Are international deposits tax-driven?

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Are International Deposits Tax-Driven ?

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Abstract: This paper investigates the impact of tax policy on international depositing. Non-bank international deposits are shown to be positively related to interest income taxes and to the presence of domestic bank interest reporting. This suggests that international deposits are in part intended to facilitate tax evasion. At present, only part of international interest flow are covered by either non-resident interest withholding taxes or international exchange of information. This incomplete coverage may be a reason that these policies currently appear to have little impact on international depositing.

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1. Introduction

Countries typically tax the worldwide interest income of their residents. By now, the tax authorities in most OECD countries require domestic banks to report interest payments to domestic residents. In contrast, no comprehensive system of international exchange of bank interest information exists to date. This, combined with the generally low taxation of international bank interest at source, implies that the international recipient of bank interest can evade all taxation of this income with relative ease.

In the minds of European policy makers, this has been a serious problem since at least the 1980s, as evidenced by the introduction in 1989 of a first proposal for a European directive towards a common minimum withholding tax on interest. In 1998, a second proposal for a directive was published that gave EU member states the option to tax interest accruing to non-residents at source or to exchange information with other countries. In November 2001, EU finance ministers abandoned the idea of co-existing withholding taxes and information exchange, and instead stated their intention to move towards generalized information exchange by 2010. Until then, several countries, namely Austria, Belgium and Luxembourg, will be free to levy a minimum withholding tax instead, with the understanding that 75 percent of the tax revenues are passed on to the residence-country tax authorities. These intended policies have been laid down in a proposal for a directive in July 2001[1].

The adoption of a directive in the area of international interest taxation would be the first major international agreement in the area of capital income taxation, or for that matter of direct taxation in general. The further development of policy in this area (to include, say, countries outside the EU, or to extend coverage to dividends) is hampered by a lack of empirical analysis of international interest tax evasion. A main impediment to research in this area has been the limited data on the international ownership of bank deposits and other financial assets. Countries are presumably restricting access to these

[1] See European Commission (2001). A stated condition for the adoption of this directive is that the European Union reaches agreement with several third countries, notably Switzerland, to institute similar anti-evasion measures in these countries.

data to protect the employment and profits of their domestic banking sectors.[2] More discussion at the international level of the potential roles of banks in tax evasion and money laundering schemes may some day force more openness, but for now data on bilateral banking flows remain confidential. Data of this kind, however, are collected by the Bank for International Settlements (BIS), and have been made available for this study on the condition that data on bilateral banking flows are not disclosed.

The main purpose of this paper is to see to what extent international banking flows reflect tax policy and efforts to enforce it. Tax determinants first are the residence-based interest income and wealth taxes that *de jure* typically apply to worldwide income and wealth. To aid enforcement, many countries by now require their banks to report interest payments to domestic residents to the tax authorities. To enable international enforcement, banking countries in some instances also supply information to foreign tax authorities. Data on both types of information provision have been collected for this study. Finally, the analysis also takes into account that international interest payments may be subject to an interest withholding tax in the source country.

Our empirical results suggest that interest income taxation has encouraged international depositing, at least during the high-interest-rate period of the 1980s. Domestic bank interest reporting also appears to contribute to international bank placements. There is less evidence that interest withholding taxes discourage such depositing, perhaps because non-resident withholding taxes are typically rather low and imposed by relatively few countries. Similarly, there is little evidence that international information exchange – for 1999 data – has a strong impact on bilateral depositing. Again, a reason may be the haphazard pattern of international information exchange at present. Truly generalized withholding taxes or information exchange in principle affect the international depositing decision as much as domestic tax policy, and hence can be expected to have a significant impact on international depositing patterns.

Several authors have previously examined the determinants of international banking flows. Grilli (1989) relates non-bank and inter-bank deposits to interest and

[2] Countries with relatively few internationally active banks may in addition see a need to retain information in order to maintain the confidentiality of bank-level information. Countries may originally

dividend taxes, capital flows, an index of bank secrecy, GNP, and a trend. He finds that non-bank deposits are influenced by taxes on interest and by bank secrecy, while inter-bank deposits are driven by the size of the source economy and by the taxation of dividends (suggesting that bank accounts might be used to park money meant for later financial transactions). Alworth and Andresen (1992) further estimate a gravity model to explain the determinants of non-bank bilateral deposit flows using data up to 1990.[3] These authors include several bank-system variables such as the (bilateral) difference in reserve requirements, the bank-country interest withholding tax, and an index of its bank secrecy. The withholding tax and bank secrecy variables, as part of interacted variables, are shown to be determinants of cross-border deposits. More recently, Fornari and Levy (2000) have estimated the determinants of bilateral cross-border deposit inflows for a group of 6 industrialized countries. These authors place special emphasis on financial structure variables such the stock market capitalization to GDP, stock market volatility differences and the trading volume of the stock market.

As Alworth and Andresen (1992), the present paper examines the determinants of bilateral international depositing with a focus on taxation. This paper differs, however, in that we have somewhat more detailed information on the tax regime and the availability of bank information to tax authorities. In particular, the present paper includes personal interest income and wealth taxes and distinguishes between the domestic and international availability of bank information to tax authorities.

Several theoretical papers have also examined tax policy towards mobile financial capital. Janeba and Peters (1999), for instance, consider the issue of discrimination against internationally mobile capital given that countries set tax rates non-cooperatively. Huizinga and Nielsen (2000) show that an internationally agreed minimum withholding

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have started to collect this information to monitor monetary developments rather than to check the competitive positions of their banking sectors.

[3] Recently several papers have also applied the gravity approach to investigate capital flows other than cross-border deposits. Portes and Rey (1999), for instance, show that bilateral portfolio equity investments reflect variables proxying (private) information availability, such as international telephone calls and multinational bank branches. Along similar lines, Ahearne, Griever, and Warnock (2000) find that U.S. holdings of a country's equities are positively related to the share of that country's stock market that is listed on U.S. exchanges. This is attributed to the fact that a listing in the U.S. lowers information costs for U.S. investors.

tax on interest, that is only binding for a small country, can benefit all countries, if in fact all countries are induced to increase their interest tax rates. Bacchetta and Espinosa (1995) argue that it may be in a country's own interest to provide information about bank interest payments to non-residents, as this enables the interest-receiving country to increase its own income tax rate. This in turn reduces the incentive for residents of the information-providing country to place their savings abroad. In a repeated game framework, Bacchetta and Espinoza (2000) further study the joint determination of taxes on international investment income and information-exchange clauses in double taxation treaties. They find that information exchange may be part of a (sustainable) tax treaty if there is a reciprocity requirement, when there is a high cost of negotiation, or with one-way capital flows. Also in a repeated game setting, Huizinga and Nielsen (2003) examine countries' exclusive choice between non-resident withholding taxes and information exchange (as provided for by the European Commission's draft directive of 1998, see European Commission (1998)). Two countries choosing the same regime (either withholding taxes or information exchange) and a mixed regime (one country choosing withholding taxes and the other information exchange) are all possible equilibria of the regime selection game. Information exchange performs relatively well, and is more likely to be chosen in equilibrium, if governments apply a relatively low discount rate to future outcomes. In the following, section 2 discusses the data used in this study. Section 3 presents the empirical results, and section 4 concludes.

