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So close and yet so far: The ability of mandatory disclosure rules to crack down on offshore tax evasion

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WIDER Working Paper 2022/116

So close and yet so far: the ability of mandatory disclosure rules to crack down on offshore tax evasion

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Abstract: We study the short-term effect of the introduction of the mandatory disclosure programme for aggressive tax arrangements by focusing on the one introduced in May 2018 under Council Directive 2018/288/EU (or DAC6). Employing bilateral data on cross-border deposits, we study the effect of this new disclosure requirement on cross-border tax evasion. Our results show a reduction of cross-border deposits in EU countries with strong enforcement, captured by large monetary penalties for misreporting. At the same time, we document a relocation of income and wealth to countries with limited intermediary reporting obligations. Finally, we detect a short-term increase of US\$14 billion in cross-border deposits held in countries offering citizenship/residence by investment programmes, suggesting the use of these schemes as regulatory arbitrage to circumvent the disclosure mandated under DAC6. We provide timely and relevant evidence contributing to the debate on international administrative cooperation to reduce cross-border tax evasion.

Key words: tax evasion, intermediary reporting, administrative cooperation, cross-border deposits

JEL classification: H26, G21, F42

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1 Introduction

On 24 August 2022, the chair of the Senate Finance Committee, Ron Wyden, released the findings of a year-long investigation concerning allegations of what has been called ‘the largest tax evasion case brought against an individual in U.S. history’. Robert Brockman, a former CEO of an Ohio-based software company, was accused of concealing approximately US\$2.7 billion in income from the IRS through the so-called ‘shell bank’ loophole, a scheme involving the use of offshore entities and secret bank accounts to escape the reporting duty under the Foreign Account Tax Compliance Act (FATCA) (US Senate Finance Committee 2022).

Globally, collecting tax revenues has become increasingly challenging. As the above case suggests, the pervasive use of complex legal structures to hide wealth and related income overseas and evade tax obligations at home is a great concern to policy-makers. The related revenue loss has been estimated to be approximately US\$200 billion annually (Zucman 2013), and is mainly attributed to the top 0.1 per cent highest earners, as empirical evidence shows (Alstadsæter et al. 2018; Guyton et al. 2021). Recent evidence from several leaks, such as the Panama Papers in 2016, the Paradise Papers in 2017, the Pandora Papers in 2021, and the Suisse Secrets in 2022, revealed—just as in the ‘shell bank’ loophole—the key role played by tax advisers, lawyers, financial institutions, and other intermediaries in supporting the world’s economic elite in under-reporting income and wealth in their respective countries of residence.

In this study we investigate the effect of an innovative reporting standard, called mandatory disclosure rules (MDRs), which has the power to prevent individuals from exploiting tax evasion schemes such as the ‘shell bank’ loophole. Specifically, an MDR targets enablers of cross-border tax evasion by requiring them to disclose their clients’ tax schemes. In contrast to existing tax transparency initiatives, such as FATCA of the United States and the Common Reporting Standard (CRS) of the OECD, the key innovation of MDRs is that it requires intermediaries, such as consultants, lawyers, or financial institutions, to report to local tax authorities a comprehensive set of information on all currently used transactions that have certain elements of tax aggressiveness.¹ In this way, tax authorities obtain information that is not limited to a specific channel of tax evasion (e.g. financial assets in the case of FACTA and the CRS), but rather extends to all types of tax-aggressive arrangements.

The United States was one of the first countries to introduce MDRs, in the 1980s. Nowadays, MDRs exist in several countries around the world.² We focus on the one introduced in the EU in June 2018 under EU Council Directive 2018/822/EU, also known as DAC6. While other countries have domestic MDRs, the EU is the first to introduce this new disclosure rule under a multilateral approach where the information collected under DAC6 is automatically exchanged across EU member states. An MDR like the one under DAC6 can enhance the speed and accuracy of the assessment of whether a transaction is created only for the purpose of evading taxes. For example, under the UK MDR more than 3,000 transactions have been reported over seven years and legislation has been changed in relation to almost 600 reported transactions (Devereux et al. 2012). Anecdotal evidence from the US MDR suggests that it was key in countering the expansion of corporate tax shelters in the early 2000s (Noked and Marcone 2022).

¹ Information to be reported includes a summary of the content of the transaction, the value of the transaction, the identification detail of the intermediaries, and of the relevant taxpayers. The reporting obligation extends to taxpayers—for example, in the case that the intermediary may claim legally recognized professional secrecy or the intermediary is not a resident of the EU or there is no intermediary involved in a transaction.

² For an overview of existing MDRs, see Noked et al. (2022).

Similarly, EU tax authorities can largely benefit from the information collected under DAC6. Assume, for example, a scheme similar to the one used in the ‘shell bank’ case: a resident of an EU country sets up a private entity in the Cayman Islands and holds financial assets in Luxembourg through this entity. Once the private entity obtains the status of ‘financial institution’, the reporting duty is shifted from the financial institution in Luxembourg that maintains the financial accounts of the entity to the private entity itself. In this way, the third-party reporting turns into a self-reporting obligation where the taxpayers can opt for not reporting the overseas income to the tax authority, as evident in the ‘shell bank’ case. However, after the implementation of DAC6, the moment a client enters into or is advised on a transaction that features elements of tax aggressiveness, the intermediary has to report all the information about it to the tax authority. If a financial institution is providing a service that is used by the client in connection to a reportable cross-border arrangement (e.g. accepting wire transfers of large amounts into accounts owned by private entities falling outside the CRS due diligence requirements), the financial institution has to report to the local tax authority information on the client’s identity and the details on which type of transaction has been used, and its value.³ In this way, every EU tax authority would obtain detailed information on any cross-border transaction that is used to circumvent the automatic information exchange agreements and to obscure true beneficial ownership (see Hallmark D of Council Directive 2018/822/EU).

Moreover, regulating the conduct of intermediaries by mandating the disclosure of their clients’ tax schemes can have a deterrent effect. The EU commission stated that it ‘should be expected that the mandatory disclosure of potentially aggressive tax planning schemes would dissuade intermediaries from designing and marketing such schemes’ (European Commission 2017). Advising on tax-aggressive arrangements after DAC6 involves increased compliance and reputation costs, as well as a higher detection risk (Noked and Marcone 2022). Thus, DAC6 has the power to make the involvement in such tax schemes less attractive.

We focus our analysis on how the introduction of DAC6 affects cross-border deposits of EU residents, who are potentially experiencing a change in the detection risk, and compare their behaviour to the one of non-EU OECD residents who are unaffected by DAC6, but face a similar economic and fiscal environment. For residents in EU countries, we expect a reaction to the new disclosure requirements (Allingham and Sandmo 1972; Slemrod 2019). If DAC6 is able to crack down on offshore tax evasion, we should expect an increase in the incentives to report previously undisclosed offshore deposits in EU countries.

We address this question by investigating the direct effect of DAC6 on EU resident behaviour and the indirect effect of DAC6 on the use of citizenship- and residence-by-investment schemes. Specifically, we estimate tax evaders’ reaction to a mandatory disclosure rule of aggressive tax arrangements at a within-country time and country-pair level by using a difference-in-difference (DiD) design. We follow the related literature on cross-border tax evasion (e.g., Casi et al. 2020; Huizinga and Nicodème 2004; Johannesen and Zucman 2014; Menkhoff and Miethe 2019) and proxy tax evasion behaviour by considering the outstanding volume of cross-border deposits placed in tax havens. The data originates from the Bank for International Settlements (BIS). Our sample period is from the first quarter of 2017 to the last quarter of 2019 to avoid confounding events affecting cross-border deposit movements like the introduction of the CRS and the COVID-19 pandemic.⁴

We begin our analysis by investigating the direct effect of DAC6 on tax evaders by focusing on EU residents, who are the ones experiencing the change in detection risk. We compare their behaviour pre-

³ For more details on the implications of DAC6 for financial institutions, see https://www.ey.com/en_be/financial-services/are-you-ready-for-dac-6.

⁴ We offer evidence on a longer time period in Appendix A1.

and post-DAC6 to that of non-EU OECD residents as the latter is a suitable control group in our sample. Non-EU OECD residents (henceforth non-EU residents for convenience) face a similar economic and tax environment and are, at the same time, not affected by DAC6 because the information collected under DAC6 is not exchanged with their respective country of residence. We estimate the changes in cross-border deposits of EU residents compared to those of non-EU residents pre- and post-DAC6, combining a regression analysis and an event study design. Our results indicate that deposits of EU residents in the EU increase by 11 per cent post-DAC6, while no change in cross-border deposits outside the EU is detected, suggesting that the policy is effective. When considering the economic relevance of our main estimate, DAC6 led to an increase of US\$124 billion in cross-border deposits held by EU residents in the EU.

However, we also show that DAC6 is still far away from a perfect policy tool against tax evasion. We highlight this by investigating cross-country differences in regulatory environments. First, countries differ in monetary penalties. Usually countries impose a maximum monetary penalty of less than €100,000 per non-compliant institution, regardless of the value and volume of the non-disclosed or wrongly disclosed transaction (Casi et al. 2021). Only Spain refrains from setting an upper limit and instead charges a penalty that is proportional to the value of the incorrectly reported transaction or to the related intermediary fee. Our results show a statistically significant decrease in deposits of approximately 16 per cent in Spain post-DAC6, suggesting tax evaders withdraw funds from countries where compliance under DAC6 is expected to be higher given the high penalty.

Second, countries differ in the definition of who enjoys the legal professional privilege with respect to the reporting duty. Most EU member states restrict it to lawyers, tax advisers, and accountants, but a few extend it to financial institutions. Enjoying the legal professional privilege impacts the actual obligations under DAC6 since the reporting duty is shifted from the intermediary to the taxpayer.⁵ The detection risk under DAC6 is, therefore, arguably reduced in those countries where the reporting obligation for an intermediary is restricted, as evident from the ‘shell bank’ case (US Senate Finance Committee 2022). According to national law, France extends the legal professional privilege to financial intermediaries. Our findings suggest that the generous scope for the legal professional privilege granted by France induced a relocation of income and wealth. Specifically, we find an approximately 30 per cent increase in cross-border deposits in France post-DAC6.

In the second part of our study we analyse whether taxpayers are able to circumvent reporting under DAC6 altogether by exploiting citizenship-by-investment programmes (CBI) or residence-by-investment programmes (RBI). Anecdotal evidence suggests that such schemes have been used for tax evasion purposes, especially to circumvent the reporting duty under the automatic exchange of information (AEOI) agreements (e.g. under the CRS; Christians 2017; European Parliament 2016; Mehboob 2019). In the context of DAC6, an EU taxpayer could make use of multiple citizenship/residence rights to channel a cross-border arrangement outside the EU and, in this way, avoid the reporting duty under DAC6. This is possible because the access to multiple citizenship and residence rights enables tax evaders to select the country where the transaction originates. Our results show a statistically significant increase of 30 per cent in cross-border deposits owned by residents of CBI/RBI countries held outside the EU compared to residents of non-CBI/RBI countries post-DAC6. When considering the economic size of the effect we detect, this translates into an approximately US\$14 billion increase of cross-border deposits held by CBI/RBI residents in the deposit locations outside EU post-DAC6, of which US\$7 billion are held in tax havens outside the EU. Our findings provide evidence of the use of these schemes as regulatory arbitrage to circumvent the disclosure mandated under DAC6.

⁵ Anecdotal evidence shows that whether or not a client’s adviser enjoys the legal professional privilege affects the final decision over which company to hire for tax planning services. Specifically, in EU member states where the legal professional privilege for DAC6 reporting duty is restricted to lawyers, the big four accounting firms have experienced a significant loss of clients, who have moved to law firms for tax advisory service. For more details, see Haines (2020).

We provide several robustness checks for corroborating the validity of our main results. We run a placebo test where we only consider residents of Ireland, Portugal, and the UK since these countries had a similar disclosure rule already in place before DAC6, and we confirm that, as expected, no statistically significant difference in cross-border deposits between treatment and control group occurs. In addition, we validate that our baseline results are not driven by the control group in a split test where results for the treatment and control groups are plotted separately. We also test the reliance of our identification on our choice of fixed effects, by modifying the fixed effect structure of our main results. Finally, we prove the validity of our results using a longer sample period.

Overall, our study contributes to the literature on regulations targeting illicit financial flows. So far, mixed results have emerged on the effectiveness of tax transparency in curbing tax evasion. While tax evaders reacted to the agreements to exchange information by reducing wealth and related income in cooperative jurisdictions, these funds haven't been repatriated but have been reallocated to tax havens not covered by such information exchange agreements (e.g., Cusi et al. 2020; De Simone et al. 2020; Johannesen and Zucman 2014; Menkhoff and Miethe 2019). An MDR like the one under DAC6 is considered to have the potential to close all loopholes in the existing global tax transparency framework (Noked and Marcone 2022). Our study shows that DAC6 has certain important elements of weaknesses. Importantly, we document the use of CBI/RBI as a regulatory arbitrage strategy to escape the reporting of information on the use of cross-border transactions used for aggressive tax planning purposes.⁶

We also contribute to the literature on tax enforcement. Overall, government attention to tax compliance increased largely after the financial crises as a result of the substantial deficits (International Monetary Fund 2015: 6) and enhancing tax compliance is now a top priority for policy-makers, given the massive economic shocks from the COVID-19 pandemic. There is a vast literature on studying the effect of stricter enforcement rules on tax compliance (e.g., Almunia and Lopez-Rodriguez 2018; Carrillo et al. 2017; Fack and Landais 2010; Kleven et al. 2011; Kopczuk et al. 2016). We focus on cross-border tax evasion and investigate the effect of mandating the automatic collection and exchange of information on aggressive tax arrangements on under-reported income and wealth held abroad. Specifically, we address the call from Slemrod (2019) on understanding the role of tax professionals in administration and enforcement, as well as the importance of the penalty level for non-compliance.

