new measures will limit tax evasion for small investors, but they could not be equally effective for the bigger and more sophisticated ones who will be able to use more complex structure to conceal their wealth. This issue is a challenge in terms of both horizontal and vertical equity of national tax systems.

The effectiveness of recent international initiatives against tax evasion would also benefit from actions aimed to drastically reduce statistical opacity of tax havens and other countries. More consistent, detailed and comprehensive statistical data would greatly help in monitoring the effects of

the recent policy measures against tax evasion linked to unreported foreign assets. They could also provide elements to develop alternative criteria for the allocation of unreported assets among different countries and regions and to refine the estimates of the related revenue losses.

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Appendix A

Table A.1: List of tax havens

1 – Tax havens used by individuals for tax evasion purposes	2 - Tax havens used for analysis of BIS data on cross-border deposits*
Andorra	**Andorra**
Anguilla	**Anguilla**
Antigua & Barbuda	**Antigua & Barbuda**
Aruba	**Aruba**
Austria	Austria
Bahamas	**Bahamas**
Barbados	**Barbados**
Barhain	Belgium
Belgium	**Belize**
Belize	**Bermuda**
Bermuda	**British Virgin Islands**
British Virgin Islands	**Cayman Islands**
Brunei	Chile
Cayman Islands	**Cook Islands**
Chile	**Guernsey**
Cook Islands	**Ireland**
Costa Rica	**Jersey**
Cyprus	**Jordan**
Dominica	**Liberia**
Gibraltar	**Macao**
Grenada	Malaysia
Guatemala	**Mashall Islands**
Guernsey	**Monaco**
Hong Kong	**Netherlands**
Hungary	**Niue**
India	**Panama**
Indonesia	**San Marino**
Ireland	**Seychelles**
Isle of Man	**Singapore**
Jersey	**St. Vincent & the Grenadines**
Lebanon	**United Arab Emirates**
Liberia	**US Virgin Islands**
Liechtenstein	
Luxembourg	
Macao	
Malaysia (Labuan)	
Maldives	
Malta	
Mashall Islands	
Mauritius	
Monaco	
Montserrat	
Nauru	
Netherlands Antilles	
Niue	
Panama	
Philippines	
Samoa	
San Marino	
Seychelles	
Singapore	
St. Kitts & Nevis	

St. Lucia	
St. Vincent & the Grenadines	
Switzerland	
Trinidad & Tobago	
Turks & Caicos	
US Virgin Islands	
Uruguay	
Vanuatu	

Note (*): countries in bold are those classified as offshore in BIS statistics.

Appendix B

Integration of official data on external portfolio stocks

Only in a few cases the derived liabilities from the CPIS were higher than those reported by the other sources (IIP and EWN II). Even though in some cases the discrepancy was far from being negligible, the overall impact on global amounts and on final results was quite moderate; particularly, this is the case for the Netherlands and Luxembourg for debt instruments.

For Luxembourg and the Netherlands the exclusion from portfolio liabilities of the securities issued by special purpose entities (SPEs) has been identified as the main cause of the observed over-reporting. SPEs are frequently created in specific countries by multinational enterprises in order to achieve benefits in terms of legal and tax advantages and of privacy. Securities issued by SPEs are generally declared by investors as an asset vis-à-vis the countries hosting the SPEs. An adjustment has been made to the declared liabilities whenever data on the amount of SPEs issuance are available. For the Netherlands, official data including the positions referring to SPEs are available.[49]

In the other cases, the available information is not complete enough to assess whether the discrepancy is due to an over-reporting of assets vis-à-vis these countries or to statistical distortions implying a systematic underestimation of portfolio liabilities. Accordingly, the CPIS derived liabilities have been generally taken into account as the most realistic proxy. The choice of using derived liabilities in the case of over-reporting made the global amount of liabilities rise, but the impact of these adjustments on the total amount was quite low (less than 0.5 per cent of total liabilities); moreover, it has not inflated the amount of the discrepancy between assets and liabilities, as in these cases it is by definition equal to zero.

