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**The Compliance
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June 2023

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The Compliance Effects of the Automatic Exchange of Information: Evidence from the Swiss Tax Amnesty*

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Abstract

This paper studies how the introduction of multilateral automatic exchange of information (AEOI) in 2017 affects tax compliance. Exploiting rich tax data, variation generated by the interplay of the Swiss tax amnesty with the AEOI, and difference-in-differences designs, I document substantial compliance responses. At the macro level, about 107k taxpayers (2% of all) were pushed to participate in amnesty by the AEOI. Together, they disclosed around 35.2 billion Swiss francs in hidden assets—more than 5% of GDP. I show that the behavioral compliance responses persists at the micro level. Once a tax evader enters the amnesty, their wealth on average increases by 50% and remains at this higher level in subsequent years (relative to the control group). Lastly, I provide evidence that tax evasion is widespread and more evenly distributed in Switzerland than in other European countries—which is consistent with Switzerland’s lack of third-party reporting prior to the AEOI.

JEL-Classification: D31, F38, F42, H24, H26, K34, K42

Keywords: tax evasion; AEOI; compliance; enforcement; CRS; tax amnesty; inequality

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1 Introduction

Globalization poses major challenges for taxation: About 8% of global household financial assets are held in tax havens (Zucman, 2013). Increased tax revenue needs in particular since the financial crisis have put the fight against offshore tax evasion high on the international political agenda in recent years. However, initial policy efforts such as the European Savings Tax Directive (Johannesen, 2014; Martinez-Toledano and Roussille, 2023) or bilateral tax information exchange agreements (Johannesen and Zucman, 2014; Menkhoff and Miethe, 2019) have not proven to be effective measures to combat tax evasion. Eventually, these early policy-making failures resulted in the introduction of multilateral automatic exchange of information (AEOI) in 2017. Today, more than 110 countries automatically exchange information on 111 million financial accounts annually, covering total assets of about 11 trillion euros. Hopes have been high that a comprehensive and assertive AEOI might be successful in tackling offshore tax evasion. Yet, so far, there is little evidence on the effectiveness of the AEOI. In particular, it is not well understood how the AEOI affects taxpayers' compliance behavior. This paper aims to fill this gap in the literature.

Studying compliance behavior is challenging because tax evasion is inherently difficult to observe. This paper tackles this challenge by using detailed administrative tax data and exploiting policy variation generated by the interplay of the introduction of the AEOI with a Swiss tax amnesty. In 2010, Switzerland introduced permanent voluntary disclosure, which is still in place today. The primary feature of the amnesty is to provide non-compliant taxpayers a one-time opportunity to voluntarily disclose previously hidden assets and income, thereby waiving all fines and criminal prosecution. This amnesty was unexpectedly hit by the announcement in 2013, that by 2017 the AEOI would be introduced. With the AEOI, financial assets held by Swiss tax residents offshore in one of the 97 partner countries are henceforth third-party reported. This drastically raises the probability that undeclared foreign assets will be detected (Kleven et al., 2011). Consequently, this paper examines how enhanced tax enforcement by increasing the probability of detection through the AEOI affects tax compliance.

At the macro level, I exploit the enforcement push by the AEOI using a simple difference-in-differences design to investigate the increase in amnesty participation and revealed hidden assets relative to an unaffected control group. At the micro level, I study the tax compliance behavior of amnesty participants. Seven in ten of these tax evaders were forced into amnesty by the AEOI. I compare these amnesty participants, who filed a voluntary self-disclosure, to taxpayers with similar ex ante characteristics. This dynamic difference-in-differences analysis allows me to quantify the persistence of the tax compliance response. Combining the static macro and dynamic micro perspectives provides a detailed understanding of the compliance effects of the AEOI. Moreover, by merging micro-level tax amnesty data with the universe of

ordinary tax records in the canton of Bern, I am also able to explore for the first time the distribution of tax evasion in Switzerland.

The main findings of this paper can be summarized as follows. First, based on newly collected data, I present the first quantification of the scope of the Swiss tax amnesty. From 2010 to 2020, 155'658 taxpayers (i.e. nearly 3% of all taxpayers) have participated in the Swiss amnesty. In total, these previously non-compliant taxpayers declared hidden taxable assets of at least 66.4 billion 2020 Swiss francs, which corresponds to about 10% of GDP in 2020 or 3.5% of the total taxable wealth declared in Switzerland. These disclosures resulted in 5.6 billion Swiss francs in back-taxes collected over the period 2010–2020.

Second, the success of the Swiss tax amnesty is closely linked to the introduction of the AEOI. Both participation in the amnesty and the amount of hidden assets revealed therein soar with the implementation of the first bilateral AEOI relationships. The macro-level DiD estimates show that nearly 70% of all participants were induced to disclose under the tax amnesty by the stricter enforcement via the AEOI. Analogously, just over half of all hidden assets disclosed under the amnesty can be attributed to the AEOI (i.e., 35.2 billion Swiss francs or more than 5% of GDP). This implies that tax evaders who participated in the amnesty due to the AEOI disclosed smaller amounts, on average, than evaders who were not forced into the amnesty by stricter enforcement.

Indeed, I provide evidence that taxpayers who participated in the amnesty in the post-AEOI period are much more likely to come from lower parts of the wealth distribution than participants prior to 2017. In addition, these moderately wealthy amnesty participants sometimes disclose a significant amount of hidden wealth from real estate assets which are actually not covered and thus would be unaffected by the AEOI. By contrast, I find no such disclosures of real estate assets among taxpayers in the top 10% of the wealth distribution. Taken together, this evidence suggests that the AEOI has improved tax compliance, particularly among taxpayers from lower strata of the wealth distribution. However, it questions how effective the AEOI is in fostering compliance at the top. At least these suggestive empirical findings align with the theoretical argument that evaders toward the top of the distribution are less affected by enhanced tax enforcement such as the AEOI as their wealth is sheltered by special concealment measures (see Guyton et al., 2021, for a formal model).

Third, at the micro level, I study the persistence of the behavioral tax compliance responses using a dynamic diff-in-diff strategy. On average, I find that the reported taxable wealth of a tax evader who participates in the tax amnesty rises by more than 50% and remains at this higher level in subsequent years, compared to taxpayers with similar ex ante characteristics. There is substantial heterogeneity in the magnitude of this behavioral response along the wealth distribution, namely that wealthier taxpayers disclose relatively less. Importantly, however, there is hardly any heterogeneity in the persistence of these compliance effects.

That is, for all types of evaders, the initial increase in tax compliance persists over time. Consequently, my results corroborate earlier findings by Alstadsæter et al. (2022a) that there is little to no substitution between illegal tax evasion and legal tax avoidance.

Moreover, I contrast the behavioral compliance patterns of amnesty participants with those of tax evaders who were caught by the cantonal tax authorities themselves. The most interesting result of this comparison is that, on average, reported taxable wealth increases more for amnesty participants than for detected tax evaders, while conversely, reported taxable income increases more for detected tax evaders than for amnesty participants. This suggests that the tax authorities are more capable of detecting undeclared (labor) income than they are in uncovering hidden offshore assets. Given the lack of third-party reporting prior to the AEOI in 2017, it is perhaps not that surprising that tax audits have been relatively unsuccessful in discovering undeclared assets. This also highlights a future potential for uncovering hidden assets held domestically by removing Swiss banking secrecy, which to this day prevents domestic third-party reporting.

Fourth, I examine the distribution of tax evasion in Switzerland. Using linked micro-level amnesty and ordinary tax data, I start by documenting the distribution of amnesty wealth for the full sample period 2010–2020: the bottom half (P00-P50) has essentially no amnesty wealth. The next 40% of the wealth distribution (P50-P90) own about 25% of overall amnesty wealth. The top 10% excluding the top 1% (P90-P99), possess about 30%. Thus, the top 1% owns roughly 46% of all hidden assets uncovered under the Swiss amnesty. However, I observe that the distribution of amnesty wealth is markedly different in the post-AEOI period, as after 2017 it is particularly evaders from the middle part of the distribution who participate. Therefore, restricting the observation period to 2010–2016 yields a considerably more concentrated distribution of amnesty wealth: The top 1% own about 60% of the disclosed hidden wealth, leaving the bottom 99% with only 40%.

From this distributional analysis, I hypothesize that the “true” distribution of tax evasion in Switzerland is likely such that the top 1% of the wealth distribution is to hold about 60% of all hidden assets. However, given the issue of self-selection into amnesty, the question concerning the “true” distribution of tax evasion in Switzerland warrants further investigation in future research. What is more clear, though, is that tax authorities are hardly capable of uncovering hidden wealth at the top of the distribution. Of all the hidden assets uncovered by the authorities themselves between 2010 and 2020, the top 1% owned less than 25%, which is significantly less than their share in total reported taxable wealth of 37.7%.

Related literature. This paper contributes to three main strands of the literature. First, my paper adds to the growing literature studying the effectiveness of cross-border information exchange as a tax enforcement tool. The empirical literature started by documenting that bilateral tax information exchange agreements have not been an effective way in combating

offshore tax evasion (Johannesen and Zucman, 2014; Menkhoff and Miethe, 2019; Johannesen et al., 2020). More recently, several empirical papers have similarly raised concerns about the effectiveness of the AEOI due to possible circumvention schemes, including acquiring citizenship in tax havens (Menkhoff and Miethe, 2019; Langenmayr and Zyska, 2023), using nontraditional tax haven countries such as the United States (Casi et al., 2020), and investing in non-covered assets such as real estate (Bomare and Le Guern Herry, 2022).¹ In contrast, my research is the first to suggest a fairly strong effect of the AEOI on tax compliance. A potential caveat in generalizing the empirical results for Switzerland is that it started from a very low level of tax enforcement prior to the AEOI in 2017, since there was zero third-party reporting. As such, Switzerland’s experience with the introduction of AEOI may be more instructive for developing economies, which are generally characterized by low levels of tax enforcement, than for industrialized countries, which already use comprehensive third-party reporting (see Pomeranz and Vila-Belda, 2019 for an overview). In identifying the AEOI as the decisive factor, I also relate to the broader literature that emphasizes information reporting as a critical instrument for enforcing tax compliance (see e.g., Kleven et al., 2011; Pomeranz, 2015; Kleven et al., 2016; Slemrod et al., 2017; Naritomi, 2019; Jensen, 2022; Bustos et al., 2022; see Slemrod, 2019 for a review).

Second, I add to a recent strand of the literature that studies the effectiveness of tax amnesties (Langenmayr, 2017; Johannesen et al., 2020; Londoño-Vélez and Ávila-Mahecha, 2021; Alstadsæter et al., 2022a; Londoño-Velez and Tortarolo, 2022; Leenders et al., 2023). In any international comparison, but especially when compared to the experience of other European countries, the magnitude of the hidden assets uncovered by the Swiss tax amnesty (10% of GDP) is very substantial, so that the amnesty is likely to be considered a success. For instance, in the Netherlands—with about twice the population of Switzerland—only about 27’000 individuals participated in that country’s tax amnesty from 2002 to 2018, disclosing a total of 12.1 billion euros, or about 1.6% of GDP (for details see Leenders et al., 2023). While Londoño-Velez and Tortarolo (2022) emphasize a variety of factors (tax incentives, threat of detection, favorable political economy, and program salience) for the success of the Argentine amnesty—with 21% of GDP the largest on record—the Swiss experience highlights in particular the rise in the (perceived) detection probability through the AEOI as key element.

Third, my paper contributes to a novel empirical literature that studies the distribution of tax evasion (Alstadsæter et al., 2019; Londoño-Vélez and Ávila-Mahecha, 2021; Guyton et al., 2021; Leenders et al., 2023; Johannesen et al., 2023). By international standards, amnesty wealth in Switzerland appears to be much more equally distributed than in other countries for

¹The Common Reporting Standard (CRS) is the mechanism developed by the OECD to operationalize the AEOI (see Section 2.4 for details). The only major economy not participating in the CRS is the United States, which has introduced its own standard for obtaining financial information on U.S. citizens in the form of the Foreign Account Tax Compliance Act (FATCA). Likewise, there is evidence that U.S. tax evaders are increasingly investing in alternative assets not covered by FATCA, such as real estate and art (De Simone et al., 2020).

which such amnesty data have been analyzed. This empirical pattern is consistent with the fact that the evasion of assets in Switzerland was (and still is) relatively easy—for taxpayers from all parts of the distribution—due to full self-declaration in tax matters without any cross-validation with third-party reports. While the distributional results presented in this paper are highly interesting and revealing, they also need to be taken with a grain of salt (I provide a thorough discussion of the limitations of this analysis). In the absence of more exogenous data samples on tax evasion, as used in previous research (e.g., Alstadsæter et al., 2019; Londoño-Vélez and Ávila-Mahecha, 2021; Leenders et al., 2023), the question regarding the “true” distribution of tax evasion remains a critical one, and the suggestive patterns of evasion presented in this paper are to be confirmed by future research.

Paper organization. Section 2 provides information on the institutional background. Section 3 describes the data. Section 4 shows the macro and micro effects of the introduction of the AEOI on tax compliance in Switzerland. Section 5 provides evidence on the distribution of tax evasion in Switzerland. Section 6 concludes.

2 Institutional background

This section provides background information on (i) the general tax environment in Switzerland, (ii) how cantonal tax authorities enforce tax compliance, (iii) the current Swiss tax amnesty, and (iv) the introduction of the automatic exchange of information and its consequences for taxation in Switzerland.

2.1 The Swiss tax system

The Swiss tax system is highly decentralized, with tax rights allocated not only to the federal government, but also its 26 cantons and some 2,100 municipalities. Cantons exercise extensive fiscal autonomy, both in spending and revenue collection. Notably, they autonomously set their tax schedules for the personal income and wealth tax.² Municipalities collect tax revenue by setting a municipal “multiplier” to the cantonal tax schedules (i.e., municipalities have the power to shift the level of taxation, but not the progressivity). As personal taxes are residence-based, there is strategic tax setting (Parchet, 2019) and strong tax competition across local authorities (Schmidheiny and Slotwinski, 2018; Martínez, 2022b; Brülhart et al., 2022; Baselgia and Martínez, 2023a). The federal government levies an income tax, but not a wealth tax, which is why wealth (tax) data are available at the cantonal level only.³

Wealth taxation. The primary outcome of interest in this paper concerns the evasion of wealth and its associated income streams, which is why I have to rely on cantonal (wealth)

²Cantons also set other tax schedules, such as bequest taxes (which are low by international standards; see e.g., Brülhart and Parchet, 2014) and the corporate income tax rate (see e.g., Krapf and Staubli, 2022).

³Besides the income tax, the most relevant revenue sources for the federal government are the VAT and, to a lesser extent, the federal withholding tax.

tax data (see Section 3). The Swiss wealth tax levied by the cantons (and municipalities through an associated multiplier) is comprehensive and applies globally.⁴

With the exemption of pension wealth and standard durable household goods all assets—real estate, land, non-incorporated business assets, financial assets (including cash, shares, bonds, private loans, etc.), cars, art, jewelry, and collectibles—net of debt are taxable and hence should in principle be recorded in cantonal tax data. While certain assets, in particular real estate held outside the respective canton, form not part of the cantonal tax base, they must be declared in order to determine the correct tax rate.⁵ All assets are recorded at their end-of-year value.⁶

Exemption thresholds for the wealth tax vary by canton (from CHF 25k to 200k for singles), but are generally low by international standards.⁷ Importantly, however, all Swiss residents aged 18 and over are required to file a tax return and declare their total global wealth, regardless of whether the net value of their assets is below the exemption threshold. Hence, cantonal wealth tax data cover the full universe of taxpayers.⁸ Note that married couples are assessed and taxed jointly, subject to a different schedule than single taxpayers. Therefore, when leveraging the full panel data set, I individualize the micro tax data by performing an equal-split (see Section 3 for details). Consequently, the unit of observation in the behavioral analyses in Section 4.3 and in the distributional analysis in Section 5 is at the individual level.

2.2 Tax enforcement by the authorities

A taxpayer who is caught evading taxes in Switzerland is liable to pay back-taxes for up to 10 years (including interests on arrears) plus a penalty of 33% to 300% of the back-taxes owed, with 100% generally being the default penalty.⁹ In this section, I briefly describe how tax enforcement—besides the deterrent effect of punishment—is institutionalized in Switzerland and how the authorities try to ensure tax compliance.

A key feature of the Swiss tax system is that, due to Swiss banking secrecy, there exists no institutionalized third-party reporting on domestically held financial assets and that tax authorities do not have access to any bank information, neither automatically nor upon

⁴For a detailed documentation on the Swiss wealth tax, see: <https://www.estv.admin.ch/dam/estv/de/dokumente/estv/steuersystem/dossier-steuerinformationen/d/d-vermoegenssteuer-np.pdf>

⁵Besides non-cantonal real estate, business operations and permanent establishments outside the canton are as well only considered for the purposes of determining the correct tax rate. Appendix Figure B5 reports both rate-determining and effective taxable wealth disclosed in the period 2010–2020 (for a detailed discussion see Section 4.2).

⁶For financial assets such as equities, this is straightforward and the asset value corresponds to the closing price on the last trading day of the year. The value of real estate is determined by the tax authorities only very irregularly, which is one of the reasons why real estate is reported in tax statistics below its market value (see Baselgia and Martínez, 2023b for a detailed discussion).

⁷For the canton of Bern, for which I have access to micro tax data, the exemption threshold is CHF 97k for single taxpayers and CHF 115k for married couples. For details on the exemption thresholds by canton, see: <https://www.estv.admin.ch/dam/estv/de/dokumente/estv/steuersystem/steuermaeppchen/persoenlicher-abzug-v-de-fr.pdf.download.pdf> and <https://www.estv.admin.ch/dam/estv/de/dokumente/estv/steuersystem/steuermaeppchen/steuerfreies-minimum-v-de-fr.pdf>

⁸Wealth owned by children (e.g. savings accounts) should be reported on the parents tax return.

⁹For an overview of current Swiss criminal tax law, see: <https://www.estv.admin.ch/dam/estv/de/dokumente/estv/Glossar%20geltendes%20Steuerstrafrecht.pdf>

request. For financial assets held offshore, this changed fundamentally after the introduction of the AEOI in 2017 (see Section 2.3 for details). So as not to depend fully on taxpayers' sincerity, the authorities instituted two main measures to foster tax compliance. First, the federal government levies a withholding tax on Swiss capital income. And second, cantonal authorities conduct tax audits.

The Swiss withholding tax. A 35% withholding tax is levied by the federal government at source on all Swiss income from movable capital assets (in particular on interest and dividends).¹⁰ By its very nature, the withholding tax's primary purpose is to curb evasion. Thus, a refund of the tax is granted only if the taxpayer has duly declared the wealth and the capital income derived therefrom in his or her tax return. Given current tax rates, the financial incentives provided by the Swiss withholding tax for duly declaring wealth can be described as modest at best. To illustrate this, I discuss the financial trade-off taxpayers face when deciding to hide their wealth from the tax authorities and thus pay the withholding tax or to duly declare it in an additional analysis in Section B.3 of the appendix.

Moreover, the Swiss withholding tax can in principle be avoided fairly easily (see Zucman, 2013 for a detailed discussion). First, by investing in securities of foreign corporations in countries with no withholding tax (e.g. using Luxembourg fund shares), one can avoid the tax as it is withheld only on Swiss capital income (e.g., dividends from Swiss corporations or interest on Swiss deposits). Second, even for interest on deposits, there is a way to avoid the withholding tax, namely through fiduciary deposits. This works as follows. First, an investor entrusts his or her funds to a Swiss bank—the fiduciary. Then, this fiduciary invests those deposits in foreign money markets on behalf of the investor. Now, the interest accruing on this fiduciary deposit is considered foreign capital income from a legal perspective and is thus exempt from the withholding tax.

Tax audits. Tax audits—via their impact on the perceived detection probability—are (one of) the most critical enforcement policy instruments available to tax authorities.¹¹ The canton of Bern conducts only targeted audits to ensure tax compliance.¹² In particular, the tax authority assesses the plausibility of changes in net wealth. As such, changes in net wealth need to be in accordance with generated income. Otherwise, the tax administration will conduct a more thorough inspection.¹³

¹⁰Swiss lottery winnings and certain insurance benefits (at a rate of 8% or 15%) are also subject to the withholding tax. More detailed information on the Swiss withholding tax is available from the federal tax administration (FTA) here: <https://www.estv.admin.ch/estv/de/home/verrechnungssteuer.html>

¹¹See Slemrod (2019) for a review on this and related issues.