Finally, the results of our study inform policy-makers, given the current global debate on the necessity to revise the rules for tax advisory services.⁷ Our study sheds light on the effectiveness of an increasing disclosure mandate for intermediaries on their clients' tax schemes. We provide evidence of the relevance of imposing sufficiently high enforcement to ensure compliance and of restricting the professional legal privilege to ensure third-party reporting. In doing so, we offer important insights to the EU member states as well as to those countries outside the EU that have similar mandatory intermediary disclosure requirements or are considering introducing them. We also contribute to the international debate on the risk related to CBI/RBI programmes. Both the EU and the OECD have expressed concerns on the misuse of these programmes (European Parliament 2018; OECD 2020). The results of our study offer novel empirical evidence to support the policy debate in this area.

The rest of the paper is organized as follows. Section 2 outlines the institutional background. Section 3 develops our testable hypotheses. Section 4 describes our data and research methodology, while Section 5 presents our main empirical results. Section 6 summarizes the robustness checks and Section 7 concludes.

⁶ Langenmayr and Zyska (2021) provide evidence of increased volume of illicit financial flows in connection to the introduction of CBI/RBI programmes.

⁷ Recently the EU Commission launched a consultation on the topic; see <https://www.etaf.tax/index.php/newsarea/300-weekly-tax-news-11-july-2022>.

2 Institutional background

2.1 The EU's mandatory disclosure rule

In 2010, the introduction of FATCA in the United States enabled the development of an extremely powerful standard for the AEOI in tax matters. This policy tool was enacted with the ambition to overcome the weakness of previous initiatives in the field and, in this way, to finally put an end to the substantial tax revenue loss resulting from US citizens hiding income and wealth offshore. It obliges foreign financial institutions to collect financial account information on behalf of their clients if they are US citizens and to automatically transmit them to the IRS. The introduction of FATCA pushed an international discussion at the OECD level on developing a global standard for the AEOI. On 21 July 2014, the OECD published the final version of the global standard for automatic exchange of financial account information in tax matters: the CRS. Currently, more than 100 jurisdictions around the world have implemented the CRS. Given the broad scope and the extensive country coverage, the AEOI information system under FATCA and the CRS presents certain key features that make it substantially different from any initiative launched in the field so far. The true revolution in the level of scrutiny of illicit financial flows held overseas would considerably redesign the cross-border tax evasion schemes detected so far. And, indeed, FATCA and the CRS have been successful in reducing international tax evasion via tax havens, resulting in significant additional reporting of accounts (e.g., Casi et al. 2020; De Simone et al. 2020; Menkhoff and Miethe 2019), especially of the highest-earning individuals (Johannesen et al. 2020). However, indirect evidence also suggests that wealth and income are relocated to non-reportable assets such as real estate and luxury goods, and to non-cooperative jurisdictions (e.g., Bomare and Herry 2022; Casi et al. 2020; De Simone et al. 2020).

In June 2018, the sixth amendment to the Directive on Administrative Cooperation was introduced with the ambition to close the loopholes detected in previously launched tax transparency initiatives. The Directive on Administrative Cooperation (Council Directive 2011/16/EU, or DAC1) is a legal instrument introduced at the EU level in 2011 with the aim to increase the automatic collection and exchange of information across EU tax authorities. Under DAC1, information on every type of tax, other than VAT, customs duties, excise duties, and social security contributions could be exchanged upon request across member states within a six-month period. In this way, DAC1 ensures that the OECD standard for the exchange of information on request is implemented in the EU. Subsequent amendments to DAC1 introduced global tax transparency initiatives within the EU. Specifically, in 2014, Council Directive 2014/107/EU (DAC2) introduced the CRS at the EU level. In 2015, Council Directive 2015/2376/EU (DAC3) introduced a proper definition of advanced cross-border rulings as well as advanced pricing arrangements, and imposed the AEOI of those. In 2016, Council Directive 2016/881/EU (DAC4) introduced the requirement for country-by-country reports at the EU level as proposed under Action 13 of the Base Erosion and Profit Shifting (BEPS) project.⁸ Council Directive 2016/2258/EU (DAC5), introduced in 2016, forces local financial institutions to identify and report to the respective tax authority the information on the beneficial owner of an intermediary structure.

Revelations from tax scandals such as the Paradise Papers and the Panama Papers publicized by the International Consortium of Investigative Journalists raised concerns regarding the pervasive use of harmful tax practices and the necessity to strengthen the fight against tax evasion and tax avoidance (European

⁸ Empirical evidence on the impact of DAC2 and DAC3 provide mixed evidence on their effectiveness. Casi et al. (2020) show that the introduction of the CRS at the EU level did not trigger a strong reaction from tax evaders given the existence of the automatic collection and exchange of interest income under the Savings Directive. Instead, the duty of large corporations to disclose country-level economic activity to tax authorities, such as the one mandated under DAC3, induced a reallocation of investment to the EU, but mainly in those countries offering preferential tax regimes (Olbert and De Simone 2021). Overall, only weak evidence of improved tax compliance has been detected (Joshi 2020).

Parliament 2016). In particular, the role certain financial institutions and other intermediaries played in supporting clients to establish complex legal structures, with the only intent being to evade tax obligations, emerged. At the informal meeting of the Economic and Financial Affairs Council in April 2016, member states welcomed initiatives, such as those stated in BEPS Action 12, requiring taxpayers and advisers to disclose aggressive tax planning arrangements.⁹ As a result, the EU adopted Council Directive 2018/822/EU (DAC6) in May 2018, which represents the sixth amendment to the Directive on Administrative Cooperation.

Under DAC6, a comprehensive set of information on the cross-border arrangements needs to be reported to the local tax authorities if certain criteria are met.¹⁰ One of the most important criteria is that the cross-border arrangement needs to involve at least one EU country. Moreover, cross-border arrangements have to be reported if they display certain predefined characteristics, called ‘hallmarks’. The definition of the selected hallmarks mainly reflects those in Action 12 of the BEPS initiative and includes generic and specific hallmarks. In particular, generic hallmarks include all arrangements embracing three elements: confidentiality, intermediary fee, and standardized documentation. The generic hallmark must be considered only if it can be proven that the main benefit of a cross-border arrangement is to gain a tax advantage. If this occurs, the main benefit test is satisfied, and the cross-border arrangement must be reported to the respective authority. Specific arrangements include four types of arrangements. First, it embraces all arrangements that satisfy the main benefit test and enables the taxpayer to use losses to reduce a tax liability, to convert income into capital, gifts, or other categories of revenue, which are taxed preferentially, or to exploit circular transactions resulting in round-tripping of funds. Second, it comprises all cross-border arrangements that aim at circumventing the requirements under AEOI legislation or agreements across EU member states. Third, it encompasses all cross-border arrangements involving deductible cross-border payments between two or more parties if certain conditions are met, namely depreciation of the same asset in multiple jurisdictions, multiple relief from double taxation on the same claims for more than one taxpayer, or transfers of assets where significant discrepancies exist in the amount being treated as payable with respect to the assets in those jurisdictions involved. Lastly, it concerns transfer pricing and covers all arrangements that do not comply with the arm’s-length principle or the OECD transfer pricing guidelines, or are within the scope of the AEOI on advance cross-border rulings but are neither reported nor exchanged.

A comprehensive set of information on the reportable cross-border arrangements is due within 30 days from the date the scheme is made available. Information to be reported includes a summary of the content of the arrangement, the value of the arrangement, the category of hallmark to which it belongs, the identification detail of the intermediaries, and the relevant taxpayers. In this way, the type of information disclosed under DAC6 is substantially different from that obtained under the CRS and FATCA, as illustrated in Table 1.¹¹

Under the CRS, tax authorities obtain extensive information on financial assets held in foreign jurisdictions that are participating in the AEOI. Yet, anecdotal and empirical evidence (e.g., Bomare and Herry 2022; Casi et al. 2020; De Simone et al. 2020) suggests that wealth and income have been relocated to non-reportable jurisdictions and non-reportable assets. DAC6 has been introduced with the aim to close such loopholes and ensure that no possibility of escaping the AEOI within the EU is exploited. This is achieved by mandating the reporting of specific types of transactions that are considered to facilitate the

⁹ For more details on BEPS Action 12, see (OECD 2013: 22–23).

¹⁰ For a comprehensive overview of DAC6 and its national implementation across EU member states, see Casi et al. (2021).

¹¹ In Table 1 we focus our comparison on how DAC6 differs from the CRS. For this reason, we exclusively explain the type of transactions that need to be reported under Hallmark D of DAC6—that is, the category of transactions that potentially undermine the AEOI under the CRS.

circumvention of the reporting duty under the CRS.¹² The moment a client is advised on a type of transaction listed under DAC6, the adviser has to report all the information about it, including the information on the client receiving the advice and the details on type of transactions, and their value.¹³

Table 1: Comparison of the CRS (DAC2) and MDR (DAC6)

Panel A	Common Reporting Standard (DAC2)
The scope	Information on financial assets held outside the country of residence
Who gets it	Information is exchanged with all CRS-participating jurisdictions
What is obtained	Automatically exchanged information: <ul style="list-style-type: none"> • Identification information of the account holder; if indirectly owned, on the last beneficial owner • Financial information on the account, including the balance, the interest and/or dividend amount, the amount of other income generated with respect to the assets held in the account, the proceeds from the sale or redemption of financial assets, the amount paid or credited by the reporting financial institution in reference to the account
Panel B	Mandatory Disclosure Rule (DAC6)
The scope	Hallmark D: arrangement which may have the effect of undermining the reporting obligation under the CRS, including transfer of funds to non-participating jurisdictions, non-reportable assets, and non-reportable financial institutions
Who gets it	Information is exchanged with EU member states only
What is obtained	Automatically exchanged information: <ul style="list-style-type: none"> • Identification information of the intermediaries, and of the relevant taxpayers involved in the reported arrangement • A summary of the content of the arrangement, the value of the arrangement, the category of hallmark to which it belongs, the identification detail of the intermediaries, and of the relevant taxpayers

Source: authors' compilation.

Besides the establishment of shell entities as in the 'shell bank' case, another reportable transaction includes the transfer of income and wealth to a jurisdiction that is not subject to the CRS. Imagine, for instance, a German taxpayer that is transferring its bank account from the Cayman Islands to the Dominican Republic after the CRS is introduced to avoid that German tax authorities automatically obtain information on it, as the Cayman Islands participates in the CRS while the Dominican Republic does not. After the introduction of DAC6, the German tax authorities would obtain extensive information on the tax advisers and to which clients this type of transaction is advised. Likewise, transactions involving the transfer of funds to 'non-reportable financial assets' and/or 'non-reportable financial institutions', as an attempt to avoid the CRS reporting duty, have to be reported to the respective tax authority. Examples that qualify as non-reportable financial assets and non-reportable financial institutions are the use of certain types of virtual currency or derivatives contracts and the use of trusts, which under certain conditions automatically qualify as active non-financial entities. Thus, DAC6 probably makes transactions that aim to circumvent the AEOI no longer attractive and allows EU tax authorities to close existing loopholes.

2.2 DAC6 and citizenship/residence-by-investment

CBI/RBI programmes have been introduced to attract funds from wealthy investors. Such programmes offer individuals the possibility to obtain citizenship or residence rights through local investment or against a flat fee. Survey evidence suggests that among various reasons, individuals opt for entering a CBI/RBI programme for tax planning reasons.¹⁴ Anecdotal evidence has highlighted that identity cards and similar documentation obtained under CBI/RBI programmes have been misused to escape

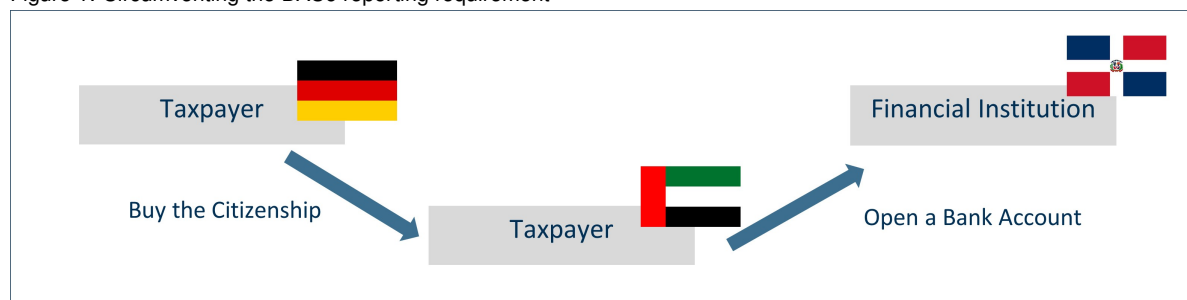
¹² For the complete list, see page 12 of Council Directive 2018/822/EU.

¹³ For more explanation, see EY (2020).

¹⁴ Specifically, 3 per cent of the surveyed individuals who are interested in CBI/RBI programmes answered that the reason is tax-related. Other reasons include education access for children, better lifestyle, and higher security. For more details, see (OECD 2018: 58).

the reporting duty under the CRS.¹⁵ Thus, one could expect that the availability of multiple citizenship and/or multiple residence rights could represent a channel to escape the reporting duty under DAC6. The simplified example shown in Figure 1 clarifies the mechanism.

Figure 1: Circumventing the DAC6 reporting requirement



Source: authors' compilation.

