



Does global financial transparency improve tax compliance in developing countries?

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Abstract

In a coordinated effort to curb tax evasion, governments systematically exchange information about bank accounts with foreign owners. We study the compliance effects of the policy in the context of South Africa using information reports on 1 million foreign bank accounts linked to income and audit data. We find that self-reported foreign income increased sharply and persistently at the onset of information exchange, but remained much below the true foreign income implied by the information reports. We explain the partial compliance response by showing that, contrary to standard theory of third-party reporting, the detection risk associated with non-compliance was modest.

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1 Introduction

Financial secrecy in offshore tax havens is a longstanding challenge to effective tax enforcement: private wealth in offshore accounts amounts to trillions of dollars (Zucman, 2013; Johannesen et al., 2024) and secrecy laws have historically made it almost impossible to detect when these accounts served as vehicles for tax evasion (Guyton et al., 2021). Further, as offshore tax evasion is much more common among the rich (Alstadsæter et al., 2019), it has important distributional consequences and may ultimately render income tax systems regressive at the top (Johannesen, 2023).

Facing this challenge, governments have made enormous efforts to improve financial transparency in the past decade. The key policy innovation is automatic information exchange, which requires banks to identify financial accounts that are beneficially owned by foreign taxpayers and share details about these accounts with the home countries of the account owners. More than 100 countries including all major offshore banking centers are committed to the policy, implying that information about more than \$10 trillion of assets sitting in more than 100 million accounts is automatically exchanged each year (OECD, 2022).

In this paper, we study how this global push for financial transparency shapes the taxation of foreign financial income in the context of a developing economy. Our laboratory is South Africa where we are able to combine an array of administrative tax data: individual-level tax returns with granular information about domestic and foreign income, account-level information reports prepared by foreign financial institutions and received by South Africa under the international agreements on automatic information exchange, and case-level information about audits of personal tax returns.

Leveraging these rich datasets, we provide evidence on key compliance outcomes by asking how much more foreign financial income taxpayers self-report when tax authorities start receiving information from foreign banks and how much income remains unreported. We also provide insights about the mechanisms that induce the changes in taxpayer compliance by asking by how much the new information flows from foreign banks raise the detection risk for taxpayers with non-compliant foreign financial income.

These questions about compliance behavior and enforcement efforts go to the heart of the contention about automatic information exchange. An optimistic view invokes the lessons from domestic third-party reporting (Kleven et al., 2011): under automatic information exchange, tax authorities can in principle detect non-compliance simply by comparing the foreign income reported by foreign banks to the foreign income self-reported by the taxpayer on their tax

return. If such comparisons are made systematically, the detection probability should be close to 1 and taxpayers who trade off the costs and benefits of compliance would choose to self-report their foreign income (Allingham and Sandmo, 1972). A more skeptical view holds that the potential benefits of third-party reporting may fail to materialize in the context of cross-border information exchange — notably in developing countries. Evidence shows that the quality of the information reports is imperfect (Belnap et al., 2024) and that simple comparisons of bank-reported and self-reported foreign income do not seamlessly identify non-compliance (Boas et al., 2024). In light of these challenges, tax authorities may choose to reallocate few, if any, of their scarce resources to enforcement efforts that leverage the new information flows.

To provide background for the analysis, we use the information reports to document the aggregate value and distribution of South Africa’s offshore financial wealth. South African households own more than one million accounts in foreign banks, including both deposit and investment accounts, with an aggregate value above \$80 billion. The aggregate value corresponds to around 20% of GDP and is almost twice as high as existing offshore wealth estimates for South Africa relying on macro sources (Alstadsæter et al., 2018). Strikingly, around three quarters of the offshore wealth is sitting in global centers of wealth management such as Switzerland, Luxembourg and Singapore, that until recently maintained strict banking secrecy laws and other institutional arrangements to protect the privacy of foreign bank customers. Consistent with evidence from other countries, the offshore accounts are concentrated at the top of the income distribution (Alstadsæter et al., 2019; Londoño-Velez and Tortarolo 2022; Johannesen et al., 2024).

In the first step of the analysis, we study the effect of automatic information exchange on self-reporting. Tracking the foreign income line items on personal tax returns, we show that aggregate self-reporting of foreign financial income was more or less stable in the pre-reform period 2010–2015, then roughly doubled in 2016–2017 coinciding with the first waves of information exchange, and remained at this much higher level through 2018–2020. The sharp increase was driven almost entirely by taxpayers with large foreign accounts: while the number of taxpayers self-reporting foreign financial income above \$100,000 almost tripled, there was barely any change in the number of taxpayers self-reporting smaller amounts. These patterns are strongly suggestive of a significant increase in tax compliance induced by the improved ability of tax authorities to detect non-compliance.

Next, we estimate the remaining offshore non-compliance by comparing foreign financial income as reported by taxpayers and by foreign banks. The key assumption is that bank reporting

provides reliable measures of South Africans’ true foreign financial income, which implies that we can interpret the gap between bank-reporting and self-reporting as non-compliance. In the aggregate, the bank reports imply that South Africans, consistently over the period 2017–2020, had around twice as much foreign financial income as they self-reported on their tax returns. Leveraging the micro-data, we find that bank-reporting and self-reporting are generally aligned for taxpayers who self-reported foreign financial income before the onset of information exchange, whereas a large non-compliance gap exists for those who did not. The results are suggestive that around half of South Africans’ foreign financial income remains non-compliant, despite the fact that automatic information exchange, at least in principle, has made it straightforward to detect.

Finally, we analyze data on tax audits to better understand why much foreign financial income remained non-compliant despite the arrival of third-party information. Based on the hypothesis that compliance behavior is ultimately shaped by detection risk (Allingham and Sandmo, 1972), we estimate the risks associated with non-compliant foreign financial income from the perspective of taxpayers. Our main empirical design relies on cross-sectional comparisons of taxpayers who are highly similar in terms of their background characteristics (i.e. income, age, self-employment, fringe benefits, and so on) and highly similar in terms of bank-reported foreign financial income (amount, bank country), but differ with respect to self-reporting of this income on their tax returns.¹

The results indicate that, for the average taxpayer with foreign financial income, failing to self-report it is associated with a small but statistically significant excess risk of an audit correction of around 1%-point (around 10%). The excess risk increases monotonically with the scale of underreporting: it is negligible and statistically insignificant below the median and approaches 5%-points for the largest underreporters. This suggests that enforcement policies are somewhere between the two views described above: the detection risk for taxpayers who fail to self-report foreign income is far below one—contrary to what we should expect if discrepancies between bank-reported and self-reported income were systematically investigated—but economically meaningful in cases of substantial underreporting. Viewed in conjunction with the results for taxpayer compliance, the results are qualitatively consistent with the predictions of the standard theory of tax evasion (Allingham and Sandmo, 1972): for small amounts of foreign income, the detection risk is negligible and taxpayers do not become more compliant. For large amounts, the detection risk is higher and the compliance response is sizeable.

¹The results are robust to an alternative design that exploits the panel dimension of the data and addresses concerns about unobserved heterogeneity by including individual fixed effects.

To learn more about the determinants of detection risk, we decompose the overall excess risk for taxpayers with non-compliant foreign income into two components: an excess probability of *selection* to audit of around -5%-points (around -10%) and an excess probability of *detection* conditional on being audited of around 5%-points (around 20%). The first component suggests that, paradoxically, self-reporting of foreign financial income may increase the tax authorities' initial risk assessment by signalling a complex balance sheet with a higher probability of error and a larger expected return to audit. This is the opposite of what we would expect if audit selection was based on systematic comparisons of bank-reported and self-reported income. It suggests an unintended mechanism whereby risk-scoring based on self-reported information creates selection on compliance rather than non-compliance. The second component suggests that the overall excess risk is driven by a significantly higher probability of detection once taxpayers have been selected for audit.

The key policy message of the paper is that automatic information exchange can have economically significant compliance effects in developing country contexts, even with an audit effort that focuses on the largest foreign bank accounts and tolerates widespread non-compliance for smaller accounts. This is relevant for the large number of low- and middle-income countries that have currently opted out of automatic information exchange (Johannesen, 2024) and may be considering whether to participate in related areas of policy cooperation, such as exchange of information on crypto investment.

Our paper contributes most directly to the emerging literature that uses administrative data to assess the compliance effects of automatic information exchange. Recent work from developed economies documents repatriation of offshore assets (Alstadsæter et al., 2024; Boas et al., 2024) as well as disclosures of offshore assets and income (Baselgia, 2023; Boas et al., 2024; Davoine et al., 2026).² In this literature, our paper provides the first analysis of compliance responses in a developing country context where the value of information exchange is often contested. Moreover, we develop a novel method for estimating detection risk from the perspective of non-compliant taxpayers using a combination of data from audits, tax returns, and foreign bank reports.

We also contribute to the broader literature on the use of third-party reported information

²A closely related literature studies the undesirable effects of automatic information exchange, in particular taxpayer responses to escape enforcement (Menkhoff and Miethe, 2019; Cusi et al., 2020; O'Reilly et al., 2021; Bomarre and Le Guern Herry, 2022; Langenmayr and Zyska, 2023). Another one studies the effects of alternative policy interventions to rein in offshore tax evasion such as tax amnesties (Johannesen et al., 2020; Londoño-Vélez and Tortarolo, 2022), information exchange on request (Johannesen and Zucman, 2014); withholding taxes in tax havens (Johannesen, 2014; Omartian, 2017; Roussille and Martinez-Toledano, 2024) and government purchases of leaked data (Johannesen and Stolper, 2021).

for tax enforcement. Kleven et al. (2011) illustrates the power of information from third parties by documenting a striking difference in compliance rates between income classes that are third-party reported and income classes that are not. Later work points to limitations, including collusion between employers and employees (Bjørneby et al., 2021) and challenges arising from incomplete coverage (Slemrod et al., 2017; Carillo et al., 2017) and errors (Boas et al., 2024) in the third-party reported information. Our analysis points to another limitation: third-party reporting is not inconsistent with high levels of non-compliance if the third-party reports are not used systematically in audit selection and in the audits themselves.

The paper proceeds in the following way. Section 2 provides background about offshore tax evasion and automatic information exchange. Section 3 describes the data sources and reports summary statistics. Section 4 presents results on offshore wealth accounting. Section 5 presents results on tax compliance. Section 6 presents results on detection risk. Section 7 concludes.

2 Background

2.1 Offshore tax evasion

Offshore tax havens have historically offered ample opportunities for individual taxpayers to evade tax on their financial income. Some tax havens had strict bank secrecy rules that made it illegal for banks to share customer information with any third parties including the local authorities. Other tax havens refused to enter into international agreements about information exchange. Whatever the specific institutional arrangement, taxpayers with undisclosed financial accounts in offshore tax havens faced almost no risk of detection as there was effectively no mechanism enabling information about income and assets to flow from offshore banks to the tax authorities in the taxpayers' home country.

The empirical literature on tax havens document three robust empirical facts, which suggest that offshore tax evasion is an important challenge for tax enforcement. First, households own significant financial wealth in offshore tax havens. An early and highly influential study estimates household financial wealth in tax havens at around \$6 trillion using a methodology that exploits inconsistencies in cross-border investment statistics (Zucman, 2013). More recent estimates using other data sources and methods are generally consistent with global offshore wealth of this order of magnitude or larger (Johannesen et al., 2024). Second, offshore assets overwhelmingly belong to the wealthiest households. One study analysing taxpayer-level information from offshore data leaks and tax amnesties estimates that around half of the offshore

assets owned by Scandinavians belong to households in the top 0.01% of the wealth distribution (Alstadsæter et al., 2019). Subsequent papers find similar distributional patterns in the United States (Johannesen et al., 2024), Colombia (Londoño-Vélez and Ávila-Mahecha, 2021), Argentina (Londoño-Vélez and Tortarolo, 2022), and Denmark (Boas et al., 2024). Third, a significant share of offshore assets and income are tax non-compliant. Early cases where tax authorities were able to compare customer lists from offshore banks with tax records revealed that only around 10% of the offshore accounts were disclosed (U.S. Senate, 2008; Alstadsæter et al., 2019). Taken together, this body of empirical evidence suggests that offshore tax evasion may cause significant revenue losses through erosion of the effective tax rates at the top of the wealth distribution (Johannesen, 2023).

While offshore tax evasion started to attract the attention of policy-makers in the 2000s, the first policy initiatives aiming to rein it in were largely unsuccessful. Under the EU Savings Directive, a group of cooperating tax havens applied a withholding tax to the interest income of EU residents, but the tax was widely circumvented by shifting the nominal ownership of assets to offshore shell corporations (Johannesen, 2014; Omartian, 2017; Roussille and Martinez-Toledano, 2024). A G20 initiative compelled tax havens to start sharing tax-relevant information about specific taxpayers suspected of tax evasion, but in practice it remained difficult for tax authorities to detect undeclared offshore accounts and the effect on tax compliance was limited (Johannesen and Zucman, 2014; Hanlon et al., 2015). Finally, a number of countries launched tax amnesties for taxpayers who voluntarily disclosed offshore assets with modest overall gains (Langenmayr, 2017; Johannesen et al., 2020; Alstadsæter et al., 2022).