2. The data

2.1 International deposits

The BIS has collected data on the external liabilities of reporting country banking systems since 1983, and on external deposits from 1996 onwards[4]. The external liabilities and deposits of BIS reporting countries for 1999 are reported in Table 1. These figures represent all currencies. From the table, we see that the UK and the US have the largest

[4] External deposits comprise all claims by non-residents on banks and bank-like reporting institutions with evidence of deposit not in the form of negotiable securities. Apart from external deposits, external liabilities include marketable instruments such as negotiable debt securities, bonds and short-term negotiable instruments, derivative instruments on-balance sheet, and working capital. See Bank for International Settlements (2000b).

external liabilities at € 1.8 trillion and € 1.0 trillion, respectively. Among the smaller countries, the Cayman Islands and Switzerland have about € 0.6 trillion foreign liabilities, while Luxembourg has around € 0.4 trillion. The total external liabilities of banks in the BIS area amount to € 9.0 trillion. Total liabilities are divided between bank and non-bank liabilities. Bank liabilities are debts to other banks, and non-bank liabilities are debts to individuals, public institutions and to businesses.[5] As seen in the second column, non-bank liabilities are less than half of total liabilities in all reporting countries. For the BIS area, non-bank liabilities stand at 24 percent of total liabilities. Interestingly, non-bank liabilities are highest in Switzerland and the Cayman Islands at 48 and 42 percent of total liabilities, respectively. External deposits are represented in the third column. External deposits are shown to be the lion's share of external liabilities.[6] For the BIS area as a whole, external deposits are 92 percent of external liabilities. The last column indicates that non-bank external deposits are 25 percent of total external deposits.

It is also interesting to consider to what extent a country's residents maintain deposits abroad. To proceed, let d_{ij} be the non-bank deposits in country i owned by the residents of country j (with i different from j). We can now define country j's exports of non-bank deposits (as part of capital exports) or E_j, and country i's imports (as part of capital imports) or I_i as follows,

$$E_j = \sum_{i \neq j} d_{ij} \qquad\qquad I_i = \sum_{j \neq i} d_{ij}$$

To see how important these non-bank deposit exports and imports are, we can relate them to the total Non-bank deposits in a country's banking system and to the worldwide ownership of non-bank deposits by a country's residents. Specifically, let D_i be the total non-bank deposits in country i's banking system. The worldwide ownership of non-bank deposits by residents of country i then can be defined as $O_i = D_i + E_i - I_i$. The share of non-bank deposits owned by residents of country i held abroad is given by

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5 These businesses include non-bank financial institutions such as mutual funds, hedge funds, and insurance companies.

6 Note that not all countries report separate data for external liabilities and deposits on a country basis. In the last several years, the rapid growth in external bank liabilities has resulted in a larger share of external bank liabilities in total external liabilities.

$s_i = E_i / O_i$. Net deposit imports cause a country's banking system to be larger than it would otherwise be. We can define the expansion ratio of a country's banking system on account of its net non-bank deposit imports as $g_i = (I_i - E_i)/O_i$. This expansion is measured relative to the hypothetical case where the banking system exactly accommodates the non-bank deposits owned by the country's residents. The expansion ratio is a rough index of how much a particular banking system gains or loses on account of its net non-bank deposit imports.

Table 2 provides data on aggregate deposit exports and imports and other derived variables for 1998.[7] Switzerland and the United Kingdom are shown to be net exporters of deposits (bank and non-bank deposits together) from the first 2 columns, while they are net importers of non-bank deposits from the 2 next columns. Net inflows of non-bank deposits thus are more than off-set by net outflows of bank deposits. At any rate, incoming non-bank deposits are recycled as outgoing bank deposits. Conversely, the United States is a net exporter of non-bank deposits, and a net importer of bank deposits (as net exports of non-bank deposits exceed net exports of overall deposits). Other net exporters of non-bank deposits are Australia, France, Italy, Japan, Norway, and Spain.

Next, we turn to the share of non-bank deposits owned by residents held abroad. Ireland leads here with 33 percent, reflecting its relatively high exports of non-bank deposits. Australia, Canada, Denmark, Finland and Norway instead have foreign shares of total non-bank deposit ownership at less than 5 percent, indicating relatively closed banking systems. Finally, we consider the expansion rate of the banking system due to net non-bank deposit imports. Switzerland is shown to be a large net non-bank deposit importer, and correspondingly is calculated to have a banking expansion rate of 19%. The United States and Spain, in contrast, display relatively large banking sector 'contractions' on account of large net non-bank deposit exports. To increase the national coverage somewhat, Table 3 provides information on exports and imports of bank liabilities rather than bank deposits. Hong Kong registers as an additional net exporter of non-bank liabilities, while the Bahamas is shown to be a strong net importer of non-bank liabilities.

[7] We chose 1998 as the total non-bank banking system deposits published for 1999 by euro-area countries include shares in money market funds.

2.2 *The tax system*

Countries typically tax different types or income at different rates. Since 1983, increasingly many countries have opted for dual tax systems with different tax rates for earned and capital income. Capital income may again be taxed differently depending on whether it takes the form of interest, dividends, or capital gains. In practice, even finer gradations are found (especially with respect to international capital income flows) where separate rates of tax are applied to bond interest, bank interest, or interest from a loan secured by real estate. Wealth taxes tend to be less specific, although some countries make distinctions between taxes on financial wealth (which could be divided into portfolio wealth or business ownership), and real estate. Throughout, we have attempted to identify the taxation of interest from deposits and wealth in the form of deposits as regards individuals.

Table 4 provides the effective interest income and wealth taxes applied to bank deposits in 1999 in most BIS reporting countries. Both taxes generally apply to worldwide interest income and wealth, and take into account sub-national taxation of interest in several cases, such as Canada and Denmark. In 1999, Austria, Belgium, Finland, France, Greece, Ireland, Italy, Japan, Portugal, Sweden, and the United Kingdom maintained dual (or multiple) income tax systems with a relatively low tax rate for interest income. In most cases, the dual income tax system was introduced during the 1983-1999 period, with a view to discourage tax evasion and to lower compliance costs. These introductions were probably at least in part meant to reduce the incentive to evade the taxation of domestic capital income such as interest income[8]. Since 1983, the average statutory interest income tax has declined gradually, as seen in Figure 1. Deposit interest rates have declined as well, and hence the interest tax burden expressed as a percentage of principal (and calculated as the statutory interest rate times the deposit interest rate) has declined even more, as also seen in Figure 1.

[8] Recent tax reforms continue the movement away from synthetic income tax systems. At the start of 2001, the Netherlands also introduced a dual system with a tax rate of 30 percent on a (deemed) return on capital income of 4 percent. This amounts to a wealth tax of 1.2 percent per annum to replace the previous wealth tax of 0.7 percent.

Table 4 also provides information about wealth taxes in place in 1999. These annually assessed wealth taxes exclude taxes on intergenerational transfers such as estate taxes. Since 1983, several countries have eliminated their regular wealth taxes (Austria's ended by 1994, Denmark's by 1997, and Germany's by 1997). France relinquished its 'old' wealth tax by 1986, to introduce a 'new' wealth tax in 1988. Overall, the average wealth tax has declined significantly since 1983 (see Figure 2). Finally, we turn to non-resident interest withholding taxes[9]. In 1999, only 4 countries, namely Australia, Japan, Portugal, and Switzerland, levy positive withholding taxes on any outgoing bank interest flows, as seen in the table. In several instances, interest paid by banks has been taxed at lower non-resident withholding tax rates than other interest. The U.S., for instance, has maintained a statutory exemption for bank interest throughout the period under consideration, even though it levied a non-resident (non-treaty) interest withholding tax of 30 applied to bond interest up to 1984. The U.K. similarly exempts bank interest on bank claims with a maturity of less than a year including regular current account and savings account deposits. Switzerland is a major financial center that continues to tax the bank interest accruing to non-residents, even though this country has also reduced the non-treaty tax rate of 35 percent to 12.5 percent or less in all but 5 cases[10]. Austria and France are among the countries that have abolished non-resident withholding taxes in 1993 and 1997, respectively. Overall, the average statutory non-resident interest withholding tax has declined since 1983, as seen in Figure 3. The withholding tax burden, as a percentage of principal, has diminished even more, reflecting the decline in deposit interest rates.