¹²There is no random auditing in the canton of Bern (and I am not aware of any canton conducting such a program). Whether the various cantonal tax administrations conduct audits in the same way as the canton of Bern and, in particular, how extensive and successful such audits generally are, is not known, as no statistics are published on this. According to the tax authority of the canton of Bern, however, they do not consider their tax audits to be systematically different from those of other cantons.

¹³See Article 174 StG and the related entry “Vermögensentwicklung”: <https://www.taxinfo.sv.fin.be.ch/taxinfo/display/taxinfo/6.+Verfahren>. In this regard, Brühlhart et al. (2022) also note that such auditing makes it much riskier for tax evaders to quietly (i.e., outside the tax amnesty) disclose large amounts of hidden wealth.

For the canton of Bern I have access to individual level data covering all cases in which such audits have led to the detection of tax evasion. The data, however, do not provide further information on the exact nature of the audit activity (see Section 3.2 for details). To my knowledge, this is the first time tax audit data has been made available in Switzerland.

2.3 The Swiss tax amnesty

In 2008, Switzerland passed a federal law¹⁴ providing the legal basis for the introduction of a voluntary disclosure program (tax amnesty), which came into force on January 1, 2010.¹⁵ The central feature of the amnesty was to give taxpayers the opportunity to voluntarily self-disclose previously hidden wealth *on a one-time basis and for the first time*, thereby waiving all fines and criminal prosecution. The Swiss amnesty is a permanent program which has been running from 2010 to date. Particularly noteworthy is that the Swiss amnesty was not launched in anticipation of the introduction of the AEOI (see Section 2.4), but was independent of it and eventually surprised by this fundamental policy change. The Swiss tax amnesty consists of two main elements, which are described below.

Ordinary voluntary self-disclosure. The main feature of the Swiss amnesty are ordinary voluntary self-disclosures, which correspond to a situation in which a tax evader discloses previously hidden wealth to his or her cantonal tax authority for the first time. In such a case the taxpayer escapes all penalties and criminal prosecution if he or she complies with the following three criteria. (i) The tax evasion is not known to any tax authority. (ii) The taxpayer shall unconditionally support the administration in assessing the back-tax payment. And (iii), the tax evader makes a serious effort to pay the back-tax owed. Upon such a self-disclosure and provided that the three criteria are met, only ordinary back-taxes (including interest on arrears) for up to the last ten tax-years, are to be paid.¹⁶

Already prior to the introduction of the amnesty in 2010, taxpayers had in principle the option to voluntarily disclose previously hidden assets to the tax authorities, however, such disclosures resulted in financial penalties of 20% of the back-tax payment.¹⁷ However, as I show in Panel (b) of Figure 2, taxpayers did not take advantage of this option prior to the amnesty that removed all financial penalties.

Simplified inheritance after-taxation. The Swiss amnesty also introduced a second procedure, namely simplified inheritance after-taxation (SIT), which allows heirs to legalize previously hidden assets of a decedent at a reduced rate. Here, the idea is that heirs—who

¹⁴<https://www.admin.ch/opc/de/federal-gazette/2008/2321.pdf>

¹⁵I use the term “voluntary disclosure program” and “tax amnesty” interchangeably. In recent years, several countries have launched voluntary disclosure programs, taking advantage of the momentum created by the introduction the AEOI (see Section 2.4). The OECD (2015) provides a comprehensive overview of 47 countries that have adopted a voluntary disclosure program, including the case of Switzerland.

¹⁶In practice, the tax authorities assess on average approximately the last seven tax years (see also Appendix A).

¹⁷Similarly, if a taxpayer after 2010 files an voluntary disclosure for a second time in his or her life, the penalty is also 20% of the back-taxes owed.

were not themselves involved in the tax evasion—should benefit from reduced after-taxation if they voluntarily report undeclared wealth in the course of the inheritance process. No (financial) penalties are incurred in such (simplified) after-taxation of inheritances, provided that the heirs themselves have not committed the evasion. In particular, the amnesty reduced the number of years for which back-taxes have to be paid from the pre-2010 standard of ten to three tax years.

Both an ordinary voluntary disclosure and SIT case must be filed in the tax delinquent’s canton of residence, as tax sovereignty in Switzerland lies with the cantons. This has major implications for the availability of Swiss tax amnesty data. In fact, only the cantons, and not the federal administration, have (detailed) tax information on amnesty participants (see also Section 3.1).

2.4 From banking secrecy to automatic exchange of information

The unique role of the Swiss finance industry, with its infamous banking secrecy laws, as (the number one) tax haven for international offshore tax evasion has been extensively documented (see e.g., Zucman, 2013; Zucman, 2015; Alstadsæter et al., 2018; Alstadsæter et al., 2019). Indeed, it is widely acknowledged that wealthy foreigners have long enjoyed hiding their wealth in Swiss banks in order to evade taxes in their home country. Possibly less well known is the fact that Swiss residents enjoy “protection” under Swiss banking secrecy laws too. That is, Swiss banks do not exchange any information with the Swiss tax authorities to this day (except in criminal cases). Accordingly, Swiss taxpayers are obliged to self-report all their assets and the resulting income, without the Swiss tax authorities being able to verify these tax returns on the basis of any third-party information.

Perhaps not surprisingly, Switzerland’s unique role in facilitating international tax evasion has resulted in increasing pressure from other countries to crack down on Swiss banking secrecy. However, initial international policy coordination and initiatives to end the era of banking secrecy have not been particularly successful. As such, neither the European Savings Tax Directive (Johannesen, 2014; Martinez-Toledano and Roussille, 2023) nor the G20-initiative which compelled tax havens to sign bilateral tax information exchange agreements (TIEAs) providing for exchange of information on request (Johannesen and Zucman, 2014; Menkhoff and Miethe, 2019) have been effective in reducing the extent of global offshore evasion.

Since then, the automatic exchange of information via the Common Reporting Standard (CRS) has been the most comprehensive and forceful international policy effort to combat offshore tax evasion.¹⁸ Given that the CRS addresses many of the pitfalls of the previous

¹⁸The United States, which does not participate in the CRS, has created its own bilateral treaty—the Foreign Account Tax and Compliance Act (FATCA)—to obtain information on U.S. taxpayers holding wealth offshore in 2010 (see e.g., Johannesen et al., 2023).

policies, hopes have been high that its introduction could eventually put an end to banking secrecy and substantially reduce offshore tax evasion.

Automatic exchange of information via the Common Reporting Standard. In April 2013, the G20 finance ministers and central bank governors endorsed the automatic exchange of information as the expected new standard to which G20 leaders committed in September of that year. Then, in February 2014, the G20 endorsed the CRS as the new standard, under which data was exchanged for the first time in September 2017. By October 2022, more than 110 jurisdictions (with over 4900 bilateral exchanges relationships) have committed to automatically exchange information with each other (see OECD, 2017). In 2022, these CRS partner states have automatically exchanged information on 111 million financial accounts, covering total assets of 11 trillion euros.¹⁹

Compared to previous policy initiatives—such as the European Savings Tax Directive or bilateral TIEAs—the CRS represents a significant improvement for several reasons (for a systematic overview, see Table 2 in Casi et al., 2020). (i) Tax information is exchanged automatic and annual. By contrast, with bilateral TIEAs, information was exchanged upon request, with tax authorities already having to know the identity of the potential tax evader in order to make a request, on top of having to establish that the information requested was “foreseeably relevant” (see Johannesen and Zucman, 2014 for a discussion). Clearly, with the CRS, it is much easier and more cost-effective for tax authorities to obtain the information they seek. (ii) The CRS, with its multilateral framework agreement, the Multilateral Competent Authority Agreement (MCAA), provides a significantly more efficient mechanism for handling the AEOI than with bilateral tax treaties. Simply because it avoids the conclusion of thousands of bilateral agreements to establish a sufficiently large network. Consequently, this multilateral approach resulted in far greater country coverage (currently 119) than any previous international policy effort to combat offshore tax evasion.²⁰ (iii) The CRS has also a much broader scope than any prior policy. In particular, the following information is exchanged: Name (incl. address, state of residency) account and financial information, tax identification number, information on the reporting financial institution, account balance, and capital income.²¹ Most critically, under the CRS, financial institutions are required to look through shell companies, trusts, or similar financial vehicles in order to identify the true beneficial owner, which drastically reduces opportunities for offshore tax evasion.

¹⁹Details on the implementation of AEOI via CRS can be found in the *Implementation Handbook* and the annual *AEOI implementation reports*, which can be found here: <https://www.oecd.org/tax/transparency/documents/key-publications-and-documents.htm#AEOI>. Moreover, The OECD offers in-depth and up-to-date information on the Automatic Exchange Portal: <https://www.oecd.org/tax/automatic-exchange/>. For instance, one can find a country-specific overview of the concrete implementation of the AEOI: <https://www.oecd.org/tax/automatic-exchange/crs-implementation-and-assistance/crs-by-jurisdiction/>.

²⁰See country list: <https://www.oecd.org/tax/automatic-exchange/about-automatic-exchange/crs-mcaa-signatories.pdf>.

²¹The CRS covers only financial assets. Recent research shows that non-financial assets, notably real estate, which is not covered by the CRS, could increasingly serve as a substitute for offshore financial wealth (see e.g., Bomare and Le Guern Herry, 2022 and Alstadsæter et al., 2022b).

Implications of the CRS for Swiss residents. Switzerland introduced the legal basis for the AEOI on January 1, 2017, and automatically exchanged data with other countries for the first time in September 2018—one year later than the early adopters.²² What the introduction of AEOI implies for Swiss taxpayers essentially hinges on whether they held their financial assets on- or offshore.

For Swiss taxpayers who held their financial assets with a Swiss financial institution, nothing has changed from a purely legal perspective.²³ Swiss banking secrecy protects their anonymity to this day, and no third-party information is exchanged between Swiss banks and the Swiss tax authorities—while Swiss banks automatically exchange such information with tax authorities of other CRS-member countries.

For Swiss taxpayers who held financial assets at a bank domiciled in one of the more than 100 countries with which Switzerland now automatically exchanges information, however, there has been a significant change. With any (first) third-party data exchange, the probability that a hidden account is being detected increases dramatically (Kleven et al., 2011). How this policy change has affected tax compliance in Switzerland is thoroughly analyzed in Section 4.

3 Data

I use two primary data sets. First, I employ a newly compiled cross-cantonal panel data set on the Swiss tax amnesty that covers the period 2010–2020. Second, I use detailed micro tax data from the canton of Bern. Specifically, I have access to the universe of ordinary individual tax files for the period 2002–2020. Moreover, I can link a separate data set containing all after-tax procedures carried out in the canton of Bern between 2002 and 2020 to the corresponding ordinary personal tax records—something which has not been done before with Swiss tax data. Besides, I utilize some standard publicly available macro data. All this data is discussed in turn.

3.1 Aggregate data on the Swiss tax amnesty

Until now, there exists neither an administrative micro data set nor aggregate tabulated statistics on the Swiss tax amnesty. The reason for this is that tax sovereignty in Switzerland rests with the cantons and therefore only cantons have detailed data on voluntary self-disclosures (and tax matters in general).

²²More information on the Swiss implementation is available here: <https://www.sif.admin.ch/sif/en/home/multilateral-relations/exchange-information-tax-matters/automatic-exchange-information/financial-accounts.html>

²³Occasionally, it is alleged that since the introduction of AEOI, Swiss banks have been asking or urging their Swiss clients to come clean on their undeclared assets (or to leave the bank) in order to reduce potential legal risks for their employees and the bank (see e.g.: <https://www.nzz.ch/wirtschaft/schweizer-steuersuender-bankangestellte-riskieren-strafklagen-ld.144750>). However, there is no direct evidence as to whether and to what extent this has been the case.

The only systematic information available to the Federal Tax Administration (FTA) is the name of the filer and thus the number of cases filed in each canton.²⁴ An aggregate analysis of the Swiss amnesty—including the “exact” number of cases, aggregate hidden wealth revealed and total back taxes paid—is thus only feasible based on cantonal data.²⁵ Therefore, I have contacted all 26 cantonal tax authorities and requested them to provide me with the following *yearly* data for the period 2010–2020: (i) the number of self-disclosures; (ii) aggregate hidden wealth disclosed; (iii) total back-taxes paid.²⁶

The data provided by the cantons in response to my request are of varying quality and level of detail and are partly based on different definitions. While some cantons provided all data in high quality, others were unable or unwilling to provide any information. In Appendix A, I describe the newly compiled cantonal (panel) data set in detail. In particular, I describe how I harmonized the data with respect to different definitions and how I imputed missing data points (for an overview of data availability, see Table A1). It must be noted, however, that given the data provided to me by the cantons, both the scope and quality of this new (panel) data set is limited.²⁷ Nevertheless, this is—as far as I am aware—the most comprehensive and concise data collection on the Swiss tax amnesty.

3.2 Micro tax data of the canton of Bern

I am able to link two anonymized micro tax data sets provided by the tax administration of the canton of Bern to form a unique panel data set. The first data set comprises the universe of *ordinary tax records* filed in the canton of Bern between 2002 and 2020. This data (or similar versions) have been used successfully in previous research (see e.g., Brülhart et al., 2022; Martínez, 2022a). The second data set includes all *special tax records on after-tax procedures* conducted in the canton of Bern from 2002 to 2020. The novel combination of these two micro data sets allows me, for the first time, to study tax evasion behavior in Switzerland at the micro-level. Below, I describe the most relevant features of this data.

Ordinary tax records. The first data set contains all individual-level tax records filled in the canton of Bern between 2002–2020. As all residents aged 18 and over are legally required to file a tax return, I have full coverage of the adult population of the canton of Bern, and

²⁴The cantons must supply the name of the disclosing taxpayer in order for the FTA to ensure that each taxpayer in Switzerland can only participate in the amnesty once in his or her lifetime. The total annual number of voluntary self-disclosures at the national level is published by the FTA here: <https://www.estv.admin.ch/estv/de/home/die-estv/steuerstatistiken-estv/kennzahlen/kennzahlen-asu.html>. The numbers of cases published by the FTA change regularly, also retrospectively. Upon request, I have received the number of self-disclosures by canton and year (data received on January 18, 2022). The number of voluntary disclosures recorded by the FTA between 2010 and 2020 is shown as the blue line in Panel (a) of Appendix Figure B2. Column 2 of Appendix Table B2 provides a breakdown by canton.

²⁵Due to late reporting by cantons resulting from lengthy retrospective tax procedures, the total number of cases as reported by the FTA for the period 2010–2020 is likely to be considerably too low (see Table B2) and moreover time delayed (see Panel (b) of Figure B2). This issue is discussed in more detail in Section 4.1.1 and in Appendix A.

²⁶With respect to (iii) total back-taxes, I requested the cantons to provide me the following breakdown if available: (iv) municipal back-taxes; (v) cantonal back-taxes; (vi) federal back-taxes (i.e., item (iii) = (iv) + (v) + (vi)). Cantons provided me with varying degrees of detail in this regard. In particular, I often received only the sum of cantonal and communal back taxes (item (iv)+(v)). For details, see Appendix A.

²⁷Due to limited data quality for some cantons, cross-cantonal analyses should be refrained from.

consequently around 12% coverage of the Swiss population (see Table B1). Married couples file their taxes jointly and are therefore included in the data as a single taxpayer.

To study the tax compliance responses at the micro level (Section 4.3) and to investigate the distribution of tax evasion (Section 5), I individualize the data so that each observation represents a single individual. To do this, I follow the standard convention and perform an equal-split (see e.g., Piketty et al., 2018). That is, I divide all income and wealth components equally between both spouses. This yields around 750,000 to 800,000 individual observations per tax-year (see Table 1). For the macro analyses in Sections 4.1 and 4.2, the results are reported at the case level (i.e., taxpayer level) so that they can be contrasted with other cantons.

While micro tax records in principle contain highly detailed information on various income and wealth components (as in Martínez, 2022a), I am unfortunately unable to mobilize this detailed data. This is because the second micro data set (see below), which is instrumental in studying tax evasion and compliance effects, captures only the main components, i.e., taxable income, taxable wealth, and taxes paid, which are consequently the main outcomes I will investigate. Importantly for the distributional analysis in Section 5, the individual tax records of the canton of Bern are not top-coded, as is the case for other cantons that provided similar data.

Table 1 provides summary statistics of the individualized ordinary tax records data set. In total, from 2002 to 2020, the dataset contains 14.8 million taxpayer-year observations. Not surprisingly, taxpayers higher up in the wealth distribution are older and more likely to be married (see Panel A). As shown in Panel B of Table 1, taxable wealth can be negative, which it is on average for the bottom 50% of the wealth distribution. Further note that the distribution of taxable wealth is heavily right skewed: the top 10% of individuals own 74% of taxable wealth in the 2002–2020 period. Finally, Panel C contains information on taxable income, which has also been decomposed along the wealth distribution. Here, for instance, we observe that the bottom 50% of the wealth distribution receives about 35% of total taxable income.

Table 1 also shows that the number of taxpayers for the most recent tax year 2020 is lower than that for 2017, which is due to the fact that the cantonal tax authority has not yet fully closed all tax cases for 2020, which also implies that these cases are not included in my dataset.²⁸ As can be inferred from the last column in Panel B, individuals from the upper part of the distribution in particular appear to still be missing. This is not surprising, as wealthy individuals file more complex tax records that sometimes require a longer period of time to process. Importantly, the results presented in the distributional analysis in Section 5 are not affected by this sample selection.²⁹

²⁸At least this was the case when access to the micro data was granted.

²⁹The distributional results are fully robust when fiscal year 2020 is excluded (not shown in the paper).

Table 1: Summary statistics of the individualized data set, 2002–2020

Panel A: Taxpayer characteristics									
year	no. taxpayers	share of married population				age			
		mean	p0-p50	p50-p90	p90-p100	mean	p0-p50	p50-p90	p90-p100
2002	743'392	0.55	0.49	0.62	0.59	47.9	39.7	54.1	64.5
2005	755'206	0.54	0.47	0.61	0.59	48.3	40.2	54.5	64.7
2008	766'227	0.53	0.46	0.60	0.59	48.8	40.4	55.2	65.0
2011	778'885	0.52	0.45	0.59	0.59	49.3	41.0	55.7	65.0
2014	794'785	0.51	0.44	0.58	0.58	49.8	41.5	56.2	65.4
2017	801'943	0.50	0.44	0.57	0.58	50.4	42.2	56.8	65.7
2020	795'905	0.50	0.42	0.58	0.57	51.4	43.2	57.9	66.1
2002–2020	14'784'382	0.52	0.45	0.59	0.59	49.4	41.1	55.8	65.2

Panel B: Taxable wealth									
year	no. taxpayers	in thousand 2020 Swiss francs				in percent of total			
		mean	p0-p50	p50-p90	p90-p100	p0-p50	p50-p90	p90-p100	
2002	743'392	143.5	-16.3	123.5	1 022.2	-0.06	0.34	0.71	
2005	755'206	160.0	-15.3	127.2	1 167.5	-0.05	0.32	0.73	
2008	766'227	165.4	-14.5	124.3	1 229.4	-0.04	0.30	0.74	
2011	778'885	173.5	-15.1	130.3	1 289.6	-0.04	0.30	0.74	
2014	794'785	192.0	-15.3	140.4	1 434.6	-0.04	0.29	0.75	
2017	801'943	212.2	-16.0	150.3	1 601.0	-0.04	0.28	0.75	
2020	795'905	239.3	-11.6	187.0	1 703.0	-0.02	0.31	0.71	
2002–2020	14'784'382	182.0	-15.3	138.0	1 344.0	-0.04	0.30	0.74	

Panel C: Taxable income									
year	no. taxpayers	in thousand 2020 Swiss francs				in percent of total			
		mean	p0-p50	p50-p90	p90-p100	p0-p50	p50-p90	p90-p100	
2002	743'392	28.8	19.7	31.5	63.7	0.34	0.44	0.22	
2005	755'206	29.1	19.8	32.0	64.4	0.34	0.44	0.22	
2008	766'227	30.6	21.4	33.0	66.8	0.35	0.43	0.22	
2011	778'885	30.9	21.3	33.6	68.7	0.34	0.43	0.22	
2014	794'785	32.6	22.7	35.2	72.4	0.35	0.43	0.22	
2017	801'943	34.4	23.9	36.6	78.1	0.35	0.43	0.23	
2020	795'905	34.4	25.0	38.0	67.4	0.36	0.44	0.20	
2002–2020	14'784'382	31.7	21.9	34.2	70.1	0.35	0.43	0.22	

Note: This table provides summary statistics for the universe of individualized ordinary tax records provided by the tax administration of the canton of Bern for the period 2002–2020. For illustration purposes, I show only certain years. For all three panels, the distribution breakdowns are based on the taxable wealth distribution.