2.2 Automatic information exchange

A much more ambitious approach to tackling offshore tax evasion was launched by the United States under the Foreign Account Tax Compliance Act (FATCA) and subsequently by more than 100 other countries under the Common Reporting Standard (CRS). The new approach requires banks and other financial institutions to identify accounts that are beneficially owned by foreigners and share information about account balances and income flows with the home countries of the beneficial owners.³ The information exchange applies to accounts owned by individuals, directly or indirectly through holding companies, whereas accounts held by listed

³Banks generally send account information about foreign-owned accounts to the local tax authorities, which distribute the information to the relevant foreign tax authorities; however, in some countries, banks are required to send account information directly to the U.S. Internal Revenue Service under FATCA.

companies and financial institutions are explicitly exempt.⁴

Automatic information exchange has been hailed as a highly effective tool against offshore tax evasion. Tax authorities can, in principle, easily check whether taxpayers report their foreign financial income truthfully, by comparing foreign-income lines on the tax return to the account information sent by foreign banks, and sanction those who continue to evade. This creates strong incentives for tax compliance just like third-party reporting in the domestic context is known to act as a strong deterrent against evasion (Kleven et al., 2011).

However, this mechanism requires that information reports received from foreign banks can be seamlessly matched to domestic tax records. In principle, matching is straightforward as banks must include the tax identification number of the account owner in addition to other identifying information, such as name and address on their information reports. In practice, however, matching is often imperfect, with an average match rate of around 80% across all countries receiving information under CRS (Global Forum, 2025). The imperfect matching may reflect that banks send reports without any tax identification number (Belnap et al., 2024) or that the reports include erroneous numbers that do not coincide with any tax identification number.

In light of the significant potential benefits of automatic information exchange, it is striking that adoption is relatively low among developing countries: while more than 80% of high-income countries had adopted CRS in 2022, the share was less than 40% for upper-middle-income countries, less than 20% for lower-middle-income countries, and 0% for low-income countries (Johannesen, 2024). A possible interpretation is that the expected compliance effects of automatic information exchange are smaller in the context of developing countries, reflecting, for instance, that tax authorities lack the resources to use information reports from foreign financial institutions for tax enforcement. This would be consistent with the broader view that low effective tax rates in developing countries often reflect a lack of state capacity (Besley and Persson, 2014).

⁴When accounts are owned indirectly through holding companies (i.e. passive non-financial entities), account information is shared with the home country of the holding company as well as the home country of the beneficial owner. When accounts are owned by an active company (i.e. active non-financial entities), banks do not need to identify the beneficial owners and account information is just shared with the home country of the active company. When accounts are owned by companies with no beneficial owner (i.e. ownership is divided and no single owner has a sufficiently large ownership share), account information is also only shared with the home country of the active company.

3 Data

Our analysis uses three types of administrative data obtained from the South African Revenue Service: account-level reports about foreign assets and income received under FATCA and CRS, individual-level personal tax returns, and case-level information about enforcement actions related to personal tax returns. Section 3.1 describes each of these three data sources in more detail while Section 3.2 provides descriptive statistics.

3.1 Sources

Our main data source is the information reports received by the South African Revenue Service under FATCA and CRS covering the period 2016–2021.⁵ Each report corresponds to a foreign account with a South African owner and includes information about the amounts of interest income, dividend income, gross proceeds from sales, and other income that have accrued to the account over the year, as well as the account balance at the end of the year.⁶ The reports are designed to include a taxpayer identification number that identifies the account owner and allows for merging with the account owner’s tax records; however, it is not rare that the taxpayer identification number is missing or does not correspond to an existing tax record. For company-owned accounts, the reports additionally indicate whether the company is active or passive and, in the latter case, identify the controlling physical persons and their relation to the corporation (e.g. director, manager or beneficial owner).

We use line-by-line information from the tax returns of personal taxpayers in South Africa for the period 2012–2021. We are primarily interested in the lines concerning foreign financial income, which contain the taxpayers’ own declarations of interest income, dividends, and capital gains derived from assets in foreign banks. While self-declared foreign interest and dividend income are directly comparable to the interest and dividend income reported by foreign banks under CRS and FATCA, self-declared capital gains are net of acquisition costs and thus conceptually different from the bank-reported gross proceeds. There is also a slight timing difference across the two data sources, with tax years starting on 1 March and reporting periods for CRS and FATCA starting on 1 January. Our analysis effectively compares self-reported foreign fi-

⁵We carefully clean the data before proceeding to the analysis, following the steps of Johannesen et al. (2024). First, information reports are often modified or deleted by subsequent information reports and we make sure to keep only the most updated reports in the analysis. Second, banks submit one report per account and owner; hence, we divide all incomes and balances on the reports by the number of account owners we observe in the data to avoid double-counting. Third, we remove duplicates, accounts with implausibly large values, and a small number of accounts with non-financial assets such as gold and platinum.

⁶Reports from U.S. banks under FATCA generally lack information about account balances.

nancial income for the 12-month period starting on 1 March to bank-reported foreign financial income for the 12-month period starting on 1 January in the same year.

Finally, we use information from the desk verifications and full audits of personal tax returns concerning the years 2012–2020.⁷ In desk verifications, tax authorities check the information provided by taxpayers against information available from other sources and request additional documents from the taxpayer when necessary. A desk verification may lead to a simple correction of taxable income or trigger a full audit if the tax authorities deem that material risk of non-compliance persists. In full audits, tax authorities conduct a broad examination of the available documents and may conduct interviews and engage in other types of active fact-finding. Full audits may lead to a correction of taxable income, but also to penalties and potentially criminal investigations. For each of these enforcement actions, our dataset indicates the identification number of the taxpayer, the dates on which the action starts and ends, and the change in overall tax liability resulting from the action. We do not observe what risk factors trigger the enforcement action nor the income components that are ultimately corrected. For simplicity, we refer to all enforcement actions as audits.

3.2 Descriptives

We provide a range of descriptive statistics in the Online Appendix. As shown in Table A1, South Africa received more than one million information reports from foreign banks concerning personal accounts held by South African owners in 2019. The average account had a balance just below \$70,000 and total income flows around \$3,700. As shown in Figure A1, the distribution of account balances is highly skewed with a median of around \$2,800 and average balances in the top 1% of the distribution of around \$5 million.

As highlighted in Figure A2, matching information reports to tax returns is a key challenge: only around 60% of account balances reported by foreign banks could be matched to tax identification numbers of individual taxpayers in 2019, but with a slightly increasing trend.⁸ While the share of information reports with no tax identification number has fallen steeply, it still accounts for most of the failed matches at the end of the sample period.⁹

Imperfect matching is particularly disconcerting if it reflects that sophisticated tax evaders are able to influence the match probability (e.g. by convincing their foreign bank to omit or

⁷We refer to Gandy et al., (2026) for more details about audit data in South Africa.

⁸The 60% match rate in 2019 is very close to the global average in that year (Global Forum, 2025).

⁹The high share of information reports without tax identification numbers in the earlier years at least partly reflects that banks, in a transitional period, were allowed to omit tax identification numbers for existing accounts if the number was not on file.

misreport identifying information). Two empirical patterns suggest that this is not likely to be an important concern. First, as shown in Figure A3, most banks provide tax identification numbers for all accounts or for none. This seems more consistent with limitations in banks' general reporting technologies than with deliberate misreporting on a specific set of non-compliant accounts. Second, as shown in Table A1, accounts without tax identification numbers are on average smaller, more likely to be dormant, and less likely to be in tax havens, which is the opposite of what one should expect about accounts owned by sophisticated tax evaders (Columns 2-4).

Finally, as shown in Table A2, our sample of South African taxpayers comprises around 15 million individuals in 2019, combining filers and non-filers subject to payroll taxes. The average taxpayer in the full sample has gross annual income of around \$18,000, of which around \$400 is in the form of financial income (Column 1). The 140,000 taxpayers linked to foreign accounts through the information reports from foreign banks constitute a highly selected subsample in terms of both income and balance sheets (Columns 2-3). The average gross income is more than four times higher and the average financial income more than 30 times higher than in the full population.

4 Offshore wealth accounting

This section provides descriptive evidence on the aggregate offshore wealth owned by South African households (Section 4.1) and how it is distributed across international banking centers and income groups (Section 4.2).

4.1 Aggregate offshore wealth

Figure 1 illustrates how we use account-level data received by South Africa under the automatic information exchange to estimate the aggregate offshore wealth owned by South African households. In a first step, we simply aggregate the (cleaned) account-level balances reported by foreign banks concerning personal accounts and the accounts of holding companies with South African beneficial owners. We also include accounts that cannot be matched to a specific taxpayer whenever foreign banks indicate that beneficial owners are South African. This yields aggregate account balances of around \$35 billion for 2016 increasing to around \$85 billion for 2021 (gray dashed line). The \$85 billion for 2021 reflects around \$65 billion on personal accounts in tax havens (blue bars), slightly less than \$20 billion on personal accounts in non-havens (red

bars), and a small residual owned by holding companies (green bars).¹⁰

The simple aggregation of account-level reports has at least two limitations. First, FATCA only requires banks to report income flows so aggregate balances do not include accounts in U.S. banks. Second, not all countries adopted automatic information exchange at the same time and the simple aggregation therefore misses accounts in the years prior to adoption.¹¹ This is of little practical relevance for the most recent years, where all significant banking centres participate, but it matters for the earlier years.

We produce estimates of aggregate offshore wealth by addressing these limitations. First, for accounts in U.S. banks, we impute account balances by capitalizing aggregate interest and dividend income flows assuming that South African owners of U.S. accounts earned the same average return as the average global cross-border portfolio investment in the same asset class.¹² Second, for countries adopting CRS late, we impute account balances in the pre-adoption years. For instance, if a country starts reporting to South Africa in 2018, we impute aggregate balances in 2017 by assuming the same growth rate between 2017 and 2018 as observed in countries reporting in both of these years. The resulting estimates suggest that South African offshore wealth increased from around \$65 billion in 2017 to around \$85 billion in 2021 (black line). The estimates differ significantly from the simple aggregated account balances in the beginning of the period, reflecting mostly the gradual adoption of CRS. The difference shrinks to less than \$1 billion at the end of the period, reflecting the imputed values of accounts in U.S. banks.

The analysis thus suggests that the personal financial wealth of South Africans in offshore banks is around \$80–85 billion in the most recent years.¹³ These estimates correspond to around 20% of the country’s gross domestic product and are roughly twice as large as earlier estimates based on macro sources (Alstadsæter et al., 2018).¹⁴ Strikingly, around 75% of the offshore

¹⁰We employ the same list of tax havens as Johannesen and Zucman (2014).

¹¹Figure A4 shows that the increase in aggregate account balances over time is largely due to new countries starting to report.

¹²The capitalization approach is frequently used in the literature on wealth inequality (Saez and Zucman, 2016; Smith et al., 2023). We construct the capitalization factors based on global aggregates from the IMF’s Balance of Payments and International Investment Position Statistics. Specifically, we use the ratio of aggregate interest income to aggregate investments in the form of portfolio debt to capitalize interest income and the ratio of aggregate dividend income to aggregate investments in the form of portfolio equity and fund shares to capitalize dividend income. Over the period 2016–2021, the capitalization factors hover between 1% and 2% for interest income and between 1.5% and 3% for dividend income.

¹³The true amount of offshore wealth exceeds this estimate to the extent that foreign banks do not provide information about all accounts owned by South Africans, either because banks are not fully compliant with the reporting requirements (Boas et al., 2024) or because of the loopholes inherent to the reporting standard itself (Langenmayr and Zyska, 2023). Assuming, consistent with the evidence in the former study, that banks fail to report on around 15% of account balances, the aggregate offshore wealth of South Africans would be around \$100 billion in 2021.

¹⁴These estimates feed into the leading work on wealth inequality in South Africa (Chatterjee, Czajka, and

wealth is held in tax havens, the financial centers that used to have strict secrecy provisions and remain home to much of the world’s wealth management industry.

4.2 Distribution of offshore wealth

Figure 2 provides evidence on the distribution of South Africa’s offshore wealth across income groups. The key challenge is that a significant share of the offshore accounts cannot be linked to taxpayers, most commonly because the information report lacks a taxpayer identification number. While most of the distributional results concern the accounts that are linked to individual taxpayers, we probe the robustness of these results to a procedure that imputes unmatched accounts to income groups based on account balance and bank country.¹⁵

We find a strong income gradient in the propensity to hold offshore accounts (Panel A). While the incidence of offshore accounts is close to zero for most income groups, it is strongly increasing at the top. It stands at around 10% for taxpayers between the 99th and the 99.9th percentile and around 20% for taxpayers in the top 0.1%. The income gradient is qualitatively similar for accounts in tax havens and non-havens but quantitatively more pronounced for accounts in tax havens (Panel B).

Consistent with the income gradient in the propensity to hold offshore accounts, offshore wealth is highly concentrated at the top of the income distribution (Panel C). Around 20% of account balances belong to the 15,000 taxpayers in the top 0.1% and less than 10% belongs to the 7.5 million taxpayers in the bottom 50%. The distribution is generally robust to including unmatched accounts with imputed ownership, although this procedure reduces the share belonging to the top 0.1% from just above to just below 20% (Panel D).

These findings are qualitatively consistent with existing evidence from other countries, but quantitatively South Africa stands out as a country with a relatively low concentration of offshore wealth. By comparison, a study using a similar type of data finds that, in the United States, the share of offshore wealth belonging to the top 0.1% of income earners is around 50%, more than twice as large as in South Africa (Johannesen et al., 2024).