2.3 Access to bank information and international information exchange

Taxes on bank interest that are not withheld by the paying bank have to be collected from the depositor. To make enforcement in this case realistic, the tax authority

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[9] See also Zee (1998) for an exposition of the role of withholding taxes in taxing international portfolio income.

[10] In the case of Switzerland, many deposits are held in fiduciary accounts that de jure are inter-bank accounts not subject to withholding taxation, even if the ultimate beneficiaries are individuals.

needs to have independent access to bank information. Access to bank information for tax purposes, either domestic or international, has been far from straightforward, as documented in a comprehensive recent report by the OECD (2000).[11] A first requirement is that the banks themselves maintain the information that is required for tax enforcement and that they do not open anonymous or numbered accounts. As indicated by OECD (2000), the vast majority of OECD tax authorities can obtain bank information to combat domestic tax evasion. Information provision – either domestic or international – can be categorized as spontaneous (on the initiative of the information provider), on request, or automatic. Tax authorities that request specific account information have to follow due procedures – administrative or legal – to make the request. To make specific requests, tax authorities need to already have some specific information on which to base the request. Information provided on request is thus not likely to lead to across-the-board tax enforcement.

This leaves the automatic and periodic provision of bank information as the only viable way to enforce taxation. As seen in OECD (2000, Appendix 1), 15 OECD countries require their banks to generally report 'interest paid and to whom it is paid'.[12] These countries were requested to indicate when they started to require their domestic banks to automatically report interest payments to domestic residents. The answers received are reflected in Table 5. As seen in the table, during the 1980s and early 1990s several countries additionally required domestic interest reporting. By 1999 about two thirds of the countries required automatic domestic information provisioning regarding interest payments.

International automatic information exchange requires some international legal agreement – in addition to domestic regulation. The legal basis can be a bilateral tax treaty, which in many cases is modeled after the OECD Model Convention on Income and Capital[13]. Article 26 of this convention requires contracting States to 'exchange such

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11 The OECD's work to promote exchange of information, as reflected in this report, has been motivated by a drive against money laundering as much as by a desire to counteract tax evasion.

12 Frequently other information, for instance on account balances or on securities held in custody, is exchanged as well.

13 In April 2002, the OECD released a new model for (non-binding) bilateral agreements concerning the effective exchange of information in tax matters, following the work of the Global Forum Working

information as is necessary for carrying out the provisions of this Convention or of the domestic laws of the Contracting States concerning taxes covered by the Convention insofar as the taxation thereunder is not contrary to the Convention'. All OECD members except Luxembourg and Switzerland can obtain bank information for the purpose of exchange of information under tax treaties as set out in the Model Convention.[14] Several multilateral agreements that can serve as a basis for information exchange exist as well. For instance, the European Union has adopted several directives that enable member states to exchange information within the EU on direct and indirect tax matters.[15] The joint OECD/Council of Europe Multilateral Convention on Mutual Administrative Assistance in Tax Matters, which has been ratified by 8 countries (Denmark, Finland, Iceland, the Netherlands, Norway, Poland, Sweden, United States), also permits countries to exchange information on direct and indirect tax matters. Finally, the Nordic Convention on Mutual Administrative Assistance in Tax Matters allows the Nordic countries to exchange bank and other information for all kinds of taxes except import duties. Unlike the other multilateral agreements, the Nordic Convention calls for the automatic exchange of bank information.

In its survey, the OECD found that 11 members (Australia, Canada, Denmark, Finland, France, Japan, New Zealand, Norway, Sweden, United Kingdom, the United States) provided bank information automatically to (some) treaty partners. We requested these countries to provide additional information about their recipient countries and the history of this automatic information exchange. The resulting data about the history of bilateral information exchange are also summarized in Table 5. Several countries (Australia, Finland, and Norway) mentioned their treaty partners as recipients, but more generally countries supply information automatically to a more selective and changing list of countries. The OECD report mentions that Australia, Canada, Denmark, France,

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Group on Effective Exchange of Information (including several OECD members and Aruba, Bermuda, Bahrain, Cayman Islands, Cyprus, the Isle of Man, Malta, Mauritius, the Netherlands Antilles, the Seychelles and San Marino).

[14] Countries that agree to exchange information automatically typically do not write this into their bilateral tax treaty, but instead conclude a separate memorandum of understanding.

[15] In particular, see directives 77/799/EEC, 79/1070/EEC, 92/12/EEC, and the recent proposal COM(2001)294.

Norway and Sweden exchange bank information automatically based in part on reciprocity. As recipient lists of countries vary from year to year and institutional memories are short, it is impossible to construct an accurate history of bilateral automatic information exchange.

On the basis of survey responses, however, one can get a relatively complete picture of automatic information exchange in the BIS-area for 1999 (see Table 6). From the table, we can see to what extent information exchange in practice occurs on the basis of reciprocity. Specifically, in the table there are 288 unidirectional entries for which we also know whether information flows in the other direction. Of these, 67 entries signal the presence of international information exchange. Of these 67 entries, 30 one-way exchanges are reciprocated (i.e. there are 15 pairs of bilateral information exchange). To measure the degree of reciprocity, we constructed 2 dummy variables for our 288 observations flagging whether information was sent and received. The correlation coefficient between these two dummy variables is found to be 0.28 and to be significant at the one percent level. This is evidence of reciprocity of information exchange.

A separate issue is whether information exchange and withholding taxes are complements or substitutes. To investigate this, we note that there are 440 entries for which we know whether there is information exchange as well as the relevant withholding tax rate. Breaking down these 440 entries, we find there are 68 entries with only information exchange, 51 entries with only a withholding tax, 17 entries with both, and finally 304 entries with neither. The 17 entries with joint information exchange and withholding taxation all pertain to Australia (as a bank country). Apart from Australia, information exchange and withholding taxes thus are substitutes rather than complements.

2.4 Other data

The empirical work below combines the bank liability and tax policy variables with various controls at the level of the individual country and of the bilateral relationship between any two countries. National controls are real GDP, the bank interest spread (defined as the ratio of the lending and deposit interest rates), an index of the rule of law, and indices of legal system origin. Controls at the bilateral level are trade flows (in both

directions), the distance between the two countries, and an index of geographical contiguity and of a common language. Variables of this type regularly appear in gravity-type regressions explaining trade or financial flows. Summary statistics of all the data used in this study are provided in Table 7. The data in the table are for 1999 given that this year is common to all estimation below. The tax variables in the table, as in the empirical work, are in the form of tax burdens expressed as percentages of the principal. Variable definitions and data sources are provided in Appendix A.