Assume, for example, an EU taxpayer that set up an investment entity in the Dominican Republic through a local bank account after the introduction of CRS. After the implementation of DAC6, every EU tax authority would become aware of every transaction the EU taxpayer conducted involving an EU member state and a CRS non-participating country, such as the Dominican Republic. Yet, the tax evader could enter into a transaction in the Dominican Republic using the passport or residence certificate from a CBI/RBI country such as the United Arab Emirates and, in this way, circumvent the duty to report the transaction under DAC6 to the true country of residence.

3 Hypotheses development

The overall objective of the MDR under DAC6 is to guarantee that tax authorities receive early information on cross-border arrangements, which could potentially pose a risk of being aggressive from a tax perspective (European Council 2017). Tax authorities within the EU obtain immediate exhaustive information on all potentially tax-aggressive transactions at the time they are ready to be used by the taxpayers or to be promoted by the intermediary. Post-DAC6, EU tax authorities would obtain information on transactions involving opening bank accounts in countries that do not exchange information under the CRS. Because DAC6 enhances detection risk of holding income and wealth in CRS non-participating countries, we expect a reduction of cross-border deposits in such countries. Since DAC6 prevents individuals escaping into non-reportable financial assets and/or non-reportable financial institutions, we expect an increase in cross-border deposits in EU deposit locations. We summarize in the following hypothesis:

Hypothesis 1 The introduction of DAC6 leads to an increase [decrease] of cross-border deposits in EU countries [CRS non-participating countries] by EU residents.

Yet, we expect that DAC6 does not equally impact EU taxpayers given certain key differences detected by Casi et al. (2021) when analysing its local implementation. First, monetary penalties for misreporting vary substantially across EU member states. Specifically, the enforcement level has been detected to be low across EU member states with the exception of certain countries, including Spain and Poland. Spain is the only country that opted for strong enforcement as the penalty is based on the value of

¹⁵ See, for example, Christians (2017), Mehboob (2019), European Parliament (2018), and OECD (2020). See also Langenmayr and Zyska (2021) for an analysis that shows how CBI schemes can be an effective tool for tax evaders to avoid the increased detection risk under AEOI.

the incorrectly reported or non-reported transaction or to the related intermediary fee. While Poland charges up to €5 million for misreporting by an individual under DAC6, we do not have the deposit data in Poland and therefore only explore the effect in Spain. Hence, we expect that tax evaders decrease the level of income and wealth only in those countries where enforcement under DAC6 is strongly established.

Second, under DAC6, the primary duty to report is on intermediaries. However, even if the cross-border arrangement occurs within the EU territory, the information on a reportable cross-border arrangement needs to be transmitted by the EU-based taxpayer if (1) the intermediary is not located in the EU, (2) the intermediary is restricted by professional privilege or secrecy rules, or (3) the arrangements occurred in-house. France, Austria, and Malta extend the legal professional privilege to financial institutions, which means that in these countries the taxpayer is responsible for reporting under DAC6. We, therefore, expect that tax evaders increase the level of income and wealth in those countries with a broad scope for the legal professional privilege. Overall, we summarize our discussion in the following hypothesis:

Hypothesis 2 The introduction of DAC6 decreases [increases] cross-border deposits of EU residents in EU countries with a strict [more lenient] regulatory environment.

While cross-country differences in regulatory environments provide individuals with an avoidance opportunity through the reallocation of wealth to favourable environments permissible with the DAC6 reporting requirements, CBI/RBI programmes enable individuals to continue the evasion of taxes by escaping reporting under DAC6 altogether. Such programmes offer individuals the possibility to obtain citizenship or residence rights through local investment or against a flat fee, which allows those individuals to invest through countries offering CBI/RBI programmes. Thus, the availability of multiple citizenship and/or multiple residence rights represents a channel to escape the reporting duty under DAC6 by disguising an individual's true residence. We expect cross-border deposits from CBI/RBI residents to increase only outside the EU because DAC6 mandates the reporting of cross-border transactions with an EU nexus (i.e. also those conducted by non-EU residents in the EU). While tax havens are naturally a place where we would expect cross-border deposits from RBI/CBI programmes to flow, recent evidence suggests that individuals hide their wealth also in non-tax haven locations. For example, several luxury properties—including yachts and houses—belonging to sanctioned Russian oligarchs were located in high-tax countries such as Norway or the United States (Harding 2022; Lambert 2022). We summarize in the following hypothesis:

Hypothesis 3 The introduction of DAC6 increases cross-border deposits in non-EU countries that originate from CBI/RBI countries.

4 Research design

4.1 Data

The data on the cross-border deposits are obtained from the Bank of International Settlements-Locational Banking Statistics (BIS-LBS) database (BIS 2020). The BIS offers bilateral quarterly data on deposits held by individuals and entities that are not residents of the country where the reporting bank is located. From the BIS-LBS data we observe cross-border deposits held by the residents of 215 countries (resident countries) in a select list of 31 countries (deposit locations). We retain all country-pairs for the purpose of our main analysis, but we exclude cross-border inter-bank deposits because they are not identified as a channel for tax evasion (Johannessen and Zucman 2014). Although the data exhibit certain limitations

in terms of coverage and granularity,¹⁶ they are extensively used in the literature on cross-border tax evasion because they offer a sound proxy for capturing the reaction of tax evaders to increased scrutiny (e.g., Cusi et al. 2020; Johannesen and Zucman 2014; Langenmayr and Zyska 2021; Miethe 2020)). Specifically, the BIS-LBS data enable us to observe, for example, the total amount of deposits French residents own in active banks located in 31 deposit countries, including several well-known tax havens. Moreover, we limit the period of analysis to the first quarter of 2017 until the fourth quarter of 2019. This allows us to exclude possible confounding impacts of the introduction of the CRS and the global pandemic.

For our analysis of the effect of the DAC6 on cross-border deposits owned by EU residents, we limit our sample to residents of all EU and OECD member states to ensure high cross-country comparability across the treatment and the control group. We exclude residents of Malta and Cyprus because these are the only EU member states offering highly risky CBI/RBI programmes as defined by the OECD (2018), and such programmes represent a possible channel to circumvent the reporting duty under DAC6.

Moreover, to ensure that our results are not driven by the reactions of multinational companies, we gather BIS-LBS data on the sectoral decomposition of cross-border deposits.¹⁷ More specifically, we observe the volume of deposits owned by banks, non-bank financial institutions, non-financial corporations, households, and general government at the aggregated level. This means that we only observe the total volume of corporate-owned deposits in a country, but we don't know the country of residence of the corporation that owns the deposit. For this reason, we cannot directly take advantage of the data, but instead use the sectoral decomposition to infer the composition of cross-border deposits in the deposit country considered in our analysis. The sectoral decomposition is only available for a limited number of deposit locations and we keep those for which deposits owned by non-financial corporations is less than 50 per cent of total non-bank deposits.¹⁸ Our deposit locations include Austria, Australia, Canada, Denmark, France, Italy, Spain, Sweden, Switzerland, South Africa, the UK, and the United States.

We observe that the data from BIS-LBS has missing values for the deposits in certain quarters for some country-pairs. To balance the panel data, we omit all country-pair observations with missing values for deposits in any given time period. Table 2 presents the summary statistics for cross-border deposits owned by EU versus OECD residents. During our sample period (2017Q1–2019Q4), the average bilateral cross-border deposit volume amounts to US\$6.6 billion. The value of cross-border deposits owned by EU residents (the treatment group) is comparable to that owned by non-EU OECD residents (the control group) in terms of average bilateral cross-border deposit with EU countries and non-EU countries. The descriptive statistics support our assumption that non-EU OECD residents are a sound control group for our analysis.

Figure 2 shows the development of cross-border deposits over time owned by EU residents and non-EU residents. Overall, the volume of cross-border deposits owned by EU residents is higher than that owned by non-EU residents. At the aggregated level there is no visible change in the level of cross-border deposits post-DAC6 from either EU or non-EU residents. In the empirical analysis that follows we will provide country-level evidence of the reaction of tax evaders to the new mandatory disclosure rule.

¹⁶ See Cusi et al. (2020) for an overview of the data limitations.

¹⁷ Empirical evidence from Edwards et al. (2021) shows that DAC6 increases the effective tax rates of EU multinationals or multinationals with EU subsidiaries, suggesting that the new MDR has been successful in reducing tax avoidance.

¹⁸ We run robustness checks where we keep all deposit locations and alternatively where we only keep deposit locations where one-third or less of the deposits are owned by non-financial corporations. These changes do not affect our inferences, which suggests that multinationals' reaction to DAC6 does not drive our results.

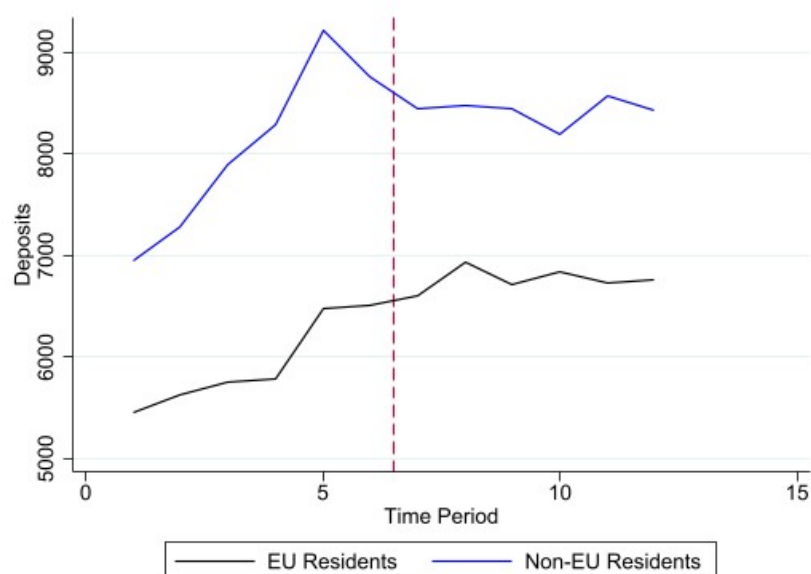
Table 2: Summary statistics

Deposit in	All residents			EU residents		Non-EU residents	
	Obs.	Mean	SD	Obs.	Mean	Obs.	Mean
Cross-border deposits	5,436	7,063	40,027	3,396	6,531	2,040	8,248
Of which:							
In the EU	3,276	8,064	45,415	2,004	6,730	1,272	10,103
Outside the EU	2,160	5,544	30,013	1,392	5,747	768	5,175

Note: the table presents summary sample statistics on bilateral cross-border deposits in millions of US dollars. Data from 2017Q1 to 2019Q4. Deposits are from EU and OECD residents in all reporting countries. Deposits are further split based on the deposit location (in the EU and outside the EU).

Source: authors' compilation based on data from the BIS-LBS, Table A6.

Figure 2: Time trends: EU- and OECD-owned deposits



Note: the graph shows the evolution of cross-border deposits owned by EU residents (black line) and non-EU OECD residents (blue line). The red dashed line represents the introduction of DAC6.

Source: authors' compilation based BIS-LBS, Table A6.

For our analysis of the effect of DAC6 on cross-border deposits owned by CBI/RBI countries, we collect information on CBI/RBI programmes from the OECD website.¹⁹ The OECD classify those programmes as being high risk if they offer access to a low income tax rate on financial assets and do not impose any physical presence in the country for a significant amount of time. The list of countries we consider is United Arab Emirates, Bahamas, Bahrain, Barbados, Cyprus, Dominica, Grenada, Malta, Saint Lucia, Turks and Caicos Islands, and Vanuatu.

Our sample extends to all bilateral data available at the BIS. We only exclude residents of EU member states from our control group (we include non-OECD countries as well) as they are directly affected by the DAC6. We still retain residents of Malta and Cyprus, since those two countries offer high-risk CBI/RBI schemes.²⁰ Moreover, we retain all deposit locations because there is no reason to expect that any detected movement of cross-border deposits in this part of the analysis is driven by multinational

¹⁹ For more information, see <https://www.oecd.org/tax/automatic-exchange/crs-implementation-and-assistance/residence-citizenship-by-investment>.

²⁰ We test the effect of DAC6 separately for EU and non-EU CBI/RBI residents and find similar results.

companies reacting to DAC6. It is reasonable to expect that any increase in cross-border deposits held by residents of aggressive CBI/RBI countries is exclusively driven by individual incentives to hide the true citizenship/residency to avoid the higher detection probability post-DAC6.

Table 3 presents the summary statistics for cross-border deposits owned by CBI/RBI versus non-CBI/RBI residents. During our sample period (2017Q1–2019Q4), the average bilateral cross-border deposit volume amounts to US\$0.5 billion. The value of cross-border deposits owned by CBI/RBI residents (the treatment group) is significantly lower compared to the one owned by non-CBI/RBI residents (the control group), but have a similar pre-DAC6 development as visible from Figure 3. Yet, cross-border deposits owned by CBI/RBI residents experience an increasing trend post-DAC6, while the ones owned by non-CBI/RBI countries do not.