Gethin, 2022).

¹⁵The imputation approach uses the sample of accounts linked to taxpayers to non-parametrically estimate probabilities that an account in a given bank country with a given account balance belongs to each income group and applies these probabilities to the sample of accounts not linked to taxpayers. The estimated probabilities are allowed to vary by the interaction of bank country and a set of indicators for account balance size.

5 Tax compliance

5.1 Aggregate self-reporting

Figure 3 provides descriptive evidence on compliance responses to the onset of automatic information exchange in 2016. For the period 2012–2020, the figure illustrates the number of taxpayers self-reporting foreign financial income in different intervals (scaled to the level in 2015). While the number of taxpayers reporting more than \$100,000 of foreign financial income was relatively constant between 2012 and 2015, it grew by around 200% between 2015 and 2017 and then stabilized at this much higher level. The two years with extraordinary growth in self-reporting of high levels of foreign financial income coincides with the two years where the vast majority of foreign banks started reporting to South Africa under CRS. The pattern is qualitatively similar for taxpayers reporting between \$10,000 and \$100,000 except that, at around 60%, the growth between 2015 and 2017 is less pronounced than in the highest income interval. In income intervals below \$10,000, there is no clear trend break around the onset of information exchange.

These results suggest that the automatic information exchange induced an economically significant increase in self-reporting among South African taxpayers with the largest non-compliant offshore accounts, but no clear self-reporting response among taxpayers with smaller offshore accounts. As shown in Figure 4, these behavioral responses are clearly discernible in the aggregate series for self-reported foreign financial income (blue line). While self-reporting is roughly constant at \$200 million between 2012 and 2015, it approximately doubles to \$400 million between 2015 and 2017 and then stabilizes at this higher level.

The surge in self-reporting of foreign financial income between 2015 and 2017 bears some resemblance to the taxpayer responses identified in Denmark in the same period. However, while the present analysis shows that self-reporting responses in South Africa are concentrated among large-account owners, Boas et al. (2024) find the opposite pattern in Denmark: a sharp increase in self-reporting among small-account owners but almost no increase among large-account owners. This striking contrast may reflect complementarity with other types of behavioral responses – e.g. many Danish taxpayers seemingly liquidated large non-compliant offshore accounts before the onset of automatic information exchange – or differences in the perceived detection risk over the account size distribution – e.g. enforcement against small non-compliant accounts may have been stricter in Denmark than in South Africa. In Section 6, we investigate how detection risk varies with account size in the South African context.

5.2 Aggregate non-compliance

We obtain estimates of aggregate non-compliance in Figure 4 by comparing aggregate bank-reported (red line) and self-reported (blue line) foreign financial income. Assuming that banks report truthfully, we can interpret the discrepancy between bank-reported and self-reported income as underreporting.¹⁶ We do not observe capital gains directly in the bank data and therefore impute them assuming the same ratio of capital gains to dividends as we observe in the self-reported data.¹⁷

As shown in Figure 4, the comparison suggests that South Africans report less than half of their foreign financial income on their tax return even after the significant increase in self-reporting around the onset of automatic information exchange. While self-reported foreign financial income hovers around \$400 million in the years 2017–2020, bank-reported foreign financial income stands at around \$800 million in the same period. Actual under-reporting may be greater if banks fail to send reports about all foreign-owned accounts (Boas et al., 2024), as that would imply true foreign financial income exceeding the approximately \$800 million reported by banks.

5.3 Taxpayer-level evidence

We exploit the granularity of the data and the staggered introduction of automatic information exchange across partner countries to provide additional evidence on compliance behavior at the taxpayer level.

Our main analysis focuses on taxpayers exposed to the first wave of information exchange under CRS: banks sending information reports to South Africa concerning financial income on foreign accounts in 2016. We analyze the behavior of the owners of these accounts while distinguishing those who had self-reported foreign financial income on their tax return for 2015 and those who had not. We refer to the former group of around 2,000 taxpayers as “ex ante compliers” and the latter group of around 5,000 taxpayers as “ex ante non-compliers”.¹⁸

¹⁶Banks may, in principle, collude with their foreign customers about misreporting of account information in the same way as employers may collude with employees about misreporting of labor income (Kleven et al., 2016). Collusion is rendered difficult by the fact that banks have many customers, that banks tend to be highly concerned with reputational risk and that information exchange is subject to monitoring by domestic financial regulators as well as peer reviews by OECD experts.

¹⁷As shown in Figure A5, we obtain qualitatively similar results when we compare the directly observable income components, interests and dividends, across the bank-reported and self-reported data.

¹⁸The categorization implicitly assumes that the taxpayers earned income through a foreign account in 2015 like they did in 2016; hence, taxpayers who opened a foreign account for the first time in 2016 are mistakenly categorized as “ex ante non-compliers”.

Figure 5 shows the average self-reported and bank-reported foreign financial income of “ex ante compliers” (Panel A) and “ex ante non-compliers” (Panel B) over the period 2012–2020. As shown in Panel A, the foreign financial income self-reported by “ex ante compliers” grows steadily over time and the level is generally in line with bank-reported foreign financial income through the entire period 2016–2020 where bank reports are available. The evidence suggests that this group is largely compliant both before and after the onset of automatic information exchange in 2016 and does not change behavior in response to the policy. As shown in Panel B, the foreign financial income self-reported by “ex ante non-compliers” increased significantly between 2015 and 2017, but to a level far below the financial income reported by foreign banks. The evidence suggests that this group, while non-compliant before the onset of automatic information exchange in 2016, became partly compliant in response to it but with most of their foreign financial income remaining in non-compliance.

We find similar patterns on the extensive margin, as shown in Figure A6 in the Online Appendix. The share of “ex ante compliers” with any self-reported foreign financial income remains close to the share with any bank-reported income through the analysis period. By comparison, the share of “ex ante non-compliers” with any self-reported foreign financial income jumps to around 20 percentage points at the onset of automatic information but remains far below the share with any bank-reported income.

The taxpayer-level results thus document the existence of a large group of taxpayers with offshore bank accounts who reported zero foreign financial income on their tax return immediately before their offshore banks started sending account-level information reports to the South African tax authorities. The results indicate that this group is responsible for the increase in self-reporting coinciding with the beginning of the new information flows, but also for the underreporting that remains in spite of them.¹⁹

5.4 Distribution of non-compliance

Finally, we provide evidence on the distribution of offshore non-compliance across income groups. We measure the offshore non-compliance of an income group as the difference between bank-reported and self-reported foreign financial income while imputing unmatched foreign accounts to income groups using the same procedure as in Section 4.2.

Figure 6 shows the share of each income group’s foreign financial income that is non-

¹⁹As shown in Figure A7 in the Online Appendix, we find similar behavioral responses when we consider smaller groups of “ex ante non-compliers” who were first exposed to information exchange in 2017 and 2018 due to the staggered introduction of CRS.

compliant (blue line). Strikingly, this non-compliance rate is decreasing in income: almost 80% of foreign financial income is not self-reported at the bottom of the income distribution as compared to around 40% at the very top. The negative income gradient in the offshore non-compliance rate is consistent with our earlier finding that increases in self-reporting around the onset of automatic information exchange were particularly pronounced for large offshore accounts.

At the same time, the figure shows that a disproportionate share of aggregate offshore non-compliance is concentrated at the top of the income distribution (gray bars). Specifically, more than half of all of South Africa’s non-compliant foreign financial income belongs to the top 1%, reflecting the strong concentration of offshore wealth at the top of the income distribution. This has implications for the incidence of enforcement efforts in the offshore domain. Despite the negative income gradient in the non-compliance rate, more enforcement of taxes on foreign financial income will primarily affect tax payments at the top of the income distribution.

6 Detection risk

From the vantage point of theory, the persistence of widespread tax non-compliance after the introduction of automatic information exchange is somewhat puzzling. In principle, the bank-reported income information makes it easy for tax authorities to detect non-compliance and enforce taxation and, anticipating that, we should expect taxpayers to become compliant. This section investigates why this mechanism does not seem to play out fully in the present context.

6.1 Conceptual framework

With a slight rewriting of the standard framework for analyzing tax compliance decisions (Allingham and Sandmo, 1972), taxpayers face the following trade-off. If they report one additional dollar of income, it is taxed at the marginal tax rate t and they are left with $(1 - t)$ for consumption. If they do not report it, they keep the full dollar for consumption if the evasion is not detected but only $(1 - t - f)$ if it is detected, where f is the penalty rate. Letting q^S denote the probability that the taxpayer is selected for audit and q^D the probability of detection conditional on an audit, we can define the unconditional probability of detection $p = q^S q^D$. Taxpayers thus choose between compliance, which gives $(1 - t)$ with certainty, and non-compliance, which gives $(1 - t - f)$ with probability p and 1 with probability $1 - p$.

The modified framework highlights that deterrence of offshore non-compliance relates to two distinct dimensions of the audit environment: the ability to *select* taxpayers with non-

compliant income for audit q^S vs the ability to *detect* non-compliant income when an audit is conducted q^D . While both parameters depend on the overall amount of resources available for enforcement, they also reflect distinct sets of capabilities within the tax administration. Selection leverages the ability to create and process information at scale to assess and compare risks across *all* taxpayers. Detection requires the collection of more comprehensive information about the *specific* taxpayers who are selected for audit because they are deemed to be high risk.

Applying the framework to automatic information exchange, the usual stylized assumptions of third-party reporting would entail that $q^S \approx 1$ and $q^D \approx 1$ and thus $p \approx 1$.²⁰ In plain words, if a taxpayer underreports foreign financial income, the tax administration would costlessly observe the discrepancy between self-reported and bank-reported income; hence, they would initiate an audit with certainty ($q^S \approx 1$), detect the non-compliance with certainty ($q^D \approx 1$), and correct taxable foreign income up to the bank-reported amount with certainty ($p \approx 1$). In such an environment, taxpayers are strictly better off reporting truthfully (consuming $1 - t$) than underreporting (consuming $1 - t - f$) and we should expect full compliance.

This prediction is clearly at odds with our empirical finding that roughly half of aggregate foreign financial income remains unreported after automatic information exchange has kicked in. In the next step of the analysis, we therefore investigate empirically whether the taxpayer behavior can be traced back to the parameters that characterize the audit environment. Specifically, if p is not close to 1, as stylized assumptions about third-party reporting would suggest, but much below 1, it may explain why many taxpayers remain non-compliant despite the new information flows. If p is indeed far below unity, it raises further questions about which feature of the audit environment that makes non-compliance attractive, a low q^S or a low q^D , and whether heterogeneity in p across the account size distribution can help explain the heterogeneity in self-reporting responses.

6.2 Empirical design

Empirically, we address these questions by estimating how much p — and its components q^S and q^D — change when taxpayers with foreign financial income fail to self-report it. The theoretical benchmark from a framework with frictionless use of third-party reporting is that all three parameters increase to unity.

Our main empirical design exploits the cross-sectional variation in self-reporting for identification. Concretely, we compare individuals who are as similar as possible in terms of taxpayer

²⁰The framework proposed by Kleven et al. (2011) makes assumptions in this spirit.

characteristics that capture background risk (i.e. age, income, self-employment) as well as foreign account characteristics that capture foreign income risk (i.e. amount, source country). Holding all these things constant, we estimate how audit outcomes p , q^S , and q^D differ across taxpayers who self-report their foreign financial income and taxpayers who do not. Restricting the sample to taxpayer-years with non-zero bank-reported foreign financial income, we estimate the following empirical model for the period 2017–2020:

$$y_{i,t} = \alpha + \beta \cdot \text{noncompliance}_{i,t} + \gamma \cdot X_{i,t} + \mu \cdot Q_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $y_{i,t}$ is one of the audit outcomes, $\text{noncompliance}_{i,t}$ is an indicator for failing to self-report any foreign financial income, $X_{i,t}$ is a vector of non-parametric controls capturing background risk, and $Q_{i,t}$ is a vector of non-parametric controls capturing foreign income risk.²¹

In the main analysis, the outcome is an indicator for a correction to the tax return in the context of an audit. The estimated β indicates how much p increases when taxpayers underreport. We also investigate how β varies with the amount of bank-reported foreign income and across accounts in tax havens vs non-havens.

We decompose the estimated effect on p into parameters that conceptually correspond to changes in q^S and q^D in two steps: First, we estimate Eq. (1) with the same sample but using an indicator for selection to an audit as the outcome. Second, we restrict the sample to taxpayer-years with an audit and use an indicator for a correction to the tax return as the outcome. The interpretation of the estimates is the effect of non-compliance on, first, selection to audit and, second, detection of non-compliance conditional on selection for audit.

The key threat to identification is unobserved heterogeneity in the underlying compliance behavior (conditional on the controls). If taxpayers who do not self-report their foreign financial income are also on average more likely to be non-compliant in other dimensions than taxpayers with similar observable characteristics who self-report their foreign financial income, we may overestimate the effect of non-compliant foreign financial income on selection and detection. We address this concern in two ways. First, we control non-parametrically for a range of other factors that capture underlying compliance risks: fringe benefits, allowances and untaxed income.²² Second, we augment Eq. (1) with individual fixed effects that absorb any time-

²¹In the baseline specification, X includes four-way interactions between 14 indicators for total taxable income (i.e. P1–10, P11–20, ..., P91–95, P96–99, P99–99.5, p99.5–99.9 and top 0.1%), indicators of age cohorts (i.e. 18 years, 19 years etc), an indicator of having any self-employment income, and indicators for the calendar year. Likewise, Q includes three-way interactions between 14 indicators for the amount of bank-reported foreign financial income (i.e. P1–10, P11–20, ..., P91–95, P96–99, P99–99.5, p99.5–99.9 and top 0.1%), indicators for the reporting foreign country, and indicators for the calendar year.

