Using bank deposit data to assess the impact of exchange of information

Summary

This note presents a summary of ongoing work to assess the impact of increasing tax transparency and exchange of information (EOI) on cross-border financial activity using international investment data. Since 2009, there has been a dramatic increase in tax transparency around the world, stemming from the implementation of new standards of exchange of information on request (EOIR) and automatic exchange of information (AEOI). Examining cross-border financial activity in light of these initiatives can help assess whether, and to what extent, these standards have strengthened tax compliance.

It focuses on one aspect of international financial activity: cross-border bank deposits, using datasets from the Bank for International Settlements (BIS). These datasets provide bilateral data on bank assets and liabilities for 38 jurisdictions from 2000 to 2018. It evaluates the changes in these deposits in response to increasing tax transparency and EOI. The analysis focuses on bank deposits of the non-bank sector (which includes non-bank financial institutions, households, and corporations).

The preliminary results reported in this note summarise more detailed OECD analysis, which will be presented in a forthcoming paper. The research includes a regression analysis of the impact of EOIR on bank deposits, following the approach of Johannesen and Zucman (2014), but with a longer time series including many recent changes in the EOI environment, and an expanded number of jurisdictions. In addition, the paper accounts for a broader set of EOI relationships than the existing literature. This includes EOIR relationships established through the Multilateral Convention on Mutual Administrative Assistance in Tax Matters (the MAC), and the Standard for Automatic Exchange of Financial Account Information (AEOI). These represent material changes in the global tax transparency and EOI landscape since the Johannesen and Zucman (2014) study was carried out.

As a result of the analysis carried out, the following preliminary observations can be made:

- Bank deposits in International Financial Centres (IFCs) held by non-bank counterparties increased substantially over the period from 2000 to 2008, reaching a peak of USD 1.6 trillion in the second quarter of 2008.
- Since 2008, these deposits have fallen substantially, by USD 551 billion or 34% by the first quarter of 2018 for the sample of IFCs currently available. A large part of this reduction came in the immediate aftermath of the financial crisis – deposits fell by 22% over the first year of the crisis, from second quarter of 2008 to the first quarter of 2009. The decrease has continued in recent

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1 Details of the definition of bank deposits used in the study are discussed further in the forthcoming paper.
2 O'Reilly, Parra-Ramirez and Stemmer (forthcoming).
3 The definition of IFCs is based on a modified version of a list compiled in IMF (2000) as discussed below.
years (by a further 12% from the 2008 peak). Disaggregated data between households and corporates, while available for a smaller number of countries, provide early supporting evidence that the main impact of EOI has been on individuals, who are now holding fewer deposits offshore.

- The extent to which this decline can be attributed to decreased tax evasion in response to tax transparency and EOI, reduced base erosion and profit shifting (BEPS) activity, or other (potentially non-tax) factors such as changes in financial regulation, cannot be established with precision. In addition, the study focuses only on one kind of financial asset. Nonetheless, the analysis of the changes in financial flows with the signature of EOI agreements suggests that tax transparency and EOI play a material role in these changes.

- Signature of an agreement that enables EOIR between an IFC and a non-IFC is associated with a reduction in bank deposits in the IFC with respect to the non-IFC counterparty of between 11% and 12%, depending on the specific model used in the regression analysis. This is consistent with earlier findings in the literature, including Johannesen and Zucman (2014[1]).

- Commencement of AEOI, which is defined as jurisdictions’ intended date of first exchanges with each other under the Common Reporting Standard (CRS) or a Foreign Account Tax Compliance Act (FATCA) Intergovernmental Agreement (IGA), is associated with a further reduction in bank deposits of between 20% and 25%, over and above the reduction associated with EOIR.
1. Introduction

1. In 2009, in response to widespread international concern about tax evasion, the G20 declared that ‘the era of bank secrecy is over’. Since then there has been a dramatic expansion in tax transparency worldwide, resulting in ever-increasing commitments from jurisdictions to join exchange of information (EOI) initiatives. To date, over 150 jurisdictions have committed to implement the standard of exchange of information on request (EOIR) and 128 jurisdictions now participate in the Multilateral Convention on Mutual Administrative Assistance on Tax Matters (the MAC), providing the international legal basis for all types of exchanges. More than 100 jurisdictions have committed to exchanging information related to offshore accounts automatically and over 90 have already commenced exchanges.