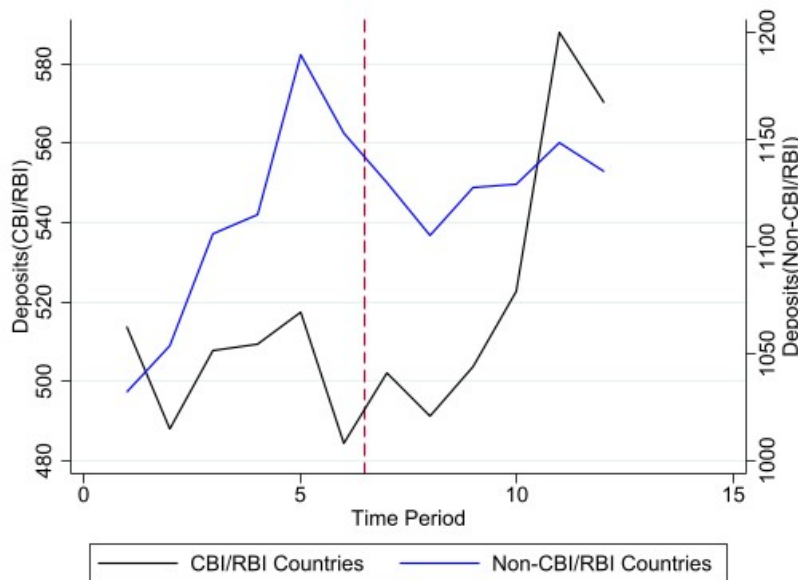
Table 3: Summary statistics

Deposit in	All residents			CBI/RBI residents		Non-CBI/RBI residents	
	Obs.	Mean	SD	Obs.	Mean	Obs.	Mean
Cross-border deposits	39,096	1,080	15,237	2,508	517	36,588	1,119
Of which:							
In the EU	18,756	1,130	41,630	1,176	482	17,580	1,174
Outside the EU	20,340	1,034	12,386	1,332	548	19,008	1,068

Note: the table presents summary sample statistics on bilateral cross-border deposits in millions of US dollars. Data from 2017Q1–2019Q4. Deposits are from non-EU residents as well as from residents of CBI/RBI countries in all reporting countries. The deposits of residents of Malta and Cyprus (both are CBI/RBI as well as EU countries) are also included when calculating the statistics. Deposits are further split based on the deposit location (in the EU and outside the EU).

Source: authors' compilation based on data from the BIS-LBS, table A6.

Figure 3: Time Trends: CBI- and RBI-owned deposits



Note: the graph shows the evolution of cross-border deposits owned by CBI/RBI residents (black line) and non-CBI/RBI residents (blue line). The red dashed line represents the introduction of DAC6. The non-CBI/RBI countries include all the countries except EU countries.

Source: authors' compilation based on data from the BIS-LBS, table A6.

4.2 Methodology

Our analysis is based on both a DiD estimation and an event study approach. We use the DiD design to estimate the average effect of the DAC6 on cross-border deposits held by EU residents. We run

regressions of the form:

$$Deposits_{ijt} = \alpha + \beta_2 PostDAC6_{jt} \times EUResidents_i + \gamma_{jt} + \theta_{ij} + \varepsilon_{ijt} \quad (1)$$

We use the event studies to explore pre-trends and dynamic effects of the DAC6 on cross-border deposits held by residents of EU versus non-EU countries, which formally reads as:

$$Deposits_{ijt} = \sum_{k=-4}^4 \alpha_k D_{jt}^k \times EUResidents_i + \gamma_{jt} + \theta_{ij} + \varepsilon_{ijt} \quad (2)$$

In both specifications, the dependent variable $Deposits_{ijt}$ is the natural logarithm of the volume of cross-border deposits located in country j and owned by a resident of country i at the end of quarter t . $EURResidents_i$ is a dummy taking value 1 when the resident country is an EU member state. The variable of interest in the DiD specification is the interaction of $PostDAC6_{jt}$ and $EURResidents_i$. $PostDAC6_{jt}$ is the post-period dummy and it switches to 1 after DAC6 became effective in June 2018.²¹ The variables of interest in the event study are the dummies D_{jt}^k , indicating a point in time k periods from the DAC6 treatment and interacted with $EURResidents_i$. As is the standard in the literature for event studies, we omit the indicator for period $t - 1$, which serves as a benchmark. We bin the treatment indicators at the endpoints.²² We include deposit–country quarter–year fixed effects γ_{it} to control for common time trends affecting cross-border deposits (e.g., globalization of financial markets and economic shocks) and deposit country-specific demand-side shocks. Ordered country-pair fixed effects θ_{ij} are added to control for all time-invariant country-pair factors (e.g., distance, common language), which might affect the change in cross-border deposits as a reaction to DAC6. Our standard errors are cluster-robust, with clustering at the resident country level. The error term is denoted by ε_{ijt} .

Similarly, we use a DiD regression followed by an event study design to estimate the effect of the DAC6 on cross-border deposits owned by CBI/RBI residents in the EU and outside the EU. Specifically, we compare the changes in cross-border deposits held by residents of CBI/RBI countries to the ones held by residents of non-CBI/RBI countries (excluding EU countries) pre- and post-DAC6 implementation. The regression equations are the same as equations (1) and (2), but we substitute the treatment variable with $CBIRBI_Residents_i$, which takes a value of 1 when the resident country i is a CBI/RBI country.

5 Results

5.1 The effect of DAC6 on EU-owned deposits: a cross-country analysis

Main analysis

In this section we show the results of testing hypotheses 1 and 2. Table 4 illustrates the results for the DiD regression model from equation (1). Columns (1)–(3) refer to the results of testing hypothesis 1, whereas Columns (4)–(6) report the results of testing hypothesis 2. Column (7) serves as a contrast to Columns (4)–(6) by showing the results for the countries not offering a preferential or stricter regulatory environment.

²¹ EU member states had until 31 December 2019 to transpose the directive into national law. Yet, every national law had a retrospective element since all cross-border arrangements advised or in use from 25 June 2018 needed to be reported if fulfilling the characteristics stated under DAC6.

²² Binning implies here that the indicator $t - 4$ stands for treatment at time $t - 4$ or more periods ago and the indicator $t + 4$ stands for time $t + 4$ or more periods in the future. See Schmidheiny and Siegloch (2019) and Fuest et al. (2018).

Table 4: The effect of DAC6 on EU-owned deposits

Sample	Cross-border deposits						
	(1) Within EU	(2) Outside EU	(3) United States	(4) Spain	(5) France	(6) France and Austria	(7) Other EU
Post-DAC6 \times EU residents	0.105** (0.049)	-0.021 (0.070)	-0.058 (0.075)	-0.179* (0.097)	0.265** (0.102)	0.248*** (0.083)	0.105* (0.060)
Constant	5.378*** (0.017)	5.185*** (0.026)	7.075*** (0.029)	5.145*** (0.035)	6.713*** (0.036)	5.674*** (0.029)	5.281*** (0.021)
Observations	3,276	2,160	480	492	492	984	1,800
R-squared	0.990	0.988	0.991	0.989	0.983	0.986	0.992
Country-pair FE	YES	YES	YES	YES	YES	YES	YES
Deposit-quarter-year	YES	YES	NO	NO	NO	YES	YES
Quarter-year	NO	NO	YES	YES	YES	NO	NO
Clustering	Resident country						

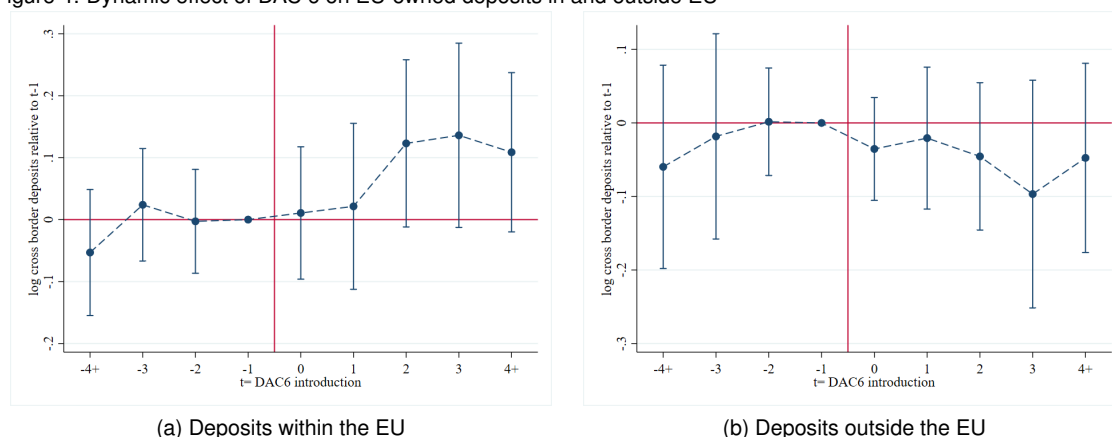
Note: the table reports the main DiD estimates. The dependent variable is the log of cross-border deposits held by residents of country i in banks in deposit country j at the end of quarter q . The sample period is 2017Q1–2019Q4 and the sample is restricted to residents of EU and OECD countries. The EU residents indicator takes a value of 1 if the deposits are owned by a resident of an EU country and 0 otherwise. In Column (1), deposit locations consists exclusively of EU countries, while in Column (2), deposit locations are exclusively non-EU countries. In Column (3), deposit location is the United States, while in Columns (4), (5), (6), and (7) the deposit locations are Spain, France, France and Austria, and Denmark, the UK, Italy, and Sweden, respectively. In Columns (1), (2), (6), and (7), ordered country-pair and deposit country \times quarter-year fixed effects are included. In Columns (3), (4), and (5) ordered country-pair and quarter-year fixed effects are included. Standard errors are clustered at the residence country level and are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: authors' compilation based on BIS-LBS data.

In Column (1) the coefficient on the interaction term is positive and statistically significant, suggesting the introduction of DAC6 led to a 10 per cent increase in deposits in the EU by EU residents, most likely due to greater disclosure of offshore accounts. In a given quarter-year, the average amount of deposits held by EU residents in our sample of EU countries is US\$1,131 billion. Based on our estimates, this amount increased by US\$124 billion post-DAC6. Column (2) shows the results for non-EU deposit locations, indicating DAC6 did not affect deposits of EU residents located outside the EU as the coefficient on the interaction term is economically small and statistically insignificant. In Column (3) we focus exclusively on how DAC6 affects EU residents' US deposits. The reason is that the United States is not participating in the CRS, which will make it easier for individuals to evade taxes as information exchange does not happen automatically. If deposits in the United States are directly owned by tax evaders, we should observe a decrease in these deposits after the introduction of DAC6. Yet, our results suggest that US deposits of EU residents are not affected by DAC6. One explanation for this result is that tax evaders do not directly own their US deposits, but indirectly through shell companies set up in tax havens. While we do not have sufficient data on tax haven deposits to directly test this channel, we indirectly shed light on this strategy by studying the effect of DAC6 on the use of CBI/RBI programmes in the next section.

Figure 4 shows the graphical results from the event study design of equation (2). In both panels of Figure 4, the vertical line between $t = -1$ and $t = 0$ indicates the implementation of the directive by the EU. The reference to DAC6 with the vertical line between $t = -1$ and $t = 0$ applies to all other event studies that follow as well. In Panel (a), we witness a constant upward trajectory of deposits in EU deposit locations post-treatment, surging in the period $t = 2$ and persisting in the remaining periods of the study. Panel (b), depicting the results of non-EU deposit locations, does not illustrate any significant movement of deposits post-DAC6.

Figure 4: Dynamic effect of DAC 6 on EU-owned deposits in and outside EU



Note: the figure shows the coefficients, each of which marks the change in cross-border deposits held within the EU (a) and outside the EU (b) around the DAC6 event date (in event time). The sample is restricted to residents of EU and OECD countries. The plotted coefficients are those of the interactions of the EU resident indicator and eight separate indicator variables, each marking one quarter over the sample period relative to the quarter before the DAC6 treatment event date ($t = 0$). We bin the treatment indicators before $t - 4$ and after $t + 4$ at the endpoints and omit the indicator for period $t - 1$, which therefore serves as a benchmark and has a coefficient value of 0 (and no confidence interval). The figure plots the coefficient estimates together with their 95 per cent confidence intervals for the DAC6 event date. The dependent variable is the log of cross-border deposits. Ordered country-pair and deposit country \times quarter-year fixed effects are included in both panels. Standard errors are clustered at the residence country level.