This appendix describes the integrations and the adjustments made and illustrates the contents of the supplementary data source that we have taken into account in order to improve the level of coverage and consistency of the database (par. 3.1).

United States – liabilities broken down by investor country

The US Department of the Treasury collects information on transactions and positions referring to foreign portfolio securities through the Treasury International Capital (TIC) reporting system.[50] Data are collected from banks and brokers. Once a year, a detailed investigation is conducted on the stocks of portfolio securities, broken down by issuer and investor country, also collecting data from importers, exporters and financial institutions other than banks. Data on liabilities broken down by investor country are regularly disseminated.

However, some difficulties in correctly identifying the country of residence of the final investor exist. As a matter of fact, these statistics tend to overestimate the assets of the countries in which

[49] De Nederlandsche Bank, http://www.dnb.nl/en/statistics/statistics-dnb/balance-of-payments-and-international-investment-position/index.jsp.

[50] US Department of the Treasury: http://www.treasury.gov/resource-center/data-chart-center/tic/Pages/index.aspx.

securities are traded and held (custodial bias)[51] and to underestimate the assets of final investors. The information on the geographical detail of the liabilities of the United States has been used in any case to quantify the assets in US securities held by some major countries that do not report CPIS data, namely China, Taiwan and the Arab oil-exporting countries. For these countries, the custodial bias is not expected to affect the figures significantly.

Japan – liabilities broken down by investor country

The Central bank of Japan publishes on its website[52] portfolio liabilities broken down by investor country at the end of each year. This information on transactions and positions regarding foreign investments in domestic securities was collected through sample surveys. Data on liabilities broken down by investor country have been used in the same way as the TIC data for the United States in order to quantify the portfolio assets vis-à-vis Japan held by some of the major countries not reporting in the CPIS.

Ireland – liabilities in equity securities (shares and funds)

As regards Irish equities and investment fund shares, there is a considerable discrepancy between the official and derived liabilities, presumably related to the presence of SPEs, especially in the financial sector.[53] A significant proportion of debtor positions are declared by Ireland but they are not reported by investor countries. On the basis of specific and confidential information, it has been possible to make a reduction in this discrepancy, attributing some of it to certain countries.

United States and Germany – adjustment on portfolio assets

It has been necessary to make a correction on CPIS asset data reported by the United States and Germany, since for some years there have been significant differences from the portfolio assets reported in their IIPs. The geographical percentage distribution deriving from the CPIS has been applied to the value of total portfolio assets as reported in these countries' IIPs.

China – assets (official reserves)

The foreign assets held by China - a country not reporting to the CPIS - are largely constituted by official reserves; the total amount is known thanks to official Chinese statistics (State Administration of Foreign Exchange) and EWN II. As assets held vis-à-vis the United States and Japan have been already calculated (see above), the further step consists in estimating the shares held vis-à-vis the remaining countries.

On the basis of a study conducted by the Bank of International Settlements (Wooldridge, 2006)[54], we assumed that 80 per cent of reserve assets was invested in debt securities. The breakdown by issuer country has been estimated on the basis of the geographical distribution of the global reserve assets in debt securities reported by all countries in the CPIS (Survey of Securities held as Foreign Exchange Reserves, SEFER).

International organizations – liabilities (debt securities)

International organizations (for example, the European Investment Bank) issue debt instruments, but statistics on their international investment position are not published. Assets held in debt securities issued by international organizations are instead included in stocks declared by investor countries, causing a discrepancy between global assets and liabilities.

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[51] In case of long and complex chains of deposits and intermediaries, the residence of the final investor cannot be easily identified; in particular, according to the US Department of the Treasury, this "custodial bias" can lead to an overestimation of the liabilities to the Cayman Islands, Switzerland, the United Kingdom and Luxembourg, and to an underestimation of liabilities to all other countries (Bertaut *et al*, 2006).

[52] Bank of Japan, http://www.boj.or.jp/en/statistics/br/bop/index.htm/.

[53] The International Financial Services Centre (IFSC) is located in Dublin, hosting more than half of the world's top 50 financial groups.