2. This increasing global commitment of countries to rising tax transparency and countering tax evasion has resulted in significant interest among stakeholders in gaining an improved understanding of the impact of EOI. This note provides a summary of analysis carried out by the OECD and the Global Forum on Transparency and Information Exchange for Tax Purposes (Global Forum) on the impact of EOI. The preliminary results presented in this note will be included in a more detailed paper, expected to be published in the second half of 2019.

3. The impact of EOI has been in evidence in a variety of ways. Since the widespread adoption of EOI, an estimated 500,000 individuals have disclosed offshore assets and around EUR 95 billion in additional tax revenue has been identified as a result of voluntary compliance mechanisms and offshore investigations. The fact that these sums were in large part disclosed through voluntary disclosure programs set up in advance of the implementation of automatic exchange of information (AEOI) in 2017 points to early evidence of taxpayer behavioural responses to AEOI.

4. There is an expanding academic literature that has focused on the impact of EOI on cross-border financial activity. Within this literature, there is an emerging consensus that EOI has resulted in a significant decline in activity in international financial centres (IFCs). An early paper by Johannesen and Zucman (2014) assessed the impact of EOI by examining the impact of signature of an EOIR agreement on bank deposits in IFCs, based on the idea that hidden wealth in these centres would be likely to decline in response to increased tax transparency. The 2014 paper demonstrated that while EOIR did have an impact on bank deposits, the incomplete nature of the EOI network limited this impact.

5. More recent papers, including Menkhoff and Miethe (2017), Casi, Spengel and Stage (2018), and Beer, Coelho and Leduc (forthcoming), have examined the impact of an expanded EOI network, as well as the impact of AEOI. These papers have all found that EOI is associated with reductions in bank activity in IFCs. Other papers, notably, Heckemeyer and Hemmerich (2018) and Kemme, Parikh and Steigner (2017), have extended this analysis to portfolio holdings coming from IFCs in OECD securities markets, and have also found that the expansion of AEOI across the world is associated with reduced financial activity in IFCs.

6. This policy brief presents the findings of research undertaken by O’Reilly, Parra-Ramirez and Stemmer (forthcoming, henceforth referred to as the forthcoming paper), and provides further evidence on the positive impact of EOI.

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2. A timeline of the expansion of global tax transparency

7. The expansion of EOI has marked a step change in the tax transparency architecture. Figure 1 shows the expansion of EOI of various forms over the course of the last ten years. There is a steady increase in the global number of bilateral EOIR relationships from 2009 to 2018 (the blue dashed line). However, more striking than the increase in total EOIR relationships is the extent to which this increase is driven by MAC signature. The number of global MAC-based EOIR relationships expands substantially after 2010. The chart also shows the dramatic expansion in AEOI – first following the commitment of G20 countries to exchange information automatically in September 2014, with increasing commitments over the course of 2014 and 2015.

Figure 1. Number of Bilateral EOI Relationships Agreements

Note: Data on bilateral EOIR agreements post-2017 are preliminary and subject to revision. “EOIR agreement signed” refers to the signature of any agreement that establishes an EOIR relationship, including Tax Information Exchange Agreements (TIEAs), Double Tax Conventions (DTCs), and the MAC itself. To avoid double-counting, agreements that establish an EOIR relationship where one was already in place are not included (e.g. instances where two countries sign a DTC that provides for EOIR where a TIEA already provided for EOIR between the two countries). Data on AEOI exchanges commenced include both AEOI under both the CRS or a FATCA IGA.

Source: Data on information exchange agreements provided by the Global Forum.

8. Consideration of the impact of the MAC is particularly important, as most of the expansion of EOI has taken place under its auspices. It does not appear as though any of the major studies in the literature on the impact of EOI have accounted for the relationships generated by signature of the MAC in the analysis. Zucman and Johannesen (2014[1]) write that ‘comprehensive multilateral agreement would prevent tax evaders from transferring their funds from haven to haven.’ The MAC performs exactly this function.
3. Methodology and data

**Data on cross-border bank deposits**

9. This analysis considers one data source for the purposes of examining the impact of tax transparency and EOI: data on bank deposits from the BIS Locational Banking Statistics (BIS LBS). Bank deposits are a key component of cross-border investment activity. These data have been used extensively to study the impact of EOI. These restricted data do not only allow for an extension of cross-country and time-series coverage span but also facilitate separation of bank deposits of non-banks into bank deposits held by non-bank financial institutions and bank deposits held by non-financial sectors. The latter breakdown differentiates between bank deposits from households, non-financial corporations and general government. The new dataset, which complements the already publicly available data, covers 11 countries with series available from the fourth quarter of 2013 to the second quarter of 2018.