Special tax records on after-tax procedures. The second micro data set on after-tax procedures covers the same period from 2002 to 2020 and can be linked to ordinary tax records at the individual level. The tax administration of the canton Bern conducts after-tax procedures for different types of cases. In my analysis, I will exploit the following three main types of such cases: (i) There are ordinary *voluntary self-disclosures* by taxpayers disclosing own hidden assets under the amnesty. (ii) There exist *simplified inheritance after-taxation* cases (denoted SIT), which can be filed when inheriting hidden wealth.³⁰ And (iii) there are cases where tax evasion is detected by the tax authorities through (targeted) audits.³¹ Figure 2 shows the evolution of the number of cases by case type for the period 2008–2020.

To ease exposition and understand how this data is recorded, consider the following situation. A taxpayer approaches the tax administration and discloses previously hidden assets under the Swiss tax amnesty. The tax administration will now re-examine and re-assess (up to) the last ten tax returns of this taxpayer, including the newly disclosed assets and income. Consequently, in this data I see the value of taxable wealth and taxable income per year before and after the disclosure for all years in which the tax authority reassesses the case (7.5 tax years on average per ordinary amnesty participant in the canton Bern). Also, the data includes the amount of back-taxes owed (i.e., the difference between the taxes that would actually have been due and the taxes paid), interest on arrears, and penalties (for cases where tax evasion was detected by the authorities).³² In general, I present back-taxes as the simple sum of these three components.

For the purposes of my analysis, this data set has two particular limitations. First, unfortunately, I can only examine taxable wealth (and analogously taxable income) before and after a disclosure, but no sub-components for wealth (or income) are available in this data. Moreover, because the ordinary tax records contain only the “true” value, i.e., the retrospectively corrected data, it is not possible to determine for which asset or income components evasion has occurred. Second, the data do not provide information on whether or not the disclosed assets and associated income streams were held offshore or domestically. This information would have been particularly valuable in examining how the introduction of the AEOI has affected tax compliance. Given that onshore wealth (i.e. assets in Swiss banks) is not affected by the introduction of the AEOI (see Section 2.4), this could have served as a natural control group. In Section 4.2, I address this issue with an alternative identification strategy that exploits the policy variation generated by the Swiss tax amnesty.

Representativeness of the canton of Bern. Apart from Section 4.1, all my results are based on the micro data of the canton Bern. Obviously, the question is whether these results are representative of Switzerland as a whole, or at least informative for the rest of the country.

³⁰Ordinary amnesty cases and SIT cases are discussed in more detail in Section 2.3.

³¹Unfortunately, I do not have any further information on the nature of the audit activities (see also Section 2.2).

³²Recall there is no penalty if taxpayers participate in the tax amnesty.

Now, I certainly do not claim that the results are matching one-to-one at the national level, but I do believe that the results for the canton of Bern represent a reasonable, perhaps somewhat conservative, approximation for Switzerland for the following reasons. First, Bern is the second most populous canton—home to about one-eighth of Switzerland’s population—and is thus by its very size of significance to national outcomes. Second, the canton of Bern itself is very diverse and represents the geographical characteristics of Switzerland in many ways. After all, the canton of Bern is home to the Swiss capital, smaller cities, suburbs, rural areas, mountainous areas with ski resorts that attract wealthy foreigners, as well as French- and German-speaking parts. Third, in a cross-canton comparison, the canton of Bern is certainly not an outlier in terms of various observable characteristics such as the share of foreigners, the share of the population aged 65 and over, GDP and wealth per capita, as some cantons—particularly low-population ones—are (see Table B1). However, it can be noted that the canton of Bern is a rather rural canton with a below-average share of foreigners and is therefore likely to be less affected by the introduction of AEOI than cantons with a high share of foreigners such as Geneva or Ticino, which are, however, themselves not representative of Switzerland (see also Table B2).

Moreover, in Figure B1 I displays the top 1% and top 10% wealth shares for the canton of Bern and Switzerland from 2003–2019. First, it can be observed that the evolution of wealth concentration in the canton of Bern and at the national level is highly parallel. Second, however, taxable wealth is more equally distributed in Bern than in Switzerland. What this implies for the interpretation of the distributional patterns of tax evasion presented in Section 5 is discussed in more detail in Section 5.4.

3.3 Other data

Additionally, I use the following publicly available macro data to present my results.

CPI. All monetary values are expressed in real terms, with the Swiss CPI used to deflate nominal Swiss franc values.³³

Population. Population data are available from the Federal Statistical Office (FSO).³⁴

GDP. GDP data including a breakdown by canton are also provided by the FSO.³⁵

Taxable wealth. To put disclosed wealth in perspective, I sometimes use the federal tabulated wealth tax statistics provided by the FTA.³⁶

³³The data is available here: <https://www.bfs.admin.ch/bfs/en/home/statistics/prices/consumer-price-index.html>. Note that one Swiss franc is very roughly equivalent to one USD in the period under study.

³⁴The data is available here: <https://www.bfs.admin.ch/bfs/en/home/statistics/population.html>.

³⁵The data is available here: <https://www.bfs.admin.ch/bfs/en/home/statistics/national-economy/national-accounts/gross-domestic-product-canton.html>.

³⁶The data is available here: <https://www.estv.admin.ch/estv/de/home/die-estv/steuerstatistiken-estv/allgemeine-steuerstatistiken/gesamtschweizerische-vermoegenssteuerstatistik.html>. These data are also employed for the comparison of top wealth shares between the canton of Bern and Switzerland (see Figure B1).

4 The automatic exchange of information and tax compliance

This section studies the effects of the introduction of the AEOI on tax compliance in Switzerland. First, Section 4.1 sets the stage and explores the number of amnesty participants and the scope of wealth uncovered under the ongoing Swiss tax amnesty. Second, in Section 4.2, I analyze what role the AEOI played in this process, in other words, what are the macro effects of the introduction of the AEOI on tax compliance. Third, in Section 4.3, I investigate behavioral responses at the micro-level among formerly dishonest taxpayers who opted for tax amnesty (or were caught by the authorities). In particular, I examine the persistence of the tax compliance behavior.

4.1 The scope of evasion under the Swiss tax amnesty

Figure 1 shows that between 2010 and 2020, (at least) 155'658 taxpayers in Switzerland participated in the amnesty—that is almost 3% of all taxpayers. Together, they declared previously hidden taxable wealth of (at least) 66.369 billion 2020 Swiss francs, which corresponds to about 10% of GDP or 3.5% of the total taxable wealth declared in Switzerland (see Table B2 for a breakdown by canton). As indicated in Figure 1, both the number of amnesty participants and the aggregate amount of hidden assets disclosed increase significantly around the time of the introduction of the AEOI.

These disclosures also resulted in substantial tax revenue. In the period 2010 to 2020, a total of 5.6 billion 2020 Swiss francs was collected in back-taxes (collectively at all tiers of government; see Table B2 for details). Moreover, if this uncovered wealth is sustained, i.e., if taxpayers do not start to evade again or to legally avoid more taxes (an issue I cover in Section 4.3), this will continue to generate significant additional tax revenue in the future.

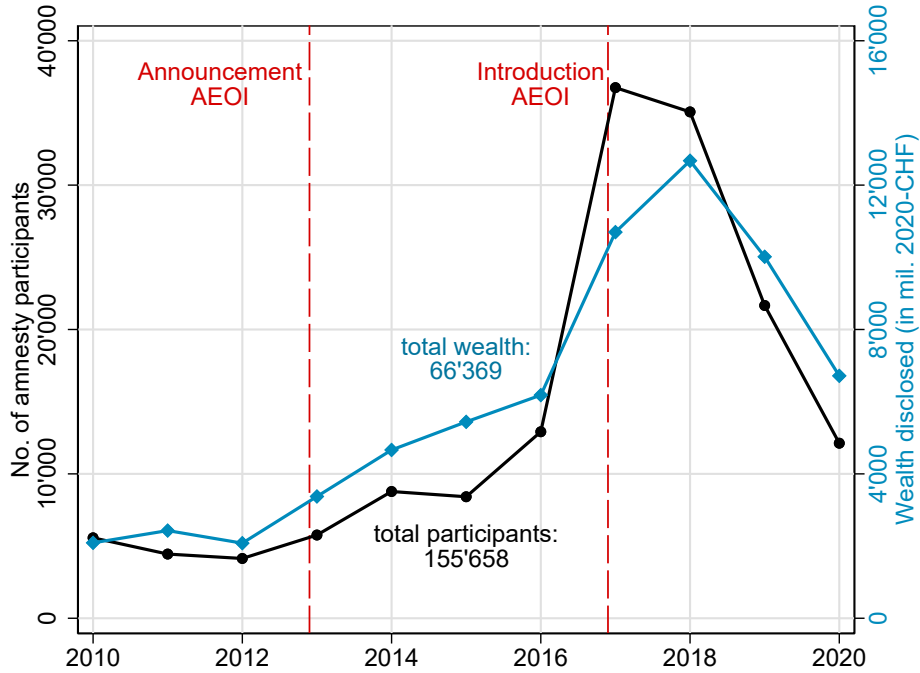


Figure 1: The size of the Swiss tax amnesty, 2010–2020

Note: This figure shows the magnitude of the Swiss tax amnesty between 2010 and 2020. The black line with the circles corresponds to the number of amnesty participants, while the blue line with diamonds represents aggregate disclosed wealth in billions of 2020 Swiss francs. Appendix Figure B3 reports the yearly average wealth disclosed per amnesty case (and other types of evasion cases).

4.1.1 Examining the reliability of estimated evaded wealth under the amnesty

Although the Swiss amnesty was introduced by federal law, the federal government only has information on the number of amnesty participants, but not on the amount of wealth disclosed and back-taxes collected under the amnesty, as tax sovereignty (and thus detailed tax information) lies with the cantons. As shown in Panel (a) of Appendix Figure B2, between 2010 and 2020, the FTA registered only 107'953 voluntary self-disclosures (Table B2 provides a breakdown by canton).³⁷ Consequently, the aggregate number of amnesty participants recorded by the FTA is significantly below my (lower-bound) estimate of 155'658.

This difference is explained as follows. As the number of disclosures soared around the introduction of the AEOI (see Figure 1 and Figure 2), cantonal tax authorities were no longer able to process all the cases filed in that same year.³⁸ Only after a case has been closed, however, do cantons report it to the FTA. Consequently, there is a significant delay between filing and reporting. Exploiting the micro-data of the canton of Bern, shown in Figure 2, confirms this conclusion. As I document in Panel (b) of Figure B2 in the Appendix, the FTA

³⁷The cantonal data was received from the FTA on January 18, 2022. In the meantime (February 18, 2023), the total number of voluntary disclosures for the period 2010–2020 was retrospectively adjusted to 116'485.

³⁸Also, in more complicated cases, the cantonal authorities require more time for processing, which can exceed up more than one year in practice.

records the cases of the canton Bern with a substantial delay—the same holds true at the national level. As the number of cases dropped significantly after 2018, the total will converge eventually, namely when the cantons have settled all cases and finally reported them to the FTA. However, the time pattern of cases recorded by the FTA remains distorted. Hence, the data compiled by the FTA are insufficient for a thorough analysis of the factors that led taxpayers to participate in the amnesty—notably, the critical role of AEOI cannot be adequately studied with this data.³⁹ Therefore, in order to accurately assess the effect of the AEOI on tax compliance (see Section 4.2), I utilize the high-quality micro-data from the canton of Bern as depicted in Figure 2. As this figure reveals, the surge in amnesty participation around the introduction of the AEOI is even more marked than the national trajectory suggests (this is best seen in Panel (b) of Figure B2).

Figure 1 further reveals the national-level evolution of aggregate wealth disclosed under the amnesty, from 2010 to 2020. According to this estimate, a total of 66.5 billion 2020 Swiss francs (10% of GDP or 3.5% of total taxable wealth) has been revealed.⁴⁰ This estimate represents the first comprehensive quantification of the amount of hidden wealth disclosed under the Swiss amnesty (see, e.g., the discussion in Pfaff et al., 2022). Given the conservative assumptions applied in imputing missing data (see Appendix A for details), this estimate should be considered a lower bound. In particular, the imputed values for the cantons of Vaud and Zug, with a high share of foreigners, may in fact be too low. Consequently, these figures are subject to revision if and once better data become available. Indeed, in its reply to a parliamentary inquiry, the federal government suggested that a somewhat higher amount of hidden assets was uncovered by the amnesty between 2010 and 2020, namely 71.4 billion Swiss francs.⁴¹

For back-taxes collected under the amnesty, there exists no (official) estimate. Again, exploiting the micro data of the canton Bern indicates that the estimated total of 5.6 billion Swiss francs collected in back-taxes is highly plausible. So, on average, 100 Swiss francs of disclosed wealth in the canton of Bern resulted in back-taxes of 8.4 francs, compared to 7.5 francs at the national level (see Table B2).

³⁹To be sure, my data collection for total Switzerland appears to be a significant improvement over the existing series provided by the FTA. However, a comparison with the high-quality micro-data of the canton of Bern suggests that a certain time lag remains also in my newly compiled data series for Switzerland (see Panel (b) of Appendix Figure B2 for details). This is why I use the micro-data of the canton Bern to study the compliance effects of the AEOI.

⁴⁰The black line in Appendix Figure B3 shows yearly average disclosed wealth by amnesty case for the period 2010–2020.

⁴¹See the response to the postulate 21.3359: <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaefte?AffairId=20213359>). Moreover, the federal government updated its estimates (for a longer period) in June 2022, according to which about 80.8 billion francs have been disclosed since 2010. See the response to the motion 20.3584: <https://www.parlament.ch/de/ratsbetrieb/amtliches-bulletin/amtliches-bulletin-die-verhandlungen?SubjectId=57305>. How exactly the federal government arrives at his estimate (e.g. when in which cantons how much wealth was disclosed), remains unclear.

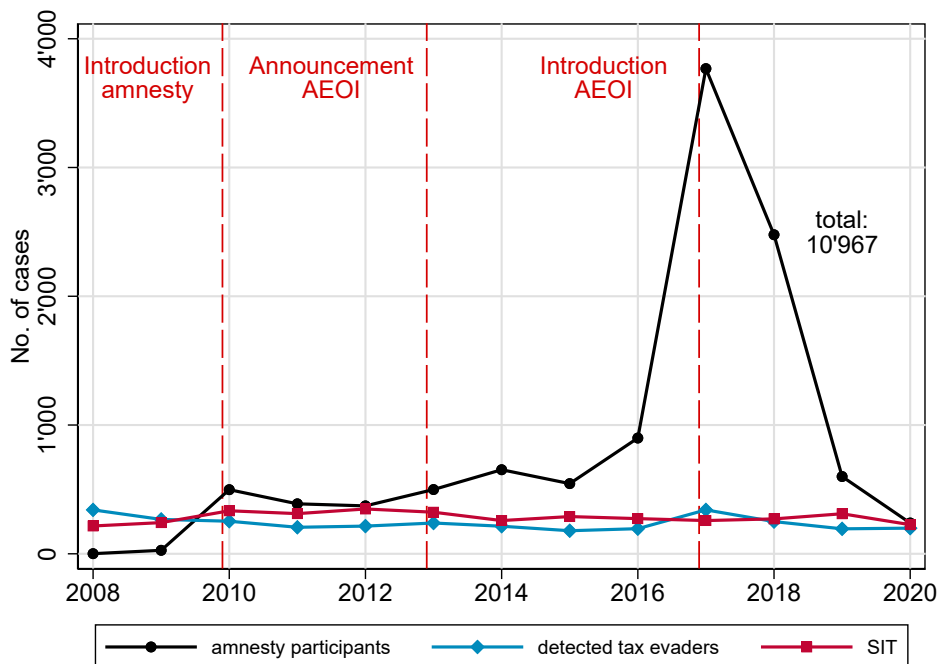


Figure 2: Tax evaders in the canton Bern, 2008–2020

Note: This figure shows the number of three different categories of evasion cases which can be distinguished in the micro data of the canton of Bern for the period 2008 to 2020. The black line with circles corresponds to ordinary voluntary self-disclosures made under the amnesty in the canton of Bern. The blue line with the diamonds indicate evasion cases that were detected by the cantonal tax authorities themselves. Finally, the red line with squares shows cases of simplified inheritance after-taxation (SIT) as described in Section 2.3.

4.1.2 The Swiss tax amnesty in international comparison.

We have seen that from 2010 to 2020, about 156'000 taxpayers disclosed at least 66.5 billion Swiss francs (10% of GDP) under the Swiss tax amnesty. Is this much? In other words: Should the Swiss amnesty be considered a success or rather not? To judge this, I compare it to other amnesties studied in the literature.

Recently, three studies have been conducted on amnesties in other Western European countries. First, Alstadsæter et al. (2019) analyse two amnesties in Scandinavia (see also Alstadsæter et al., 2022a). A total of 1'422 taxpayers in Norway and 6'811 in Sweden participated in the respective voluntary disclosure programs—jointly less than in the canton Bern alone (see Figure 2). Amnesty participation in Switzerland was thus extremely high compared to these two Scandinavian countries.⁴² In the Netherlands—a country with roughly twice the population of Switzerland—some 27'000 people participated in the tax amnesty between 2002 and 2018 (Leenders et al., 2023). Together, they disclosed 12.1 billion euros (approx. 1.6% of GDP). Thus, the Dutch amnesty is significantly less substantial too. In addition to this European experience, Johannesen et al. (2020) show that in the United States,

⁴²This is not simply due to differences in population size between countries. Population 2020 (World Bank): Switzerland 8.637m; Norway 5.379m; Sweden 10.350m.

the enforcement initiatives launched by the IRS in 2008 induced about 50,000 taxpayers to disclose 100 billion US dollars in previously hidden assets (well below one percent of GDP).⁴³

Besides, two recent papers have examined amnesties in middle-income countries in Latin America. First, Londoño-Vélez and Ávila-Mahecha (2021) study Colombia’s amnesty, in which nearly 12,000 people participated from 2015 to 2017, disclosing previously hidden assets worth 1.73% of the country’s GDP. In comparison, the Swiss amnesty is again considerably more extensive, both in terms of the number of amnesty participants and the amount of hidden assets disclosed.

Second, Londoño-Velez and Tortarolo (2022) investigate (one of) the largest tax amnesty ever conducted, that in Argentina in 2016. In total, about 255,000 people (0.6% of total population) came forward, disclosing (offshore) wealth equivalent to about 21% GDP. While Argentina’s amnesty uncovered about twice as much wealth relative to the size of the country’s economy, it involved far fewer taxpayers relative to the overall population (see Section 5 for a discussion of the distributional patterns).