[54] It is higher than the average estimated (70 per cent; Wooldridge, 2006, p. 32) for the developed countries, as there are reasons to believe that the Chinese monetary authorities have a lower propensity for other types of financial instrument than other central banks.

In order to reduce these inconsistencies, international organizations' portfolio liabilities have been estimated on the basis of data on the outstanding amount of international bonds periodically published by the Bank for International Settlements. It should be noted that the valuation of these stocks is based on nominal values, whereas the assets reported by the investor countries in the CPIS are based on market ones. The different valuation criteria may generate discrepancies.

The Netherlands – adjustments on portfolio liabilities

As already mentioned, for the Netherlands portfolio debt liabilities have been increased by adding the amount of liabilities issued by SPEs, which are excluded from the official IIP (liabilities are lower than total assets vis-à-vis the Netherlands reported in the CPIS). Data on SPEs' portfolio liabilities are published by the Dutch central bank, as already mentioned. After the correction, portfolio liabilities ended up higher than declared assets.

Offshore centres – assets and liabilities

The Cayman Islands and British Virgin Islands are two of the most relevant offshore centres as regards portfolio investments, particularly investment funds.[55] These two countries do not report complete portfolio statistics: the Virgin Islands do not publish IIP and do not participate in the CPIS, while the Cayman Islands only report the assets held by banks to the CPIS. Consequently, for these countries estimations and adjustments on both assets and liabilities have been made.

For the Cayman Islands, estimates are based on data published by the Cayman Islands Monetary Authority[56] (CIMA), which is the authority in charge of monitoring resident investment funds. The net asset values declared by Cayman funds have been considered as a proxy for equity liabilities to foreign investors. As for debt, the derived liabilities calculated on the basis of CPIS data have been considered as a proxy because of the lack of specific and reliable information. Furthermore, in order to estimate portfolio assets (except those held vis-à-vis the US and Japan, see above) statistics from CIMA have been used as well.

As for the British Virgin Islands, Lane and Milesi-Ferretti (2010) tried to quantify total external assets and liabilities. For two other major offshore centers, Guernsey and Jersey, the integration to the database only relates to the external liabilities in equity investment funds issued. Both countries do not publish IIP but they do report portfolio assets in the CPIS. The integration is based on data on collective investment funds published respectively by the Guernsey Financial Services Commission[57] and the Jersey Financial Services Commission.[58] Also in this case we used the net asset value of the investment funds issued in these countries to approximate the amount of their external equity liabilities.

Whenever we have used data on fund net asset value, we have assumed that: a) all equity funds are held by foreign investors; b) the fund invests all its assets in foreign securities. We expect that these assumptions do not have an important impact on the estimation of global discrepancy, as the effects on assets and liabilities should balance each other. However, such assumptions may influence the country and financial instrument breakdown of the global discrepancy.

As regards the breakdown by debtor country and by financial instrument of the assets held by the Cayman Islands and British Virgin Islands, we have estimated it by adopting the hypothesis that it reflects the distribution related to the subset of offshore and small financial centres[59] declaring in the CPIS.

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[55] According to estimates made by Lane and Milesi-Ferretti (2010), these two countries account for between 50 and 60 per cent of total assets and liabilities of the 32 small international financial centers (SIFCO) countries (information relating to year 2007).

[56] http://www.cimoney.com.ky/Stats_Reg_Ent/. (Investment Statistical Digest for various years).

[57] http://www.gfsc.gg/Investment/Pages/Statistics.aspx.

[58] http://www.jerseyfsc.org/investment_business/statistics/totalfundsunderinvestmentmanagement.asp.

[59] The group comprises Bermuda, Guernsey, Jersey, Luxembourg, the Isle of Man and - only for banking sector - Barbados, the Bahamas, British Virgin Islands, Cayman Islands and Netherlands Antilles.