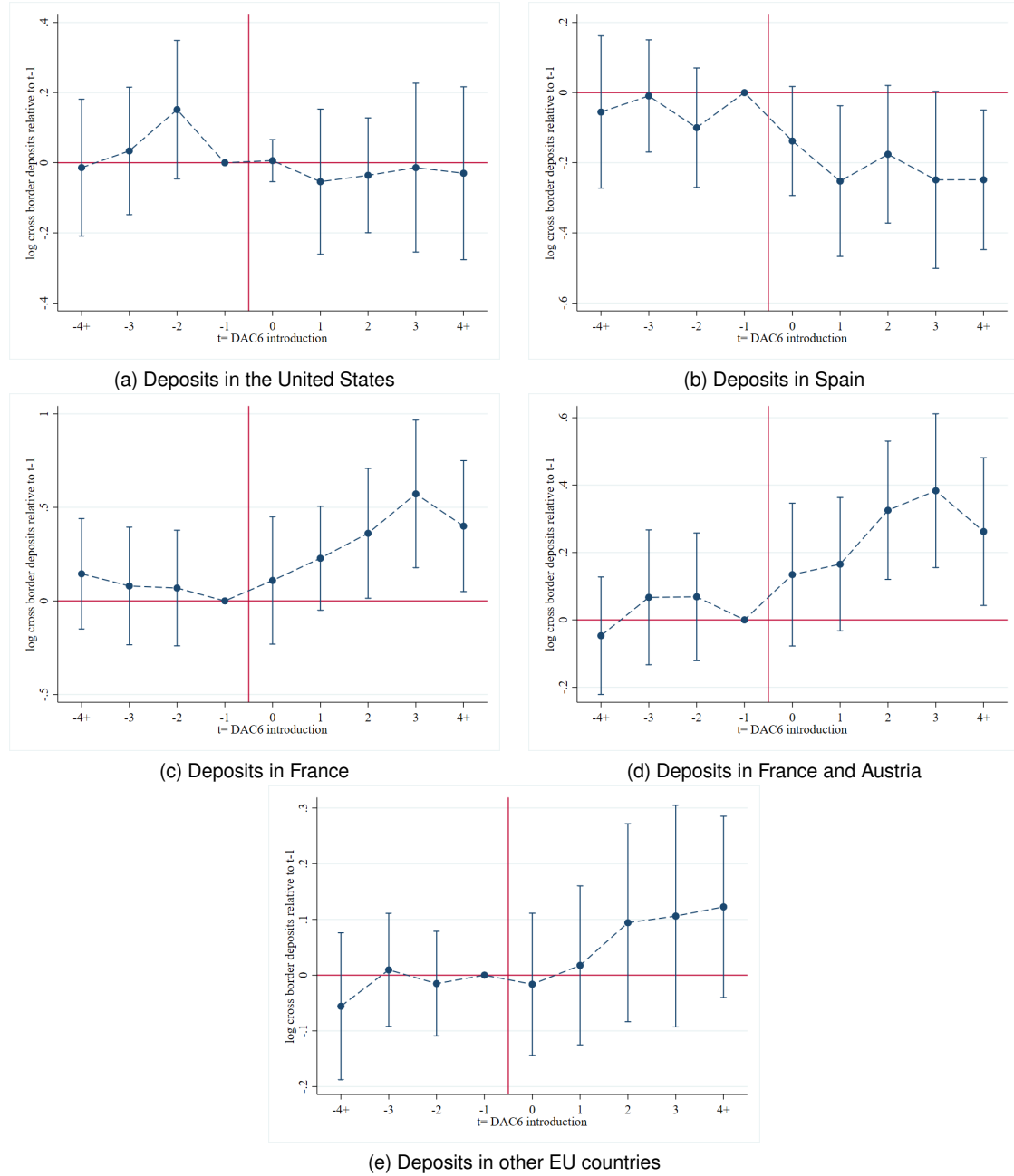
Source: authors' compilation based on BIS-LBS data.

In Columns (4)–(6) of Table 4 we present the results for testing hypothesis 2 to verify whether the regulatory environment plays a role for deposit relocation to the EU after the introduction of DAC6. Specifically, in Column (4) we analyse how deposits located in Spain are affected by the introduction of DAC6, while Column (5) shows the same analysis for France. Spain has a comparably stricter enforcement of DAC6 as it imposes a high monetary penalty on non-compliance, whereas France has a comparably weaker enforcement of DAC6 as it offers a legal professional privilege to financial institutions. If stronger enforcement disincentivizes misreporting or non-disclosure, we should observe a lower inflow of deposits into Spain, but a higher inflow of deposits into France. Interestingly, the coefficient on the interaction term in Column (4) is negative (–16 per cent) and significant, which suggests an outflow of deposits from Spain. In contrast, we observe a positive (30 per cent) and significant effect in Column (5), implying a strong inflow of deposits to France.

In Column (6) we present the combined results for deposits in France and Austria. We perform this additional test to show the effect of DAC6 on legal professional privilege by including a country where the legal professional privilege also extends to financial institutions, although it is granted only under certain conditions. Thus, in Austria, the extent of the privilege is limited in comparison to France. Austria also represents a special case given the long history of bank secrecy, which resulted in the country being considered a tax haven. However, we note that the inclusion of Austria does not change the result and indicates that any form of professional privilege may be used to relocate deposits.

Column (7) presents the results for all other EU locations excluding Spain, France, and Austria. We observe a coefficient that is economically of the same magnitude (10.5 per cent) as compared to the benchmark in Column (1). The combination of results suggests that some deposits owned by EU residents in Spain are relocated after DAC6 within the EU, and potentially to France or Austria. Hence, these results lend credence to the fact that deposits are not repatriated to the residence country, but relocated to a country with a more favourable regulatory environment.

Figure 5: Dynamic effect of DAC 6 on EU-owned deposits: cross-country analysis



Note: the figure shows the coefficients, each of which marks the change in cross-border deposits held in (a) the United States, (b) Spain (c) France, (d) France and Austria, and (e) Denmark, the UK, Italy, and Sweden around the DAC6 event date (in event time). The sample is restricted to residents of EU and OECD countries. The plotted coefficients are those of the interactions of the EU resident indicator and eight separate indicator variables, each marking one quarter over the sample period relative to the quarter before the DAC6 treatment event date ($t = 0$). We bin the treatment indicators before $t - 4$ and after $t + 4$ at the endpoints and omit the indicator for period $t - 1$, which therefore serves as a benchmark and has a coefficient value of 0 (and no confidence interval). The figure plots the coefficient estimates together with their 95 per cent confidence intervals for the DAC6 event date. The dependent variable is the log of cross-border deposits. Ordered country-pair and quarter-year fixed effects are included in Panels (a)–(c). Ordered country-pair and deposit country quarter-year fixed effects are included in Panels (d) and (e). Standard errors are clustered at residence country level.

Source: authors' compilation based on BIS-LBS data.

Figure 5 shows the event study results for the sub-samples presented in the last five columns of Table 4. Figure 5(a) shows for the sub-sample of the United States that the effect size is small in magnitude and statistically insignificant in any post-treatment period. Panels (b) and (c) show the event study results for the sub-samples of Spain and France, respectively. In both cases, the effect becomes significant with some delay, but remains significant at the end of the post-treatment period. Panel (d) presents the result

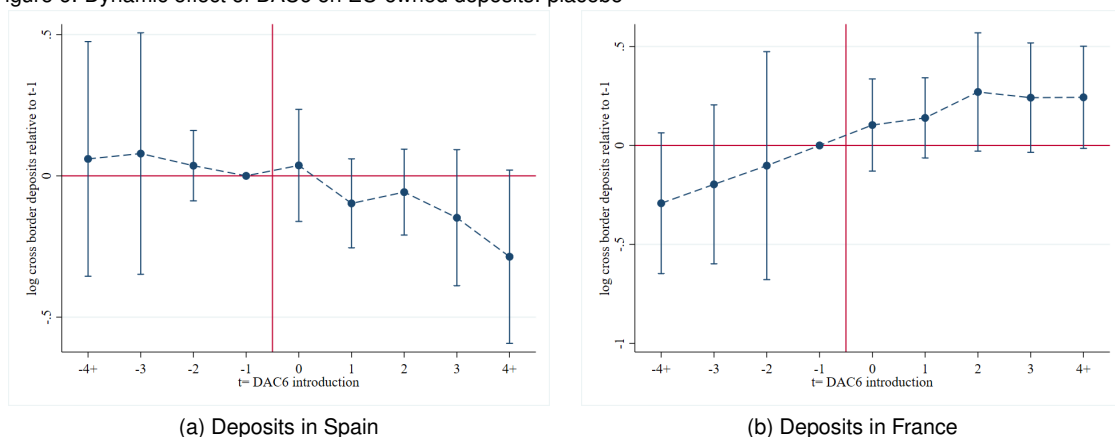
for the sub-sample of France and Austria, which is very similar to the one in Panel (c). Finally, Panel (e) illustrates the results for other EU countries with no significant change in the post-treatment period. Though we observe a positive trend in the post-treatment period, it is not significant at the 95 per cent significance level.

Placebo test

We conduct a placebo test exploiting the introduction of an MDR in three countries prior to DAC6. More specifically, Portugal introduced its MDR in 2008, the UK followed two years later in 2010, and Ireland another year later in 2011.²³ Thus, for the residents of those countries we do not expect any effect of DAC6. We test our hypothesis by comparing cross-border deposits of residents of Ireland, Portugal, and the UK to those of residents of non-EU countries before and after the implementation of DAC6.

Figure 6 shows the results of the event study design of equation (2) by changing the treatment group that now only includes the deposits of residents from Ireland, Portugal, and the UK. We verify the effect of DAC6 on deposits in four different samples of deposit locations, namely Spain, France, and other EU deposit locations. In none of the panels is the effect on the treatment group statistically significant. While we can observe a reduction in deposits located in Spain (a) and an increase in deposits located in France (b), the results are not statistically significant. The findings, therefore, corroborate that indeed DAC6, instead of other unobservable shocks occurring at the same time, is accountable for the movements in deposits.

Figure 6: Dynamic effect of DAC6 on EU-owned deposits: placebo



Note: the figure shows the coefficients, each of which marks the change in cross-border deposits held in (a) Spain and (b) France around the DAC6 event date (in event time). The sample is restricted to residents in Ireland, Portugal, and the UK, and OECD countries which are not EU member states. The plotted coefficients are those of the interactions of the EU resident indicator and eight separate indicator variables, each marking one quarter over the sample period relative to the quarter before the DAC6 treatment event date ($t = 0$). We bin the treatment indicators before $t - 4$ and after $t + 4$ at the endpoints and omit the indicator for the period $t - 1$, which therefore serves as a benchmark and has a coefficient value of 0 (and no confidence interval). The figure plots the coefficient estimates together with their 95 per cent confidence intervals for the DAC6 event date. The dependent variable is the log of cross-border deposits. Ordered country-pair and quarter-year fixed effects are included in Panels (a) and (b). Standard errors are clustered at residence country level.

Source: authors' compilation based on BIS-LBS data.

²³ For more details, see Portugal Ministry of Finance (2008), UK Ministry of Finance (2004), and Revenue—Irish Tax and Customs (2019), respectively.

5.2 Circumventing the DAC6 reporting requirement via CBI/RBI programmes

Main analysis

In this section we test hypothesis 3 by analysing how cross-border deposits in non-EU countries that originate from CBI/RBI countries are affected by the implementation of DAC6. CBI/RBI programmes allow individuals to escape information transmission to the true country of residence and therefore enable them to continue the evasion of taxes. Because DAC6 mandates the reporting of cross-border transactions with an EU nexus (i.e. also those conducted by non-EU residents in the EU), we expect cross-border deposits from CBI/RBI residents to increase only outside the EU.

Table 5 presents the results of the DiD regression model similar to equation (1). The difference to the previous analysis is that the treatment group now constitutes residents of countries offering CBI/RBI programmes. Importantly, this also applies to the two EU countries offering CBI/RBI programmes—Cyprus and Malta—that are included in the treatment group.²⁴

Table 5: The effect of DAC 6 on deposits owned by CBI and RBI residents

Sample	Cross-border deposits				
	(1) In EU	(2) Outside EU	(3) Non-EU tax havens	(4) Non-EU non-tax havens (incl US)	(5) Non-EU non-tax havens (excl. US)
Post-DAC6 × RBICBI residents	−0.029 (0.085)	0.266** (0.111)	0.242** (0.109)	0.293* (0.158)	0.283 (0.177)
Constant	2.163*** (0.003)	2.149*** (0.004)	2.444*** (0.004)	1.831*** (0.006)	1.186*** (0.006)
Observations	18,756	20,340	10,560	9,780	8,472
R-squared	0.975	0.968	0.975	0.961	0.947
Country-pair FE	YES	YES	YES	YES	YES
Deposit-quarter-year	YES	YES	YES	YES	YES
Clustering	Resident country				

Note: the table reports the main DiD estimates. The dependent variable is the log of cross-border deposits held by residents of country i in banks in deposit country j at the end of quarter q . The sample period is 2017Q1 to 2019Q4 and the sample excludes residents of EU member states, with the exception of those from Malta and Cyprus. In Column (1) deposit locations consist exclusively of EU countries, while in Column (2) they are of non-EU countries. In Column (3), Chile, Guernsey, Hong Kong, Isle of Man, Jersey, Macau, and Switzerland are included. In Column (4), Australia, Brazil, Canada, Korea, Mexico, Philippines, South Africa, Taiwan, and the United States are included. In Column (5), all the countries in Column 4 are included except the United States. Ordered country-pair and deposit country × quarter-year fixed effects are included. Standard errors are clustered at residence country level and are reported in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: authors' compilation based on BIS-LBS data.

In Column (1) we present the results for the deposits that are situated in EU deposit locations. We conduct this test to verify whether residents from countries offering CBI/RBI programmes invested in the EU post-DAC6. As expected, the coefficient of the interaction term is negligible and statistically insignificant. Column (2) shows the results for the sub-sample of non-EU deposit locations. The coefficient on the interaction term is positive (30 per cent) and statistically significant, indicating the strong use of these programmes post-DAC6 to circumvent the new disclosure rule. In a given quarter-year, the average amount of deposits held by CBI/RBI residents in our sample of non-EU countries is US\$47 billion. Given our estimates, that amount is increased by US\$14 billion post-DAC6. The different effects between EU and non-EU deposits therefore indicate that CBI/RBI programmes have not become lucrative in general, but are explained by the implementation of DAC6.

²⁴ We restrict the control group to non-EU countries (including non-OECD countries as well) because our analysis in the previous section illustrates that deposits in EU countries reacted to the introduction of DAC6. Hence, adding these countries to the control group would bias the results.

In Columns (3), (4), and (5) we present the results by splitting the non-EU deposit locations into non-EU tax haven locations and non-EU non-tax haven locations, respectively. We perform this test to verify whether the deposits from CBI/RBI countries were primarily moved to tax havens due to the lower tax rates offered by the tax haven deposit locations. The difference between these two analyses emerges from the unclear role of the United States in terms of secrecy. Given that the United States is not participating in the CRS, the country could arguably be treated as a haven.²⁵ However, so far, there is no general consensus around the status of the United States as a tax haven.²⁶ For this reason, we label the United States as a non-haven country in Column (4) and we exclude it from the list of non-haven countries in Column (5) as an additional test.