Indeed, the extent of the Swiss amnesty is most remarkable even when compared to the “outlier” Argentina, as the two countries face fundamentally different political and economic environments. While the Argentine economy regularly suffers strong exchange rate fluctuations, high periods of inflation and pronounced business cyclical fluctuations, Switzerland, on the other hand, is characterized by its long-term stability (see Baselgia and Martínez, 2023b). Also, it has been estimated that Argentina held assets worth 36.5% of its GDP offshore in 2007—putting the country in fifth place for this metric, behind the UAE, Venezuela, Saudi Arabia, and Russia (Alstadsæter et al., 2018). Unfortunately, it is unclear where Switzerland falls in this global ranking, as there exists no estimate of the total amount of offshore assets held by Swiss residents.⁴⁴ Assuming that Switzerland held the same share of assets offshore in terms of GDP as the average Continental European country (which may be wrong, but does not seem to be a very far-fetched assumption), this would imply that Switzerland held assets offshore equivalent to about 15% of its GDP in 2007 (Alstadsæter et al., 2018). Based on these figures, a simple back-of-the-envelope calculation suggests that the Swiss amnesty may have even been somewhat more successful in uncovering hidden assets in terms of initial offshore holdings than the Argentine amnesty. The Swiss amnesty uncovered hidden wealth worth 67% ($\approx 10\%/15\%$) in terms of its 2007 offshore assets (under the above assumption), while the Argentine amnesty uncovered 58% ($\approx 21\%/36.5\%$).

Overall, it is fair to summarize that the Swiss amnesty is very substantial in any international comparison, but particularly when compared to the experiences of other countries in Europe. Remarkably, from 2010 to 2020, the Swiss amnesty has revealed previously hidden wealth (in

⁴³It should be noted that this figure includes both amnesty participants and quiet disclosures (i.e., taxpayers disclosing outside of an amnesty).

⁴⁴This is because Switzerland, as the largest tax haven, serves as (data) basis for those other country estimates (see Alstadsæter et al., 2018 for details).

% of GDP) equivalent to the estimated average offshore wealth (in % of GDP) at the global level (Alstadsæter et al., 2018).

4.2 The macro effects of the AEOI on tax compliance

Why was the Swiss amnesty so successful in uncovering this relatively large amount of previously hidden assets? Certainly, as already suggested by Figure 1 and Figure 2, the introduction of the AEOI appears to have been critical. Indeed, the AEOI represents a fundamental paradigm shift in taxation in Switzerland. Financial wealth—whether held offshore or in a Swiss bank, protected by banking secrecy—has been fully subject to self-declaration until 2017, when Switzerland introduced the AEOI.

The blue line (with diamonds) in Figure 3 illustrates the implementation process of the AEOI. It shows the annual number of Switzerland’s bilateral AEOI relationships that have entered into force under the CRS.⁴⁵ Ever since, offshore financial assets held in these countries—which covers Switzerland’s most important economic partners as well as many other major international tax havens—have been subject to third-party reporting via the CRS, while Swiss banking secrecy to this day restricts the exchange of information between *Swiss* financial institutions and *Swiss* tax authorities (but not to foreign tax authorities).

By moving from no third-party reporting to a systematic and annual automatic exchange of information on financial assets held in a CRS jurisdictions, the AEOI dramatically increases the probability that tax authorities will be able to detect undeclared financial assets held offshore (see Kleven et al., 2011 for a theoretical model along these lines). As in any deterrence-evasion model alla Allingham and Sandmo (1972), such an increase in the probability of detection results (theoretically) in a decrease of baseline tax evasion and consequently an increase in tax compliance.

4.2.1 Empirical approach

Figure 3 displays the number of newly activated bilateral AEOI relationships along with the number of amnesty participants in the canton of Bern from 2010 to 2020. The figure suggests a strong association between the two. Particularly once the AEOI is introduced, a sharp rise in amnesty participation is observed.

⁴⁵It should also be noted that Switzerland initially implemented AEOI relations with its close economic and political partners such as France, Germany, other neighboring and EU countries. The list of CRS partner countries and the date of implementation is available from the State Secretariat for International Finance (SIF): <https://www.sif.admin.ch/sif/en/home/multilateral-relations/exchange-information-tax-matters/automatic-exchange-information/financial-accounts.html>

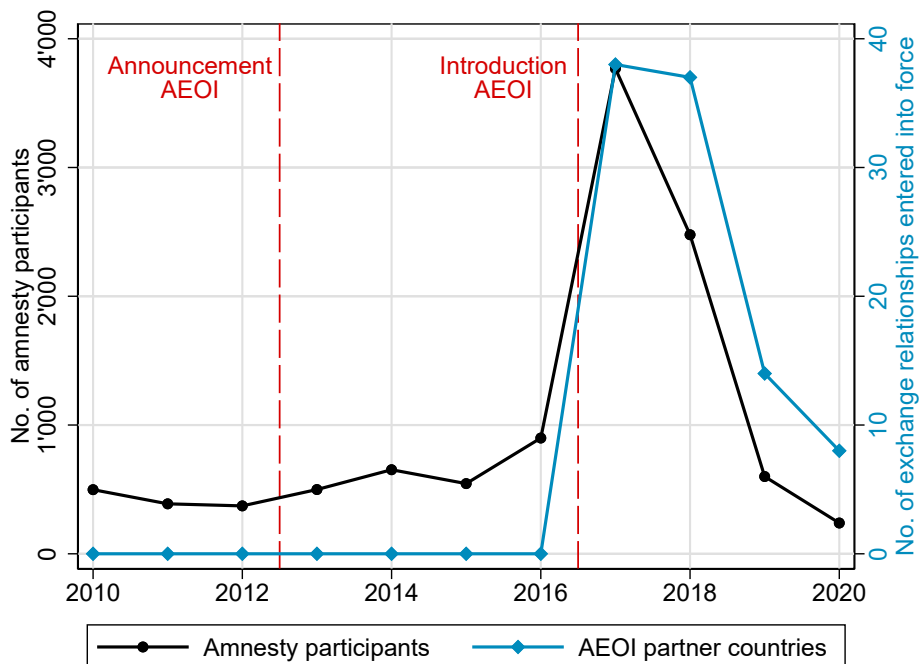


Figure 3: Amnesty participation and activated AEOI relationships, 2010–2020

Note: This figure shows the number of ordinary voluntary self-disclosures (black line with circles) that took place under the tax amnesty between 2010 and 2020 in the canton of Bern (left scale). The blue line (with diamonds) represents the annual number of newly activated AEOI relationships under the CRS in the period 2010–2020 (right scale). The list of CRS partner countries is available here: <https://www.sif.admin.ch/sif/en/home/multilateral-relations/exchange-information-tax-matters/automatic-exchange-information/financial-accounts.html>

To quantify the aggregate effect of the AEOI on tax compliance more rigorously, I exploit policy variation generated by the Swiss tax amnesty. Specifically, to estimate the causal effect of the AEOI—announced in 2013 and implemented in 2017—on amnesty participation, disclosed hidden wealth, and collected back-taxes, I employ simplified inheritance after-taxation (SIT) cases (see Section 2.3 for details) as control group in a standard aggregate difference-in-differences analysis.⁴⁶

For this approach to correctly identify the macro effects, two critical assumptions must be satisfied. (i) The introduction of the AEOI has no impact on the number of SIT cases filed and the amount of hidden assets revealed by these cases. (ii) The number of ordinary amnesty participants and the number of SIT cases move in parallel prior to the announcement of the AEOI in 2013. I provide evidence to support parallel pre-trends in the next section (see in particular Figure 4).

The (i) identifying assumption requires more detailed elaboration. Theoretically, one might well consider that the AEOI could increase the number of SIT cases, as the continuation of tax evasion of inherited hidden wealth is riskier in a post-AEOI world. Figure 2, however, shows

⁴⁶SIT cases may not be considered the most natural control group for this analysis. Indeed, as financial assets held at Swiss banks are not affected by the introduction of AEOI (in a legal sense; see Section 2.4), such domestic disclosures over time could have served as a more natural control group. However, the Swiss data unfortunately do not allow for a breakdown by origin of disclosed wealth.

that the number of SIT cases did not change in any substantial way due the introduction of the AEOI—while ordinary amnesty cases did. Likewise, SIT cases did not change significantly with the introduction of amnesty, but ordinary amnesty cases did.⁴⁷

This finding may be explained by the fact that each individual taxpayer has full control over his or her voluntary self-disclosure, but not over an SIT case. In filling a voluntary self-disclosure, each individual decides autonomously whether, when and to what extent to participate in the Swiss tax amnesty or not. In contrast, for SIT cases, the timing is exogenously determined by the death of the decedent. More importantly, all heirs are required to participate in a tax inventory procedure. If they intend to declare inherited hidden wealth, they must do so in this tax inventory procedure.⁴⁸ Moreover, it is sufficient for a single heir to declare hidden assets in the inventory process to benefit from SIT.

From this immediately follows that if any heir wishes to continue evading taxes, all other heirs must agree and coordinate to conceal the inherited assets from the tax authorities. This and the the fact that in such a situation one’s own future detection probability will depend on the behaviour of all other heirs, will considerably limit the continuation of tax evasion from inheritances in practice (especially for large groups of heirs). At minimum, this is consistent with the evidence that SIT cases do not have been affected by both two major policy reforms—while ordinary amnesty participation did. This is reassuring in that SIT cases appear to be a valid control group for estimating the macro effect of the AEOI on tax compliance.

4.2.2 Empirical results

Figure 4 shows the compliance effects of the AEOI that occurred during the Swiss tax amnesty. Panel (a) reveals that, compared to the control group, the number of amnesty participants only slowly begins to increase after the announcement of the AEOI in 2013. Only with the introduction of the AEOI in 2017, however, we observe a very sharp increase in the number of taxpayers showing up in the tax amnesty. In fact, the number of annual amnesty participants in the canton of Bern rises from 545 in 2015 to 3’768 in 2017—a nearly six-fold increase. In 2018, amnesty participation was high relative to the counterfactual scenario too. This is explained by the fact that in 2018, Switzerland put into force agreements on the exchange of information via the CRS with a second large group of partner countries. In general, the number of amnesty participants coincides very closely with the new number of partner countries exchanging information with Switzerland via the CRS (see also Figure 3). It is striking that by 2020—after Switzerland has implemented the AEOI with its main financial and economic partners—the number of individuals participating in the amnesty returns to its counterfactual level. A simple difference-in-differences estimate suggests that 68.7% of all

⁴⁷Recall that the amnesty reduced the number of years for which back-taxes have to be paid from ten to three for SIT cases, which implies a 70% reduction in the cost of filing such a case.

⁴⁸Once the tax inventory procedure has been closed, heirs are no longer eligible for SIT proceedings, but must file an ordinary voluntary self-disclosure.

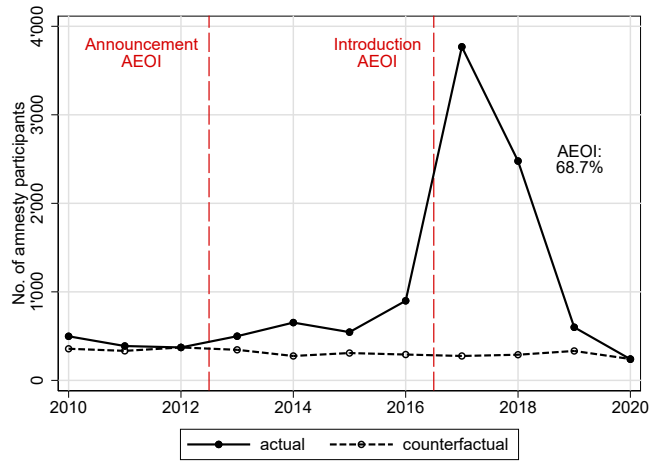
taxpayers who have participated in the amnesty since 2010 were prompted to do so by the AEOI.

Panel (b) in Figure 4 presents the same analysis, but this time for the aggregate amount of hidden wealth disclosed. Again, pre-trends are evolving highly similar prior to the announcement of the AEOI. However, unlike for the number of cases, the amount of hidden wealth revealed starts to diverge more immediately after the announcement of the policy change compared to the control group. This is, naturally, reflected in the above-average disclosures per amnesty case in 2013 and 2014 (see Figure B3). Here, too, a sharp increase occurs in 2017, once Switzerland implements the AEOI. In 2017 alone, over 750 million Swiss francs in hidden assets were revealed by the amnesty in the canton of Bern, which is around seven times what the counterfactual for that year would suggest. The difference-in-differences estimate indicates that more than half of all hidden wealth disclosed during the 2010–2020 period is attributable to the announcement and implementation of the AEOI. Moreover, it should be noted that the results shown in Panel (b) are not driven by outliers.⁴⁹ Again, as for the number of participants, the AEOI effect on wealth disclosed fades after 2019. Indeed, the true amount of wealth disclosed converges to its estimated counterfactual value in 2020. This suggests that the impact on tax compliance materializes promptly after the policy change.

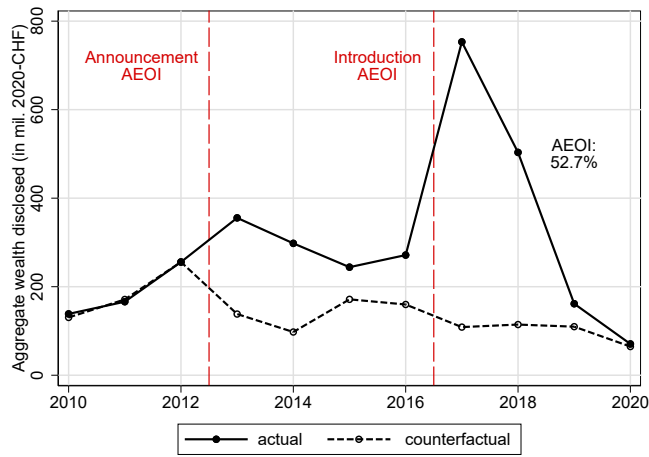
Lastly, Panel (c) of Figure 4 shows the effect of the AEOI on back-taxes collected. Not surprisingly, the patterns shown in Panels (b) and (c) are highly similar, as back-taxes are some function of hidden wealth disclosed. Yet again, the difference-in-differences estimate suggests that just above 50% of total back-tax revenue is due to the AEOI.

Overall, Figure 4 suggests very strong compliance effects of the AEOI at the macro-level: almost 70% of all taxpayers participating in the amnesty in the canton of Bern and more than 50% of all hidden wealth disclosed between 2010–2020 can be attributed to the AEOI. Combining this results with the findings of Section 4.1, we obtain that the AEOI has induced around 107k taxpayers to participate in the Swiss amnesty and to jointly disclose hidden assets valued in aggregate at more than 5% of Swiss GDP. Given this evidence, it seems fair to say that the introduction of AEOI has been the key to the success of the Swiss tax amnesty.

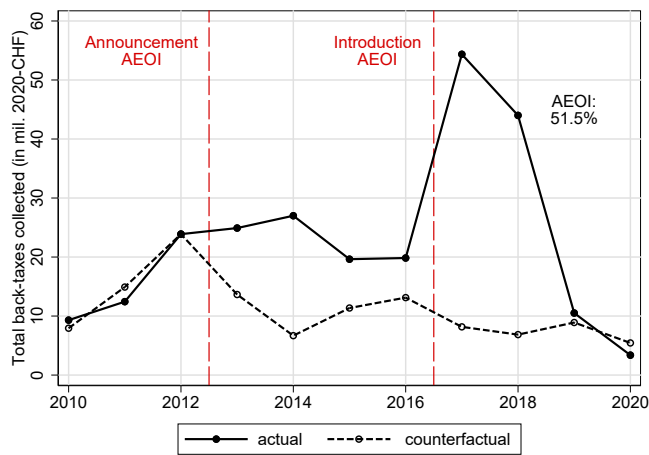
⁴⁹As a robustness check and to assess whether the results are attributable to outliers, I winsorized the data to the 99th percentile. That is, I set the value of all disclosures above the 99th percentile for both ordinary voluntary self-disclosures and SIT cases to the 99th percentile. These winsorized and indexed series are shown and compared in Figure B4 in the Appendix. The qualitative results remain unchanged.



(a) Number of amnesty participants



(b) Aggregate hidden wealth disclosed



(c) Total back-taxes collected

Figure 4: The macro effects of the AEOI on tax compliance, 2010–2020

Note: This figure shows the actual time-series for voluntary self-disclosure cases under the Swiss amnesty and a corresponding counterfactual based on SIT cases. Panel (a) shows the number of amnesty participants per year, Panel (b) the aggregate amount of hidden wealth disclosed, and Panel (c) the total back-tax payments collected. The AEOI effect indicated in the figures is the share of cases (or wealth disclosed or back-taxes) that can be attributed to the AEOI between 2010 and 2020: $(\text{actual} - \text{counterfactual})/\text{actual}$.

The effect of the AEOI on non-covered non-financial assets. While the micro data generally do not allow to distinguish and explore the compliance effects by asset categories, in Appendix Figure B5, I show the evolution of *rate-determining* and *effective* taxable wealth disclosed separately.⁵⁰ The main difference between the two series is that real estate owned outside the canton of residence (i.e. here outside the canton of Bern) is included in the former time series, but not in the latter.⁵¹

Given that the AEOI via CRS only covers financial assets, not non-financial assets, one should not expect a response for real estate assets. Consequently, effective and rate-determining taxable wealth disclosed should coincide. However, as I show in Appendix Figure B5, this is not the case—at least not for the years 2017 and 2018 immediately after the introduction of the AEOI. Indeed, there is a fairly large difference for 2017 (and to a lesser extent for 2018) that is attributable to the fact that a relatively large number of individuals voluntarily disclosed hidden real estate.⁵²

As I show in Appendix Figure B6, it is the relatively “poor” tax evaders between the 50th and 90th percentiles of the wealth distribution who disclose more rate-determining than effective taxable wealth. In contrast, taxpayers in the top 10 percent and especially the top 1 percent reported a higher fraction effective taxable wealth than rate-determining taxable wealth. This is suggestive evidence that relatively “poor” taxpayers were not fully aware of the scope and implications of the CRS. Consequently, they reacted anyway and disclosed undeclared offshore real estate once the AEOI came into force.

4.3 The micro effects of the AEOI on tax compliance

The analysis in the last section has established a significant and immediate macro effect of the AEOI on tax compliance. These previous results, however, suffer from one limitation in particular: they are static in nature. At issue is whether the observed compliance effects persist over time. Indeed, one might well be concerned that only those tax evaders entered the amnesty who already know beforehand that they will be able to legally avoid (or to again illegally evade) their future tax liabilities once they file a voluntary disclosure. Hence, at issue is whether and to what extent non-compliant taxpayers can substitute between illegal evasion and legal evasion?

Only if this substitution rate is sufficiently low will the immediate macro compliance response have lasting effects, i.e., lead to a sustained increase in tax revenues from these

⁵⁰By default, I use rate determining taxable wealth (if not stated otherwise), as this is the more comprehensive wealth concept.

⁵¹Real estate outside the canton of residence is not part of the actual tax base and only needs to be reported to determine the correct tax rate (hence the name: rate-determining taxable wealth). Besides non-cantonal real estate also business operations and permanent establishments outside the canton of residence are only considered in the *rate-determining* series.

⁵²While with the data at my disposal I cannot attribute this difference exclusively to real estate with one hundred percent certainty, the tax administration of the canton of Bern has confirmed that this difference is indeed largely attributable to real estate.

formerly non-compliant taxpayers. Consequently, the objective of this section is to present evidence on the persistence of the behavioral responses at the micro level. To do so, I closely follow the empirical strategy of Alstadsæter et al. (2022a), which allows me to investigate the degree of substitution between illegal tax evasion and legal tax avoidance.

4.3.1 Empirical strategy

The key idea of the empirical approach by Alstadsæter et al. (2022a) is to compare how taxpayers comply after a voluntary self-disclosure—or after getting caught by tax authorities—relative to others taxpayers with similar ex ante characteristics. Specifically, I estimate the persistence of the compliance behavior at the micro level using the following event-study framework:

$$\log(Y_{it}) = \alpha_i + \gamma_t + \chi_{it} + \sum \beta_k D_{it}^k + \epsilon_{it} \quad (1)$$

where $\log(Y_{it})$ is the log of the outcome of interest for individual i in year t . I explore three separate outcomes to assess tax compliance, namely: (i) reported taxable wealth, (ii) reported taxable income, and (iii) total personal taxes paid. α_i and γ_t capture individual and calendar year fixed effects, respectively. The vector χ_{it} adds time-varying individual-level controls (e.g. marital status and number of children). Most notably, however, it adds a large set of dummies (50 dummies in the baseline specification) capturing individual characteristics (see details below). D_{it}^k are the event dummies specifying year k relative to the year of the event for taxpayer i . Specifically, I analyze two separate events: (i) participating in the tax amnesty or (ii) being caught by the tax administration. By normalizing to the pre-event year, i.e., $\beta_{-1} = 0$, I show the dynamic compliance effects β_k as percentage changes relative to the pre-event year.⁵³ Hence, the β_k 's are the parameters of interest. They capture the effect of amnesty participation (or (ii) being caught) on the various outcomes beyond any changes observed for non-disclosing taxpayers with similar individual characteristics over the same period. I use two-way clustered standard errors by individual and calendar year.⁵⁴

The estimation sample covers the universe of *individualized* taxpayers in the canton of Bern over the period 2002–2020: in total, it comprises approx. 14.8m taxpayer-year observations (see Table 1). The estimation of Equation 1 thereby utilizes information on roughly 909k unique taxpayer observations, 10'967 of whom participated in the amnesty and 3'935 of whom were caught by the tax authorities (see Figure 2).⁵⁵

The key identifying assumption of this empirical strategy is that the analyzed outcomes for amnesty participants (or (ii) caught evaders) and non-participants (the control group),

⁵³As suggested by the literature (see e.g., Schmidheiny and Siegloch, 2023) the endpoints in all event study specifications are binned.