²²In the most demanding specification, we add four-way interactions between five indicators for the size of

invariant propensity for non-compliance.²³

6.3 The effect on detection

Figure 7 illustrates the estimated effect of underreporting foreign financial income on the probability of the tax administration making a correction to the tax return. In the full sample, the estimate is just below 1%-point, which is relative to a baseline of around 10%. Moreover, the figure documents important heterogeneity in two dimensions. First, the main effect is entirely driven by taxpayers with accounts in tax havens (blue bars). Second, the effect is increasing monotonically in the scale of the underreporting and approaches 5 %-points for the taxpayers who fail to report the largest foreign incomes (green bars).

The results have several important implications. First, non-compliance appears to come with a penalty, albeit small, in the form of a slightly higher risk of receiving an audit correction, i.e. around 1%-point at the mean. Second, the gradient in the estimates, i.e. the effect size ranging from essentially zero for small foreign incomes to almost 5%-points for the largest foreign incomes, mirrors our earlier finding that self-reporting barely changed for small foreign incomes at the onset of automatic information exchange, but increased significantly for the largest foreign incomes. Third, the audit environment is very far from the theoretical benchmark where any deviation from third-party reported income on the tax return is systematically corrected in an audit.

6.4 Decomposition

Figure 8 illustrates the decomposition of the main result—that is, how the effect of underreporting on the overall correction probability (red bar) derives from the more primitive effects on selection and detection (blue bars). The estimates are roughly consistent with the multiplicative relationship $p = q^S q^D$.²⁴

The first result is surprising: underreporting foreign financial income *lowers* the risk of selection to an audit by more than 5%-points. In our preferred interpretation, this reflects

fringe benefits, five indicators for the size of allowances, five indicators for the size of untaxed income, and indicators for the calendar year. For each of the three new variables, the five indicators are 1 indicator for zero and four indicators for P1–50, P50–90, P90–99 and top 1% respectively conditional on non-zero.

²³With the fixed effects specification, we extend the sample period back to 2012 to allow the pre-reform years to contribute to the identification of the fixed effects.

²⁴The multiplicative relationship between p , q^S , and q^D implies the additive relationship $dp/p = dq^S/q^S + dq^D/q^D$. The bars illustrate the estimated change in probabilities caused by non-compliant foreign financial income: dp , dq^S and dq^D . Given the baseline values of p , q^S , and q^D , these estimates imply $dp/p \approx 10\%$, $dq^S/q^S \approx -10\%$, and $dq^D/q^D \approx 20\%$, which approximately satisfy the additive relationship.

that the self-reporting of foreign financial income is a flag that raises the assessment of risk and thus makes it more likely that the taxpayer is selected for audit.²⁵ Intuitively, foreign financial income is likely to correlate with more complex balance sheets and income structures and, thus, a higher risk of errors and a larger expected gain from auditing. The result points to a mechanism whereby risk-scoring based on self-reported information creates an unfortunate selection on compliance, not non-compliance, into audits.

The second result is more intuitive: conditional on selection to an audit, underreporting foreign financial income *raises* the risk of detection by around 5%-points. While past studies have suggested that foreign financial income is essentially invisible to tax authorities (Guyton et al., 2021), this result suggests that the South African tax authorities, in the era of automatic information exchange, detect some, but far from all, non-compliance when they audit taxpayers with foreign financial income.

6.5 Robustness

We report the robustness tests in the Online Appendix. Figure A8 shows the results from the specification with individual fixed effects. The effect of underreporting on the overall correction risk is slightly smaller than in the baseline specification, but remains positive and statistically significant (red bar). The decomposition is also qualitatively similar with a negative effect of underreporting on selection to an audit and a positive effect on detection conditional on selection to an audit (blue bars). Figure A8 shows the results from the specification augmented with non-parametric controls for fringe benefits, tax allowances, and non-taxable income. The estimates are highly robust to these additional controls even when they enter in the most flexible way.

7 Conclusion

In the last decade, governments have made enormous efforts to improve global financial transparency. One of the key policy innovations is automatic information exchange, which provides tax authorities with granular bank-reported information about the offshore bank accounts owned by households .

This paper studies the impact of automatic information exchange on tax compliance in the context of South Africa. We show that the foreign financial income self-reported by South

²⁵This interpretation is supported by auxiliary regressions for the pre-reform period, in which we regress an indicator for any enforcement action on a large set of controls including self-reporting of foreign financial income. In these regressions, the self-reporting of foreign financial income variable consistently emerges as a strong and highly robust predictor.

African taxpayers doubled around the first waves of information exchange. However, non-compliance remained pervasive, with self-reported income just barely reaching half the level implied by the foreign information reports.

The findings imply that automatic information exchange can have economically significant compliance effects in developing country contexts even if it only moderately raises detection risk for non-compliant taxpayers. This challenges the view that developing countries with limited administrative capacity do not benefit from automatic information exchange, which is relevant for the large number of low- and middle-income countries that have currently opted out of automatic information exchange (Johannesen, 2024).

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Figure 1: Aggregate offshore wealth. The figure illustrates the evolution of aggregate offshore wealth held by South African households over the period 2016-2021 based on the account-level information reported by foreign financial institutions under CRS and FATCA. Specifically, the figure shows the aggregate value of personal accounts in tax havens (blue bars), personal accounts in non-havens (red bars), corporate accounts attributable to holding companies with a South African beneficial owner (green bars), and the sum of all these three account types (gray dashed line). The figure also shows our preferred estimate of aggregate offshore wealth held by South African households (black solid line), which differs from the raw aggregate of account balances in two respects. First, it includes estimated balances of accounts in U.S. banks imputed from reported capital income (addressing that U.S. banks report income flows but not account balances). Second, it includes estimated balances in all countries that were reporting by 2021 (addressing that countries started reporting in different years).

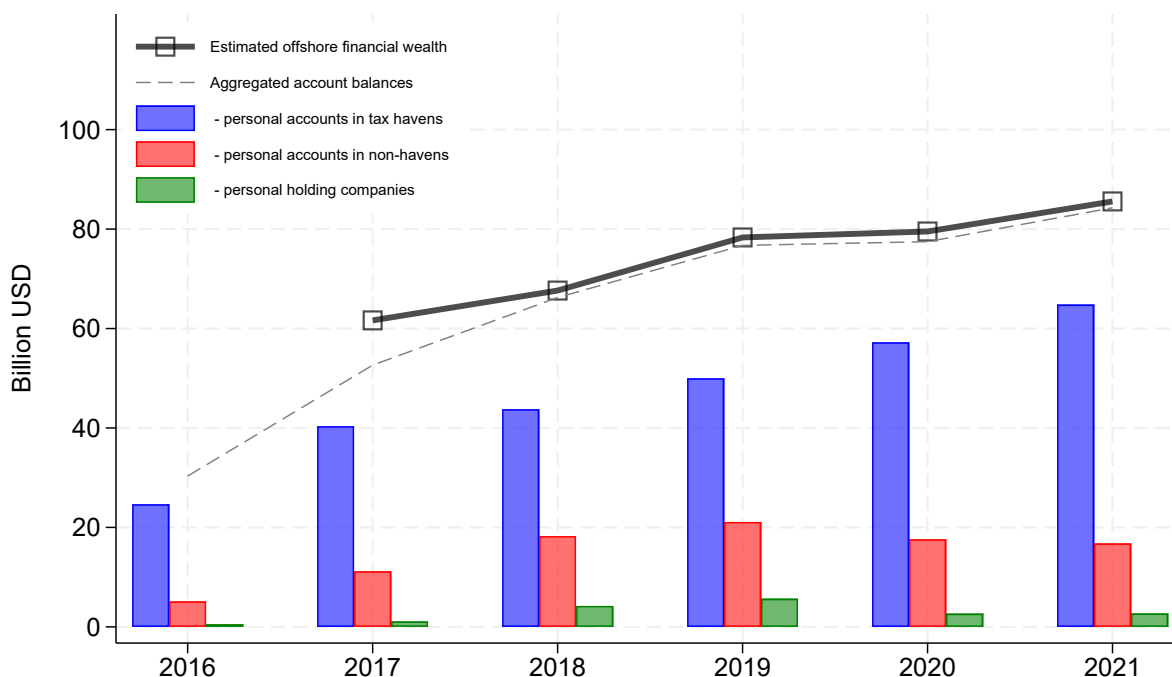


Figure 2: Distribution of offshore wealth. The figure shows the distribution of the offshore wealth owned by South Africans across income groups based on the information about personal accounts reported by foreign financial institutions under CRS and FATCA. Panel A shows the propensity to own an offshore account by income groups and year. Panel B shows the propensity to hold an offshore account in a tax haven (blue line) and a non-haven (red line) respectively. Panel C shows each income group's share of the aggregate value of offshore accounts. Panel D shows how each income group's share of the aggregate value of offshore accounts differs across accounts matched to individual taxpayers through taxpayer identification numbers and accounts assigned to income groups based on account characteristics.

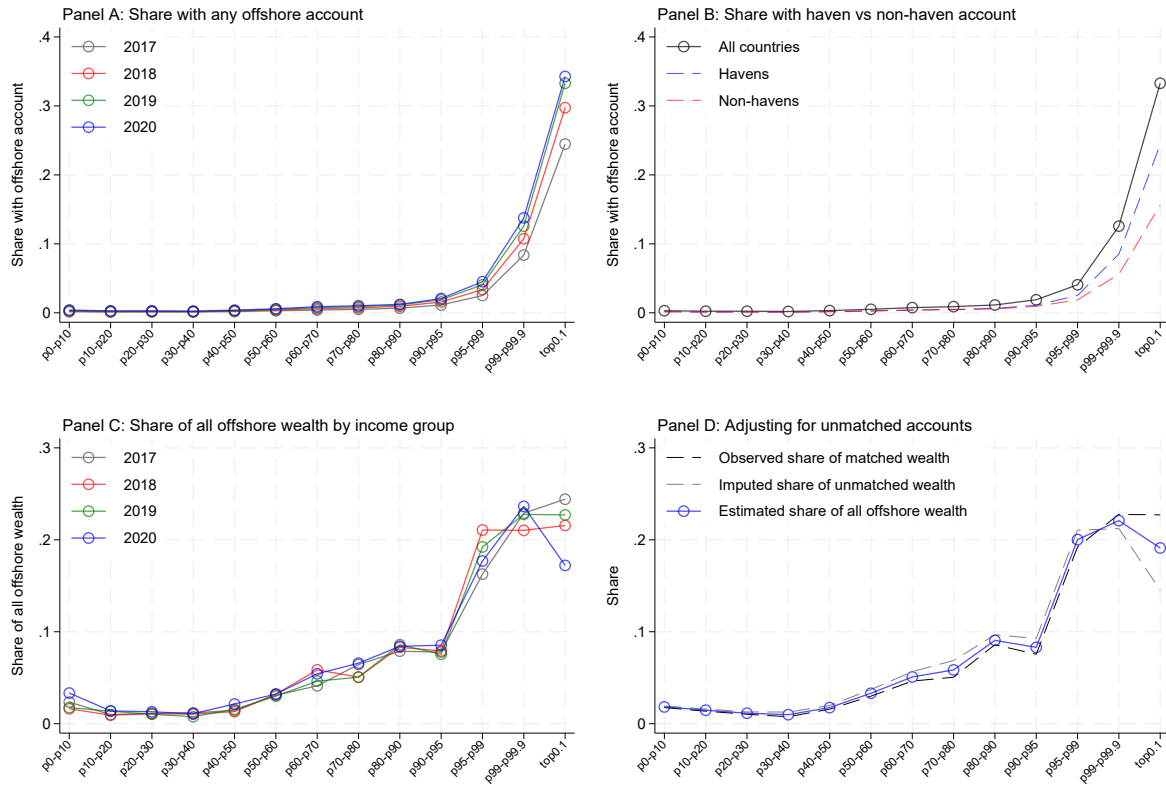


Figure 3: Self-reporting dynamics by foreign income range. The figure shows the dynamics in self-reporting by range of foreign financial income (i.e. interest, dividends and capital gains) over the period 2012-2020. For each income range, the figure shows the percentage change in the level relative to 2015, i.e. the last year before the onset of automatic information exchange.