When looking at the effect of DAC6 on deposits of CBI country residents, we observe that deposits significantly increase (27 per cent) in tax haven countries, which translates into an approximately US\$7 billion increase considering an average quarter-year cross-border deposit volume of approximately US\$28 billion in tax havens from CBI/RBI residents. Looking at how deposits in non-haven countries are affected by DAC6, we find that the result is sensitive to the inclusion of the United States as a haven country. While DAC6 significantly increases (34 per cent) the deposits in non-haven countries when we include the United States in the list of non-haven countries (Column (4)), this effect becomes statistically insignificant when we drop the United States from the sample (Column (5)), though the coefficient and the standard deviation are quite comparable.

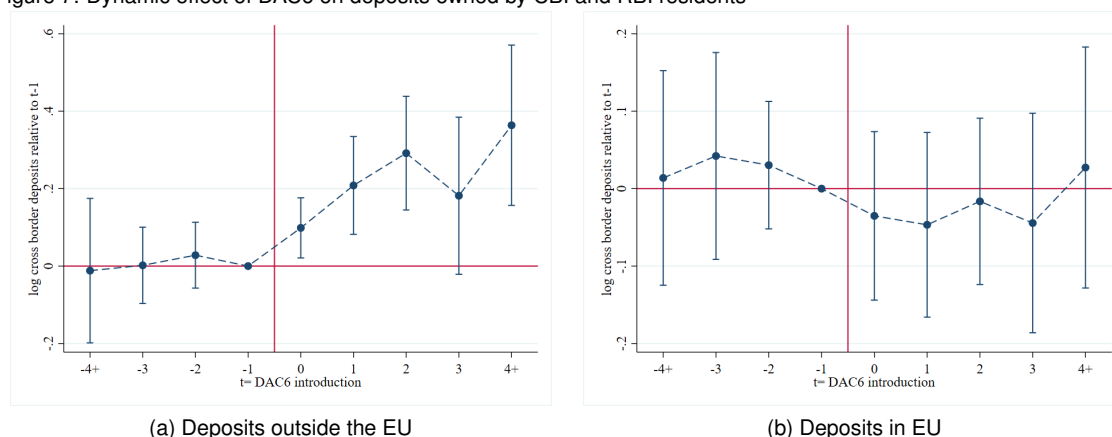
The latter result hints at the potentially special role of the United States for tax evasion and may explain why EU residents' deposits in the United States remain unaffected by the introduction of DAC6 (cf. Table 4, Column (3)). Instead of owning deposits directly in the United States, EU residents may own them indirectly through shell companies (trust) in a tax haven, such as the Bahamas. This evasion strategy is important to understand the difference between the CRS and DAC6. Under the CRS, trusts are considered non-reportable institutions. However, under DAC6, any transaction from an EU country to the tax haven, in our example the Bahamas, which is done to circumvent the CRS has to be reported, not by the individual itself, but by the intermediary. To circumvent the reporting duty under DAC6, individuals can set up the trust using CBI/RBI citizenship rights instead of directly from the EU country because information only flows to the stated residence country, which in this case is the CBI/RBI country. The consequence of this strategy is that deposits in tax havens are no longer owned by EU residents, but by residents of CBI/RBI countries. Although we are unable to test whether deposits of EU residents decrease in tax havens due to data availability, our results show that deposits in tax havens owned by residents of CBI/RBI countries significantly increase after DAC6. Although tax havens are the natural place to expect deposits to flow, we also observe an increase in deposits in non-tax havens. This result is in line with recent evidence that rich individuals hide their wealth in the form of tangible assets, such as yachts and houses, in high-tax countries like Norway and the United States (see Harding 2022; Lambert 2022). While our results are indirect by nature, they are consistent with a change in the tax evasion strategy induced by DAC6.

Figure 7 shows the graphical results of the event study for the treatment group of CBI/RBI countries in EU and non-EU deposit locations. Panel (a) presents the results for deposits in non-EU deposit locations and shows an immediately significant effect that is constantly increasing in the post-treatment period. Panel (b) presents the results of the deposits in EU countries and indicates that the effect of CBI/RBI programmes is insignificant throughout the entire period of the study. This suggests that the residents of CBI/RBI countries avoided the EU deposit locations post-DAC6.

²⁵ See, for example, Casi et al. (2020), who highlight the special role of the United States in the context of the CRS.

²⁶ The United States is not on the EU blacklist or the OECD list for non-cooperative countries.

Figure 7: Dynamic effect of DAC6 on deposits owned by CBI and RBI residents



Note: the figure shows the coefficients, each of which marks the change in cross-border deposits held (a) in the EU and (b) outside the EU. The sample excludes residents of EU member states, with the exception of those from Malta and Cyprus. The plotted coefficients are those of the interactions of the EU resident indicator and eight separate indicator variables, each marking one quarter over the sample period relative to the quarter before the DAC6 treatment event date ($t = 0$). We bin the treatment indicators before $t - 4$ and after $t + 4$ at the endpoints and omit the indicator for period $t - 1$, which therefore serves as a benchmark and has a coefficient value of 0 (and no confidence interval). The figure plots the coefficient estimates together with their 95 per cent confidence intervals for the DAC6 event date. Ordered country-pair and deposit country \times quarter-year fixed effects are included in all panels. Standard errors are clustered at residence country level.

Source: authors' compilation based on BIS-LBS data.

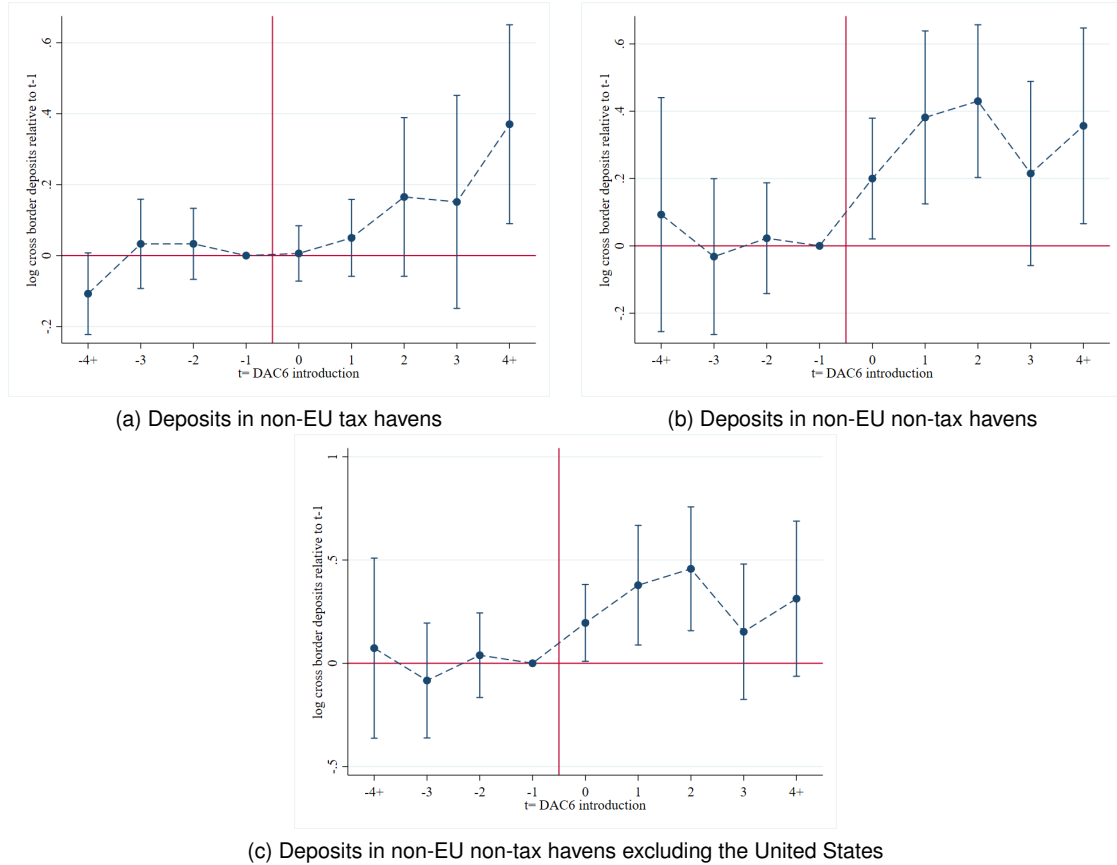
Figure 8 shows the results of the event study design in various sub-samples of the data. In Panel (a), we observe a steady increase in deposits in non-EU tax haven locations, which becomes significant in the final period. Panel (b) shows an immediately significant increase in deposits in non-EU non-tax haven locations that remains significant for most of the post-treatment periods. Panel (c) presents the results for the sub-sample of deposits in non-EU non-tax haven locations excluding the United States and shows a very similar picture to Panel (b), with the only difference that the effect becomes statistically insignificant in the last period.²⁷

The use of CBI/RBI programmes in and outside the EU

Figure 9 shows the event study results for the deposits owned by CBI/RBI residents. Panel (a) shows the results for non-EU CBI/RBI countries as the treatment group and non-EU countries as the control group. Here, we observe a strong upward trend in the post-treatment period. The effect becomes significant in the period $t = 1$ and remains significant for most of the remaining post-treatment periods. In Panel (b) we verify the same results as that of Panel (a), but this time the treatment group comprises only the EU CBI/RBI countries, namely Malta and Cyprus. From Panel (b) we observe that there is a constant upward trend in the post-treatment period. The effect becomes significant in the period $t = 2$ and remains significant for the remaining post-treatment periods. The results from this additional test show that there is a strong affinity for the CBI/RBI programmes post-DAC6, whether the country is situated in the EU or outside.

²⁷ In Appendix A3 we show the results from the same analysis but we split the results into EU and non-EU CBI and RBI countries. The results suggest that the use of CBI and RBI programmes extends to those countries within the EU, namely Malta and Cyprus. One possible explanation is that tax evaders might perceive no risk of detection if the transactions are reported to such countries and not their true country of residence.

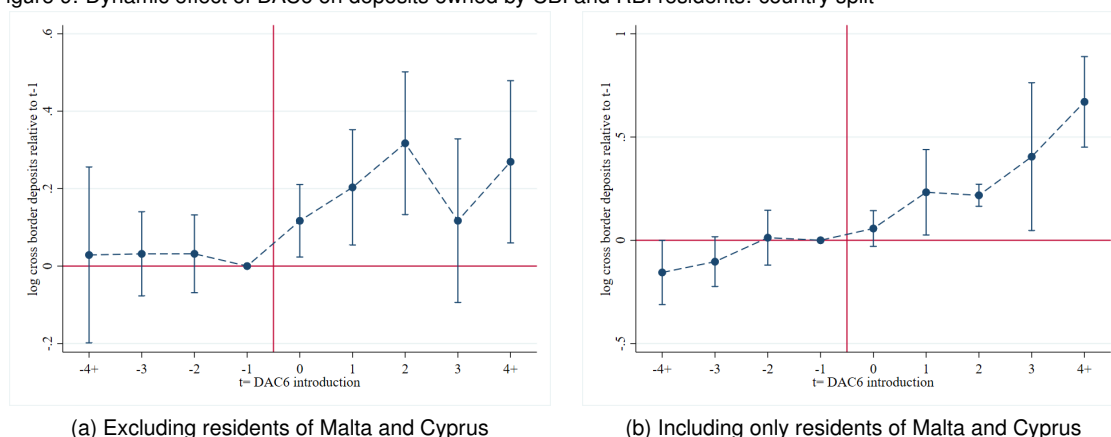
Figure 8: Dynamic effect of DAC6 on deposits owned by CBI and RBI residents



Note: the figure shows the coefficients, each of which marks the change in cross-border deposits held in (a) Chile, Guernsey, Hong Kong, Isle of Man, Jersey, Macau, Switzerland, (b) Australia, Brazil, Canada, Korea, Mexico, Philippines, South Africa, Taiwan, and the United States, and (c) Australia, Brazil, Canada, Korea, Mexico, Philippines, South Africa, and Taiwan around the DAC6 event date (in event time). The sample excludes residents of EU member states, with the exception of those from Malta and Cyprus. The plotted coefficients are those of the interactions of the EU resident indicator and eight separate indicator variables, each marking one quarter over the sample period relative to the quarter before the DAC6 treatment event date ($t = 0$). We bin the treatment indicators before $t - 4$ and after $t + 4$ at the endpoints and omit the indicator for period $t - 1$, which therefore serves as a benchmark and has a coefficient value of 0 (and no confidence interval). The figure plots the coefficient estimates together with their 95 per cent confidence intervals for the DAC6 event date. Ordered country-pair and deposit country \times quarter-year fixed effects are included in all panels. Standard errors are clustered at residence country level.

Source: authors' compilation based on BIS-LBS data.

Figure 9: Dynamic effect of DAC6 on deposits owned by CBI and RBI residents: country split



Note: the figure shows the coefficients, each of which marks the change in cross-border deposits held outside the EU (a) excluding those held by residents of Malta and Cyprus and (b) including only those held by residents of Malta and Cyprus around the DAC6 event date (in event time). The sample includes residents of Malta and Cyprus and residents of countries that are not in the EU and have no CBI or RBI programmes. The plotted coefficients are those of the interactions of the EU resident indicator and eight separate indicator variables, each marking one quarter over the sample period relative to the quarter before the DAC6 treatment event date ($t = 0$). We bin the treatment indicators before $t - 4$ and after $t + 4$ at the endpoints and omit the indicator for period $t - 1$, which therefore serves as a benchmark and has a coefficient value of 0 (and no confidence interval). The figure plots the coefficient estimates together with their 95 per cent confidence intervals for the DAC6 event date. Ordered country-pair and deposit country \times quarter-year fixed effects are included in both panels. Standard errors are clustered at residence country level.