3 . Empirical results

This section examines the empirical relationship between tax policy and the external liabilities of the banking system. As our main interest is in tax policy at the personal level, we mainly consider non-bank liabilities and deposits. Following Alworth and Andresen (1992), we use BIS data on bilateral external liabilities and deposits. Bilateral data are preferred as this allows us to include tax and other information concerning the bank country, the customer country and their bilateral relationship. The analysis starts from the following estimating equation:

$$I_{ijt} = \alpha + \beta_i X_{it} + \beta_j X_{jt} + \beta_{ij} X_{ijt} + \varepsilon_{ijt}$$

where I_{ijt} is the dependent variable denoting funds held in country *i*'s banks by residents of country *j* (e.g., *non-bank external liabilities* or *non-bank external deposits*); next, X_{it} are bank country variables (e.g., *real GDP*), X_{jt} are customer country variables (e.g., the *wealth tax*), and X_{ijt} are characteristics of the bilateral relationship between the bank and the customer countries (e.g., *distance*). The vector X_{it} only contains non-tax-policy controls, while the vectors X_{jt} and X_{ijt} contain tax policy variables as well as controls. Further, α is a constant, the βs are vectors of coefficients, and ε_{ijt} is an error term. All regressions in addition include time dummies, while some regressions also contain country dummies for bank and customer countries alike.

The variable I_{ijt} reflects an equilibrium value in a country's external liability market. We consider that banks can operate freely in the international interbank deposit market, and can obtain funds inelastically at an exogenously given international interbank

rate. One reason for this is that the banks themselves generally are not subject to interest withholding taxes. Changes in tax policy then affect I_{ijt} through their effect on the risk and after-tax return associated with deposits in different geographical locations as perceived by international depositors.

Table 8 reports regressions of several measures of external non-bank exposures. First, regressions of *non-bank external liabilities* for the period 1983-1999 are reported in columns (1)-(2). The dependent variable in columns (3)-(4) is *non-bank external deposits* for the period 1996-1999, while it is share of non-bank deposits owned by the a country's residents held abroad, or *s*, in columns (5)-(6) again for the period 1996-1999. The dependent variables as well as the control variables *real GDP*, *bank interest spread* and the two trade variables are in logs. Regressions (2), (4), and (6) include unreported bank and customer coutry dummies. Regressions (1), (3) and (5) instead include the *rule of law* and a set of dummy variables denoting the origin of a country's legal system as controls. The *bank interest spread* serves as a measure of banking system efficiency. Systems with low interest spreads are expected to be attractive to bank customers and vice versa. Several estimated coefficients on the *bank interest spread* variable in the table are statistically significant and consistent with this. The legal system variables are included following research by La Porta et al. (1997) showing that the outside equity and debt finance raised by firms depend importantly on the legal system. The included legal system variables in Table 8 denote legal systems of French, German and Scandinavian civil law origins – as opposed to the systems in the English common law tradition. The generally negative coefficients for these variables suggest that countries with non-English legal traditions participate less in international bank depositing. More intense international trade, a smaller distance, geographical contiguity and a common language are expected to contribute to external bank liabilities. The estimated coefficients in the table largely confirm these expectations.

Turning to tax policy, the *income tax x deposit rate* variable is constructed as the customer-country income tax rate times its deposit interest rate (on the assumption that an individual depositing in his home country chooses the home currency). This tax variable obtains positive coefficients and significant coefficients in columns (1) and (2) (be it only at the 90 percent level in column (2)), but fails to be significant in other regressions. The

coefficient of 0.024 in column (2) suggests that a 1 percent increase in the interest tax burden increases external bank liabilities by 2.4 percent. Next, the *wealth tax* variable simply is the wealth tax rate. This variable enters columns (3) a positive and significant coefficient but it is insignificant in the other columns. The final indicator of customer-country tax policy is the *domestic information* variable. This is a dummy variable flagging the existence of automatic interest information provisioning to domestic tax authorities. This variable enters columns (1) and (2) with positive and significant coefficients. The estimated coefficient of 0.248 in column (2) suggests that such domestic information provisioning increases external bank placements by 28 percent. As indicated at the bottom of the table, the estimation in columns (1) and (2) includes 7 episodes where a country adopts a domestic information requirement. During the 1996-1999 period underlying the regressions in columns (3)-(6) no such episode occurred.[16]

Next, we turn to bank-country tax policy. *Withholding tax x deposit rate* is constructed as the non-resident interest withholding tax levied by the bank country times this country's deposit interest rate. This variable thus measures the withholding tax burden the international bank customer faces in the bank country. The withholding tax variable enters most regressions in the table with negative coefficients, but only significantly in columns (1), (3), and (5). This reflects that the inclusion of country dummies suffices to render the coefficient on the withholding tax variable insignificant. This may reflect that most of the variation in the withholding tax rate is across bank country.[17]

A key result in Table 8 is that the interest income tax variable has a significantly positive impact on external liabilities for the 1983-1999 period, but not on external deposits for the 1996-1999 period. Most external liabilities in fact are external deposits, and hence the difference in the results appears to reflect the different time periods. To

[16] This explains why a coefficient for the domestic information variable cannot be estimated in regressions (4) and (6) where full sets of country dummies are included.

[17] The non-resident interest withholding tax presumably affects a saver's choice of foreign bank location as much as the more fundamental choice of whether to bank abroad at all. Hence, estimated coefficients on the withholding tax variable may mostly reflect savers' substitutions among various international banking destinations. Regressions with bilateral data thus cannot tell us directly how aggregate foreign banking would respond if all countries were to raise their withholding taxes (or alternatively were to exchange information).

further investigate this, we estimate a regression based on column (2) in Table 8 including the four policy variables interacted with a time dummy for the 1992-1999 period. The non-interacted income tax policy variable enters with a positive and statistically significant coefficient, while the interacted income tax variable has a negative coefficient that is statistically significant. Together these results suggest that interest income taxes mattered in the earlier period of 1983-1991, while the sensitivity of external deposits to interest income taxes declined from the earlier to the latter period (in fact, the relationship between external deposits and the income tax variable is statistically insignificant in the 1992-1999 period).

This is surprising, as reduced transportation and communication costs have generally increased international capital mobility. One reason why we fail to find a significant relationship between external deposits and interest income taxes from 1992 may be that the interest income tax burden itself has become almost insignificant – due to declines in statutory tax rates as well as deposit interest rates (see Figure 1). These declines probably were motivated by a perceived sensitivity of external liabilities to taxes in the 1980s, but policy makers may have 'overshot' to the point where the tax sensitivity is no longer material. Another possibility is that the relative importance of individual tax evaders, as holders of non-bank external liabilities, has declined. Holders of non-bank deposits that would presumably not respond to personal income tax changes are corporations, governments, various non-bank tax-exempt financial institutions (such as mutual funds and insurance companies) and individuals interested in keeping funds abroad for a variety of non-tax reasons.

Deposit owners in practice may need considerable time to adjust the geographical location of their deposits to policy changes. To see whether lagged responses are significant, we report a regression including lagged values for the four policy variables in column (2) of Table 9. These lagged policy variables fail to be statistically significant. Substituting the lagged values for the contemporaneous ones – as in column 3 – also produces lagged policy variables that are statistically insignificant. Hence, there is no evidence that depositor response to policy changes is stretched out over more than a year.