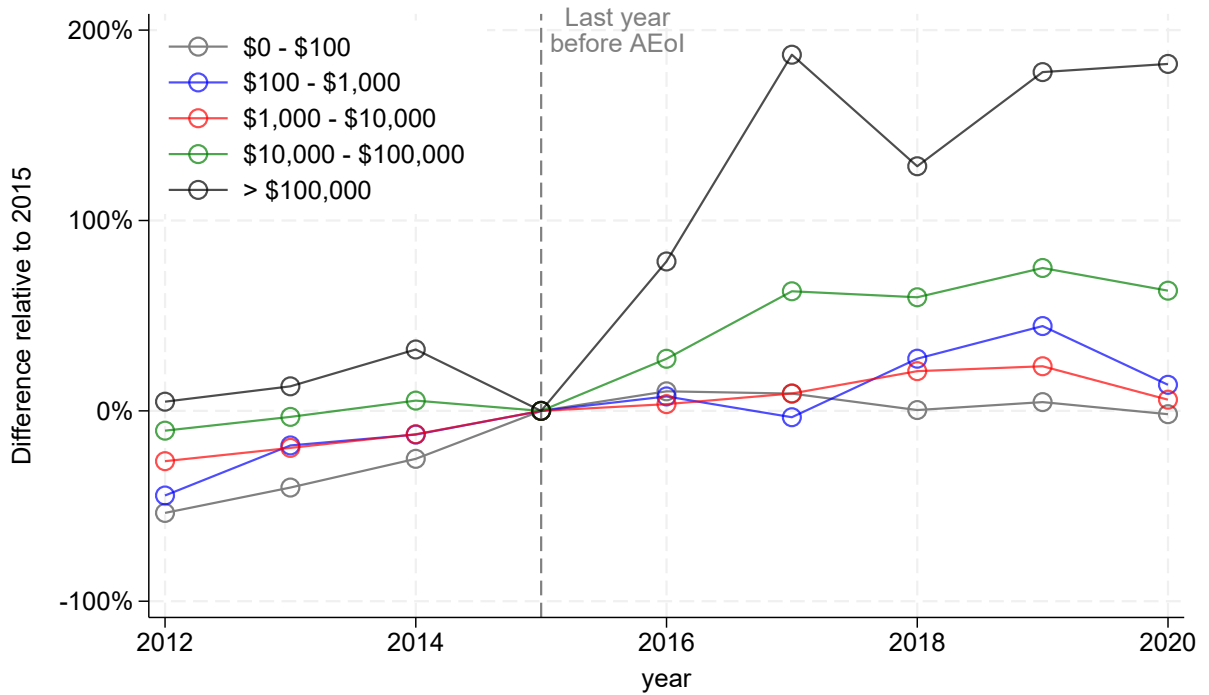


Figure 4: Aggregate reporting and underreporting. The figure provides an estimate of aggregate underreporting of personal foreign financial income (i.e. interest, dividends and capital gains) by comparing the aggregate amount self-reported on personal income tax returns (blue line) to the aggregate amount on personal accounts reported by foreign financial institutions under CRS and FATCA (red line). As capital gains are not reported by foreign financial institutions, we impute a value by applying the ratio of aggregate foreign capital gains to aggregate foreign dividends in the tax return data to the value of aggregate dividends in the bank-reported data. Figure A5 in the Online Appendix shows an analogous figure that circumvents imputation of capital gains by comparing only foreign interest and dividends.

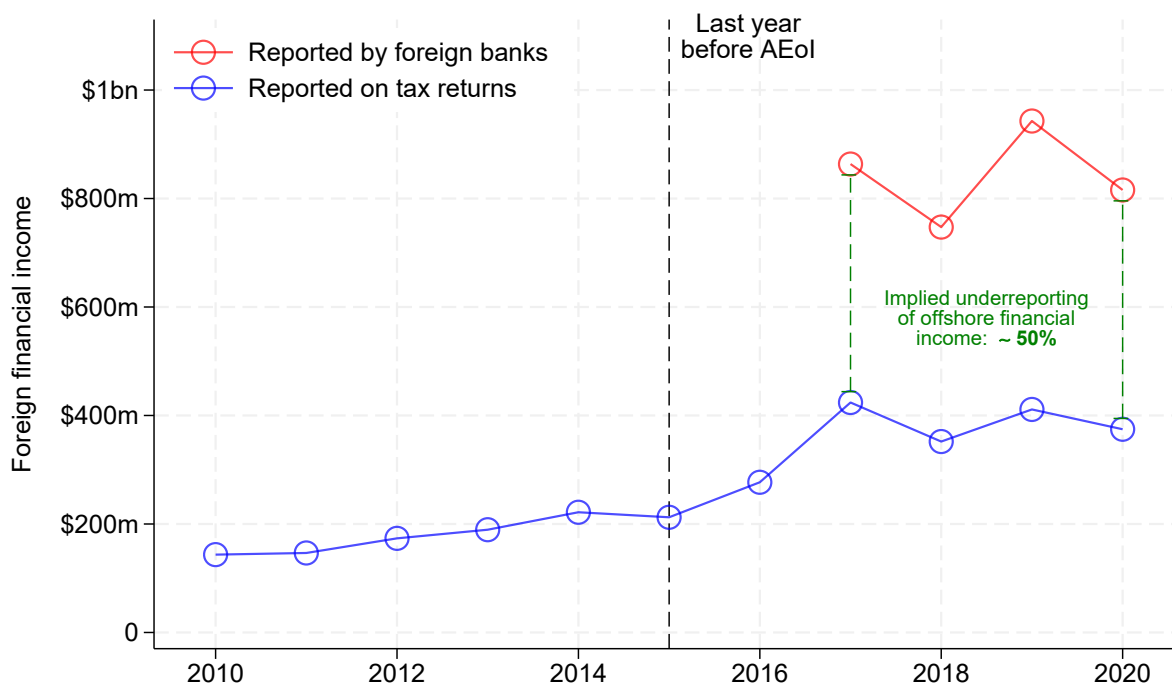


Figure 5: Compliance effects. The figure illustrates how the onset of automatic information exchange affected self-reporting by taxpayers who differed in their ex ante compliance behavior. Specifically, the figure shows average self-reported foreign financial income (colored lines) and bank-reported foreign financial income (black lines) for individual taxpayers with a matched AEOI report in 2016 while distinguishing taxpayers who self-reported no foreign financial income in 2015 (top panel) and taxpayers who self-reported some foreign financial income in 2015 (bottom panel).

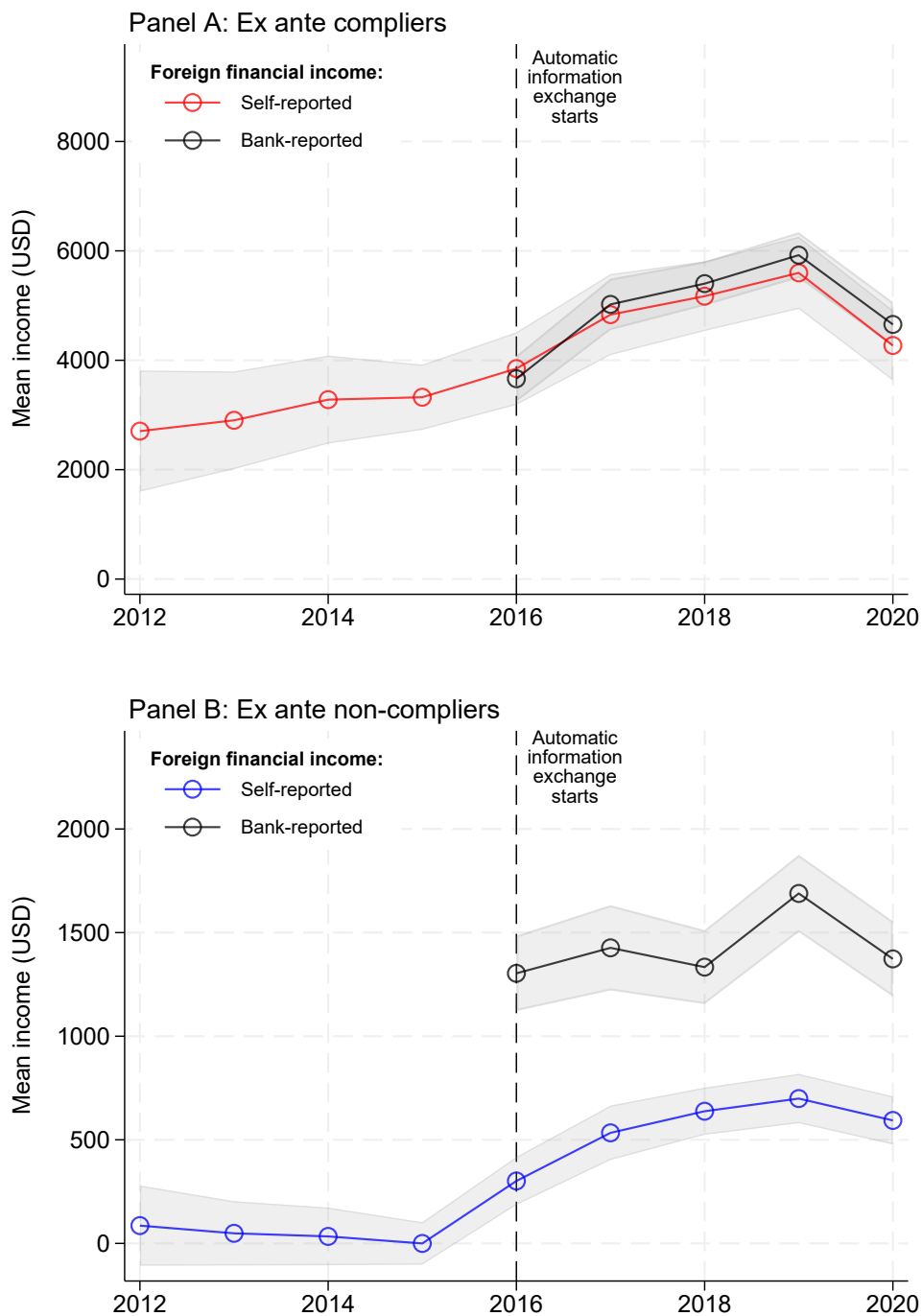


Figure 6: Under-reporting by income group. The figure illustrates for each income group the share of bank-reported foreign interest and dividend income that is not self-reported by the taxpayers (blue line, left axis) and the group’s share of aggregate underreporting (gray bars, right axis). Foreign accounts not matched to individual taxpayers through tax identification numbers are assigned to income groups based on a procedure that uses observed links between account characteristics and income groups in the sample of matched accounts.

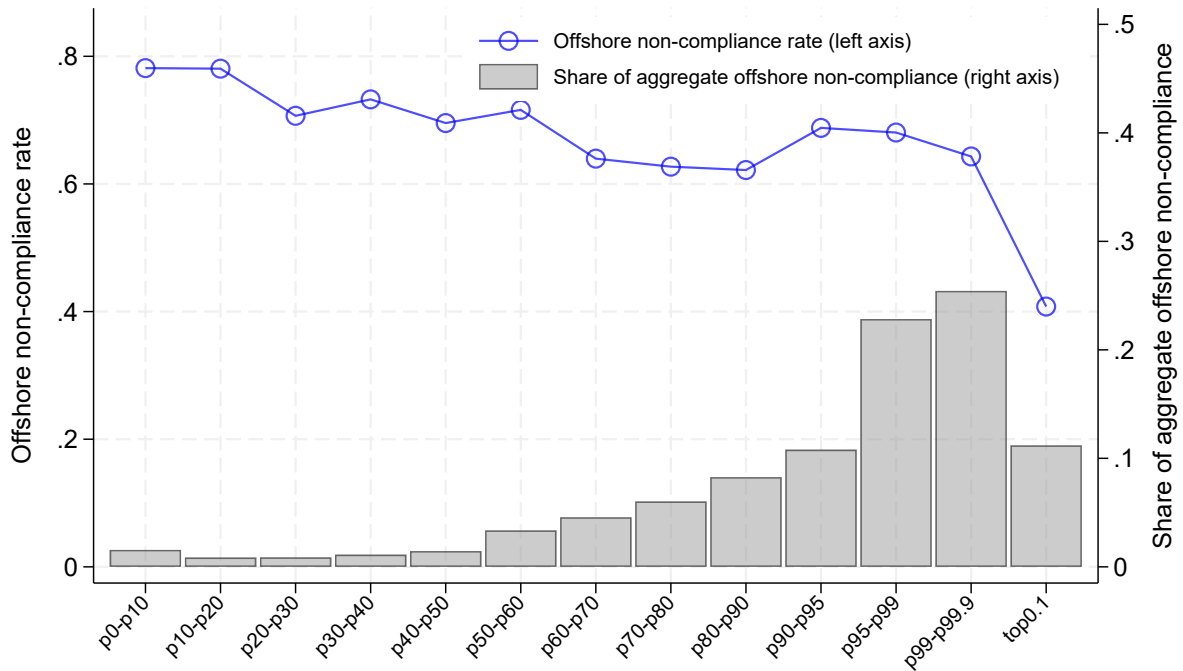


Figure 7: Audit corrections. The figure illustrates the estimated effect of underreporting on the probability of audit correction. The estimates are obtained in a taxpayer-level regression where the sample is taxpayers who have bank-reported foreign accounts with positive income. The dependent variable is an indicator for tax authorities making a correction to the tax return in the context of an audit. The independent variable of interest is an indicator for underreporting of foreign financial income (i.e. bank-reported income exceeding self-reported income). The specification includes a large set of non-parametric controls: indicators for age, total taxable income, self-employment and year (4-way interactions) as well as indicators for the amount of bank-reported income, foreign bank country and year (3-way interactions). The figure shows the estimated coefficient on the indicators for underreporting in the full sample (red bar), in subsamples split by whether the taxpayer has an account in a tax haven (blue bars) and subsamples split by the absolute magnitude of the underreporting (green bars). The vertical gray lines represent 95% confidence intervals.