Source: authors' compilation based on BIS-LBS data.

6 Robustness checks

In this section we briefly discuss the tests we conduct to check the robustness of our main findings. First, we conduct a split sample analysis to rule out that our main findings are driven by the control group. We test the changes in cross-border deposits on the sub-sample of EU residents and non-EU residents separately. Figure A1 presents the results for a time trend test of cross-border deposits in different EU locations. When considering the effect of DAC6 in different EU locations together and separately, as well as outside the EU, the figure shows that the control group is unaffected by the introduction of DAC6. Figure A2 confirms this robustness also for our analysis on CBI/RBI countries.

Second, we examine the reliance of our identification on the fixed effects we select. Specifically, we modify the fixed effects structure of each main result of our analysis. In Figures A3–A5 we include only country-pair fixed effects, only deposit country–time fixed effects, and no fixed effects. Including or excluding fixed effects does not affect our results substantially. The necessity to control for deposit country–time variant characteristics (or for general time trends) is limited given the selection of a short sample period that ensures that no major economic shocks affect cross-border deposits. The necessity to control for time-invariant characteristics across and within country-pairs is also restricted given the accurate selection of the control and treated group in terms of comparability.

Third, in our main test we restrict the sample to the period from the first quarter of 2017 to the last quarter of 2019 in order to exclude possible confounding impacts of the introduction of FATCA and the CRS in 2010–16 as well as the global pandemic in 2020. Nevertheless, in the Appendix we test how our results change if we extend our sample period from the first quarter of 2016 to the last quarter of 2020. In Figure A6 we show that the effect of DAC6 on cross-border deposits in Spain and France continues to hold over the whole sample period. The results in Figure A7 suggest that residents of CBI/RBI countries increase cross-border deposits in tax havens immediately after DAC6 is introduced, although the effect

diminishes in the last quarters of 2020. Instead, the increase in cross-border deposits in non-tax havens outside the EU persists throughout the sample period.

7 Conclusions

This paper studies the effect of the MDR introduced by the EU under the sixth amendment to the Directive on Administrative Cooperation, the so-called DAC6, which came into effect in June 2018. By making intermediaries liable to report a comprehensive set of information on aggressive tax structures, the directive adds a new dimension to the disclosure of cross-border financial activity. In the first part of the study, using data on cross-border deposits, we find that the reporting of cross-border deposits from EU residents in EU deposit locations has considerably increased, with no effect of DAC6 on non-EU deposit locations. However, this result neglects important cross-country differences within the EU. While DAC6 had a negative effect on deposit growth in countries with a stronger enforcement of DAC6, deposits increased in countries with a weaker enforcement of DAC6. These results suggest that individuals partially circumvented the DAC6 disclosure requirement by relocating deposits to weak enforcement countries that offer professional legal privileges for financial institutions.

In the second part of the study, we investigate the effect of CBI/RBI schemes and their usage as methods of regulatory arbitrage against DAC6. We show that cross-border deposits of residents of CBI/RBI countries in the EU were unaffected by DAC6, demonstrating that pre-DAC6 such schemes were not widely used as methods to escape the AEOI. Yet, CBI/RBI country residents sharply increased their deposits in non-EU locations, providing evidence that CBI/RBI schemes can be used to escape the disclosure requirement under DAC6.

Overall, our study contributes substantially to the current international debate on increasing regulation of tax advisory services. A key finding is that strong enforcement is an essential element to increased information collection and exchange on cross-border transactions and to ensuring a disclosure reaction from tax evaders. Moreover, we provide novel evidence on the regulatory arbitrage offered by the existence of risky CBI/RBI programmes.

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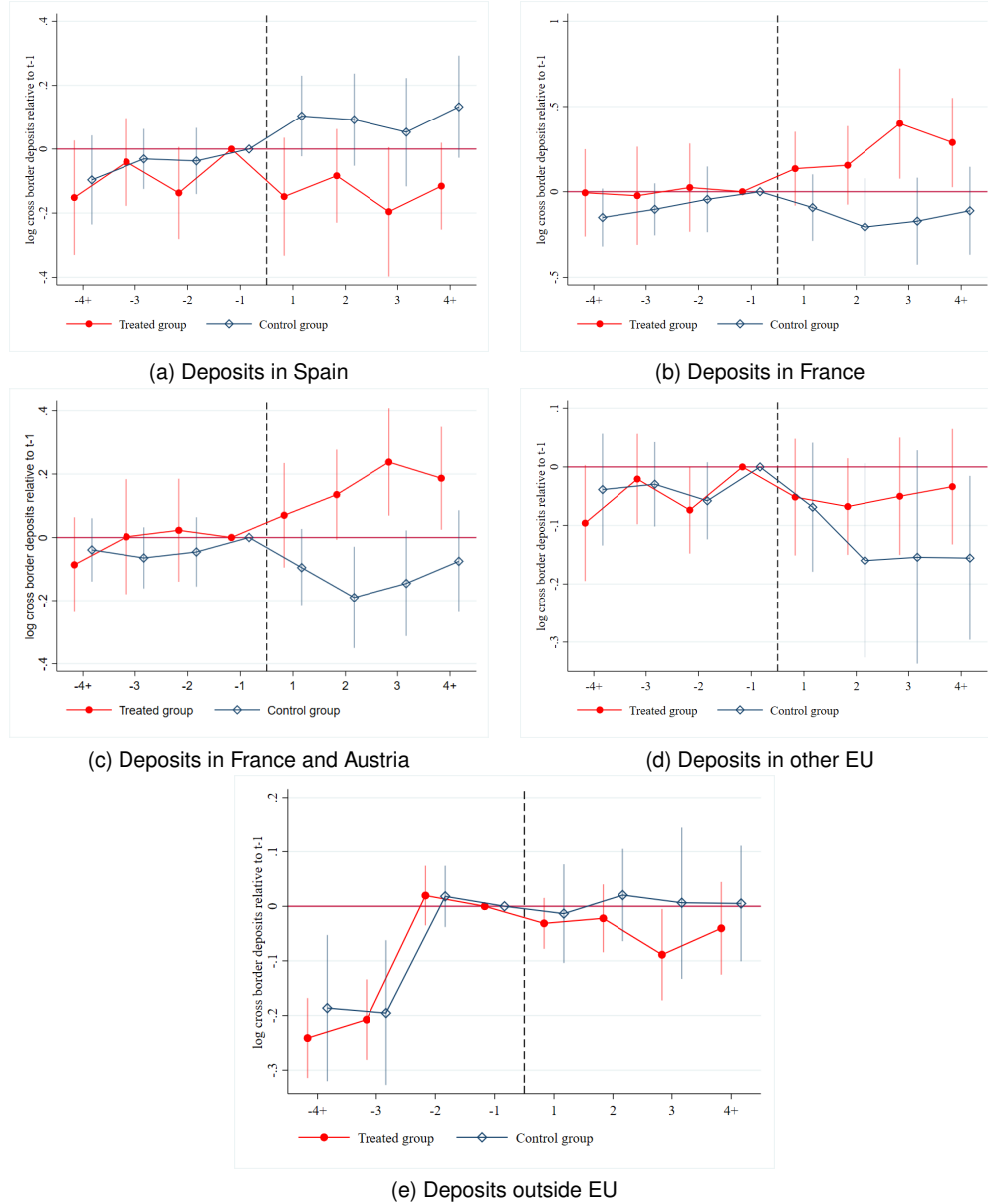
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Appendix A

A1 Main results: split tests

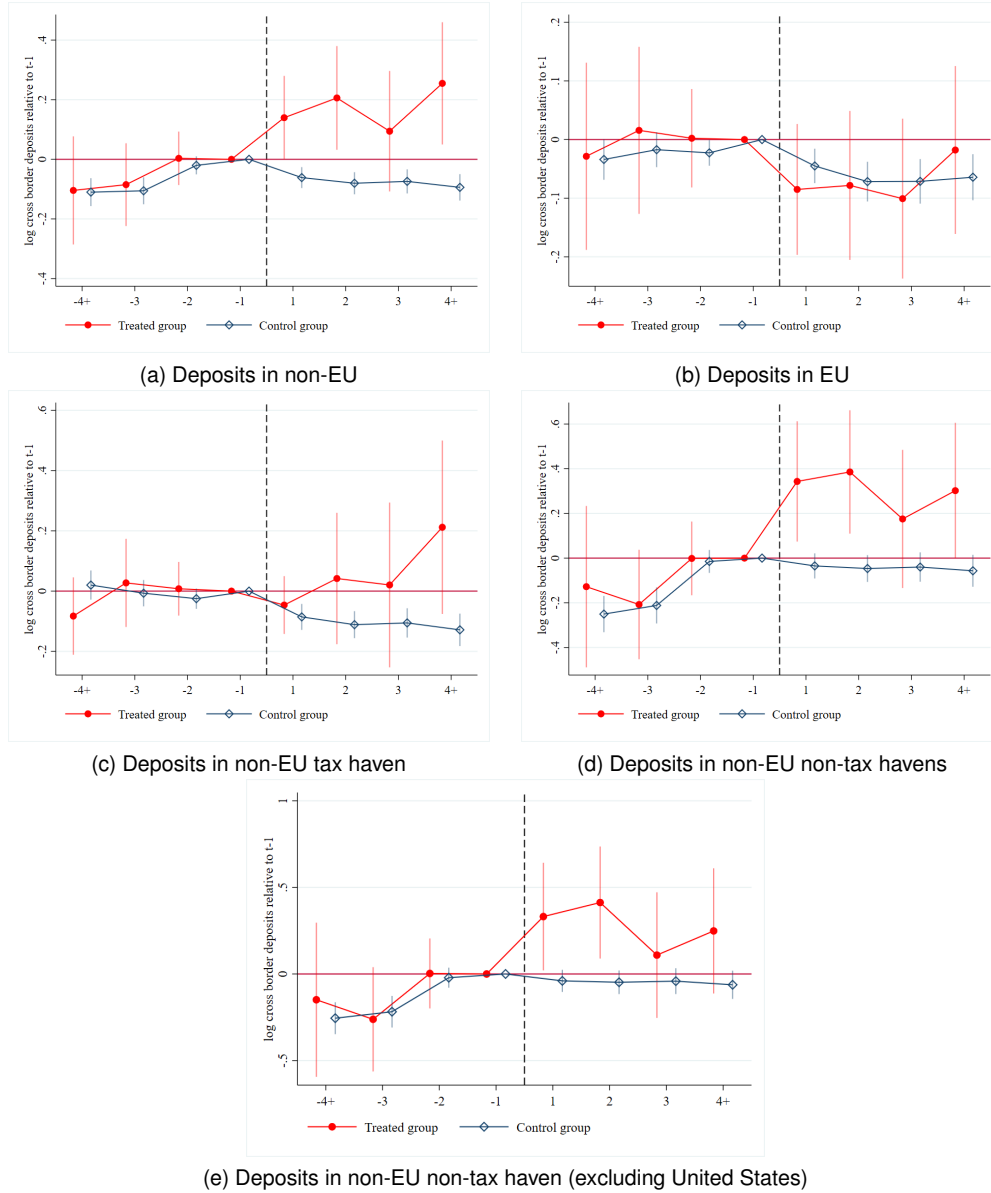
Figure A1: Dynamic effect of DAC6 on EU-owned deposits: split test



Note: the figure replicates Figure 5 panels (b), (c), (d) and (e) and Figure 4 panel (b). The figure shows the coefficients, each of which marks the change in cross-border deposits held by residents of EU (red) and non-EU (blue) countries in (a) Spain, (b) France, (c) France and Austria, (d) Denmark, the UK, Italy, and Sweden, and (e) Australia, Canada, Switzerland, the United States, and South Africa around the DAC6 event date (in event time).

Source: authors' compilation based on BIS-LBS data.