The income, wealth and non-resident withholding taxes considered in this paper apply to the interest receipts of individuals. Thus we naturally have considered how tax

policy changes affect non-bank external liabilities. The question arises, however, whether banks adjust their other external lending and borrowing following, say, an increased inflow of non-bank external liabilities. The two main options are that banks hold more funds on deposit with international banks or, alternatively, obtain fewer funds on deposit from international banks. The latter possibility suggests that external bank and non-bank deposits can be substitutes. To test this, we estimate a regression based on column (2) of Table 8 with external bank liabilities as the dependent variable. This leads to a coefficient on the wealth tax variable that is negative and statistically significant, as seen in column (1) of Table 10. This is in line with the substitution hypothesis, as a higher wealth tax that encourages external non-bank deposits should discourage external bank deposits. Along similar lines, the ratio of non-bank to bank liabilities is expected to increase with those tax policy variables that encourage non-bank external depositing per se. A regression of this ratio, reported in column (2) of the table, yields positive and significant coefficients for all three customer country variables, i.e. the interest income tax variable, the wealth tax variable, and the domestic information variable.

As discussed before, we have been able to collect information on the extent of bilateral international information exchange only for 1999. To test whether this information exchange affects external liability flows, we estimate several regressions with data only for 1999 as reported in Table 11. The first two columns in the table are for non-bank liabilities, while the remaining two are for non-bank deposits. The inclusion of full sets of bank and customer country dummies implies that only the bilateral policy variables (the withholding tax variable and the international information variable) and a set of bilateral controls can be included. As bilateral trade data tends to be available with a considerable lag, we find that including the two international trade variables leads to rather limited samples with 1999 data (as seen in columns (1) and (3)). Therefore, we also report regressions without these trade variables in columns (2) and (4). The two policy variables fail to be statistically significant in any of the regressions reported in Table 11.

The withholding tax variable may by insignificant, as most countries have adopted zero withholding taxes by 1999. The international information variable further may not prove to be significant if the exchange of information, as currently organized,

fails to bring about an effective tax enforcement. At the same time, international information cannot have a noticeable effect, if savers by 1999 do not recognize that tax authorities sometimes 'automatically' swap information about particular international interest payments. Further, international information exchange was far from comprehensive in 1999 so that savers continued to have access to 'trusted' foreign banking systems with strong reputations for bank secrecy. Continued access to this type of foreign banking could make information exchange by any subset of countries ineffectual.

4. Conclusion

This paper has investigated the impact of tax policy on international depositing. The empirical results indicate that non-bank external liabilities have been positively related to interest income taxes and to the presence of domestic bank interest reporting. This is evidence that international deposits are in part intended to facilitate tax evasion. The sensitivity of international deposits to interest income taxes appears to have declined after the 1980s. This may reflect that the interest income tax burden itself has been reduced considerably over the last 2 decades. The financial wealth tax and the non-resident interest withholding tax burden have similarly been diminished substantially.

As interest withholding taxes have been reduced or eliminated, the international exchange of information becomes potentially more important to ensure a reasonable taxation of international interest flows. A simple count of bilateral international relationships reveals that by 1999 the automatic exchange of information is already as prominent as withholding taxes. However, we fail to find a significant impact of international information exchange on international depositing patterns. This justifies doubts about the effectiveness of international information exchange at present. For the instrument to become more effective, the quality of the information exchanged may need to be improved, for instance through the adoption of a common protocol regarding tax identification numbers. Also, the international exchange of information has to cover most industrialized countries and other financial centers to be truly effective. All this implies that international cooperation in this area is necessary to shore up the taxation of international interest flows.

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Appendix A. Variable definitions and data sources.

External bank liability and deposit data

Data on external liabilities and deposits are for all currencies. In the regressions, non-bank external liabilities and non-bank external deposits are in real ecus or euros and in logs. Other dependent variables in Tables 8 and 10 are in logs as well. Total deposits in the banking system in Table 2 are the sum of demand and other deposits (lines 24 and 25 of the *International financial statistics* of the IMF).

Taxation and bank information variables

- *Income tax x deposit rate* = income tax rate (between 0 and 100) times the deposit interest rate (between 0 and 1) in the bank customer country. The income tax is the final tax paid by residents (either the final withholding tax or the top marginal rate of the personal income tax).
- *Wealth tax* = wealth tax is the wealth tax applicable to financial assets (between 0 and 100)
- *Withholding tax x deposit rate* = non-resident interest withholding tax on interest (between 0 and 100) times the deposit interest rate (between 0 and 1) in the bank country
- *Domestic information* = dummy signaling automatic reporting by banks of interest payments to domestic residents
- *International information* = dummy signaling the international exchange of information on bank interest payments

The taxation variables are from various issues of *International tax summaries* (Coopers & Lybrand), *International corporate income taxes, a worldwide summary* (PriceWaterhouseCoopers), and the *European tax handbook* (International Bureau for Fiscal Documentation). Information on whether there recently has been domestic interest reporting by banks and any automatic exchange of information on international bank interest payments is taken from OECD (2000). Information on when automatic domestic reporting by banks started and to what countries and since when bank interest information is provided automatically (in Table 5) has been obtained from national authorities. The deposit interest rate is line 60l of the *International financial statistics* of the IMF.

Other variables

- *Real GDP* = log of GDP in real ecus or euros
- *Bank interest spread* = ratio of bank lending and deposit interest rates (in logs in regressions)
- *Rule of law* = assessment of law and order in a country. Average of the months of April and October of the monthly index between 1982 and 1995. On a scale from 0 to 10 with lower scores for less law and order. The variable is an assessment of the strength and impartiality of the legal system and of popular observance of the law (see La Porta et al., 1997)

- *French law* = dummy identifying French legal origin
- *German law* = dummy identifying German legal origin
- *Scandinavian law* = dummy identifying Scandinavian legal origin
- *Bank country exports* = exports from bank country to customer country in real ecus or euros (in logs in regressions)
- *Customer country exports* = exports from customer country to bank country in real ecus or euros (in logs in regressions)
- *Distance* = distance in kilometers from capital to capital (in logs in regressions)
- *Contiguity* = dummy identifying a common border.
- *Common language* = dummy identifying if a pair of countries has at least one common language.

Data on GDPs and trade are from Eurostat and the IMF. The lending interest rates if from line 60p of the *International financial statistics* of the IMF. Information on rule of law and legal origin is from La Porta et al. (1997). Data on distance, contiguity, and common language are from WorldAtlas.com (2000) and Phensel (2000).

Table 1. External liabilities and deposits of banks in the BIS-area in 1999

	External liabilities		External deposits	
	€ bn	% non-bank	€ bn	% non-bank
Australia	146	8	47	26
Austria	80	12	65	15
Bahamas	225	33	224	33
Bahrain	82	31	82	31
Belgium	272	31	261	28
Canada	100	32	95	34
Cayman Islands	604	42	597	43
Denmark	56	15	46	18
Finland	22	20	12	35
France	611	9	472	12
Germany	819	32	719	37
Hong Kong	349	23	348	23
Ireland	129	19	126	19
Italy	233	7	232	7
Japan	509	6	502	6
Luxembourg	371	37	319	37
Netherlands	288	18	240	22
Norway	25	9	15	12
Portugal	65	17	55	13
Singapore	393	29	361	32
Spain	184	39	177	40
Sweden	72	13	53	10
Switzerland	560	48	560	48
United Kingdom	1,778	21	1,626	21
United States	1,035	9	1,035	13
Other	24	30	24	30
Total	9,031	24	8,292	25