Arab oil exporters – assets (Sovereign Wealth Funds)

The estimates of portfolio assets held by Arab oil exporters (again with the exception of those vis-à-vis the US and Japan) have been mainly based on published data on the net asset values of sovereign wealth funds collected by the SWF Institute[60] and from specific studies (ECB, 2008). In the absence of reliable information on the distribution by country and by financial instrument, we assume that they are proportionally distributed according to the global discrepancy. In other words, such assets have been proportionally subtracted from the global discrepancy for each combination of year, issuer country and type of instrument (see formula A.1 below).

Other countries not included in the CPIS and IIP statistics – assets and liabilities

As regards the other countries (e.g. Taiwan) not reporting data to IMF (CPIS and IIP) and not included elsewhere, we derived data – subject to availability – on assets (portfolio securities plus the 70 per cent of official reserves) and liabilities (portfolio securities) from EWN II. In the absence of reliable information on the distribution by country and by financial instrument, we assume that they are proportionally distributed according to the global discrepancy (see formula A.1 below).

As regards the breakdown by country and type of instrument of estimated assets held both by Arab (A) oil exporters (in securities issued by countries other than the US and Japan) and by countries not included in the CPIS and IIP statistics (O), we define, respectively, equity and debt securities as follows:

$$A_{AO}^{E} \quad \text{and} \quad A_{AO}^{D}$$

and considering global individual country discrepancies before the integration of the above assets:

$$_{t}U^{E*} \quad _{t}U^{D*} \quad _{t}U_{i}^{E*} \quad _{t}U_{i}^{D*}$$

the final amount of the discrepancy in equity securities by a reference year and issuer country can be expressed as follows (with a similar notation for debt securities):

A.1) $$\forall \boldsymbol{i,t} \quad {}_{t}U_{i}^{E} = {}_{t}U^{E*} - \left(A_{AO}^{E} \times \frac{{}_{t}U_{i}^{E*}}{{}_{t}U^{E*}} \right) = {}_{t}L_{i}^{E} - \sum_{j} {}_{t}A_{ji}^{E} - \left(A_{AO}^{E} \times \frac{{}_{t}U_{i}^{E*}}{{}_{t}U^{E*}} \right) .$$

[60] http://www.swfinstitute.org/fund-rankings.

Appendix C

Table C.1: Under-reporting attributed to five major European countries
(billions of euros or percentages)