10. The BIS LBS offer several advantages over other sources: bank deposit data are among the best-quality data on cross-border financial activity available and information on bank deposits held abroad is specifically provided for under EOI agreements. Under the assumption that EOI affects cross-border deposits, the BIS LBS are a highly relevant data source for informing an assessment of the effectiveness of EOI initiatives.

11. This analysis, like others in the literature, focuses on bank deposits towards non-bank actors and, in particular, bank deposits in IFCs held by non-bank residents of non-IFCs. Focusing on non-bank deposits involves excluding liabilities of banks with respect to other banks, as banks’ lending to each other on the inter-bank market is unlikely to be impacted substantially by EOI expansion.

**Data on International Financial Centres**

12. In order to assess the impact of EOI, it is necessary to use a set of jurisdictions that have historically been associated with offshore activity. The definition of what constitutes an IFC is a controversial subject. In the academic literature, a wide variety of lists have been used, based on a wide range of criteria. These criteria are often subjective. From the perspective of assessment of EOI on bank deposits, the ideal focus would be those jurisdictions that have specialised in international banking. This constitutes an important caveat, as different IFCs may have different features. For example, some IFCs may specialise in insurance activity, some as centres for fund activity, and some in banking activity, and so on. Assessing the impact of EOI requires a nuanced understanding of the differences across different IFCs, and therefore of the varying ways the expansion of EOI is likely to affect IFCs with different profiles.

13. The list of IFCs used in this study is based on a list of 46 jurisdictions developed by the IMF (2000). Of the jurisdictions on this IMF list, many smaller centres do not report bank liability data to the

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6 The restricted dataset is available to the Banque de France. It has been used and aggregated by the Banque de France; the results have been submitted to the BIS for approval before being shared.

7 Following the dissolution of the Netherlands Antilles, Curaçao’s banking statistics are used as an approximation.

8 These countries include bilateral data for, on average, 157 counterpart countries.

9 This IMF report defines an offshore financial centre (OFC) as follows:
   “[A] centre where the bulk of financial sector activity is offshore on both sides of the balance sheet (i.e., the counterparties of the majority of financial institutions’ liabilities and assets are non-residents), where
BIS. Those who do report some data to the BIS are the Bahamas, Bahrain, Bermuda, the Cayman Islands, Curacao, Cyprus, Guernsey, Hong Kong, the Isle of Man, Jersey, Luxembourg, Macao, Malaysia, Panama, Singapore, and Switzerland.

**Data on EOI**

14. The forthcoming paper examines the two main forms of EOI that have expanded in recent years: EOIR and AEOI. The independent variable for EOIR is the signature of a bilateral or multilateral agreement providing for EOIR. Such an agreement could be a bilateral agreement such as a Double Tax Convention (DTC), a Tax Information Exchange Agreement (TIEA), or any other relevant multilateral exchange of tax information agreement, such as when two jurisdictions both sign the MAC.

15. The independent variable for AEOI is either first, a public commitment to exchange information automatically or second, the commencement of AEOI under the Common Reporting Standard (CRS), or implementation of a Foreign Account Tax Compliance Act (FATCA) Intergovernmental Agreement (IGA). Taxpayers may have responded to such agreements with varying speeds. Some taxpayers may have responded at the earliest possible date, declaring deposits to tax authorities or shifting them out of IFC jurisdictions with the advent of expanded EOI, or they may have waited until the last possible moment before EOI would come about. This means that it is useful to separately examine both the announcement of commitment to AEOI as well as the commencement of exchange under AEOI agreements.

The transactions are initiated elsewhere, and where the majority of the institutions involved are controlled by non-residents. OFCs are usually referred to as:

- Jurisdictions that have relatively large numbers of financial institutions engaged primarily in business with non-residents;
- Financial systems with external assets and liabilities out of proportion to domestic financial intermediation designed to finance domestic economies; and
- More popularly, centres which provide some or all of the following services: low or zero taxation; moderate or light financial regulation; banking secrecy and anonymity.