⁵⁴All point estimates are reported along with their 95% confidence intervals based on two-way clustered standard errors.

⁵⁵The number of taxpayers detected by the tax authorities between 2008 and 2020 is 3'093, as shown in Figure 2. 3'935 corresponds to the number over the entire observation period of 2002–2020.

would have evolved the same if taxpayers who disclose hidden wealth had not participated in the amnesty (or (ii) have not been caught). The key mechanism of the approach to ensure the identifying assumption is that the vector χ_{it} —which contains a large set of dummies capturing individual characteristics—allows the identification of a valid control group. All specifications capture ex ante taxpayer characteristics with a total of 50 dummies: 20 dummies for taxable wealth (incl. wealth later disclosed), 20 dummies for taxable income (incl. income later disclosed), and 10 dummies for age. Thus, the dummies contain information about “true” wealth and income, while the outcomes Y_{it} on the left-hand side of Equation 1 reflects what the taxpayers report in their tax records. To build the set of dummies for taxable wealth (or taxable income), the full sample of taxpayers, i.e., amnesty participants and non-disclosing taxpayers, is divided into twenty equally sized groups based on their true wealth (resp., income). This procedure is applied for each year of the sample. The 10 dummies for age are constructed in uniform intervals (i.e., 0-9; 10-19; 20-29;...90-99) by analogous procedure.

4.3.2 Threats to identification and the empirical strategy

Alstadsæter et al. (2022a) discuss limitations of this empirical strategy and threats to identification in detail. Many of the issues raised there also apply to my analysis, so I will only briefly recapitulate the most critical aspects and, in particular, point out a peculiarity in the construction of the (amnesty) data which potentially may impact my empirical analysis.

Selection, control group, and reverse causality. The most significant issue regarding identification is clearly that amnesty participants themselves have selected to participate (i.e., “to receive treatment”). In the absence of a random treatment assignment, identification of a valid control group is not straightforward. The empirical strategy to achieve this in the present context is by controlling for a large set of ex ante taxpayer characteristics (see previous section for details). Here, testing for the absence of differential pre-trends can support the validity of the empirical strategy presented in Equation 1.

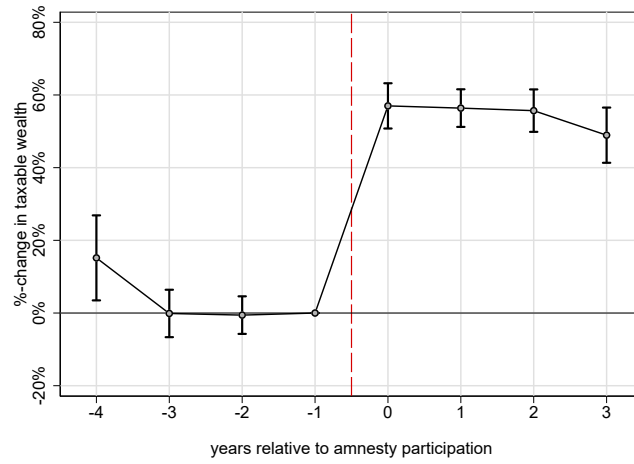
Another related and salient issue is reverse causality. That is, taxpayers may decide to opt for the amnesty based on (expected) changes in their assets and/or income. As such, taxpayers may, for instance, decide to participate in the amnesty in order to use their legalized assets to access (more) credit or to invest in (above-average) profitable business opportunities. In such cases, this might introduce bias in the estimation of the persistence of compliance effects. Concerns about reverse causality—occurring for whatever reason—are alleviated by the fact that participating in the amnesty is not truly voluntary for most individuals. As I show in Section 4.2, 68.7% of those taxpayers who participated in the amnesty did so because of the introduction of the AEOI. Thus, for the vast majority of amnesty participants, causality runs the right direction. It is increased tax enforcement—rather than (anticipated) changes in the outcomes of interest—that drives them into the Swiss tax amnesty.

Finally, selection into the amnesty may result in a specific sub-sample of non-compliant taxpayers, so that the estimated persistence effects may be local to this subset. To test this and to generalize the main results from this analysis, I will apply the identical empirical procedure to a second treatment group unrelated to amnesty participants, namely tax evaders caught by the authorities.

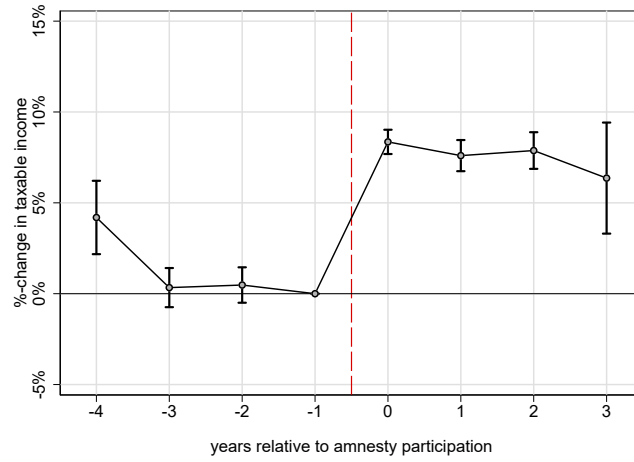
Retroactive adjustments in after-tax procedures and differential trends. A potential issue regarding the applicability of the empirical strategy arises from the way in which the micro data is generated. Recall that upon participation in the amnesty, the tax administration will re-examine (up to) the last ten tax returns. Such a re-examination is naturally performed retrospectively. Now suppose that the further back in time the audit goes, the more difficult it is for tax auditors to determine “true” taxable income and/or wealth (which seems a natural assumption). If in such circumstances auditors tend to be more cautious for tax years that are longer in the past (and, when in doubt, tend to rule in favor of the taxpayers), this will result in a systematic undervaluation of “true” wealth and income for amnesty participants (or (ii) caught evaders), which is increasing in the length of the re-assessment period. Accordingly, this implies that in practice one may observe a positive pre-trend differential even if the empirical strategy is theoretically perfectly reliable in determining a valid control group.

4.3.3 Empirical results

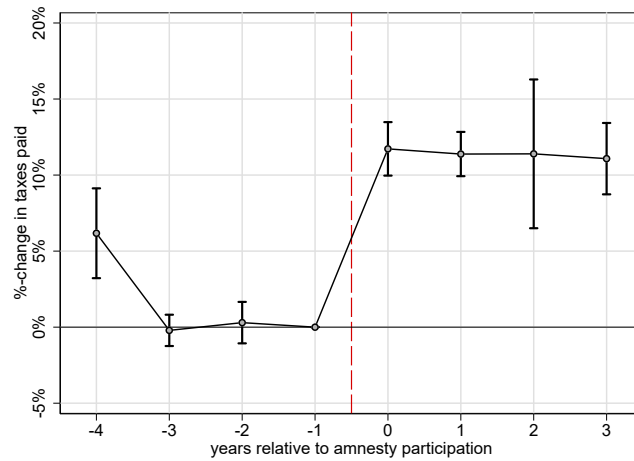
Figure 5 presents the dynamic tax compliance effects. Panel (a) shows that reported taxable wealth increases by an average of almost 60% once a tax evader participates in the amnesty, relative to taxpayers with similar ex ante characteristics. This compliance response is economically substantial and statistically significant (Figure 5 reports point estimates with 95% confidence intervals based on two-way clustered standard errors by individual and year). While there is some statistically significant positive pre-trend differential (binned to the initial event study year -4), it is relatively small to the estimated effect size. The fact that the micro level compliance response unfolds immediately at the time of participation is reassuring that it is indeed amnesty participation and not to any kind of idiosyncratic shocks that affected wealth holdings of amnesty participants and the control group differentially. Most critically, the compliance response effect is largely sustained in the three years following a voluntary self-disclosure and only slightly decreases in the last year of the event study.



(a) Reported taxable wealth



(b) Reported taxable income



(c) Total personal taxes paid.

Figure 5: Dynamic tax compliance response for amnesty participants

Note: This figure shows dynamic tax compliance effects for amnesty participants using the specification shown in Equation 1. Panel (a) reports the estimation result for reported taxable wealth, Panel (b) for reported taxable income, and Panel (c) for total personal taxes paid. The point estimates are reported with their 95% confidence intervals based on two-way clustered standard errors by individual and year. Appendix Figure B8 additionally shows the compliance effects for detected tax evaders.

Panel (b) provides the analogous analysis, but for reported taxable income. Here, three aspects in particular are worth highlighting. (i) Reported taxable income increases by about 8% at the time of disclosure under the amnesty, again compared to taxpayers with similar characteristics. Again, this compliance effect persists over time. Consequently, the dynamic pattern for reported taxable income is very similar to that for reported taxable wealth. (ii) For reported taxable income, however, the economic magnitude of the effect is considerably smaller. Unfortunately, with the data available, it is not possible to disentangle the behavioral patterns with respect to different income components. In particular, it is not feasible to study the dynamics of labor and capital income separately. However, a comparison between the evolution of reported taxable wealth (Panel (a)) and taxable income (Panel (b)) is strong suggestive evidence that amnesty participants primarily regularize hidden assets (and capital income), but not evaded labor income. (iii) Estimation results for reported taxable income are generally somewhat less precise than for taxable wealth (particularly at the binned endpoints). Also, the positive pre-trend differential at the binned endpoint ($t = -4$) is somewhat more pronounced. Yet again, the rise in compliance is large and immediate, suggesting that the effect is indeed related to participation in the amnesty.

Finally, Panel (c) shows the average effect of amnesty participation on total personal taxes paid (i.e., income and wealth taxes at all tiers of government). Tax payments increase by about 12% and remain at this higher level in the years following amnesty participation. Given that tax payments are a function of wealth, but more importantly of income, the dynamic pattern in Panel (c) unsurprisingly resembles the patterns discussed earlier, especially that for reported taxable income.

The evidence presented in Figure 5 may be summarized as follows. Reported taxable wealth, reported taxable income and taxes paid rise immediately when a taxpayer enters the Swiss amnesty. This is not (too) surprising, but lies in the nature of a voluntary self-disclosure. What may be surprising is the economic magnitude of these micro level compliance effects. Most critical for tax enforcement, however, is that compliance responses persist over time. Thus, there is no (or only very limited) substitution between illegal evasion and legal tax avoidance. Consequently, my results corroborate previous findings by Alstadsæter et al. (2022a) and demonstrate that strengthening tax enforcement—through the AEOI and potentially other measures—can lastingly enhance tax compliance at the micro level

Effect heterogeneity. Figure 5 reports average compliance effects. In Appendix Figure B7, I explore heterogeneity in compliance responses. Specifically, I examine whether wealthier taxpayers behave systematically differently by re-estimating Equation 1 for taxpayers from different parts of the wealth distribution. From this empirical exercise, two things stand out. First, it does not matter for the persistence of compliance effects from which part of the wealth distribution the amnesty participants originate. For both reported taxable

wealth and income, the effects are highly persistent for either of the wealth percentile ranges P75-P80, P85-P90, and P95-P100.⁵⁶ Second, the size of the estimated effect—especially for reported taxable wealth—varies considerably along the wealth distribution. The wealthier the amnesty participants, the less they disclose (relatively speaking). Consequently, distributional considerations require a more thorough investigation, which is provided in Section 5.

Compliance effects for a second sample: detected tax evaders. A natural limitation of the micro level compliance responses presented so far is that these estimates may be local (i.e., apply only to this particular sub-sample of amnesty participants) and therefore may not generalize to other types of tax evaders.⁵⁷ The data available allow me to test for substitution between illegal evasion and legal avoidance for a second type of non-compliant taxpayer that has no relation to the amnesty, namely taxpayers who are detected by the tax authorities themselves. The estimation is analogous (using the specification in Equation 1), but instead of amnesty participation, the event is getting caught by the tax administration. Figure B8 in the Appendix shows the dynamic compliance responses for detected tax evaders (along with the estimates for amnesty participants as reported in Figure 5). A comparison of the micro level compliance responses among these two types of previously non-compliant taxpayers reveals a number of results.

First and foremost, there is an immediate surge in reported taxable wealth, reported taxable income, and taxes paid once a taxpayer is caught by the tax authorities, and this rise is largely sustained in subsequent years. Hence, also for this second type of non-compliant taxpayer, there is little evidence of positive substitution between tax evasion and tax avoidance—at least not around the time of detection. Second, while the parallel pre-trends assumption for detected taxpayers appears valid for reported taxable wealth (see Panel (a)), it is clearly violated for reported taxable income (Panel (b)) and, consequently, also for personal taxes paid (Panel (c)). A tentative explanation for this positive pre-trend differential is provided in the second paragraph of Section 4.3.2.⁵⁸ Also, the fact that the pre-trend differential is positive and, in particular, that the event is random from the perspective of tax evaders somewhat mitigates the concerns about the validity of the results in Panels (b) and (c). Nevertheless, the results for detected tax evaders should be interpreted with caution for the outcomes concerning reported taxable income and taxes paid.

Finally, the most intriguing finding from the comparison of the two types of tax evaders is that, on average, reported taxable wealth increases more for amnesty participants than for detected tax evaders, but that, on average, reported taxable income rises more for detected

⁵⁶For taxpayers from the top 5% of the wealth distribution, there is a sign of a slight decline in reported taxable income over time relative to the control group. However, given the limited statistical precision of this estimate, this result is not very robust.

⁵⁷Given that the main interest of the study are the compliance effects to the AEIOI, which I measure through the behavioral responses of the amnesty participants, this is not a severe (but rather an intentional) constraint.

⁵⁸While it may be plausible that the positive pre-trend difference results from retroactive adjustments in after-tax procedures, there is no way to directly test this in the data. A possible way to test this hypothesis in practice would be to evaluate and analyze the audit process of tax auditors in detail.

tax evaders than for amnesty participants (see Panel (a) and (b) in Fig. B8). This is suggestive evidence that (Swiss) tax auditing is typically more concerned with, or able to detect, undeclared (labor) income than it is with uncovering hidden wealth. In the absence of any third-party reporting (prior to the AEOI), it is not too surprising that tax audits are relatively unsuccessful in uncovering undeclared assets.

5 The distribution of tax evasion

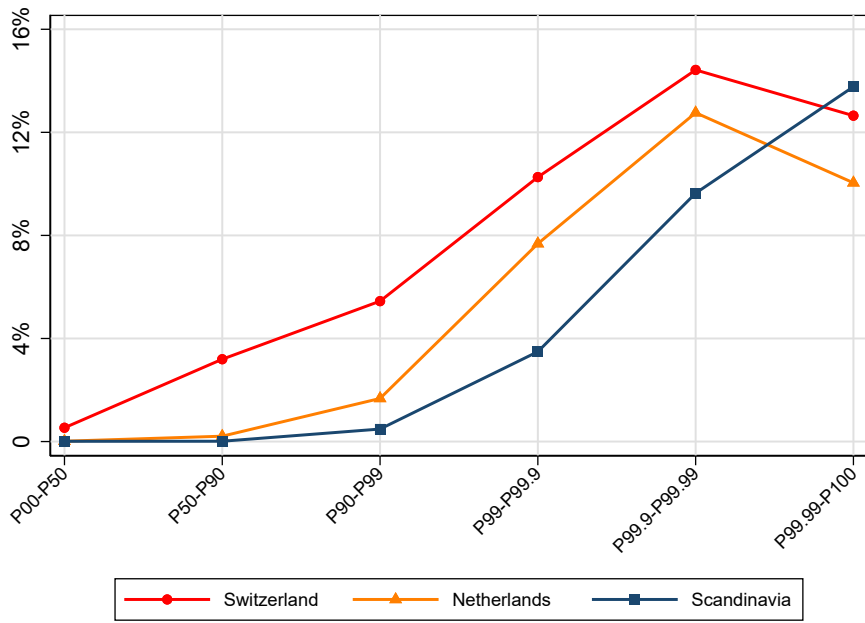
This section examines the distribution of tax evasion in Switzerland. First, I leverage the amnesty data to investigate who participates in the Swiss amnesty. In doing so, I compare the results for Switzerland with other countries—the Netherlands, Scandinavia, and Colombia—for which such amnesty programs have been analyzed. Second, I study how the distribution patterns vary over time. Thereby, we will gain a better understanding of the influence of the AEOI on the measured distributional patterns of tax evasion. Third, I compare the distribution of evasion between amnesty participants and tax evaders detected by audits. Lastly, I conclude by discussing the limitations of this distributional analysis and, in particular, how it is linked to the AEOI, and highlight what remains to be explored in future research.

5.1 Who participates in the amnesty?

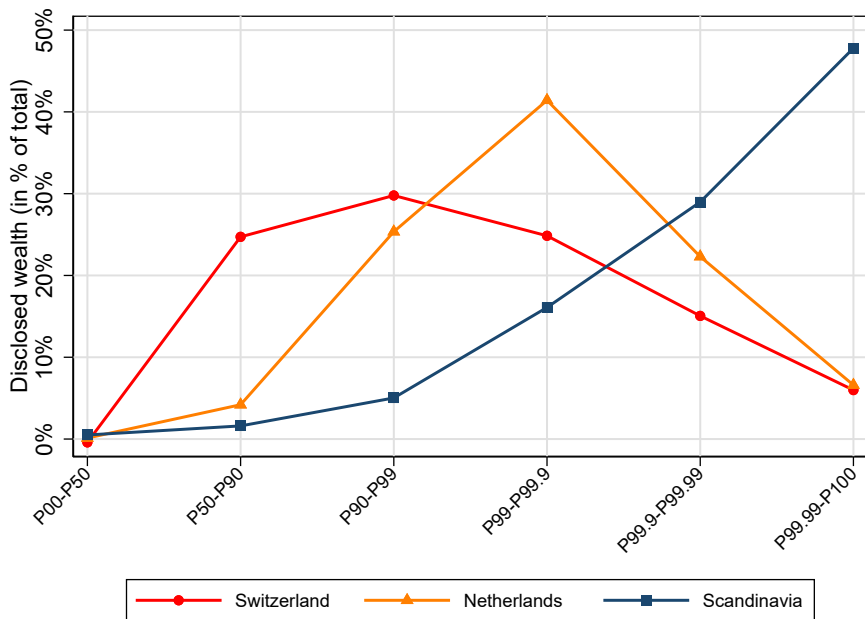
To answer the question of who participates in the Swiss tax amnesty, I rank all amnesty participants (or later caught tax evaders) in the universe of individual taxpayers by their “true” net wealth (i.e., including wealth subsequently disclosed through amnesty participation or by being caught by the tax authorities) for all years between 2010 and 2020.⁵⁹

The red line (with circles) in Panel (a) of Figure 6 shows the likelihood of participating in the Swiss amnesty between 2010 and 2020 for different wealth groups. From the bottom half of the wealth distribution, we see that hardly anyone participated in the amnesty (in relative terms). The probability of participating for this wealth group was about half a percent. The likelihood of disclosing wealth under the amnesty, however, rises along the wealth gradient: 12.6% of all taxpayers from the top 0.01% disclosed some hidden assets between 2010 and 2020. Consequently, taxpayers from the top 0.01% are 23.5 times more likely to have participated in the Swiss amnesty than a taxpayer from the bottom half of the wealth distribution.