		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
ITALY														
1° criterion: mirror data (CPIS)	A) Equity securities	92.6	94.6	101.0	103.7	145.4	141.5	140.0	95.9	98.9	116.8	117.6	124.5	122.1
	B) Debt securities	51.1	41.5	28.6	28.0	31.0	20.1	21.4	26.5	23.4	7.1	37.0	42.1	34.7
	C) Total	**143.7**	**136.1**	**129.6**	**131.7**	**176.4**	**161.6**	**161.4**	**122.4**	**122.3**	**123.9**	**154.6**	**166.6**	**156.8**
	% on official assets	*22.9%*	*24.0%*	*20.7%*	*19.6%*	*21.2%*	*18.7%*	*19.1%*	*17.8%*	*15.8%*	*14.3%*	*19.4%*	*21.0%*	*18.9%*
2° criterion: share of world GDP	A) Equity securities	46.7	42.1	48.7	56.4	72.8	75.5	93.6	70.3	70.4	72.0	68.8	68.6	70.2
	B) Debt securities	38.1	39.0	29.5	32.9	33.9	27.3	31.0	37.3	29.5	12.0	41.6	48.2	44.1
	C) Total	**84.8**	**81.1**	**78.1**	**89.2**	**106.6**	**102.8**	**124.7**	**107.6**	**100.0**	**84.0**	**110.4**	**116.8**	**114.4**
	% on official assets	*13.5%*	*14.3%*	*12.5%*	*13.3%*	*12.8%*	*11.9%*	*14.8%*	*15.7%*	*12.9%*	*9.7%*	*13.9%*	*14.7%*	*13.8%*
GERMANY														
1° criterion: mirror data (CPIS)	A) Equity securities	121.5	102.5	111.3	115.4	152.3	161.1	174.2	162.0	161.9	169.8	161.1	165.1	156.1
	B) Debt securities	58.9	67.3	49.9	59.9	64.9	59.9	71.2	79.5	68.1	32.1	107.4	142.5	130.7
	C) Total	**180.4**	**169.8**	**161.2**	**175.3**	**217.2**	**221.0**	**245.4**	**241.5**	**230.0**	**201.9**	**268.5**	**307.5**	**286.8**
	% on official assets	*20.1%*	*19.8%*	*16.9%*	*15.8%*	*16.5%*	*12.8%*	*13.8%*	*15.6%*	*13.2%*	*10.6%*	*14.6%*	*14.7%*	*12.8%*
2° criterion: share of world GDP	A) Equity securities	78.2	68.9	77.9	88.5	112.7	117.0	146.3	110.4	110.1	115.7	113.6	116.7	123.2
	B) Debt securities	63.8	63.9	47.2	51.6	52.5	42.3	48.5	58.5	46.1	19.3	68.7	82.0	77.5
	C) Total	**142.0**	**132.8**	**125.1**	**140.1**	**165.2**	**159.2**	**194.8**	**169.0**	**156.2**	**135.0**	**182.4**	**198.7**	**200.7**
	% on official assets	*15.8%*	*15.5%*	*13.1%*	*12.6%*	*12.5%*	*9.2%*	*10.9%*	*10.9%*	*9.0%*	*7.1%*	*9.9%*	*9.5%*	*9.0%*
FRANCE														
1° criterion: mirror data (CPIS)	A) Equity securities	51.0	48.3	57.8	67.9	101.8	121.3	160.8	118.6	92.9	105.0	85.2	92.1	100.8
	B) Debt securities	44.4	51.8	42.1	49.7	49.8	54.7	73.3	91.2	72.4	32.8	102.8	121.7	102.8
	C) Total	**95.5**	**100.1**	**99.9**	**117.6**	**151.7**	**176.0**	**234.1**	**209.9**	**165.3**	**137.8**	**188.0**	**213.8**	**203.5**
	% on official assets	*11.8%*	*11.3%*	*9.2%*	*9.1%*	*9.6%*	*9.4%*	*11.6%*	*11.4%*	*8.3%*	*6.6%*	*10.3%*	*11.0%*	*9.7%*
2° criterion: share of world GDP	A) Equity securities	57.4	51.5	59.4	69.0	89.8	93.7	117.2	89.1	89.9	92.7	89.7	91.5	95.2
	B) Debt securities	46.9	47.8	36.0	40.2	41.8	33.9	38.8	47.2	37.7	15.5	54.2	64.3	59.8
	C) Total	**104.3**	**99.3**	**95.4**	**109.2**	**131.6**	**127.5**	**156.1**	**136.3**	**127.6**	**108.1**	**143.9**	**155.8**	**155.0**
	% on official assets	*12.9%*	*11.2%*	*8.8%*	*8.5%*	*8.3%*	*6.8%*	*7.7%*	*7.4%*	*6.4%*	*5.1%*	*7.9%*	*8.0%*	*7.4%*
the NETHERLANDS														
1° criterion: mirror data (CPIS)	A) Equity securities	62.9	50.1	59.9	57.3	60.7	53.8	66.8	62.7	73.2	84.6	84.5	93.6	94.8
	B) Debt securities	31.6	30.5	20.5	26.2	34.6	24.2	33.7	39.5	32.3	13.2	42.6	54.2	47.5
	C) Total	**94.5**	**80.6**	**80.5**	**83.5**	**95.4**	**78.1**	**100.5**	**102.2**	**105.5**	**97.8**	**127.1**	**147.8**	**142.3**
	% on official assets	*17.1%*	*14.8%*	*11.7%*	*10.3%*	*9.7%*	*7.7%*	*9.5%*	*11.6%*	*10.2%*	*8.8%*	*11.5%*	*11.8%*	*10.7%*
2° criterion: share of world GDP	A) Equity securities	17.7	15.9	18.3	21.0	27.4	29.0	36.7	28.4	28.6	29.3	28.0	28.0	28.9
	B) Debt securities	14.5	14.8	11.1	12.2	12.8	10.5	12.2	15.0	12.0	4.9	16.9	19.7	18.2
	C) Total	**32.2**	**30.7**	**29.5**	**33.2**	**40.1**	**39.5**	**48.8**	**43.4**	**40.6**	**34.2**	**44.9**	**47.7**	**47.1**
	% on official assets	*5.8%*	*5.7%*	*4.3%*	*4.1%*	*4.1%*	*3.9%*	*4.6%*	*4.9%*	*3.9%*	*3.1%*	*4.1%*	*3.8%*	*3.6%*
SPAIN														
1° criterion: mirror data (CPIS)	A) Equity securities	12.5	11.7	13.9	19.9	30.6	30.2	29.7	17.9	21.2	21.2	20.1	21.4	25.5
	B) Debt securities	12.0	16.1	14.9	17.7	24.7	15.9	17.6	18.2	17.5	5.0	15.9	22.5	13.2
	C) Total	**24.4**	**27.8**	**28.9**	**37.6**	**55.3**	**46.1**	**47.3**	**36.1**	**38.7**	**26.2**	**36.0**	**43.9**	**38.7**
	% on official assets	*12.4%*	*10.8%*	*8.6%*	*9.9%*	*11.2%*	*9.1%*	*9.4%*	*8.6%*	*8.8%*	*7.2%*	*12.2%*	*13.8%*	*11.9%*
2° criterion: share of world GDP	A) Equity securities	25.3	23.6	28.4	33.9	46.1	49.8	63.4	48.6	48.5	48.5	45.6	45.1	46.1
	B) Debt securities	20.7	21.9	17.2	19.8	21.4	18.0	21.0	25.7	20.3	8.1	27.6	31.6	28.9
	C) Total	**46.0**	**45.4**	**45.6**	**53.7**	**67.5**	**67.8**	**84.5**	**74.3**	**68.9**	**56.6**	**73.1**	**76.7**	**75.0**
	% on official assets	*23.4%*	*17.6%*	*13.6%*	*14.1%*	*13.7%*	*13.4%*	*16.7%*	*17.6%*	*15.7%*	*15.5%*	*24.7%*	*24.2%*	*23.1%*