Source: BIS (2000), Tables 2A, 2B, 3A, and 3B and own calculations

Table 2. Summary statistics on external deposits in 1998

Country	Exports of deposits (€ bn)	Imports of deposits (€ bn)	Exports of non-bank deposits (€ bn)	Imports of non-bank deposits (€ bn)	Total non-bank deposits in banking system (€ bn)	Non-bank deposits owned by residents held at home or abroad (€ bn)	Share of non-bank deposits owned by residents held abroad (%)	Expansion ratio of non-bank deposits in banking system due to net imports of non-bank deposits (%)
Australia	16	18	6	3	203	207	3	-2
Austria	37	43	6	6				
Bahamas	124	147	12	15				
Belgium	154	185	13	30				
Canada	45	75	14	15	317	316	4	0
Denmark	33	36	3	5	86	84	3	3
Finland	17	9	1	1	53	53	2	-1
France	288	326	41	34				
Germany	337	494	87	97	1,267	1,257	7	1
Ireland	58	91	19	19	57	57	33	0
Italy	155	173	41	17	457	481	9	-5
Japan	348	364	36	14				
Netherlands	254	202						
Norway	6	10	2	1	72	73	3	-1
Portugal	29	30	5	5	87	87	6	0
Spain	112	108	46	18	317	346	13	-8
Sweden	31	57	4	12				
Switzerland	459	261	42	93	325	273	15	19
United Kingdom	1,035	1,024	86	237				
United States	656	541	228	31	2,291	2,488	9	-8

For data sources see Appendix A. Note that exports and imports are calculated using only data from those countries for which imports are available.

Table 3. Summary statistics on external liabilities in 1998

Country	Exports of liabilities (€ bn)	Imports of liabilities (€ bn)	Exports of non-bank liabilities (€ bn)	Imports of non-bank liabilities (€ bn)
Australia	22	74	7	3
Austria	38	45	6	6
Bahamas	129	157	10	59
Bahrain	25	35	2	3
Belgium	157	200	13	41
Canada	48	81	15	18
Denmark	38	37	3	5
Finland	17	9	1	1
France	313	348	41	35
Germany	352	512	89	97
Hong Kong	258	294	23	14
Ireland	59	92	19	19
Italy	158	177	41	17
Japan	653	545	40	15
Netherlands	268	209		
Norway	7	10	2	1
Portugal	29	40	5	8
Singapore	216	251		
Spain	113	109	47	18
Sweden	32	58	5	12
Switzerland	463	277	42	98
United Kingdom	1,129	1,098	97	243
United States	709	572	234	34

For data sources see Appendix A. Note that exports and imports are calculated using only data from those countries for which imports are available.

Table 4. Wealth tax, interest income tax, and non-resident withholding tax for bank deposits in 1999.

Country	Income tax[18]	Wealth tax	Withholding tax for non-residents
Australia	47	0	10
Austria	25	0	0
Bahamas	0	0	0
Bahrain	0	0	0
Belgium	15	0	0
Canada[19]	48.75	0	0
Cayman Islands	0	0	0
Denmark[20]	61.7	0	0
Finland[21]	28	0.9	0
France [22]	25	1.8	0
Germany[23]	56.975	0	0
Hong Kong	0	0	0
Ireland	24	0	0
Italy	27	0	0
Japan[24]	20	0	10/15
Luxembourg	47.15	0.5	0
Netherlands	60	0.7	0
Netherlands Antilles	60	0	0
Norway[25]	28	1.1	0
Portugal	20	0	10/12/15/20
Singapore	28	0	0
Spain[26]	48	2.5	0
Sweden	30	1.5	0
Switzerland[27]	41.4	0.713	0/5/10/12.5/35
United Kingdom	40	0	0
United States[28]	39.6	0	0

For data sources see Appendix A

18 Final withholding tax or top marginal tax rate.

19 Ontario.

20 Copenhagen. Sum of basic rate, surcharges, and local and church taxes.

21 Helsinki.

22 Including social surcharge and generalized social tax.

23 Including solidarity surcharge.

24 Tokyo. Including local taxes.

25 Sum of 0.4 percent national tax plus 0.7 percent local tax.

26 Including regional tax.

27 Bern, including cantonal and municipal wealth tax.

28 Federal tax only.

Table 5. Domestic and international reporting of bank interest payments

	Automatic reporting by banks on interest payments to domestic residents		International automatic exchange of information on bank interest payments	
Country	**Yes or no**	**If yes, since**	**To**	**Since**
Australia	Yes	88	Treaty partners	About 95
Austria	No		None	
Belgium	No		None	
Canada	Yes		U.S at least	
Denmark[29]	Yes	77	Differing countries	1993
Finland[30]	Yes	Over 20 years	Treaty partners (except Russia)	Over 20 years
France[31]	Yes	84		94
Germany	No		None	
Greece	No		None	
Ireland	Yes	92	None	
Italy	No		None	
Japan	Yes		Some countries	
Luxembourg	No		None	
Netherlands	Yes	87	None	
Norway	Yes	86	Treaty partners	More than 10 years
Portugal	No		None	
Spain	Yes	85	None	
Sweden	Yes	86	Canada, Denmark, Finland, Iceland, Norway, US. Australia, Estonia, France, Italy, Japan, Lithuania, Spain, UK.	91 97
Switzerland	No		None	
United Kingdom	Yes	52	Some countries	
United States	Yes		Canada	1997

For data sources see Appendix A

[29] In 1998 and 1999, Denmark provided info to Australia, Canada, Czech Republic, Faeroe Islands, Finland, France, Greenland, Hungary, Japan, Korea, New Zealand, Norway, Spain, Sweden, UK, US.

[30] Main recipients have been Belgium, Denmark, Finland, France, Germany, Iceland, Japan, New Zealand, Poland, Sweden, UK, US.

[31] In 1999, France provided information to Australia, Austria, Belgium, Canada, Denmark, Finland, Germany, Iceland, Italy, Japan, Korea, Netherlands, New Caledonia, New Zealand, Norway, Portugal, Spain, Sweden, UK, US.

Table 6. International automatic exchange of information on bank interest in 1999

Receiving Country \ Providing Country	Australia	Austria	Bahamas	Bahrain	Belgium	Canada	Cayman Isl.	Denmark	Finland	France	Germany	Greece	Hong Kong	Ireland	Italy	Japan	Luxembourg	Netherlands	Netherl. Ant.	Norway	Portugal	Spain	Sweden	Switzerland	U. Kingdom	United States
Australia	X	1	0	0	1	1	0	1	1	1	1	0	0	1	1	1	0	1	0	1	0	1	1	1	1	1
Austria	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Belgium	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Canada						X																				1
Denmark	1	0	0	0	0	1	0	X	1	1	0	0	0	0	0	1	0	0	0	1	0	1	1	0	1	1
Finland	1	1	0	0	1	1	0	1	X	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1
France	1	1	0	0	1	1	0	1	1	X	1	0	0	0	1	1	0	1	0	1	1	1	1	0	1	1
Germany	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greece	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0	0
Italy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0	0	0
Luxembourg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0	0
Netherlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0	0	0	0
Norway			0	0	1		0	1	1	1	1		0			1			0	X			1		1	1
Portugal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0	0
Spain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0	0	0
Sweden	1	0	0	0	0	1	0	1	1	1	0	0	0	0	1	1	0	0	0	1	0	1	X	0	1	1
Switzerland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X	0	0
United States	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	X

For data sources see Appendix A.

Table 7. Summary statistics for 1999.