⁵⁹The results shown in Figure 6 and Figure B9 represent the *collapsed* results for the 2010–2020 period.



(a) Probability to participate in the amnesty



(b) Share of amnesty wealth

Figure 6: The distribution of amnesty wealth

Note: This figure shows the distributional patterns of amnesty wealth in Switzerland, the Netherlands, and Scandinavia. Panel (a) indicates the probability of amnesty participation for taxpayers in different parts of the wealth distribution (i.e., the extensive margin response). Panel (b) reports the fraction of total amnesty wealth held by the different wealth groups. The data for Switzerland cover the period 2010–2020. The data for the Netherlands are taken from Leenders et al. (2023), and those for Scandinavia are from Alstadsæter et al. (2019). In addition, in Appendix Figure B9, I add the analogous results for Colombia as presented in Londoño-Vélez and Ávila-Mahecha (2021). Moreover, in Panel (c) of the Appendix Figure B9, I show the intensive margin of tax evasion for the top 5% for which such data is available (i.e., the share of hidden wealth disclosed relative to total taxable wealth conditional on amnesty participation). Additionally, for Switzerland, the intensive margin response for the upper half of the wealth distribution is shown in Panel (b) of Figure B10 (black line with circles).

Comparing the likelihood of participating in the Swiss amnesty with the experiences in Scandinavia (Alstadsæter et al., 2019), the Netherlands (Leenders et al., 2023), and Colombia (Londoño-Vélez and Ávila-Mahecha, 2021), reveals a striking result. While the likelihood of participation within the top 1% of the wealth distribution is broadly similar among the European countries (see Panel (a) of Fig. 6), the patterns further down are very different. In both Scandinavia and the Netherlands, virtually no one from the middle part of the wealth distribution (i.e., between the 50th and 90th percentiles of the wealth distribution; P50-P90) participated in the respective amnesties, while in Switzerland close to 3.2% of all taxpayers from this wealth group participated. Also, the top 10%, excluding the top 1% (i.e., P90-P99), are at 5.4% significantly more likely to participate in Switzerland than elsewhere: 1.7% in the Netherlands; 0.5% in Scandinavia, and 0.3% in Colombia. Indeed, in Colombia, the likelihood of tax evasion is even more pronounced among those at the very top (see Panel (a) in Appendix Figure B9). This suggest that tax evasion in Switzerland is widespread—at least at the extensive margin—in the lower part of the wealth distribution in international comparison. This finding is in line with the fact that tax evasion in Switzerland was (or still is) relatively easy, as there is no (domestic) third-party reporting. Consequently tax evasion may not be limited to individuals who can afford special concealment services (see e.g., Guyton et al., 2021 and a more detailed discussion in Section 5.4).

Panel (b) in Figure 6 shows the distribution of aggregate hidden wealth disclosed under the amnesty between 2010 to 2020. The 40% of the Swiss population in the middle part of the wealth distribution (i.e., in P50-P90) own roughly 25% of total amnesty wealth. The top 10%, excluding the top 1% (P90-P99), own about 30% of such assets. Thus, this leaves the top 1% holding about 46% of all hidden assets revealed under the Swiss amnesty. Again, an international comparison reveals that amnesty wealth is much more evenly distributed in Switzerland than in other countries. In both Scandinavia and Colombia, amnesty wealth is held almost exclusively by the top 1% of taxpayers (see Panel (b) of Figure B9). In the Netherlands, amnesty wealth is somewhat more equally distributed, but still essentially concentrated only among the top 10% of the richest taxpayers (Panel (b) Figure 6).

Panel (b) of Figure B10 shows the intensive margin of tax evasion for amnesty participants (and caught tax evaders) in Switzerland. That is the share of hidden wealth disclosed relative to total taxable wealth conditional on participating in the amnesty. Here two things stand out. First, taxpayers in the middle part of the distribution (P50-P90) disclose on average 43% of their true taxable wealth if they participated. This is considerably more than taxpayers between the 90th and 99.99th percentile of the wealth distribution, who disclose an average about 25% conditional on participating. Second, the share of disclosed wealth in total wealth drops significantly at the very top of the wealth distribution. On average, the top 0.01% in Switzerland disclosed only around 12%. As shown in Panel (c) of Appendix Figure B9, this

is a relatively low fraction also by international standards. Hence, besides the much higher participation in the lower parts of the wealth distribution—which is the main reason—it is also the relatively low fraction of disclosed wealth at the very top of the wealth distribution that results in a relatively even distribution of amnesty wealth by international standards.

5.2 The AEOI and the distribution of tax evasion

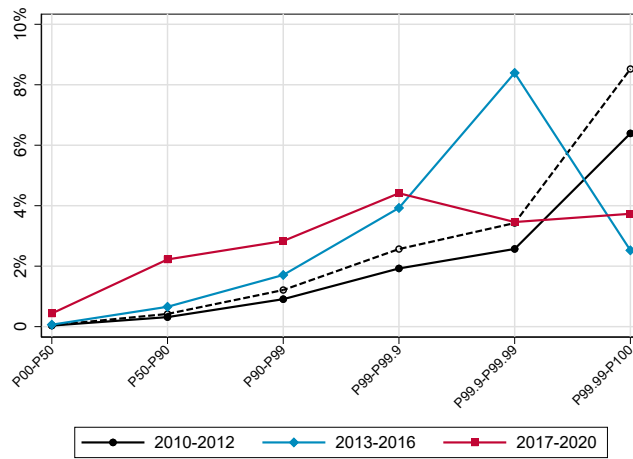
The AEOI is the driving force behind the high Swiss amnesty participation (see Figure 4). Given that descriptive results presented in the previous section are based on the full 2010–2020 amnesty period, we might expect heterogeneity in the distributional patterns over time caused by the introduction of the AEOI.⁶⁰ To investigate this, I explore the distribution of amnesty wealth for three separate time periods related to the AEOI: (i) 2010–2012: the period prior to the announcement of the AEOI; (ii) 2013–2016: the period between announcement and introduction of the AEOI; (iii) 2017–2020: the period after the introduction of the AEOI. Indeed, Figure 7 documents considerable heterogeneity in the distribution of amnesty wealth in these three time periods.

First, Panel (a) of Figure 7 reports the likelihood that a taxpayer from a certain wealth group participated in the Swiss amnesty. Comparing the 2010–2012 period (black line with circles) with the 2017–2020 period (red line with squares), two things stand out in particular.⁶¹ First, the line for the post-AEOI period is consistently higher than the line for the 2010–2012 period (except for the top 0.01%). This, of course, merely reflects the fact that participation in the amnesty surged after the introduction of the AEOI (see Figure 2). Second, and most critically, the gradient is much less steep in the post-AEOI period: From 2017 to 2020 a taxpayers from the top 1% of the wealth distribution is only around 2 times as likely to participate in the amnesty as someone in the middle part of the distribution (P50-P90). During 2010–2012, however, an evader from the top 1% was about 6.7 times more likely to participate than a non-compliant taxpayer from the P50-P90 bracket.⁶² Put differently: After the introduction of the AEOI, amnesty participation was particularly high—relatively speaking—for individuals from the lower parts of the wealth distribution.

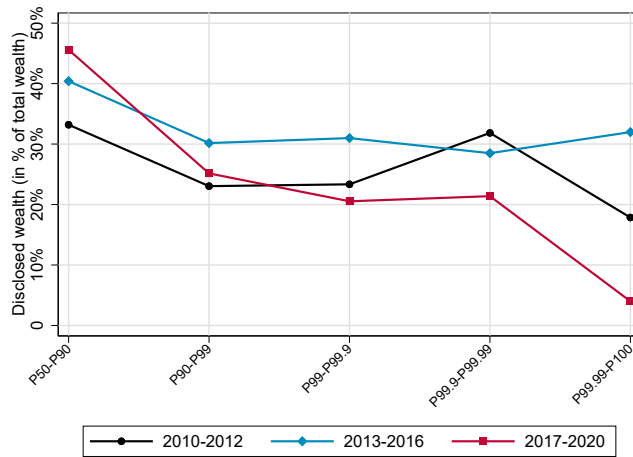
⁶⁰The event-study analysis has already shown that the behavioral responses vary along the wealth distribution (see Figure B7).

⁶¹As the 2010–2012 period covers only three years, compared to four years for the other two periods, I also show a version of the results scaled up to four years (i.e. the 2010–2012 series is simply multiplied with a factor 4/3; see dashed black line in Figure 7).

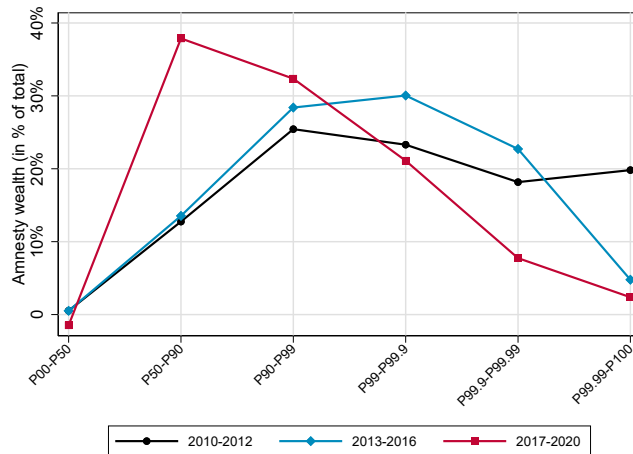
⁶²2010–2012: P50-P90 = 0.3%; P90-P99 = 0.9%; P99-P100 = 2.0% versus 2017–2020: P50-P90 = 2.2%; P90-P99 = 2.8%; P99-P100 = 4.2%.



(a) Probability to participate in the amnesty



(b) Amnesty wealth as share of total taxable wealth



(c) Share of amnesty wealth

Figure 7: The AEOI and the distribution of amnesty wealth, 2010–2020

Note: This figure shows the distribution of tax evasion for three distinct periods related to the AEOI: (i) 2010–2012: prior to the announcement of the AEOI; (ii) 2013–2016: between announcement and introduction; (iii) 2017–2020: after the introduction. Panel (a) reports the probability of amnesty participation (i.e., the extensive margin response). Here, as the 2010–2012 period covers three years only, compared to four years for the other two periods, I also present a version of the results scaled up to four years (dashed line). Panel (b) shows the the share of hidden wealth disclosed relative to total taxable wealth conditional on amnesty participation (i.e., the intensive margin response). Finally, Panel (c) reports the fraction of hidden wealth held by the different wealth groups.

Second, Panel (b) of Figure 7 shows the intensive margin response for different wealth groups and time periods. In all three periods, taxpayers between the 50th and 90th percentiles of the wealth distribution disclose a higher share, as measured by their actual taxable wealth, than individuals higher up in the wealth distribution. For the top 10% of taxpayers, the intensive margin response is relatively homogeneous in all three sub-periods—which appears consistent with evidence for other countries as shown in Panel (c) of Figure B9. The exception is the top 0.01% in the post-AEOI period. Here, even if people at the very top did in fact disclose some hidden assets it represented a relatively minor fraction of their total wealth holdings.

Finally, Panel (c) shows the distribution of amnesty wealth over time. The period after the introduction of the AEOI contrasts sharply with the two periods prior to 2017. For both the 2010–2012 and 2013–2016 period, the top 1% hold about 60% of the disclosed hidden assets (i.e., the other 99% hold only 40%). For the post-AEOI period, however, the pattern is strikingly different: the top 1% hold roughly 30% of disclosed hidden wealth, while the remaining 70% is held by the bottom 99%. Further, it should be noted that part of this pattern is explained by the fact that taxpayers between the 50th and 90th percentiles (but not taxpayers higher up) in the wealth distribution disclosed real estate assets after 2017, even though these assets were not directly affected by the introduction of the AEOI via the CRS (see Panel (b) of Appendix Figure B6 for details).

5.3 The distribution of evasion: amnesty participants vs. caught evaders

The previous section provided suggestive evidence that the AEOI might not be too effective in combating tax evasion at the top of the wealth distribution. Consequently, (more) targeted audit efforts may be required. Appendix Figure B10 provides insights into the distributional patterns of tax evasion that result from such (targeted) audit activities.⁶³

First, Panel (a) of Figure B10 shows the likelihood of participating in the amnesty versus getting caught for different wealth groups over the 2010–2020 period. The difference in levels merely reflects the fact that during this period far more tax evaders participated in the amnesty than were caught by the authorities—which was already evident from Figure 2. As for the gradient, things are different. A taxpayer from the top 0.01% of the wealth distribution is more than six times as likely to be caught as a taxpayer from the middle part of the distribution (P50-P90). While taxpayers from the top 0.01% are only about four times more likely to participate in the amnesty than an individual from the P50-P90 bracket. Therefore, at the extensive margin, the tax authority seems to be fairly successful—in relative terms—in detecting tax evasion at the very top. However, it should be noted that given these observed detection probabilities and the existing tax rates, it is (very likely) still advantageous—from a

⁶³There is no information on how tax returns are selected for targeted audits. Section 2.2 provides further information on the institutional tax enforcement by public authorities.

purely monetary perspective—for taxpayers in roughly the top third of the wealth distribution to engage in tax evasion. In an extension in Appendix Section B.3, I estimate the required level of the Swiss withholding tax that would make taxpayers from different parts of the distribution in the canton Bern indifferent between proper declaration and tax evasion. For instance, for a taxpayer from the top 0.01%, the estimated “indifference” withholding tax rate is about 60%, while the currently effective rate is 35%.

Panel (b) in Figure B10 depicts the share of revealed hidden wealth in total taxable wealth for amnesty participants and detected tax evaders along the wealth distribution. While the results between detected tax evaders and amnesty participants are relatively similar for taxpayers between the 50th and 99th percentiles of the wealth distribution, they contrast sharply for the top 1% and especially for the top 0.1%. What is striking here is that while the tax authorities seem to be able to uncover some tax evasion at the very top (i.e., in the top 0.1%; see Panel (a)), the fraction of wealth they uncover is negligible in relation to overall taxable wealth held by these taxpayers.

This finding together with the evidence presented in Appendix Figure B8 suggest that the tax audits conducted by the authorities are not designed to detect hidden wealth but rather to find undeclared (labor) income.⁶⁴

Finally, putting the intensive and extensive margin responses together, we arrive at the overall distribution of evaded wealth for detected tax evaders and amnesty participants. Figure 8 shows these distributions together with the distribution of ordinary taxable wealth (yellow line with triangles) for the period 2010–2020. The key insight from Figure 8 is that hidden wealth, as measured through amnesty cases, is significantly more concentrated than taxable wealth, while hidden wealth uncovered by the authorities is significantly less concentrated than taxable wealth. This may also be expressed in numbers: the top 1% owns 37.7% of all taxable wealth (i.e. the remaining 62.3% of taxable wealth are held by the bottom 99%). For hidden wealth, on the other hand, we find that the top 1% owns 45.9 of the amnesty wealth, but only 24.9% of the total hidden assets discovered by the authorities.

⁶⁴A comparison of Panel (a) and Panel (b) in Figure B8 reveals that, on average, auditing reveals relatively more taxable income than taxable assets compared to amnesty cases. Surely, more research is needed to confirm this hypothesis with certainty.

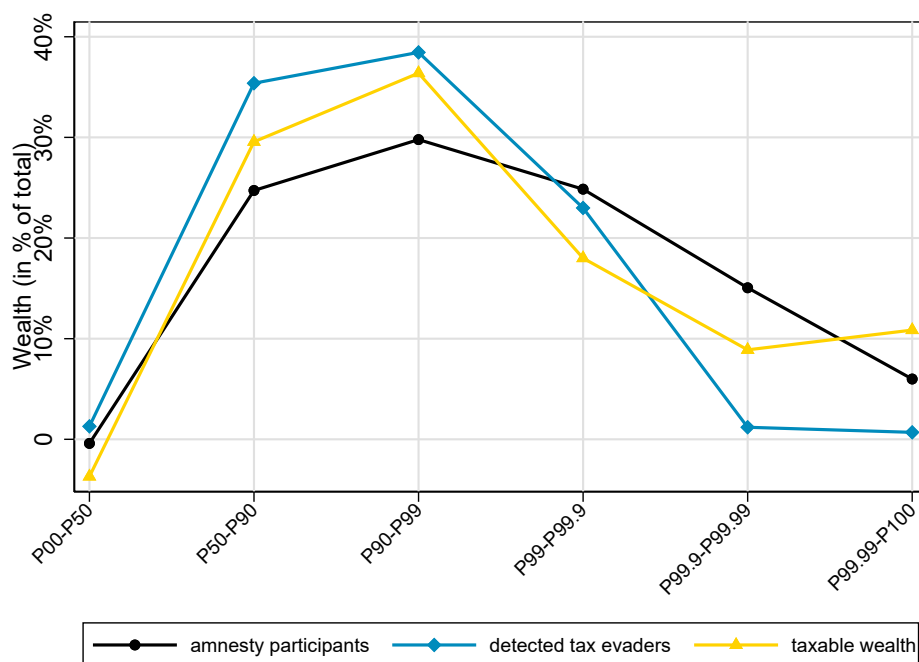


Figure 8: The distribution of evaded and declared taxable wealth, 2010–2020

Note: This figure shows the distribution of evaded wealth for amnesty participants (black line with dots), for detected tax evaders (blue line with diamonds), and the distribution of ordinary taxable wealth (in yellow with triangles). For all series, the distribution is derived using the distribution of net wealth for the universe of individual taxpayers over the 2010–2020 period.

5.4 Discussion

So far, I have presented novel evidence on the distribution of tax evasion in Switzerland. Yet, given that the study of tax evasion is fraught with great difficulties due to its inherently unobservable nature, this section provides a thorough discussion of two particularly salient issues. First, how representative are the documented distributional patterns for the “true” distribution of tax evasion in Switzerland? And second, for whom has the AEOI effectively enhanced tax compliance, and why? In doing so, I elaborate on the limitations of the analysis in Sections 5.1 through 5.3, the main lessons that can be drawn, and the open issues that need to be addressed in future research.

The “true” distribution of tax evasion in Switzerland. In Figure 6, I show who evades taxes using amnesty data.⁶⁵ Given that taxpayers self-select into tax amnesties, there is, naturally, concern that such data samples are not representative of the general population of tax evaders. To test for self-selection into amnesties, previous studies (Alstadsæter et al., 2019; Londoño-Vélez and Ávila-Mahecha, 2021; Leenders et al., 2023) have benchmarked amnesty data against more random samples from offshore leaks such as the Panama Papers

⁶⁵See also Appendix Figure B9.

and the HSBC leak. These papers generally suggest that self-selection is a minor issue and that amnesty data are therefore a valuable source for studying the distribution of tax evasion. However, given the fact that I am not able to cross validate the distributional patterns of tax evasion in Switzerland with other data⁶⁶, as well as for some other aspects of the analysis (see below), we should not conclude that Figure 6 necessarily represents the “true” distribution of tax evasion in Switzerland.

A first (potential) limitation is that the data underlying the distributional analysis of tax evasion for Switzerland are only from the canton of Bern. While the observable characteristics suggest that the canton of Bern is broadly representative for Switzerland (see Section 3.2), some uncertainty about the documented distributional patterns certainly remains. Given the fact that taxable wealth is somewhat more equally distributed in the canton of Bern than at the national level (see Figure B1), it seems reasonable to assume that the concentration of tax evasion presented in the previous sections is a rather conservative approximation for Switzerland as a whole.

Much more importantly, however, the distribution of tax evasion—as measured by amnesty data—is significantly more equally distributed in the post-AEOI period than in the years 2010–2016, as Figure 7 shows. I consider that the “true” distribution of hidden wealth is more likely to resemble the distributional patterns for 2010–2016 period than for the 2017–2020 period for the following reasons: First, the distributional patterns of tax evasion observed over the 2010–2012 period are not endogenous to the announcement or introduction of the AEOI and may therefore be considered less confounded. Second, given that the financial incentives to evade are greater for individuals higher up in the wealth distribution (e.g. as only they have to pay the wealth tax; see also the supplementary empirical exercise in Appendix Section B.3), wealthier taxpayers are more likely to engage relatively more in tax evasion. Consequently, hidden wealth should be more concentrated than taxable assets. This is, however, only true for the years 2010–2016, but not for the post-AEOI period of 2017–2020 (compare Panel (c) in Fig. 7 and Fig. 8). Third, the distribution of tax evasion shown for 2010–2016 fits much better with the evidence from other countries. While the concentration of hidden wealth is significantly higher in the 2010–2016 period than in the 2017–2020 period, tax evasion in Switzerland is still much more equally distributed by international standards, even when considering the more concentrated series from the 2010–2016 period. This widespread tax evasion along the wealth distribution in Switzerland is likely related to the lack of third-party reporting, which enables many more taxpayers to evade taxes (see Kleven et al., 2011).