Appendix D

Offshore Voluntary Disclosure Schemes

Offshore voluntary disclosure schemes usually have a temporary nature, and try to provide incentives to taxpayers to declare previously unreported foreign assets by relying on the sense of urgency created by the changing international context[61]. The "tax regularization" may affect previously undeclared income or assets that arose in a number of past years still subject to tax assessment, varying from a minimum of three to a maximum of twenty or even an unlimited period in cases involving tax fraud or unknown taxpayers. A number of countries also provide permanent or temporary voluntary disclosure schemes aimed at all kind of assets (i.e. domestic and foreign) and all kind of taxpayers.

Under most offshore voluntary programs, taxpayers must pay the amount of tax they would have owed in the absence of a voluntary disclosure; in some countries the taxes due under the voluntary scheme as well as the interest due for the late payment are reduced and/or computed differently. Monetary penalties are often eliminated or substantially reduced following a voluntary disclosure by the taxpayer. Finally, in most countries the voluntary disclosure allows non-compliant taxpayers to avoid criminal prosecution[62].

In 2010 the OECD draft specific guidelines for the implementation of voluntary disclosure programs, taking into account the experience of member countries (OECD, 2010). The guidelines aimed at helping countries to design voluntary disclosure programs able to identify the fine line between encouraging non-compliant taxpayers to permanently improve their compliance and retaining the support and compliance of the vast majority of taxpayers who are already compliant. The OECD guidelines have been recently updated, in parallel with the release of a survey of voluntary disclosure programs undertaken in 47 countries (OECD, 2015).