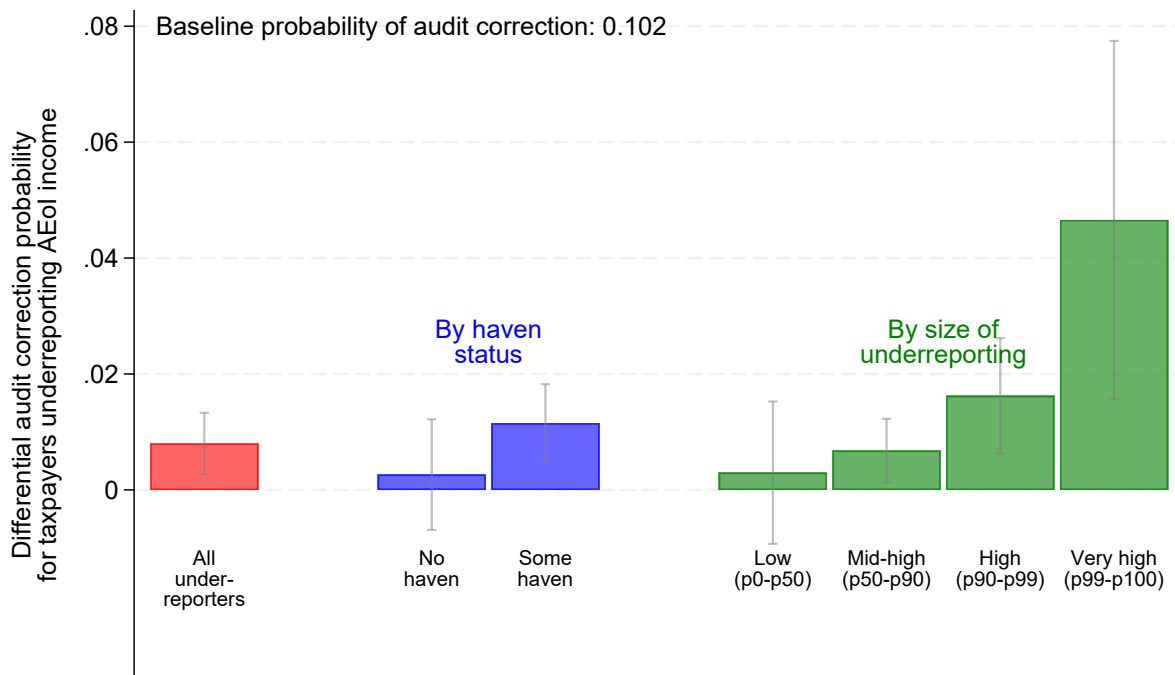
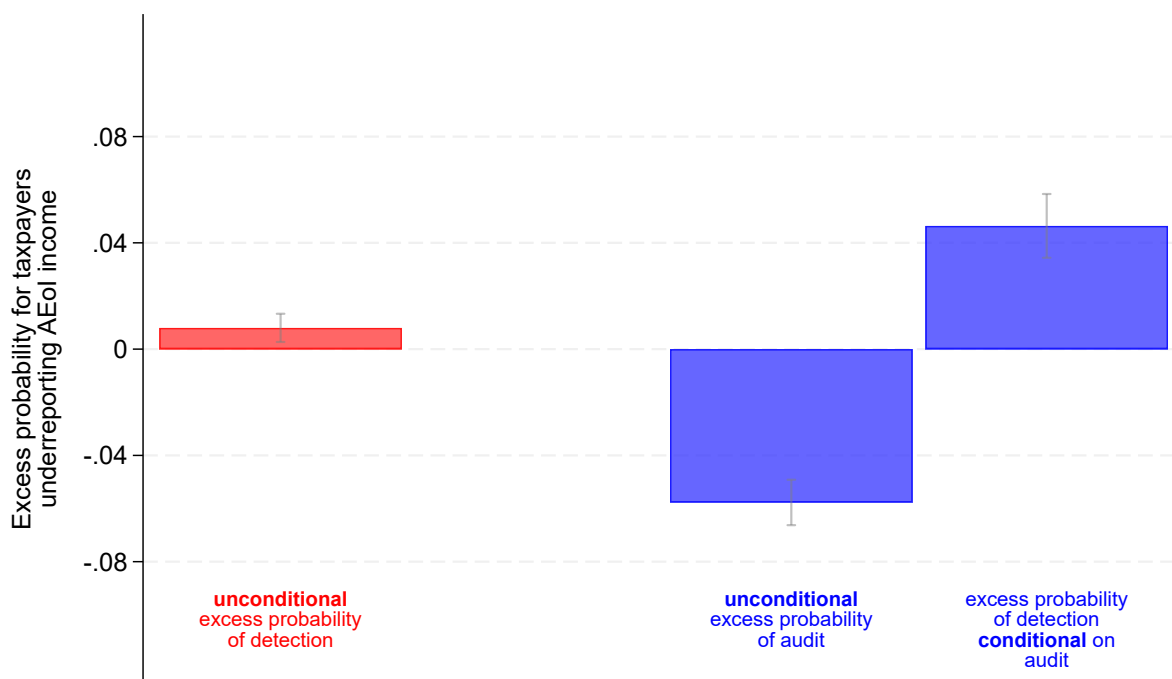


Figure 8: Audit effect decomposition. The figure decomposes the effect of underreporting on the probability of audit correction. The estimates are obtained in a taxpayer-level regression with a large set of non-parametric controls: indicators for age group, total taxable income group, self-employment and year (4-way interactions) as well as indicators for the amount of bank-reported income, foreign bank country and year (3-way interactions). The figure shows the estimated coefficient on underreporting when the dependent variable is an indicator for audit correction and the sample is taxpayers who have bank-reported foreign accounts with positive income (red bar); the estimated coefficient on underreporting when the dependent variable is an indicator for selection to an audit the sample is taxpayers who have bank-reported foreign accounts with positive income (first blue bar); the estimated coefficient on underreporting when the dependent variable is an indicator for audit correction and the sample is taxpayers who have bank-reported foreign accounts with positive income and have been selected to an audit (second blue bar). The vertical gray lines represent 95% confidence intervals.



ONLINE APPENDIX

Figure A1: Distribution of account balances. The figure illustrates the distribution of (non-zero) account balances in 2019 (red markers) and in 2018 and 2020 (gray markers) by plotting mean values within percentile groups. In 2019, the median account balance is around \$2,800.

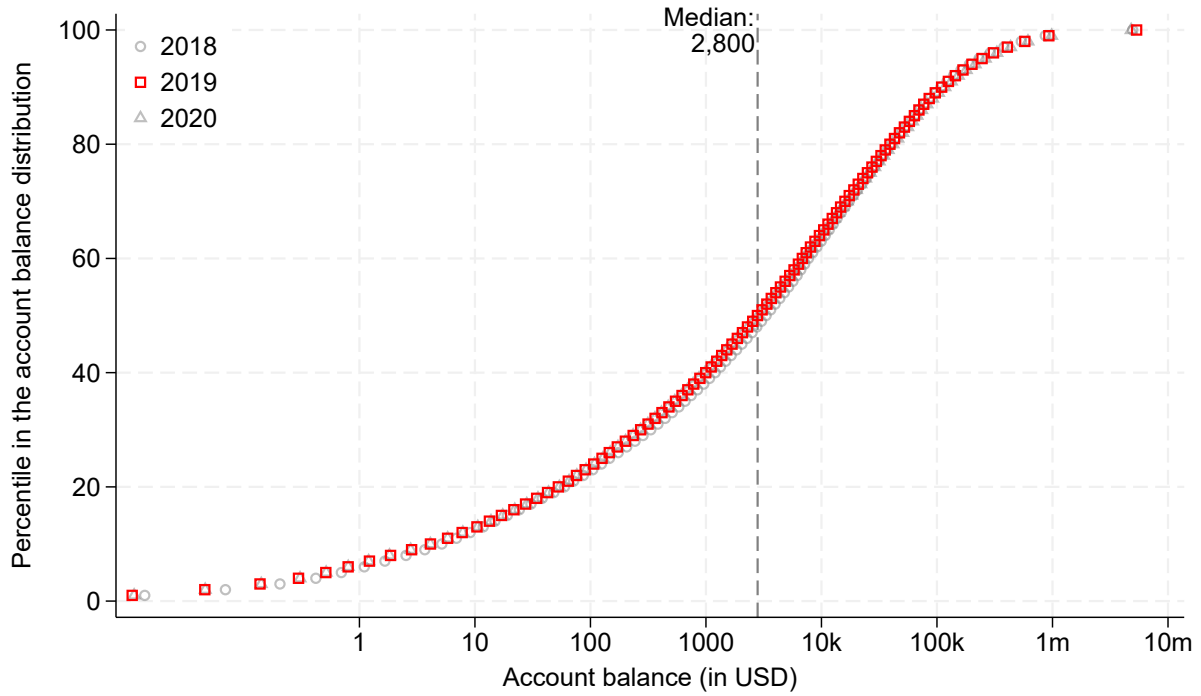


Figure A2: Match rates. The figure shows the share of aggregate account balances for which the report includes a tax identification number that matches a South African taxpayer (blue line), the share for which the report includes a tax identification number that matches no South African taxpayer (green line) and the share for which the report includes no tax identification number (red line).

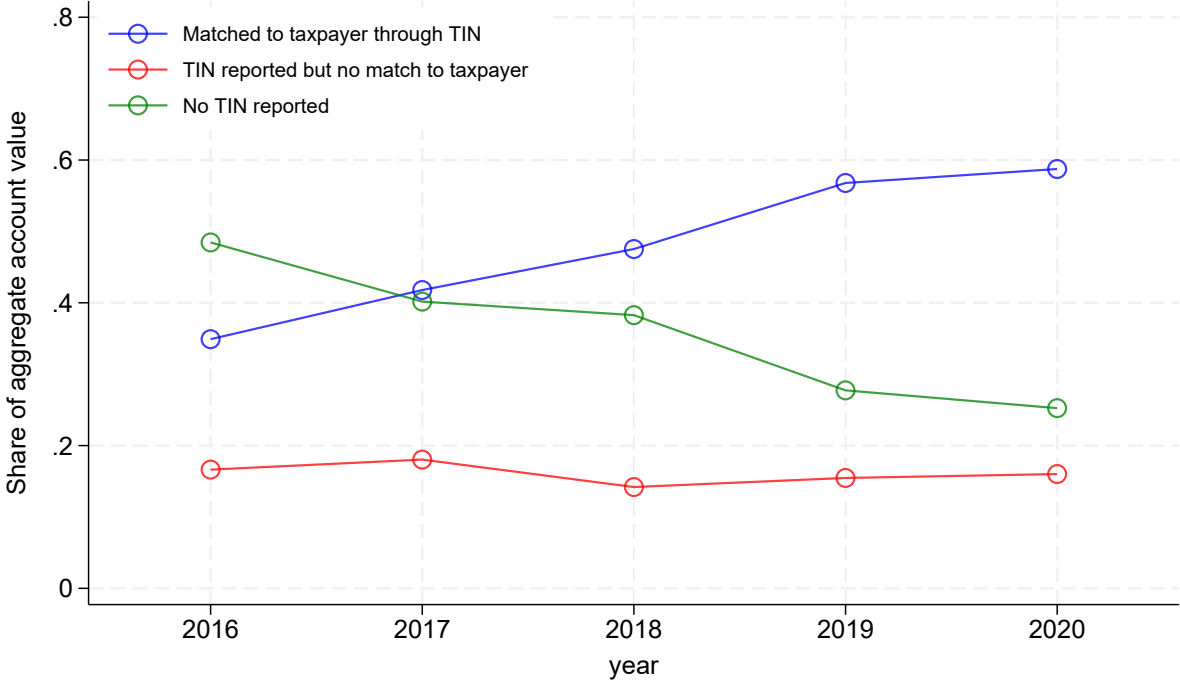


Figure A3: Share of reports with TIN. The figure illustrates how the share of reports including a tax identification number is distributed across reporting banks and reporting countries. Specifically, for each bank sending AEOI reports to South Africa, we compute the share of reports with a TIN and illustrate the distribution of that variable in a histogram (top panel). Similarly, for each country sending AEOI reports to South Africa, we compute the share of reports with a TIN and illustrate the distribution of that variable in a histogram (bottom panel).