Given the (still limited) evidence presented in Section 5, and for the reasons outlined above, I hypothesize that the “true” distribution of tax evasion in Switzerland is probably distributed as shown by the blue line (with diamonds) or black line (with circles) in Figure 7:

⁶⁶Testing for self-selection based on data from offshore leaks is not possible because Swiss tax authorities do not allow such data to be linked to official tax records.

the top 1% hold around 60% of all hidden wealth, while the bottom 99% hold about 40%. Yet only more research on the subject, and especially new data, will make it possible to validate this suggestive evidence. Thereby, (more direct) collaborations with tax authorities seem to be a particularly fruitful way forward. This would allow researchers to directly compare administrative and offshore leak data, and in addition, to conduct random audits that would allow for validation of previous results (at least for the lower parts of the distribution).

For whom has the AEOI effectively enhanced tax compliance. The results presented in Panel (c) of Figure 7 are particularly relevant for understanding the impact of the AEOI on tax compliance across different types of tax evaders. There I show that for the period 2010 to 2017, that is, before the introduction of the AEOI, 60% of the hidden assets are disclosed by the top 1% (i.e., the bottom 99% disclosed only 40% of the total). This pattern changed sharply after the introduction of the AEOI in 2017, with the top 1% disclosing only about 30% of total hidden assets.

I view this finding as a strong indication that the AEOI has increased tax compliance, especially among taxpayers from the lower strata of the wealth distribution. On the other hand, this naturally casts doubt on the effectiveness of the AEOI in enhancing tax compliance at the top of the distribution. Theoretically, at least, it is plausible that taxpayers at the upper end of the wealth distribution are less affected by increased tax enforcement due to the AEOI because they take special concealment actions as a result of—or even prior to—the introduction of the AEOI (see Guyton et al., 2021 for an expansion of the classical Allingham and Sandmo (1972) model that formalizes such special concealment actions). Hence, while third-party reporting (through the AEOI) raises the probability of detection of tax evasion in general and thus reduces equilibrium-level tax evasion (Kleven et al., 2011), the AEOI may not be sufficient to combat tax evasion at the (very) top. The evidence presented in this section strongly points in this direction. However, given the uncertainty regarding the distribution of baseline tax evasion, more research on this issue is needed. Indeed, a better understanding of how and through what channels (wealthy) taxpayers can circumvent the AEOI will be critical to effective tax enforcement. Given that taxpayers at the top of the wealth distribution typically own a very large share of total wealth—the top 1% owns around 40% of all taxable wealth in Switzerland (see Figure B1)—this is an issue of utmost importance for tax policy.

6 Conclusion

This paper provides evidence on the effectiveness of the introduction of the automatic exchange of information in enhancing tax compliance. Exploiting policy variation generated by the Swiss tax amnesty and using rich administrative tax data, I present a set of new results.

First, I document an economically large compliance response at the macro level. As a result of the introduction of AEOI, around 35.2 billion Swiss francs—that is more than 5% of GDP—in hidden assets have been uncovered in Switzerland. That the AEOI has led so many tax evaders—around 2% of all taxpayers—to become more compliant with their tax obligations is likely due to the fact that the baseline level of tax enforcement without third-party reporting was very low. In this sense, the Swiss experience may be more revealing for developing economies, which are generally characterized by low levels of tax enforcement, than for developed countries, which already had comprehensive (domestic) third-party reporting systems in place.

Second, at the micro level, I find that these behavioral compliance responses persist over time. Once an evader participates in the tax amnesty, that is, he or she becomes more compliant, reported taxable wealth increases by an average of more than 50% and remains persistently at this higher level relative to taxpayers with similar ex-ante characteristics. While I find heterogeneity in the magnitude of this behavioral response along the wealth distribution, there is scarcely any heterogeneity in the persistence of these effects. This implies that there is little to no substitution between illegal tax evasion and legal avoidance for all kind of tax evaders forced into the tax amnesty.

Third, I show that amnesty wealth—likely also “true” tax evasion—is more equally distributed in Switzerland than in other European economies. Given the absence of third-party reporting prior to AEOI and the fact that Swiss banking secrecy remains in place for domestic taxpayers to this day, this may not be too surprising. Moreover, while the AEOI has been able to significantly raise tax compliance on average in Switzerland, the evidence presented in Section 5 casts doubt on the effectiveness of the AEOI in enhancing tax compliance at the (very) top of the wealth distribution. Consequently future research in this area should aim to gain a deeper understanding of the extent and, in particular, the ways by which wealthy tax evaders are able to circumvent the CRS. This, in turn, may help to further develop the CRS and thus enhance it in the fight against international tax evasion.

An open but policy relevant question which cannot be answered with the data used in this paper is the quantification of the extent and distribution of domestic tax evasion in Switzerland. This will be an important (first) step towards a comprehensive cost-benefit analysis of domestic banking secrecy. In particular, studying the welfare consequences of Swiss banking secrecy seems to be a fruitful avenue for future research.

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Appendix

The Compliance Effects of the Automatic Exchange of Information:
Evidence from the Swiss Tax Amnesty

Enea Baselgia

June 13, 2023

A Data Appendix – Aggregate data on the Swiss amnesty

This appendix provides a detailed description of the aggregate cantonal data on voluntary self-disclosures which I collected from the Swiss cantons. To date, this represents the most comprehensive data collection on the Swiss tax amnesty at the national level. However, both the scope and quality of this data is limited. Below I describe the necessary imputations that were performed to make these data analyzable.

Given the absence of any obligation by the federal government to collect such data (see Section 3.1), the information provided to me by cantons varies in quality, level of detail and is partly based on different definitions. Certain cantons, particularly low-population cantons, do not themselves retain an overview of the aggregate data from voluntary self-disclosures made under the amnesty, while some other cantons were able to provide only a subset of the requested data.⁶⁷

I requested annual data on three outcomes from the cantons for the period 2010–2020: (i) the number of voluntary self-disclosures; (ii) the aggregate amount of wealth disclosed; (iii) and the total of back-taxes collected. Table A1 summarizes data availability by canton. A zero implies that no data are available for the indicated outcome, while a one means that data is available for all years from 2010–2020. So, any number between 0 and 1 gives the fraction of years for which data—albeit of varying quality—is available. While I was able to obtain the necessary data for most (populous) cantons, the lack of data for the canton of Vaud in particular—and to a lesser extent for the canton of Zug—is an obvious limitation.⁶⁸

The nature of the data and the fact that data is not available for some cantons requires imputing certain figures in order to obtain a national number of voluntary self-disclosures and previously concealed wealth. Consequently, the imputed data and the estimates based on this data should not be taken at face value. Rather, the goal is to provide a reasonable approximation of the number of disclosures, total amount of hidden wealth disclosed, and the back-taxes collected at the national level—something that is so far not available. Also, the data presented here is, to my knowledge, the most detailed data collection on the Swiss amnesty and will be made available to other researchers upon request. It should be noted, however, that in light of the limited data quality for some cantons, one should refrain from conducting cross-canton analysis, or at least proceed very cautiously.

To form a cantonal panel data set I perform different imputations—which I believe are reasonable, but to some extent arbitrary given the nature of the data. Below, I describe only the principal adjustments made to the raw data which were common across several observations. For more detailed explanations, I refer the interested reader to the

⁶⁷Considering the scope of wealth disclosed and the amount of back-taxes collected (see Table B2), it is rather surprising that certain cantons do not maintain any overview themselves.

⁶⁸Despite repeated requests, both cantons were not willing or able to provide me with the requested data.

commented code that converts the raw data into the final aggregated cantonal panel data set.⁶⁹ This allows other researchers to replicate the analysis or perform other adjustments to the raw data for their own research purposes if they wish to use this data.

It should be noted that the imputations performed (as described below) are conservative, so the estimates based on these aggregate data, such as shown in Figure 1, should be considered lower bounds. Table B2 provides summary statistics of the final cantonal panel data set for the full period 2010–2020.

Including versus excluding simplified inheritance after-taxation cases

The Swiss tax amnesty has introduced a second procedure alongside “ordinary” voluntary self-disclosures in order to regularize evaded assets: simplified inheritance after-taxation (see Section 2.3). This procedure allows heirs who inherit undeclared assets—but who were not themselves involved in the evasion—to benefit from a simplified procedure in which back-taxes owed are significantly reduced if they actively and fully cooperate with the tax authorities. Specifically, back-taxes and interest are only claimed for the last *three* tax periods prior to the year of the decedent’s death, as opposed to the last *ten* years as is the case with an ordinary voluntary self-disclosure.⁷⁰

For some cantons only ordinary cases are recorded, in other cantons ordinary and simplified inheritance after-taxation (SIT) cases are reported separately, but in most cantons they are only recorded jointly, so one cannot distinguish between them. When the data allow, I *excluded* SIT cases for two reasons.⁷¹ First, the main interest of the paper is on the amnesty participation of tax evaders (and not of heirs of tax evaders). Second, this is the more conservative approach than imputing the SIT cases for cantons for which this information is not available. Column 3 of Table A1 shows in which cantons SIT cases are included and in which they are not. Importantly, however, these SIT cases are not expected to drive the results, as they are significantly rarer compared to ordinary amnesty cases (e.g., in the canton of Bern, for which I have micro data, the number of ordinary disclosures between 2010 and 2020 is 10’939 compared to only 3’203 SIT cases; see Figure 2) and on average generally reveal somewhat less hidden assets (Figure B3).

Filed versus processed cases

The introduction of the automatic exchange of information (AEOI) resulted in a very substantial increase in the number of amnesty cases filed in 2017 and 2018 (see Section 4.2). As a result of this surge, cantonal authorities were unable to process all cases in

⁶⁹Both raw data and commented code (that converts them into the final panel data set) are made available for scientific purposes upon request: enea.baselgia@unisg.ch.

⁷⁰See <https://www.efd.admin.ch/efd/de/home/steuern/steuern-national/straflose-selbstanzeige-und-vereinfachte-erben-nachbesteuerung.html>

⁷¹Whether or not to include these SIT cases is ultimately a rather arbitrary decision.

the years—particularly in 2017 and 2018—in which the voluntary disclosures were made. The data provided by some cantons are therefore likely to reflect a time lag, because cantons generally only record those cases in their statistics that they have already fully terminated. Indeed, in some cantons (e.g., ZH; LU; BL) where we know both the number of cases filed and the number of cases settled per year, there is a clear difference between the two time series. In Zurich, for instance, 6'200 cases were filed in 2017, but only 3'800 were settled. In contrast, in 2019, 3'400 cases were terminated while only 2'350 cases were filed. For cantons (e.g. ZH; LU; BL) where we can distinguish between filed and settled cases, we use the former figure, as this is ultimately the one of interest. For these cantons, in order to obtain time series that are as consistent as possible, I also adjust the values of disclosed wealth and back-taxes collected to the number of cases filed. For most cantons, however, I cannot distinguish between filed and processed cases, so it is impossible to fully account for this potential time lag in the aggregate cantonal data. In Section 4.1.1, I provide a more thorough discussion on this issue (see also the corresponding evidence presented in Figure B2).

Accumulated versus effectively disclosed wealth

Certain cantons (LU; UR; GL; BS; NE) do not report *effectively* disclosed hidden wealth in their aggregate statistics, but rather *accumulated* wealth over all back-taxation periods considered. This is a critical data issue that needs to be accounted for.

To ease understanding, consider the following example. A taxpayer participates in the Swiss tax amnesty and declares previously hidden assets worth 100'000 Swiss francs to his or her cantonal tax authority. So what we want in this situation—and what most cantonal tax authorities actually do—is to record 100'000 Swiss francs in the aggregate statistic (the true amount of wealth that has been disclosed).

However, some cantons (LU; UR; GL; BS; NE) have a different way of recording, which leads to a much higher (accumulated) and wrong value of hidden wealth disclosed. This occurs because when processing an amnesty case, the tax authorities will re-examine (up to) the last *ten* tax years filed. If the taxpayer has consistently evaded wealth of 100'000 Swiss francs throughout the last *ten* tax years, the cumulative disclosed value of hidden wealth is simply 1 million Swiss francs (*10 times 100k*). And this is what these cantons recorded in the aggregate tax statistic they provided me with.

Consequently, to determine the actual amount of effectively disclosed wealth per year for these cantons, one has to divide total accumulated disclosed wealth by the (average) number of back-tax years considered.⁷² In the canton of Bern, for which I have access to micro data, the average number of back-tax years considered in ordinary amnesty cases is

⁷²This holds true under the mild assumption that evaded wealth has been constant over time.

just below 7.5. The only other canton for which I have information on both effective and accumulated wealth per year is the canton of Zurich. Using this information and dividing accumulated assets by actual disclosed wealth, the average number of back-tax years is 7.06 (for all single years this number is between 6 and 8). Thus, for all cantons that report only accumulated wealth, I divide the reported value by 7 to obtain an estimate of effectively disclosed wealth.⁷³

Imputations based on own cantonal information

As shown in Table A1, for several cantons the data for some variables is available for different time periods. Whenever possible, the imputations are based on average values of the canton for which the data is to be imputed. For the sake of concreteness, consider, for instance, the canton of Schwyz. For the canton of Schwyz, all information of interest is available, except for the value of disclosed wealth and total back-taxes collected for the tax year *2010*. So, I impute these two missing data points by multiplying the corresponding per-case averages (for the 2011–2020 period) by the number of voluntary disclosures for 2010. Similar imputations are performed for other cantons and are detailed in the commented code that generates the final data set.

Imputations based on other cantons

As indicated in Table A1, for the cantons AI, AR, SH, VD, and ZG cantonal tax authorities did not provide me with any data on the tax amnesty. For the aggregate evolution of the Swiss tax amnesty, the missing data from the cantons AI, AR, and SH should hardly matter, since together these three cantons account for only 1.8% of the total Swiss population (see Table B1). However, as described above, the missing data for the canton of Vaud (VD) in particular, but also for the canton of Zug (ZG), are a more severe data limitation. In order to nevertheless arrive at a national number of total hidden wealth disclosed and back-taxes collected, the missing values for these cantons are imputed by multiplying the number of ordinary amnesty participants in a year by the corresponding averages of all other cantons in that year. With respect to this imputations, there are two things to be noted.

First, using other cantons to impute the missing values obviously affects the quality of the final cross-canton panel data set. Consequently, performing any panel analysis based on this dataset can potentially be subject to (severe) measurement error. Therefore, caution should be exercised when performing such analyses. Second, it should be noted that this imputation is likely to result in a lower bound, since for the canton of Vaud

⁷³As a precaution, I have inquired with tax officials in the cantons of Lucerne and Basel-Stadt whether they consider this approximation appropriate, which they do. In fact, the canton BS also uses this average of 7 back-tax years for its internal evaluations.

in particular (also for AI and AR; but this should not matter) I apply the number of disclosures provided by the FTA to multiply the averages calculated on the basis of the other cantons. Yet, the number of cases recorded by the FTA is likely to be significantly too low (see columns 2 and 3 in Table B2 and the discussion in Section 4.1.1), resulting in a lower bound estimate of disclosed wealth and back-taxes paid.

Table A1: Availability of cantonal amnesty data, 2010–2020

canton			share of years (2010–2020) for which data is available		
no.	name	inc. SIT	amnesty participants	wealth disclosed	back-taxes
1	ZH	No	1.00	1.00	1.00
2	BE	No	1.00	1.00	1.00
3	LU	Yes	1.00	1.00	1.00
4	UR	Yes	1.00	0.36	0.36
5	SZ	No	1.00	0.91	0.91
6	OW	No	1.00	0.00	1.00
7	NW	Yes	1.00	0.55	1.00
8	GL	No	1.00	1.00	1.00
9	ZG	Yes	1.00	0.00	0.00
10	FR	Yes	1.00	1.00	1.00
11	SO	Yes	1.00	0.91	0.00
12	BS	Yes	0.82	0.55	0.82
13	BL	Yes	1.00	0.82	0.00
14	SH	Yes	1.00	0.00	0.00
15	AR	No	0.00	0.00	0.00
16	AI	No	0.00	0.00	0.00
17	SG	No	1.00	1.00	1.00
18	GR	Yes	1.00	1.00	1.00
19	AG	Yes	1.00	1.00	1.00
20	TG	No	1.00	1.00	1.00
21	TI	No	1.00	1.00	1.00
22	VD	No	0.00	0.00	0.00
23	VS	No	1.00	1.00	0.00
24	NE	Yes	1.00	1.00	1.00
25	GE	Yes	1.00	0.82	1.00
26	JU	Yes	1.00	1.00	1.00
CH			0.88	0.69	0.66

Note: The coding of the cantons follows the standard numbering of the Swiss cantons. Column 3 reports whether the data obtained by the cantons include simplified inheritance after-taxation (SIT) cases. Columns 4-6 show the fraction of years for which data is available per main variable of interest. A zero implies that no data are available for the indicated variable, while one means that data is available for all years from 2010–2020. So, any number between 0 and 1 gives the simple fraction of years for which data is available. The percentages for Switzerland are simple averages (and not population or gdp weighted quantities).

In summary, the imputations performed to obtain the final cantonal panel data set on Swiss amnesty for the period 2010-2020 followed a rather rough but therefore also transparent procedure. Of course, the cantonal estimates are subject to revision once better data becomes available. Also, I make this raw data available for scientific purposes

so that other researchers can perform different imputations if they wish. That being said, I believe that the data presented in this appendix represent an important step forward. They allow for the first transparent and consistent quantification of the total amount of hidden assets revealed under the Swiss amnesty and thus represent an significant contribution to the evaluation of this large-scale policy reform.

B Additional results

B.1 Additional tables

Table B1: Cross cantonal comparison: population, wealth, and income in 2015

canton			population			taxable wealth (p.c. in 2020-CHF)	GDP (p.c. in 2020-CHF)
no.	name	abbrv.	total (in thsnd)	share in total population			
				foreigners	over 65-year-old		
1	Zürich	ZH	1'466	0.26	0.17	268'500	99'289
2	Bern	BE	1'017	0.15	0.20	165'858	77'686
3	Luzern	LU	399	0.18	0.17	208'358	66'469
4	Uri	UR	36	0.11	0.19	184'071	52'738
5	Schwyz	SZ	154	0.20	0.17	723'229	60'425
6	Obwalden	OW	37	0.14	0.17	327'268	65'683
7	Nidwalden	NW	42	0.14	0.19	681'884	75'411
8	Glarus	GL	40	0.23	0.19	189'362	68'809
9	Zug	ZG	122	0.27	0.16	495'570	158'601
10	Fribourg	FR	307	0.22	0.15	99'755	59'775
11	Solothurn	SO	266	0.21	0.19	102'381	66'746
12	Basel-Stadt	BS	192	0.35	0.20	294'251	171'941
13	Basel-Landschaft	BL	283	0.22	0.21	156'636	72'244
14	Schaffhausen	SH	80	0.25	0.21	159'827	85'190
15	Appenzell A.Rh.	AR	55	0.16	0.19	259'423	57'723
16	Appenzell I.Rh.	AI	16	0.11	0.18	316'105	62'527
17	St. Gallen	SG	499	0.24	0.17	208'242	73'976
18	Graubünden	GR	197	0.18	0.20	308'882	71'738
19	Aargau	AG	654	0.24	0.17	176'452	64'050
20	Thurgau	TG	267	0.24	0.17	206'304	60'451
21	Ticino	TI	352	0.28	0.22	179'581	84'726
22	Vaud	VD	773	0.34	0.16	186'280	69'730
23	Valais	VS	336	0.23	0.19	152'392	54'563
24	Neuchâtel	NE	178	0.26	0.18	108'035	87'395
25	Genève	GE	485	0.41	0.17	247'200	103'919
26	Jura	JU	73	0.14	0.20	101'428	64'525
Switzerland			8'327	0.25	0.18	216'590	80'751

Note: This table shows total population (in 1'000) as well as the cantonal share of foreign nationals and individuals over 65 years of age for all Swiss cantons for the year 2015. The last two columns of the table display real taxable wealth and real gdp (both in per capita terms) for 2015, respectively. The *no.* of the cantons follows the standard numbering of the Swiss cantons.