The forthcoming paper uses an amended list of IFCs based on the IMF OFC definition. The full amended list is as follows: Andorra, Anguilla, Antigua and Barbuda, Aruba, Bahamas, Bahrain, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Cook Islands, Costa Rica, Curacao, Cyprus, Dominica, Gibraltar, Grenada, Guatemala, Guernsey, Hong Kong, Isle of Man, Jersey, Lebanon, Liechtenstein, Luxembourg, Macao, Malaysia, Malta, Marshall Islands, Mauritius, Monaco, Montserrat, Nauru, Niue, Palau, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, Seychelles, Singapore, Switzerland, Turks and Caicos Islands, United Arab Emirates, Uruguay, and Vanuatu. The forthcoming paper also contains a robustness analysis of the main results with respect to the inclusion of different IFCs.

10 Dates for the commencement of exchanges under AEOI are taken from the intended date of first exchanges as described in the *Automatic Exchange of Information Implementation Report 2018* (Global Forum on Transparency and Exchange of Information for Tax Purposes, 2018[9]), page 3). AEOI agreements are activated on a bilateral basis and exchanges are also bilateral, which is not taken into account in this analysis. Jurisdiction-pairs are coded 1 if both jurisdictions have passed their intended date of first exchange of information under the CRS or under FATCA, and zero otherwise. However, this does not necessarily mean that they are exchanging with each other. The details of which jurisdictions have actually exchanged with each other are not public at this stage. Incorporating actual activated bilateral agreements could be an avenue for future enhancement of this work. Data on FATCA IGAs are taken from [https://www.treasury.gov/resource-center/tax-policy/treaties/pages/fatca.aspx](https://www.treasury.gov/resource-center/tax-policy/treaties/pages/fatca.aspx).
4. The evolution of cross-border bank deposits amid EOI network expansion

16. As previously shown, the expansion of tax transparency, particularly through the expansion of MAC signature, has led to an unprecedented deepening of the network of exchange relationships. This expansion has been further deepened by the widespread adoption of AEOI.

17. Since 2011, there has been a change in the overall trend of deposits in IFCs as compared to deposits in non-IFCs (see Figure 2). In particular, while both deposits in IFCs and deposits in non-IFCs first declined in the years after the financial crisis, deposits in non-IFCs have since returned to close to pre-crisis levels and have recently even surpassed the previous 2008 peak.

18. The same cannot be said for deposits in IFCs. Deposits in these jurisdictions rose substantially in the period after 2000 and rose even faster in the period immediately before the financial crisis, reaching a peak in the second quarter of 2008 (USD 1.6 trillion). Since then, bank deposits in IFCs in respect of non-banks have fallen substantially, by USD 551 billion or 34% for the sample of IFCs currently available. A large part of this reduction came in the immediate aftermath of the financial crisis, where deposits fell by 22% over the first year of the crisis, from second quarter 2008 to the first quarter of 2009. The decrease has continued in recent years (by a further 12% from the 2008 peak).

19. The forthcoming paper discusses in further detail the variation across IFCs in these trends. Declines were most evident in Guernsey, the Isle of Man, Jersey, and Switzerland. By contrast, in Hong Kong and Macao, for example, there has been an increase in cross-border deposits over time, though in the case of Macao this increase has levelled off in recent years. Disaggregated data between households and corporates, while available for a smaller number of countries, provides early supporting evidence that the main impact of EOI has been on individuals, who are now holding fewer deposits offshore.

Figure 2. Changes in Cross-border Bank Deposits (2000-2017)

Note: Data are provided for non-bank counterparties only. Data are aggregated across currencies, type of currency and reporting institutions. Source: Authors’ calculations based on BIS LBS.
5. Investigating the impact of EOI on cross-border bank deposits

20. To assess the impact of EOI agreements, the analysis relies on a quantitative model in which foreign-owned bank deposits in IFCs are regressed on various sets of indicator variables switched on upon MAC and EOIIR signature, AEoI announcement as well as AEoI commencement (including FATCA IGAs), as an additional mechanism of automatic exchange of information). The key expectation is that, under the assumption that a certain share of offshore tax evasion activity has historically been associated with a lack of transparency in IFCs, where an exchange of information agreement has been entered into, tax evasion activity through the use of foreign-owned deposits in IFCs becomes much riskier. As a result, it would be expected that some taxpayers withdraw their assets from EOI-abiding IFCs. The most appropriate points in time at which such a response might be expected would be at the time of signature, announcement, ratification or entry into force of EOI agreements.