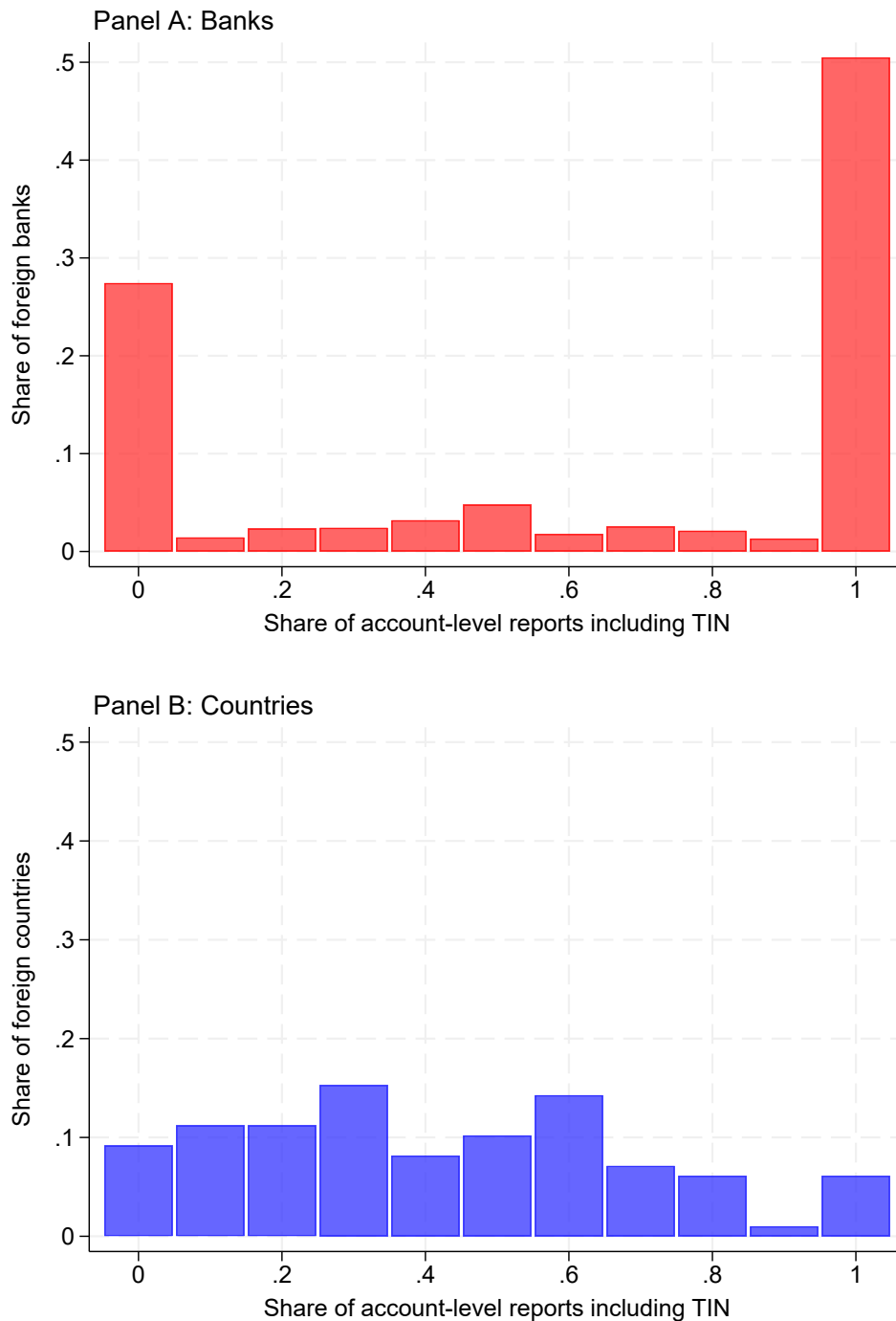


Figure A4: Aggregates by AEOI country cohorts. The figure breaks down aggregate account balances (top panel) and the number of reporting banks (bottom panel) by AEOI country cohorts: countries reporting from 2016 (blue line) from 2017 (red line), from 2018 (green line) and from 2019 (purple line).

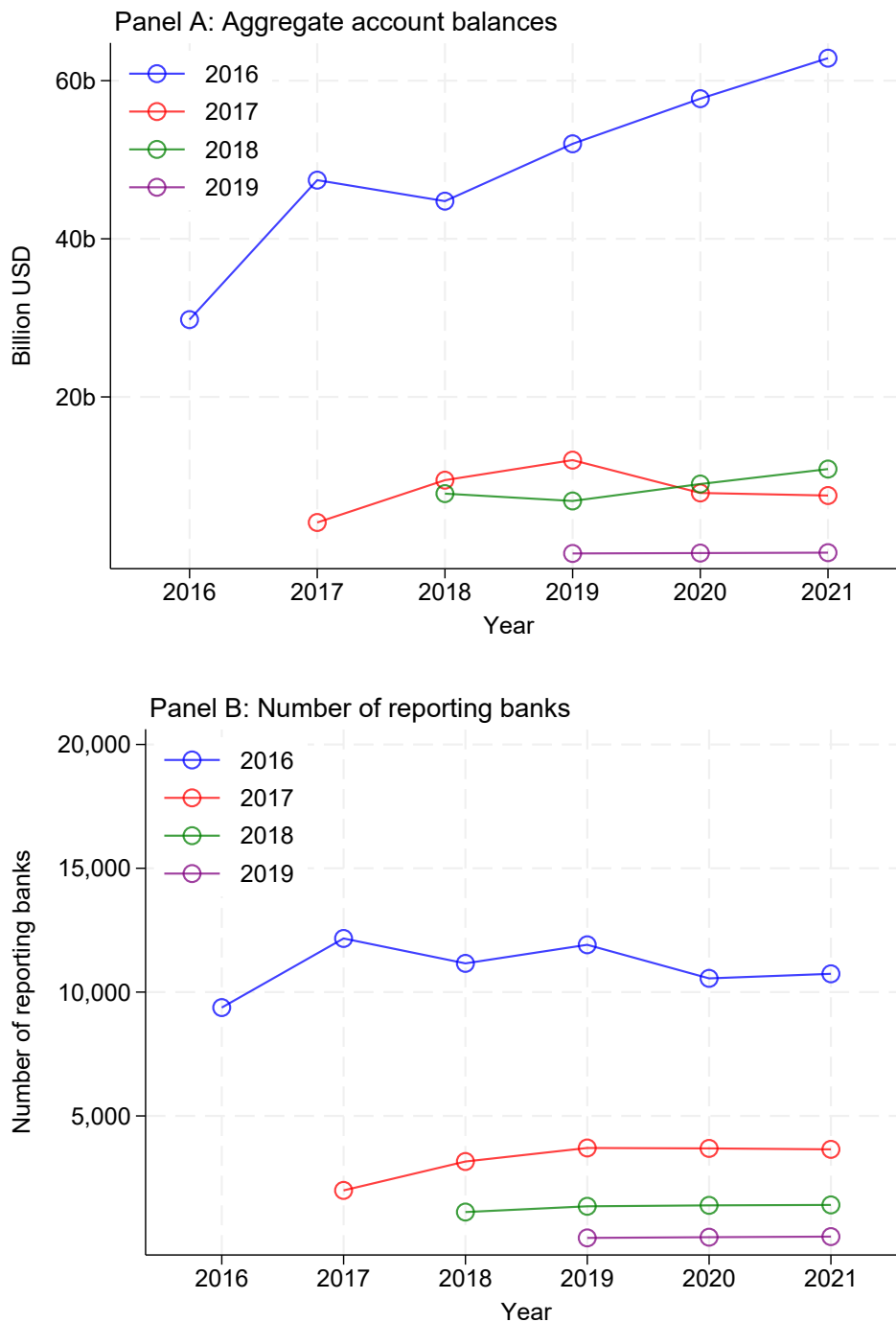


Figure A5: Aggregate reporting and underreporting, no imputation. The figure compares the aggregate value of foreign interest and dividends self-reported on the tax return (red line) to the aggregate value of foreign financial interest and dividends reported by foreign financial institutions under CRS and FATCA (blue line).

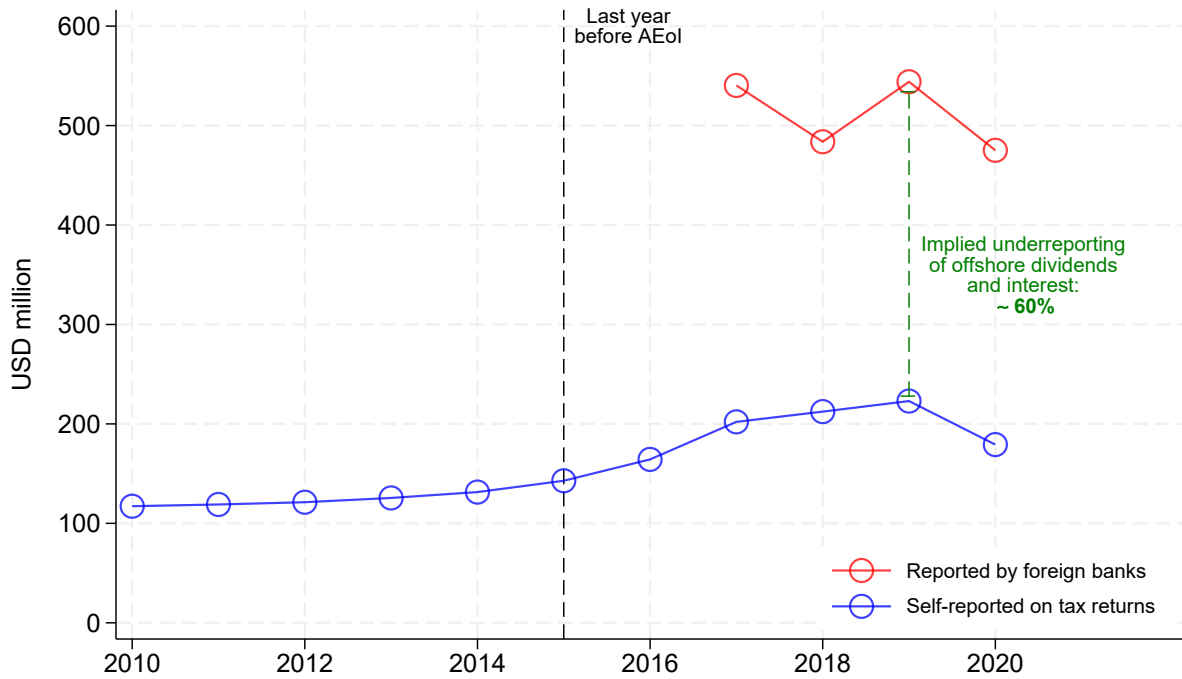


Figure A6: Compliance effects, extensive margin. The figure illustrates how the onset of automatic information exchange affected self-reporting of foreign financial income on the extensive margin by taxpayers who differed in their ex ante compliance behavior. Specifically, the figure shows the propensity to self-report foreign financial income (colored lines) and to have any bank-reported foreign financial income (black lines) for individual taxpayers with a matched AEOI report in 2016 while distinguishing taxpayers who self-reported no foreign financial income in 2015 (top panel) and taxpayers who self-reported some foreign financial income in 2015 (bottom panel).

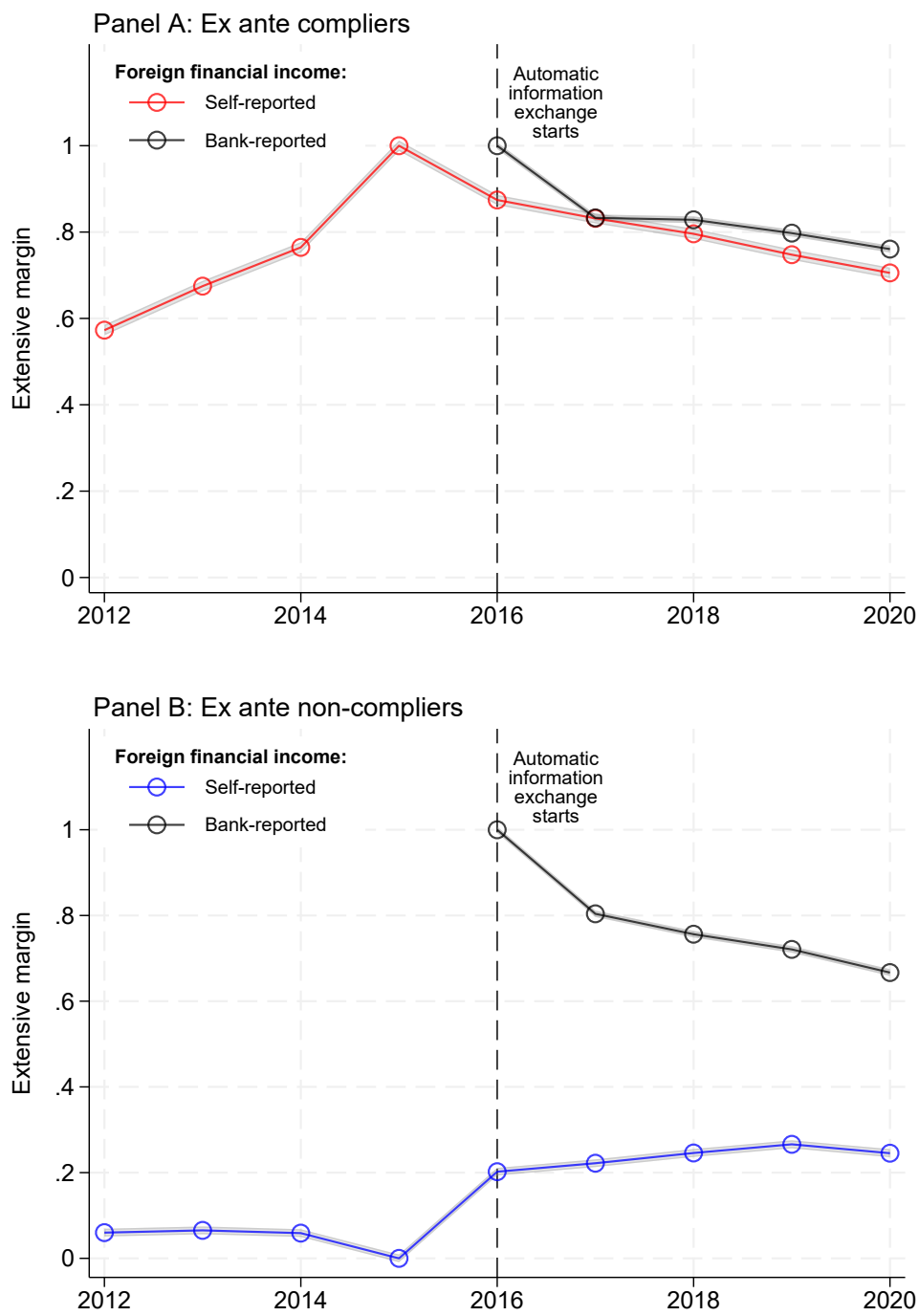


Figure A7: Compliance effects, by AEOI cohort. The figure shows average self-reported foreign financial income for individual taxpayers who are matched with a matched AEOI report for the first time in year t and who self-reported no foreign financial income in year $t-1$ where year t is 2016 (red line), 2017 (blue line) and 2018 (green line). To focus on cases that reflect policy variation (i.e. the foreign bank starts reporting) rather than taxpayer variation (the taxpayer opening a foreign account), the sample is restricted to cases where year t coincides with the first AEOI reporting year for the foreign bank.