Variable	#obs	Unit	Mean	Std. deviation	Minimum	Maximum
Country variables						
GDP	23	€ Bn	975.862	1873.174	6.212	8638.711
Bank interest spread	22		4.628	7.326	1.261	33.433[32]
Rule of law	20		9.228	1.066	6.180	10
French law	22		0.318	0.477	0	1
German law	22		0.182	0.395	0	1
Scandinavian law	22		0.182	0.395	0	1
Income tax x deposit rate*	23		0.938	0.874	0	3.166
Wealth tax	26		0.374	0.675	0	2.500
Domestic information	20		0.650	0.489	0	1
Bilateral variables						
Bank country exports	286	€ Bn	5.055	15.479	0.000	192.366
Customer country exports	286	€ Bn	4.275	11.216	0.000	135.511
Distance	702	Km	5942	4760	174	18,389
Contiguity	702		0.071	0.257	0	1
Language	702		0.185	0.389	0	1
Withholding tax x deposit rate*	575		0.040	0.115	0	0.480
International information	440		0.193	.0395	0	1
Non-bank liabilities	520	€ Bn	2.235	7.769	0.000	90.567
Bank liabilities	520	€ Bn	8.669	23.155	0.000	182.108
Non-bank deposits	468	€ Bn	2.289	8.048	0.000	89.833
Bank deposits	468	€ Bn	8.860	23.196	0.000	182.108

* as percentage of principal. For data sources, see Appendix A

[32] Ireland's deposit rate was 0.10 percent and its loan rate was 3.34 percent in 1999.

Table 8. Determinants of external non-bank liabilities and deposits

	Non-bank liabilities		Non-bank deposits		Non-bank deposits divided by ownership	
	(1)	(2)	(3)	(4)	(5)	(6)
Bank country						
Real GDP	.082	.852*	-.122**	2.683	.191	3.152
	(.056)	(.431)	(.019)	(1.952)	(.143)	(2.299)
Bank interest spread	-.386**	.085	-.528**	-.267	-.304*	-.147
	(.063)	(.065)	(.100)	(.240)	(.138)	(.335)
Rule of law	.667**		.021		.134	
	(.067)		(.104)		(.141)	
French law	-.249*		-.776**		-.927**	
	(.116)		(.160)		(.216)	
German law	-.146		.193		-.272	
	(.128)		(.186)		(.266)	
Scandinavian law	-2.719**		-2.309**		-2.729**	
	(.138)		(.193)		(.249)	
Customer country						
Real GDP	.184**	.890	.081	.056	-.629**	1.141
	(.058)	(.492)	(.104)	(1.861)	(.193)	(3.209)
Bank interest spread	-.094	.250**	.039	-.292	-.386	-.212
	(.070)	(.073)	(.152)	(.272)	(.428)	(.774)
Rule of law	.139**		.085		-.311	
	(.045)		(.105)		(.247)	
French law	-.988**		-1.233**		-2.172**	
	(.097)		(.203)		(.389)	
German law	-.184		-.573		-1.483	
	(.142)		(.324)		(.959)	
Scandinavian law	-2.285**		-2.469**		-2.526**	
	(.116)		(.210)		(.305)	
Income tax x deposit rate	.056**	.024	.018	-.074	.006	-.125
	(.017)	(.014)	(.098)	(.141)	(.172)	(.214)
Wealth tax	.064	.065	.212*	.164	.175	.124
	(.047)	(.068)	(.105)	(.324)	(.285)	(.366)
Domestic information	.367**	.248*	.190		-.041	
	(.091)	(.124)	(.215)		(.580)	
Relationship						
Bank country exports	.349**	.253**	.540**	.443**	.065	.500
	(.057)	(.056)	(.101)	(.100)	(.144)	(.399)
Customer country exports	.239**	.388**	.246*	.439**	.420**	.395**
	(.058)	(.047)	(.106)	(.085)	(.147)	(.116)
Distance	-.838**	-.234**	-.741**	-.140	-1.396**	-.427*
	(.060)	(.079)	(.103)	(.131)	(.166)	(.207)
Contiguity	.000	.391**	-.119	.249	-.401	-.197
	(.094)	(.086)	(.166)	(.154)	(.223)	(.215)
Common language	.442**	.529**	.219	.058	.336	.049
	(.109)	(.078)	(.182)	(.130)	(.229)	(.155)
Withholding tax x deposit rate	-.781**	.022	-1.414**	-.486	-1.226**	-.401
	(.112)	(.106)	(.249)	(.368)	(.331)	(.581)
Adj. R^2	.72	.84	.70	.83	.70	.83
No. of obs	2375	2375	757	757	410	410
No. changes in domestic information	7	7	0	0	0	0

Data on liabilities are for 1983-1999, while data on deposits is for 1996-1999. All regressions include unreported time dummies. Columns (2), (4) and (6) include bank and customer country dummies. The sample underlying columns (5) and (6) only includes data for those 18 countries for which we can compute both non-bank deposit exports and imports during the 1996-1999 period. Detailed variable definitions and data sources are given in Appendix A. Heteroskedasticity consistent errors are given in parentheses. * and ** indicate significance levels of 5 and 1 percent, respectively.

Table 9. Determinants of external non-bank liabilities for different time periods

	(1)	(2)	(3)
Bank country non-policy variables			
Real GDP	.880*	1.126*	1.168**
	(.429)	(.440)	(.439)
Bank interest spread	.087	.082	.074
	(.065)	(.070)	(.070)
Customer country non-policy variables			
Real GDP	1.243*	.603	.879
	(.532)	(.547)	(.533)
Bank interest spread	.188*	.252**	.554**
	(.014)	(.079)	(.078)
Relationship non-policy variables			
Bank country exports	.247**	.246**	.257**
	(.056)	(.060)	(.060)
Customer country exports	.386**	.405**	.398**
	(.047)	(.050)	(.050)
Distance	-.242**	-.249**	-.238**
	(.079)	(.083)	(.084)
Contiguity	.393**	.367**	.370**
	(.085)	(.090)	(.090)
Common language	.533**	.508**	.518**
	(.078)	(.083)	(.083)
Policy variables			
Income tax x deposit rate	.035*	.047	
	(.014)	(.027)	
Wealth tax	.035	-.007	
	(.069)	(.116)	
Domestic information	.250*	.392*	
	(.126)	(.176)	
Withholding tax x deposit rate	-.029	.001	
	(.111)	(.195)	
Income tax x deposit rate, 1992-1999	-.101*		
	(.046)		
Wealth tax, 1992-1999	.069		
	(.058)		
Domestic information, 1992-1999	-.125		
	(.110)		
Withholding tax x deposit rate, 1992-1999	.148		
	(.131)		
Income tax x deposit rate$_{-1}$		-.026	.013
		(.024)	(.013)
Wealth tax$_{-1}$		.108	.091
		(.115)	(.071)
Domestic information$_{-1}$		-.089	.130
		(.151)	(.128)
Withholding tax x deposit rate$_{-1}$		.118	.108
		(.180)	(.112)
Adj. R^2	.84	.84	.84
No. of obs	2375	2213	2216
No. changes in domestic information	7	6	6

Data on liabilities are for 1983-1999. All regressions include unreported time and bank and customer country dummies. Detailed variable definitions and data sources are given in Appendix A. Heteroskedasticity consistent errors are given in parentheses. * and ** indicate significance levels of 5 and 1 percent respectively.