The Italian Voluntary Program Initiative of 2015

Following the example of other OECD countries, at the beginning of 2015 Italy launched a new voluntary disclosure program (VD) aimed at promoting the regularization of violations committed by resident individuals, partnerships and similar entities and concerning reporting duties and tax payments related to undeclared assets held abroad for the years still open for assessment (i.e. tax years 2009-2013, or 2004-2013 when the assets were held in tax havens or in case of tax fraud).[63]

The deadline for applying under the Voluntary Disclosure program, originally due to expire on 30 September 2015, was extended to 30 November 2015 (with the further possibility to present the relevant documentation up till 30 December 2015).[64]

Under the VD scheme taxpayers that came forward and declared the foreign assets had to pay all taxes due and interest for late payment, but could benefit from a significant reduction of administrative fines (up to 50 per cent) due for the non-declaration of foreign assets according to the special provisions known as "fiscal monitoring" ("monitoraggio fiscale"), a legislation similar to the US

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[61] For example, in 2014 Australia launched Project DO IT4, as a short-term "never-to-be-repeated" opportunity for taxpayers to correct their offshore tax affairs and to return back into the tax system. The United States have also run short-term programs aimed directly at improving offshore compliance. The terms of the short-term programs have become less generous each time, creating a sense of urgency as taxpayers can see that the opportunities for making a voluntary disclosure are steadily reducing, while the risks of detection are rising.

[62] In the United States a voluntary disclosure will not automatically guarantee immunity from prosecution; however, a voluntary disclosure may result in prosecution not being recommended.

[63] Law No. 186 of 15 December 2014. The initial draft of the program was released by the Italian Government on 29 January 2014 but then repealed a few weeks later. Under the VD taxpayers may declare not only financial assets held abroad, but also real estate and other real assets held abroad or even those held in Italy, but through foreign fiduciary entities or vehicles. In parallel with the VD scheme specifically aimed at unreported assets held abroad by individual taxpayers, the Decree provided for a VD scheme aimed at the declaration of previously unreported income by all types of taxpayers, including corporations and non-residents. The benefits of this latter VD scheme are similar to those of the foreign asset VD.

[64] The extension of the final deadline was introduced by Decree Law No. 153 of 30 September 2015.

FBAR) and from a lower reduction of the administrative fines due for the non-payment of taxes;[65] furthermore, they were excluded from criminal persecution, except in the case of tax fraud, in which criminal fines were only reduced by one half.

Given the variety of circumstances that could occur for each taxpayer, the actual cost of the VD for taxpayers could only be assessed on a "case-by-case" basis. In general terms, the VD could be particularly convenient for those taxpayers whose assets were held abroad for some time, or came from inheritance: in these cases, the amount of taxes and penalties due could have been quite low (in the range of 7-12% of the foreign asset value if the assets were not held in tax havens, around 20% otherwise), being limited to taxes on annual yields and to penalties for the non-reporting of the foreign assets under the "fiscal monitoring" provisions. On the other hand, if the assets came from capital recently transferred abroad which, in turn, arose from income originally subtracted to taxation, the cost could be significant (in some cases higher than 100% of the foreign assets value). In these latter cases, the likelihood of taxpayers adhering to the VD depended on how they evaluated the probability of being detected in the new international landscape of reinforced cooperation.

According to the data released by the Italian Revenue Autority (Agenzia delle entrate) in January 2016, after the end of the VD scheme, the amount of foreign assets declared under the VD was around €62 billion, and tax revenues were around €4 billion. The analysis of the 2015 VD results gives some interesting insights:

- the average amount of the VD requests stood at 620,000 euro, but more than two thirds of them related to asset values of less than 300,000 euro; the remaining one third − 31,682 requests related to assets above 300,000 euro − represented almost 90 per cent of the declared assets (nearly €53 billion);
- in terms of geographical origin, 68.9 per cent of the assets came from Switzerland (the same percentage of the 2009-2010 VD), 8.1 per cent from the Principality of Monaco, 4.6 per cent from France, 3.7 per cent from the Bahamas, 2.3 per cent from Singapore, 2.2 per cent from Luxembourg, 1.9 per cent from San Marino, 1.5 per cent from Liechtenstein, 2 per cent and the rest from other countries (both tax havens and non-havens).

[65] The reduction of administrative fines was lower if the assets were held in tax havens.