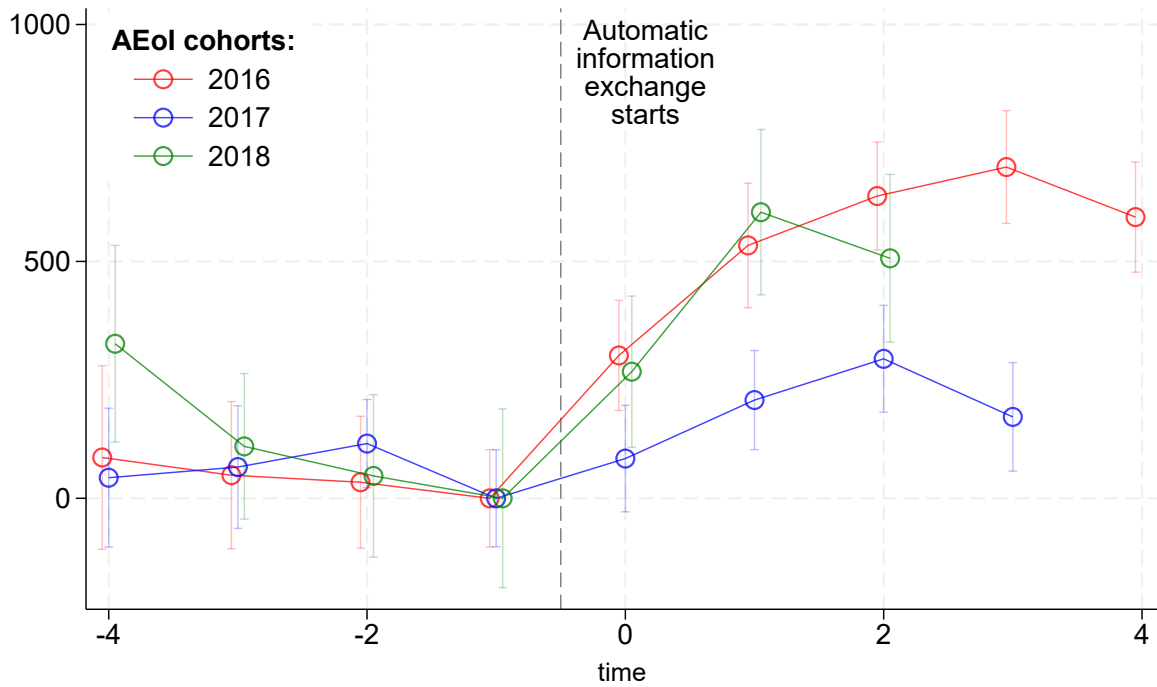


Figure A8: Audit decomposition, robustness to fixed effects. The figure shows that the decomposition of the effect of underreporting (8) are robust to individual fixed effects. The estimates are obtained in a taxpayer-level regression with taxpayer fixed effects and a large set of non-parametric controls: indicators for age group, total taxable income group, self-employment and year (4-way interactions) as well as indicators for the amount of bank-reported income, foreign bank country and year (3-way interactions). The figure illustrates the estimated coefficient on underreporting when the dependent variable is an indicator for audit correction and the sample is taxpayers who have bank-reported foreign accounts with positive income (red bar); the estimated coefficient on underreporting when the dependent variable is an indicator for selection to verification and the sample is taxpayers who have bank-reported foreign accounts with positive income (first blue bar); and the estimated coefficient on underreporting when the dependent variable is an indicator for audit correction and the sample is taxpayers who have bank-reported foreign accounts with positive income and have been selected for verification (second blue bar). The vertical gray lines represent 95% confidence intervals.

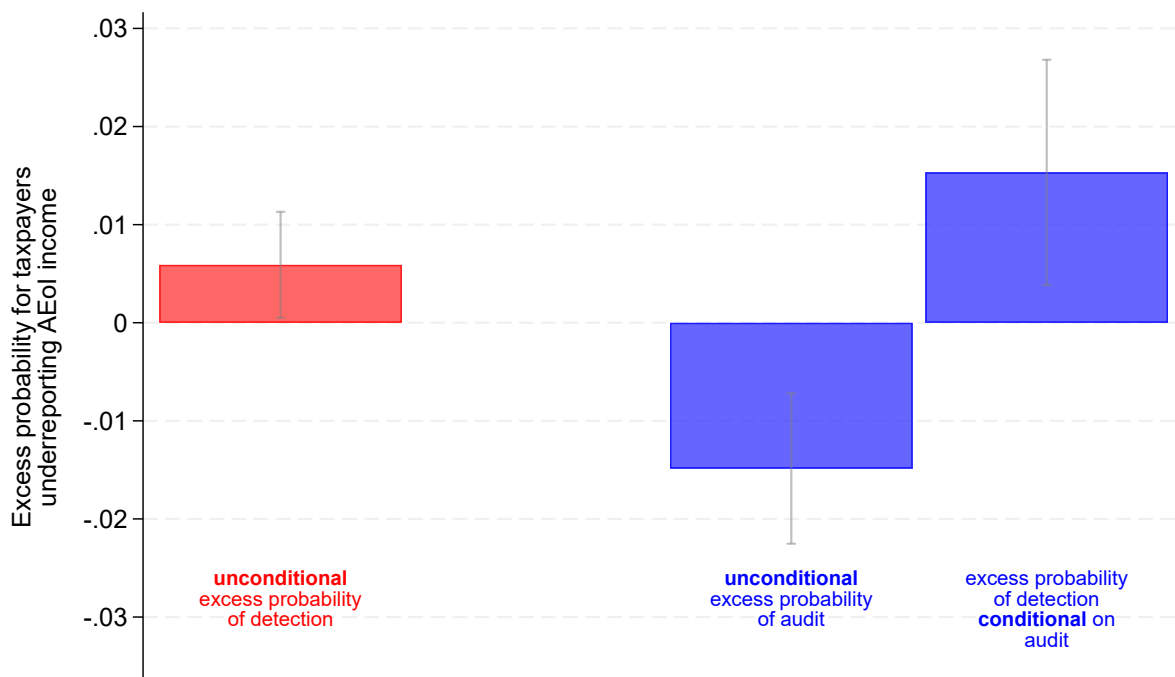


Figure A9: Audit decomposition, robustness additional controls. The figure shows that the decomposition of the effect of underreporting (8) is robust to further controls for background risk. The estimates are obtained in a taxpayer-level regression with a large set of non-parametric controls, which, in the *baseline*, include: indicators for age group, total taxable income group, self-employment and year (4-way interactions), indicators for the amount of bank-reported income, foreign bank country and year (3-way interactions). The augmented models include indicators for fringe benefits, allowances, non-taxable income and year (4-way interactions). One specification controls only for the *extensive margin* of the three additional controls (8 combinations). Another specification controls for the *extensive and intensive margins* with 5 indicators: 1 indicator for zero and 4 indicators for P1-50, P50-90, P90-90 and top 1% conditional on non-zero (125 combinations). The figure shows the estimated coefficient on underreporting when the dependent variable is an indicator for audit correction and the sample is taxpayers who have bank-reported foreign accounts with positive income (red bar); the estimated coefficient on underreporting when the dependent variable is an indicator for selection to an audit and the sample is taxpayers who have bank-reported foreign accounts with positive income (first blue bar); the estimated coefficient on underreporting when the dependent variable is an indicator for audit correction and the sample is taxpayers who have bank-reported foreign accounts with positive income and have been selected to an audit (second blue bar). The vertical gray lines represent 95% confidence intervals.

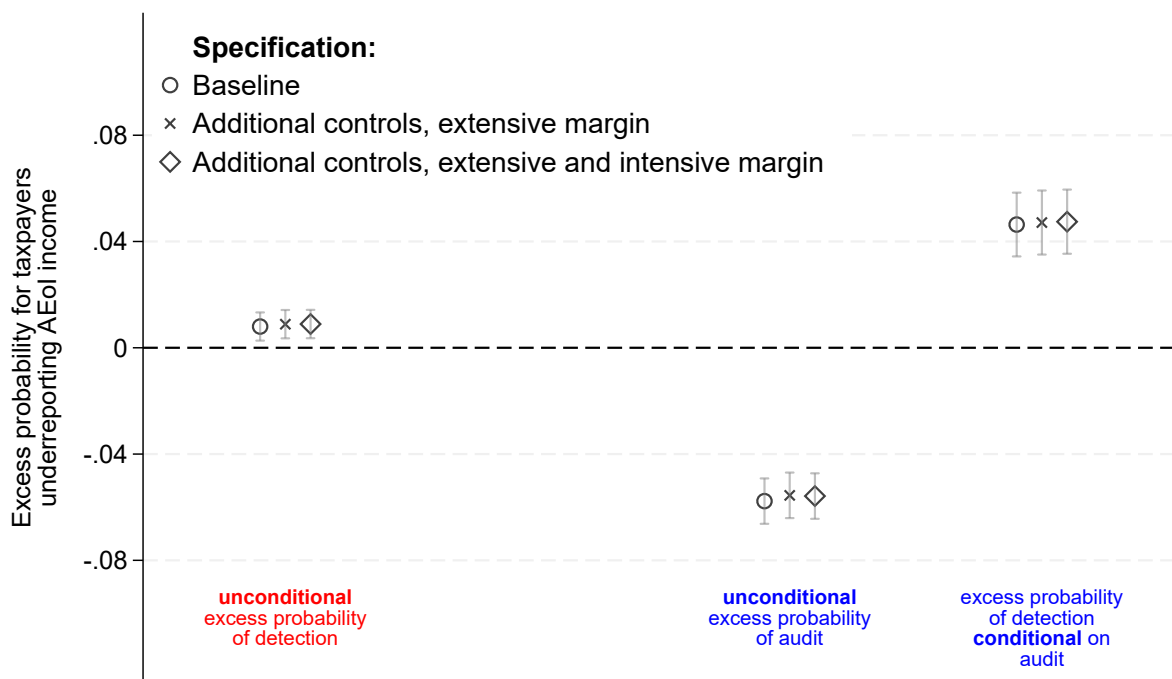


Table A1: Foreign account characteristics. The table shows summary statistics for the personal accounts reported by foreign financial institutions under CRS and FATCA in 2019 with separate entries for reports with no taxpayer ID numbers (Column 1); reports with taxpayer ID numbers that cannot be matched to taxpayers (Column 2); and reports with taxpayer ID numbers that can be matched to taxpayers (Column 3).

	(1)	(2)	(3)	(4)
	All accounts	No TIN	Unmatched TIN	Matched TIN
Observations	1,060,318	646,374	124,223	289,721
Amounts (USD):				
Account balance	68,549	31,420	89,900	142,231
Dividend income	234	106	225	524
Interest income	279	269	292	296
Other income	9	9	7	10
Gross proceeds	3,190	1,580	4,027	6,422
Other characteristics:				
Zero balance	0.297	0.353	0.246	0.194
Large account (>p99)	0.010	0.004	0.010	0.023
Very large account (>p99.9)	0.001	0.000	0.001	0.002
Dormant account	0.020	0.028	0.006	0.009
Tax haven account	0.380	0.333	0.295	0.521
Multiple owners	0.136	0.126	0.160	0.149
Owner age	52.0	50.8	51.1	55.0

Table A2: Taxpayer characteristics. The table shows summary statistics for the full sample of South African taxpayers in 2019 (Column 1); for the subsamples matched and not matched to foreign financial accounts (Columns 2-3).

	Full sample	AEol report	No AEol report
Individuals	14,955,137	134,653	14,820,484
Socio-demographics:			
Female	0.48	0.40	0.48
Age	41.1	53.1	41.0
Income (USD):			
Gross income	17,773	76,924	17,235
Domestic financial income	373	13,057	257
- interest	171	4,242	134
- dividends	99	4,203	62
- capital gains	102	4,613	61
Foreign financial income	27	1,947	10
- interest	7	535	2
- dividends	8	520	3
- capital gains	13	892	5