Table 10. Determinants of external bank liabilities

	Bank liabilities	Ratio of non-bank to bank liabilities
	(1)	(2)
Bank country		
Real GDP	3.191**	-2.277**
	(.360)	(.471)
Bank interest spread	.249**	-.155*
	(.063)	(.072)
Customer country		
Real GDP	1.999**	-1.217*
	(.466)	(.562)
Bank interest spread	.272**	-.007
	(.063)	(.081)
Income tax x and deposit rate	-.028	.052**
	(.015)	(.016)
Wealth tax	-.207**	.279**
	(.057)	(.074)
Domestic information	-.118	.264*
	(.108)	(.126)
Relationship		
Bank country exports	.603**	-.334**
	(.049)	(.059)
Customer country exports	.363**	.024
	(.050)	(.054)
Distance	-.036	-.198*
	(.070)	(.088)
Contiguity	-.280**	.668**
	(.076)	(.095)
Common language	.306**	.184
	(.080)	(.095)
Withholding tax x deposit rate	.032	-.016
	(.095)	(.120)
Adj. R^2	.87	.61
No. of obs	2465	2371
No. changes in domestic information	7	7

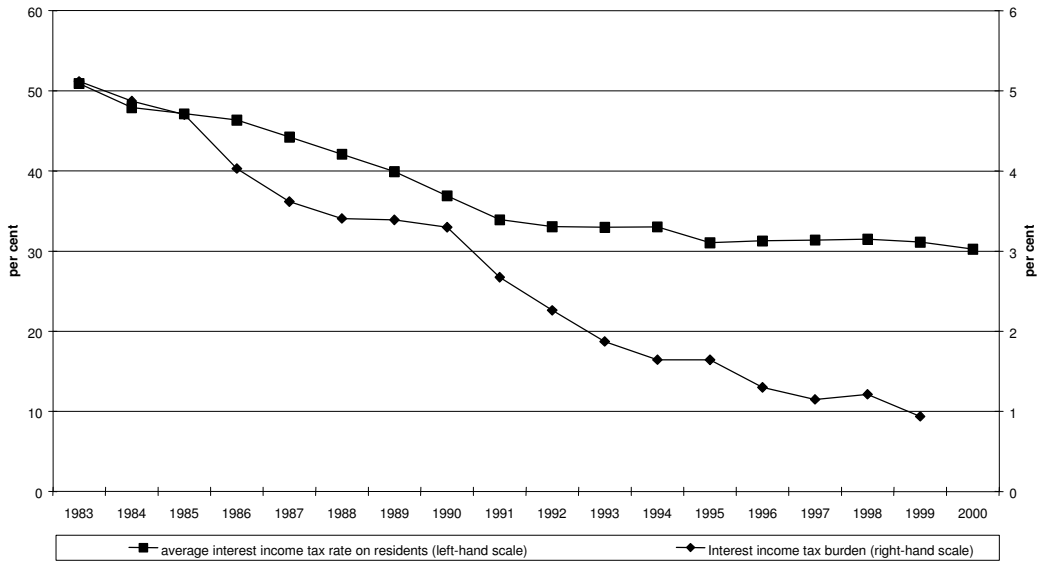
Data on liabilities is for 1983-1999. All regressions include unreported time dummies and bank and customer country dummies. Detailed variable definitions and data sources are given in Appendix A. Heteroskedasticity consistent errors are given in parentheses. * and ** indicate significance levels of 5 and 1 percent, respectively.

Table 11. Determinants of non-bank liabilities and deposits in 1999

	Non-bank liabilities		Non-bank deposits	
	(1)	(2)	(3)	(4)
Exports	.298		.283	
	(.220)		(.697)	
Imports	.429		.468*	
	(.222)		(.221)	
Distance	-.738	-1.437**	-.718	-1.441**
	(.422)	(.269)	(.429)	(.268)
Contiguity	.223	.441	.221	.433
	(.372)	(.316)	(.375)	(.315)
Common language	-.250	-.433	-.251	-.442
	(.277)	(.308)	(.273)	(.301)
Withholding tax x deposit rate	6.384*	2.227	6.076	1.914
	(3.126)	(3.008)	(3.133)	(3.138)
International information	.304	.036	.336	.007
	(.380)	(.351)	(.379)	(.345)
Adj. R^2	.78	.74	.78	.73
No. of obs.	112	203	112	203

All regressions include unreported time dummies as well as unreported bank and customer country dummies. Detailed variable definitions and data sources are given in Appendix A. Heteroskedasticity consistent errors are given in parentheses. * and ** indicate significance levels of 5 and 1 percent, respectively.

Figure 1. Average interest income tax on interests payments from domestic deposits to resident individuals

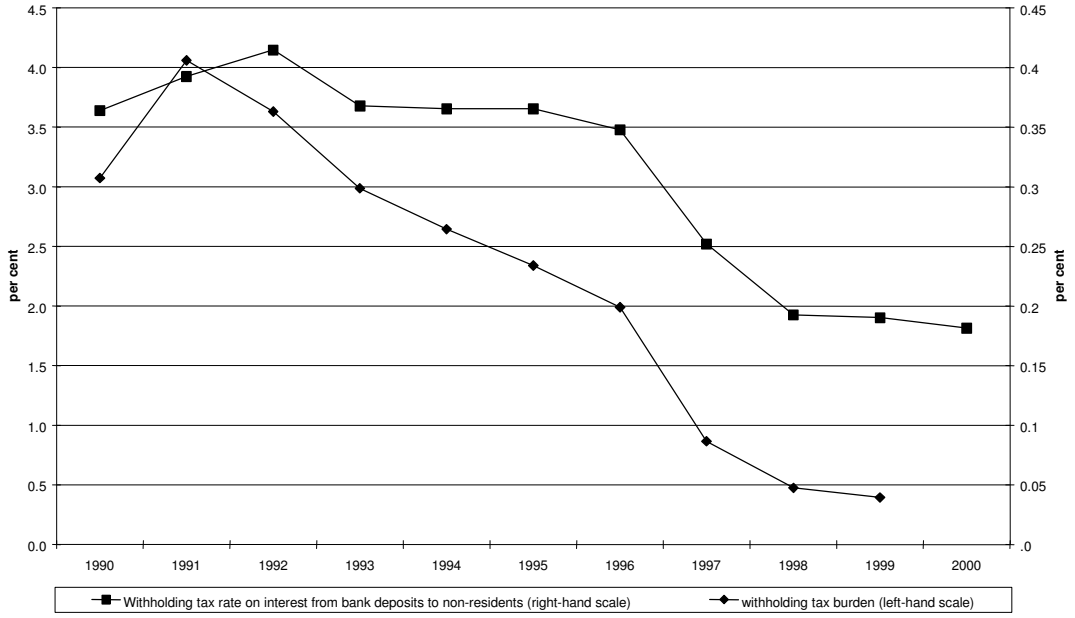


Note. Non-weighted average for countries listed in Table 6. For data sources see Appendix A

Figure 2. Average wealth tax on financial wealth

Note. Non-weighted average for countries listed in Table 6. For data sources see Appendix A

Figure 3. Average withholding tax on interest from bank deposits to non-residents



Note. Non-weighted average for countries listed in Table 6. The increase in the early 90's is due to the introduction of a withholding tax in Greece and the extension of the Austrian withholding tax to a larger set of countries. The sharp decrease in 1997 and 1998 is mainly due to changes in the Greek and the Italian withholding tax rates. For data sources see Appendix A.