21. The analysis presented in the forthcoming paper follows the same approach adopted in earlier papers. The set of results in Table 1 incorporates analysis of various types of change to the EOI environment, including EOIR signature, AEoI announcement and commencement. The regression equation is as follows:

\[ \log(Deposits_{ijq}) = \alpha + \beta_1EOI_{ijq} + \mu_{ij} + \theta_q + \epsilon_{ijq}, \]

where \( Deposits_{ijq} \) denotes the bank deposits held in jurisdiction \( i \) by residents of jurisdiction \( j \) in quarter \( q \). This paper focuses on bank deposits in IFC jurisdictions. \( EOI_{ijq} \) is a dummy variable that denotes whether an EOI relationship exists in quarter \( q \) between jurisdictions \( i \) and \( j \). The results of the analysis are presented with both jurisdiction-pair fixed effects and time fixed effects. \( \mu_{ij} \) stands for a jurisdiction-pair dummy, which is averaging out constant jurisdiction-pair effects such as, for instance, common language or common legal systems. The variable \( \theta_q \) is a time fixed effect accounting for varying events over time affecting all jurisdictions equally such as financial crises, changes in financial market activity or the regulatory environment.\(^{11}\)

22. For the sake of brevity, this note reports only the headline results from the baseline specification in Table 1 below. The forthcoming paper reports more detailed results.

\(^{11}\) A more detailed description of the models employed is contained in the forthcoming paper.
Table 1. Regression Results of Bank Deposits in IFCs with Respect to non-IFCs, with Jurisdiction-Pair and Quarter Fixed Effects

<table>
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<th>EOIR and AEOI Commencement</th>
<th>EOIR and AEOI Announcement and Commencement</th>
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<td>Quarter FE</td>
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</table>

Note: The dependent variable is the stock of deposits held by savers of jurisdiction i in banks of IFC j at the end of quarter q. The unit of observation is the jurisdiction-pair (i, j) and the sample period goes from Q1 2004 to Q1 2018. Statistics reported below the coefficients represent cluster-robust standard errors, clustered at the jurisdiction-pair level. Data are provided for non-bank counterparties only. Data are aggregated across currencies, sectors, reporting institutions, and instrument type. ***, **, * refer to statistical significance at the 1, 5 and 10% level respectively.

Source: Authors’ calculations based on BIS LBS, and data on information exchange agreements provided by the Global Forum.

23. The results presented from the analysis undertaken provide evidence of a significant negative impact of AEOI commencements on foreign-owned bank deposits in IFCs over and beyond the signature of EOIR agreements. Significantly, AEOI commencement is associated with a decrease in deposits of between 20% and 25%. These results are at the middle of the range of findings in the existing literature, which report that AEOI is associated with a reduction in offshore activity of between 10-40%.

6. Conclusions and caveats

24. The note provides new evidence that the expansion of EOI is associated with a reduction in bank deposits in IFCs. Following the literature, this suggests that the adoption of EOI in many jurisdictions around the world is having a positive impact on tax compliance and is reducing offshore hidden wealth.

25. However, shifts in deposits are not the only potential response to EOI. Bank deposits may remain offshore and become tax compliant. Reductions in IFC bank deposits may also respond to other contemporaneous tax factors including changes in the tax environment of the IFC and the home jurisdiction of the capital owner. These could include changes in statutory rates or changes in tax rules, such as those that might result from the implementation of the OECD/G20 BEPS package. Disentangling these various effects remains a significant challenge.

12 The following transformation has been applied to the estimated coefficients for percentage results:

\[100 \times (\exp(\beta_i) - 1).\]

13 The fact that the independent variables exhibit a substantial time trend (both EOIR and AEOI networks experience substantial increases over time) and that some of the EOIR impact is accounted for by the quarter fixed effects hint at some multicollinearity between the EOIR variables and the quarter fixed effects. The forthcoming paper is aware of the issue and will provide contrasting evidence.

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While these findings provide strong evidence of the positive impacts of EOI initiatives on the scale and size of offshore deposits held in IFCs, many important areas of future research remain to be explored. For example, future avenues of research to better understand the impact of EOI that could be explored include the direct analysis of increased foreign taxes paid due to EOI (Johannesen et al., 2018[8]) or by extending the existing analysis to consider other kinds of assets held offshore, including shares and securities, property and insurance products.
References


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