Figure A2: Dynamic effect of DAC6 on deposits owned by CBI and RBI residents: split test

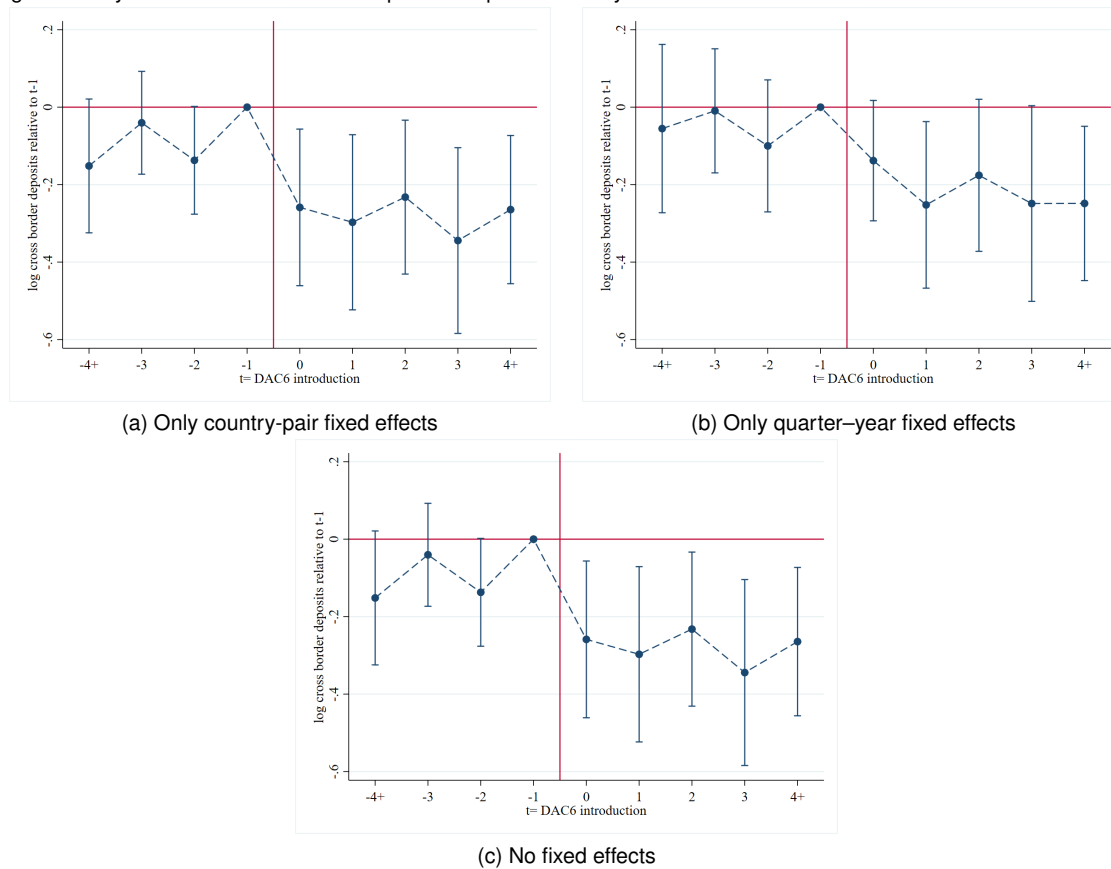


Note: the figure replicates Figure 7 panels (a) and (b) and Figure 8 panel (a) and (b). The figure shows the coefficients, each of which marks the change in cross-border deposits held by residents of CBI/RBI countries (red) and non-CBI/RBI countries (blue) in (a) all non-EU deposit locations, (b) all EU deposit locations, (c) Chile, Guernsey, Hong Kong, Isle of Man, Jersey, Macau, and Switzerland, (d) Australia, Brazil, Canada, Korea, Mexico, Philippines, South Africa, Taiwan, and the United States, and (e) in Australia, Brazil, Canada, Korea, Mexico, Philippines, South Africa, and Taiwan around the DAC6 event date (in event time).

Source: authors' compilation based on BIS-LBS data.

A2 Main results: different fixed effects structure

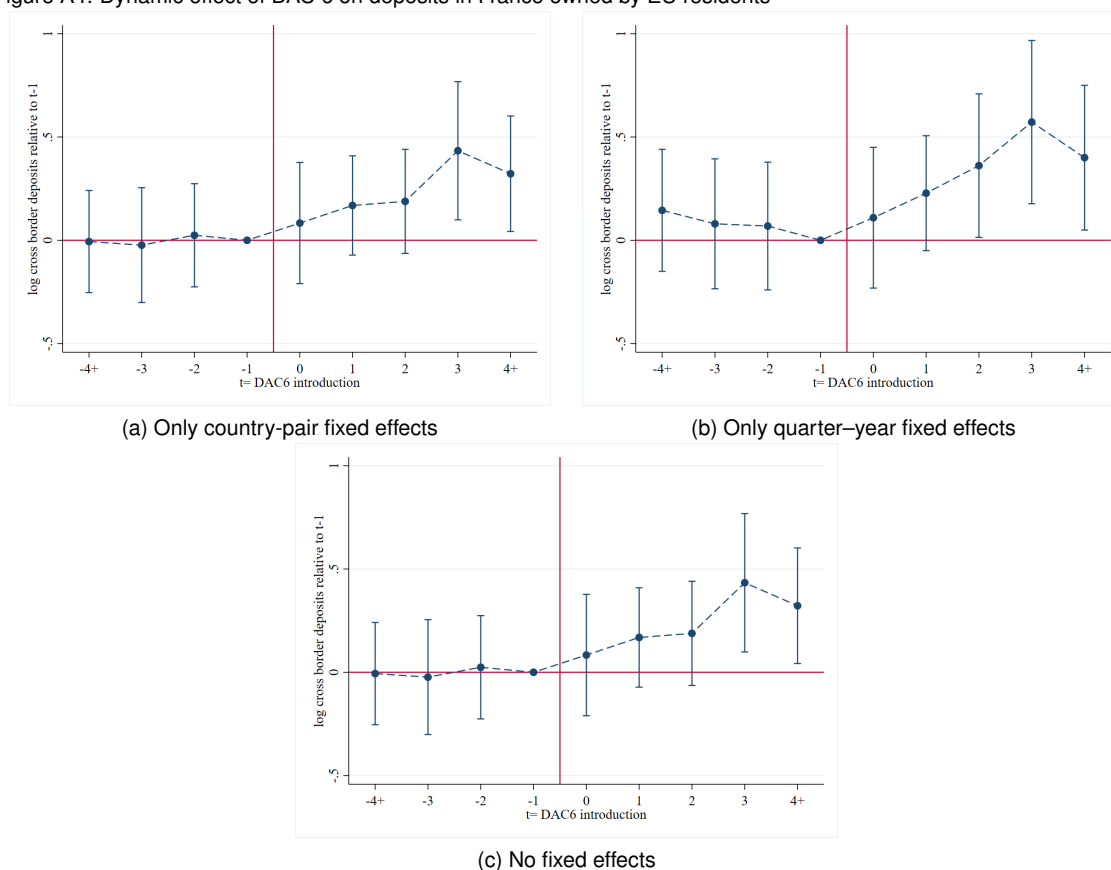
Figure A3: Dynamic effect of DAC6 on deposits in Spain owned by EU residents



Note: The figure replicates Figure 5 panel (b) but with different fixed effects. Ordered country-pair fixed effects are included in (a), quarter-year fixed effects are included in (b), no fixed effect is included in (c). Standard errors are clustered at residence country level.

Source: authors' compilation based on BIS-LBS data.

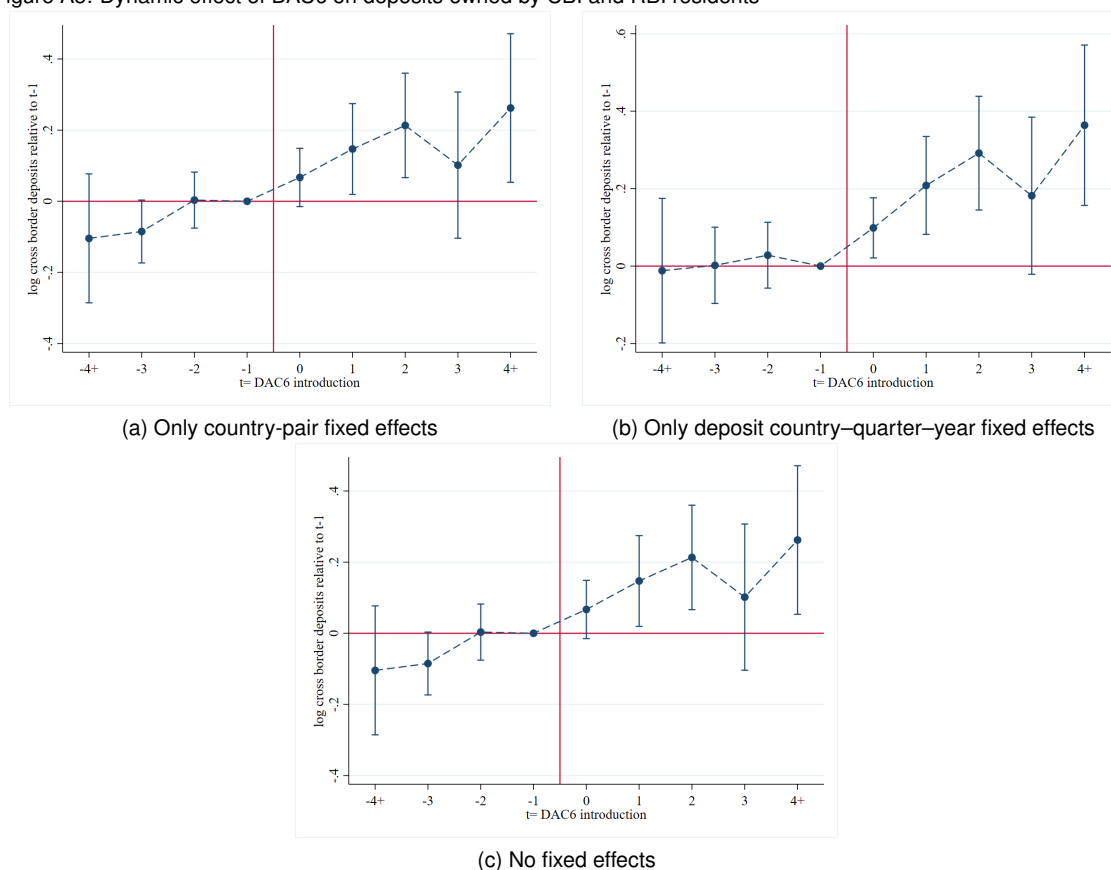
Figure A4: Dynamic effect of DAC 6 on deposits in France owned by EU residents



Note: the figure replicates Figure 5 panel (c) but with different fixed effects. Ordered country-pair fixed effects are included in (a), quarter-year fixed effects are included in (b), no fixed effect is included in (c).

Source: authors' compilation based on BIS-LBS data.

Figure A5: Dynamic effect of DAC6 on deposits owned by CBI and RBI residents

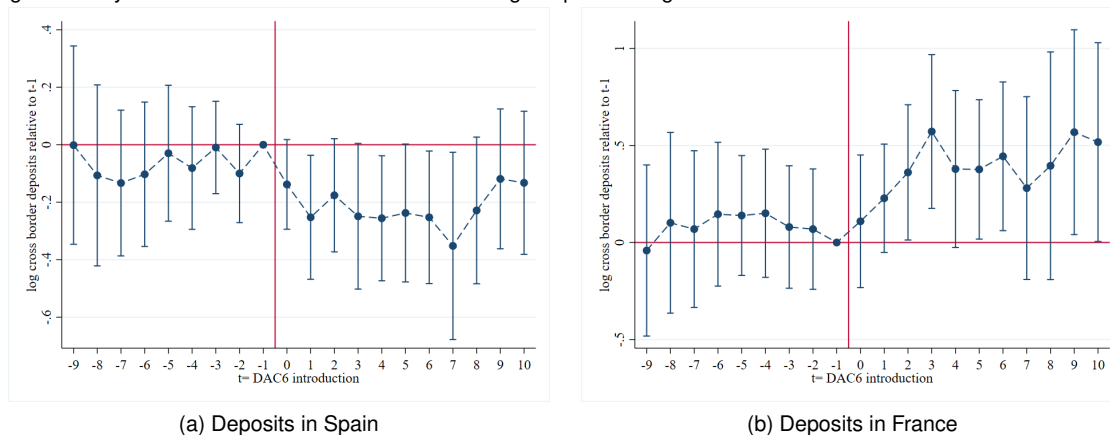


Note: the figure replicates Figure 7 panels (a) and (b) but with different fixed effects. Ordered country-pair fixed effects are included in (a), deposit country-quarter-year fixed effects are included in (b), no fixed effect is included in (c). Standard errors are clustered at residence country level.

Source: authors' compilation based on BIS-LBS data.

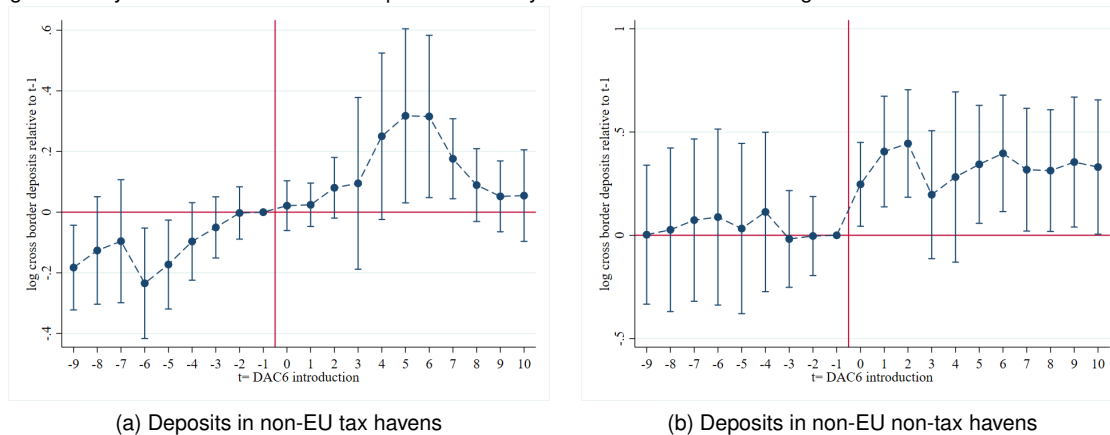
A3 Main results: long-term effect

Figure A6: Dynamic effect of DAC6 on EU-owned foreign deposits: long run



Note: the figure replicates Figure 5 panels (b) and (c). A longer period of time is considered from 2016Q1 to 2020Q4.
Source: authors' compilation based on BIS-LBS data.

Figure A7: Dynamic effect of DAC6 on deposits owned by CBI and RBI residents: long run



Note: the figure replicates Figure 9 panels (a) and (b). A longer period of time is considered from 2016Q1 to 2020Q4.
Source: authors' compilation based on BIS-LBS data.