Table B2: The Swiss tax amnesty by canton, 2010–2020

canton	amnesty participants		wealth disclosed (in mil. 2020-CHF)			back-taxes
	FTA	own	total	(in % of GDP)	(in % of wealth)	(in mil. 2020-CHF)
ZH	13'975	27'300	12'156	0.08	0.03	996
BE	11'033	10'939	3'218	0.04	0.02	249
LU	5'013	6'513	2'552	0.10	0.03	171
UR	307	424	85	0.04	0.01	4
SZ	2'340	3'089	1'356	0.15	0.01	46
OW	364	646	145	0.06	0.01	11
NW	711	748	692	0.24	0.02	30
GL	887	840	185	0.07	0.02	11
ZG	1'502	1'535	613	0.03	0.01	52
FR	2'593	3'328	1'509	0.08	0.05	119
SO	3'040	3'969	1'012	0.06	0.04	84
BS	3'498	4'247	1'058	0.03	0.02	86
BL	4'101	6'209	1'045	0.05	0.02	189
SH	741	920	352	0.05	0.03	30
AR	386	386	141	0.05	0.01	12
AI	175	175	70	0.07	0.01	6
SG	4'756	6'004	2'949	0.08	0.03	206
GR	3'229	3'808	1'316	0.09	0.02	84
AG	3'066	6'124	2'000	0.05	0.02	174
TG	1'971	1'835	1'066	0.07	0.02	67
TI	2'059	10'250	9'707	0.33	0.14	871
VD	22'587	22'587	7'944	0.14	0.05	635
VS	3'608	2'639	2'281	0.12	0.04	134
NE	1'774	1'814	895	0.06	0.05	172
GE	12'726	25'939	11'343	0.22	0.08	1'107
JU	1'511	3'390	679	0.15	0.10	63
CH	107'953	155'658	66'369	0.10	0.03	5'609

Note: This table shows the total number of (i) amnesty participants, (ii) disclosed wealth, and (iii) back-taxes collected by canton for the period 2010–2020. Columns 2 and 3 report the number of voluntary disclosures recorded by the FTA and my own data collection, respectively. Column 4 displays aggregate wealth disclosed under the amnesty (2010–2020) by canton in millions of 2020 Swiss francs. Columns 5 and 6 present this figure as a share of 2020 GDP or of total 2019 taxable wealth in the respective canton. The last column shows total back taxes (incl. federal, cantonal and municipal taxes) collected by the Swiss tax amnesty.

B.2 Additional figures

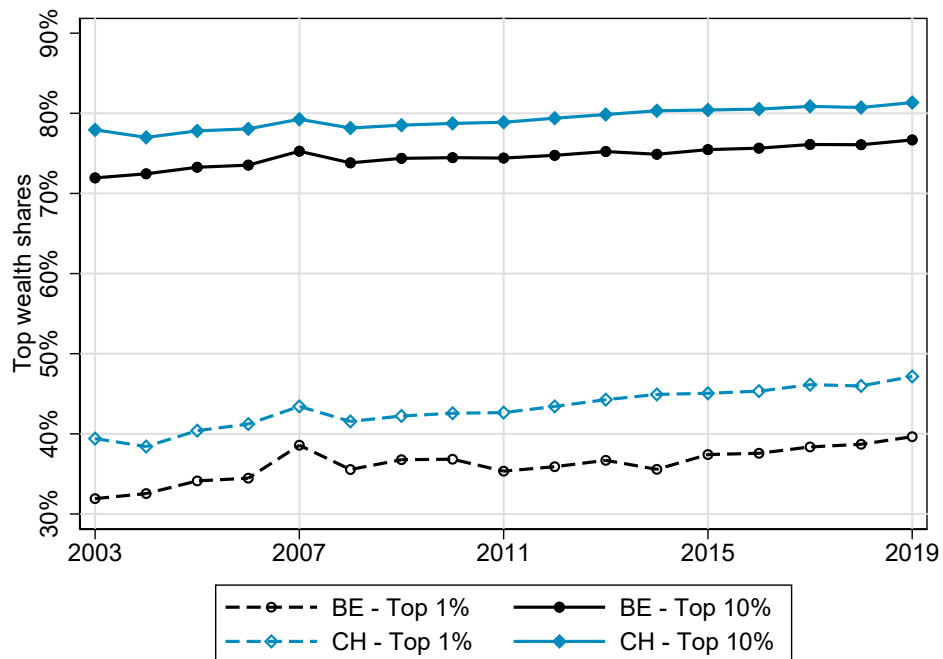
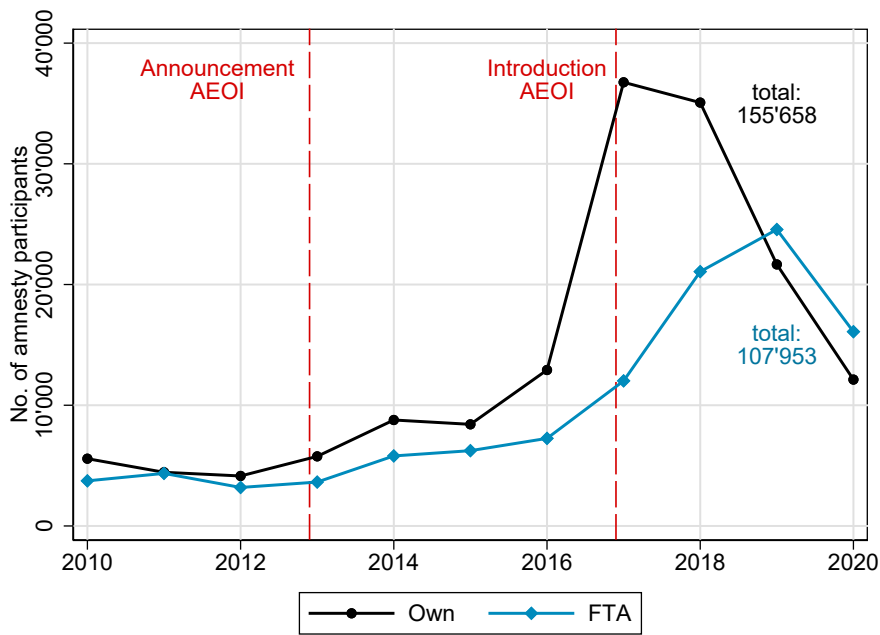
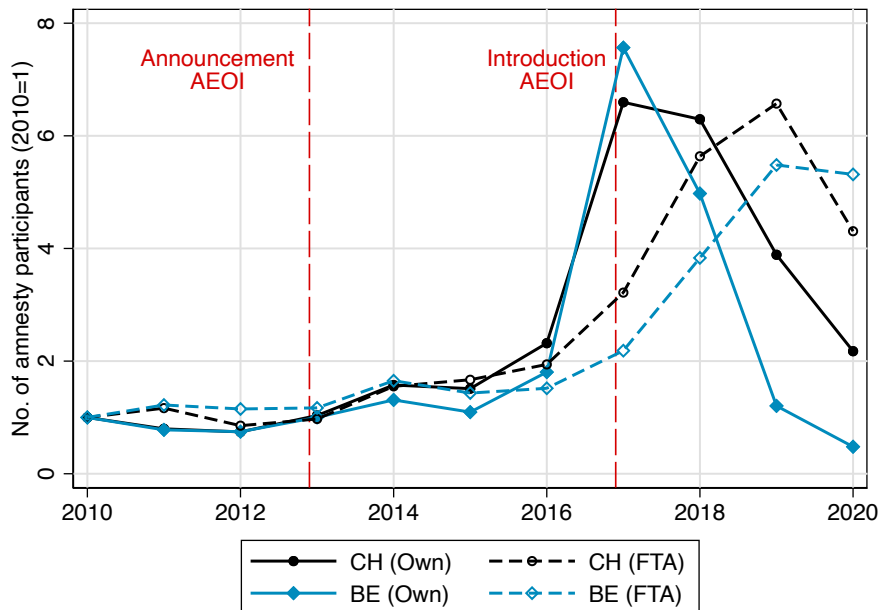


Figure B1: Top wealth shares for Switzerland and the canton Bern, 2003–2019

Note: This figure shows wealth shares of the top 1% and the top 10% in the period 2003–2019 for Switzerland (in blue) and for Bern (in black), respectively. Methodologically, these estimates are obtained by Pareto interpolation of tabulated wealth tax statistics as described in Föllmi and Martínez (2017). The data source is described in Section 3.3.



(a) Amnesty participants at the national level



(b) Time patterns in amnesty participation

Figure B2: Comparing the number of amnesty participants, 2010–2020

Note: This figure provides a detailed comparison of the number of amnesty participants from two different data sources: my *own* data collection versus the official data by the *FTA*. Panel (a) shows the total number of amnesty participants from 2010 to 2020 for Switzerland. The black line with circles represents the number of amnesty cases from my own data collection, which is described in detail in Section 3.1 and Appendix A. The blue line with diamonds is the respective official number of amnesty cases as published by the *FTA*. Panel (b) compares the two data sources by indexing all series to 1 for the year 2010. The black line with circles are the number of amnesty participants at the national level (as depicted in Panel (a)). Here the solid line with filled dots shows my data and the dashed line with hollow dots indicates the data from the *FTA*. Analogously, the blue line with the diamonds represents the number of amnesty participants in the canton of Bern (as shown in Fig. 2). The main takeaway from this figure is that the data provided by the *FTA*—both for the canton of Bern and for aggregate Switzerland—show a time delayed pattern of the number of voluntary disclosures filed.

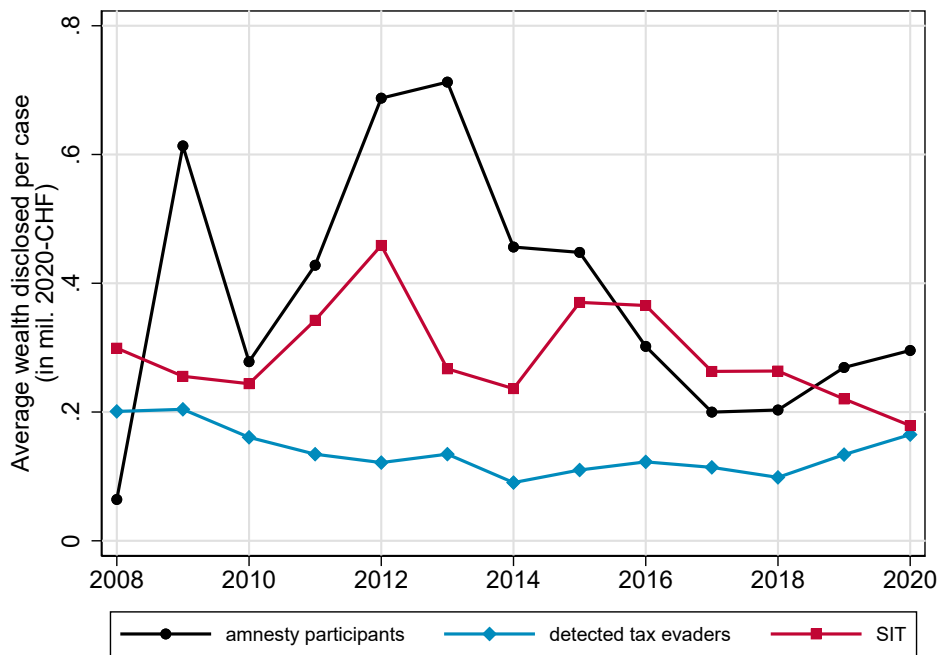


Figure B3: Average wealth disclosed per case, 2008–2020

Note: This figure shows the average amount of wealth disclosed by the three different categories of evasion cases from 2008 to 2020. The black line with circles corresponds to ordinary voluntary self-disclosures under the amnesty. The blue line with the diamonds indicate evasion cases that were discovered by the cantonal tax authorities themselves. The red line with squares shows cases of simplified inheritance after-taxation (SIT).

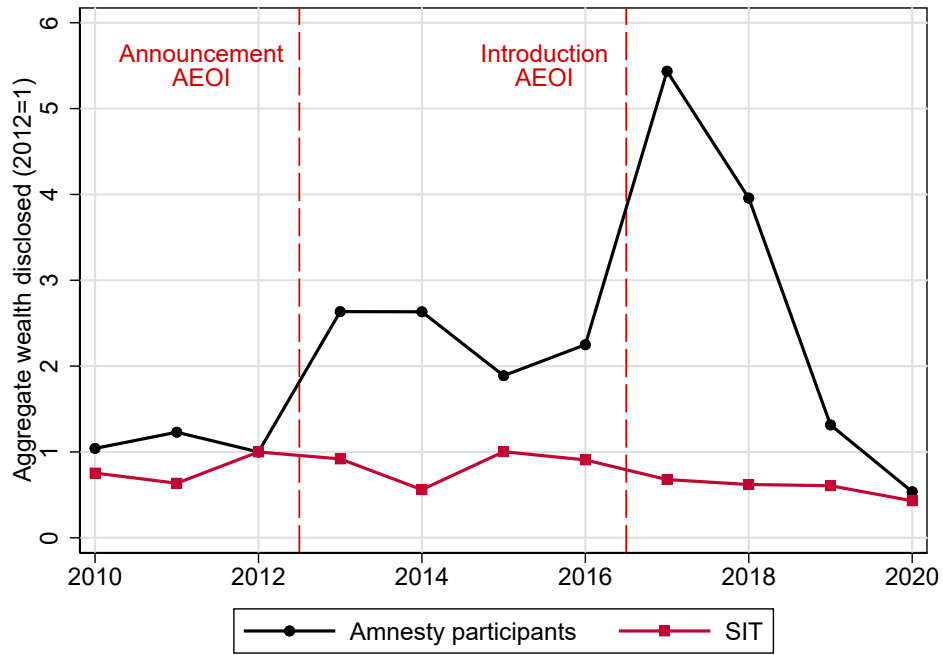


Figure B4: Windsorized wealth disclosed by amnesty participants and SIT cases, 2010–2020

Note: This figure shows indexed (2012=1) aggregate wealth disclosed for amnesty participants and SIT cases, respectively. Thus, this figure corresponds to Panel (b) of Figure 4, except that the data in this figure are windsorized at the 99th percentile (for detailed explanations see Footnote 49).

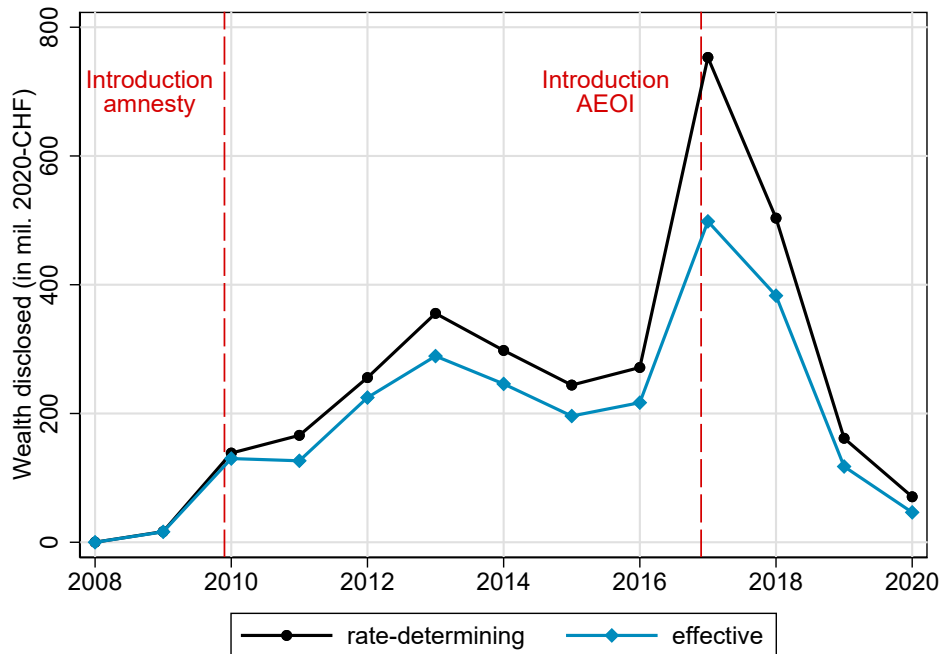
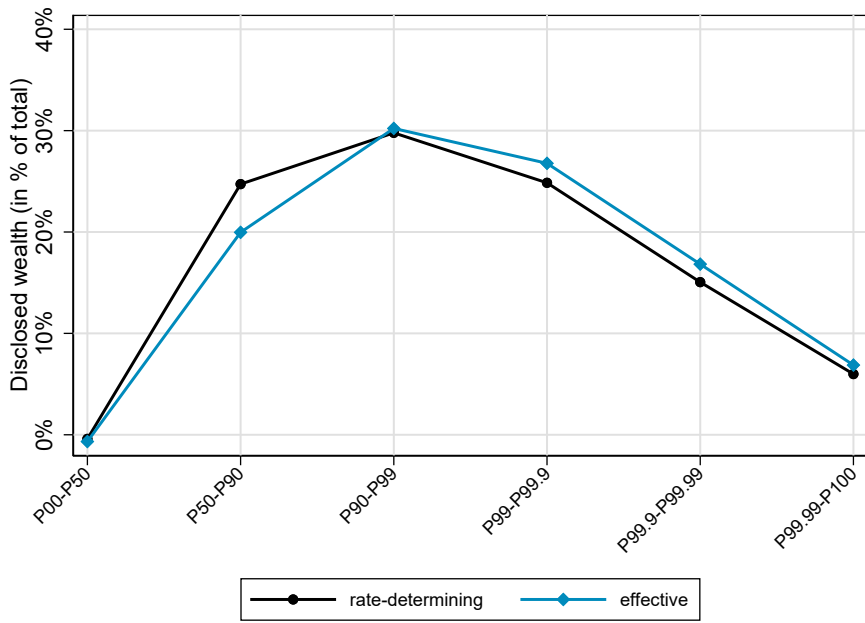
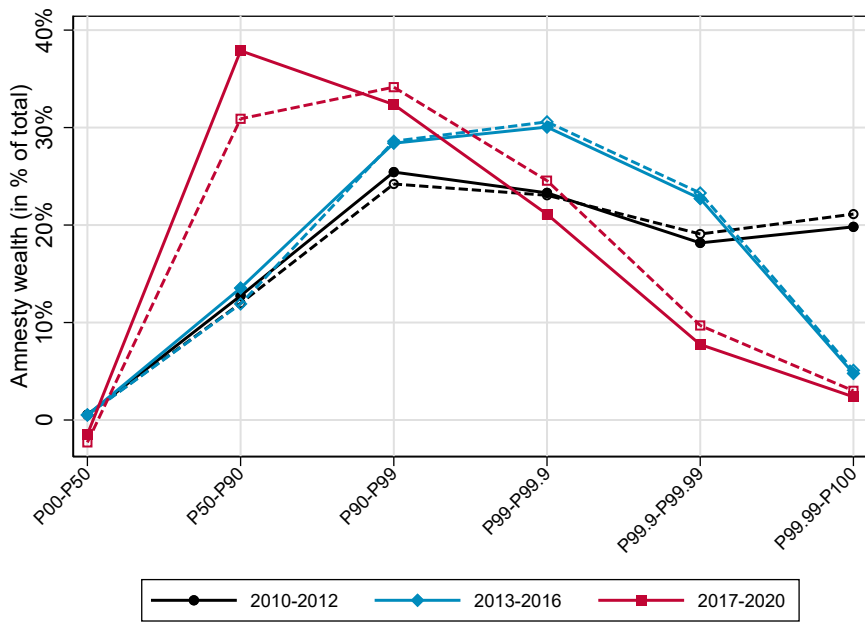


Figure B5: Rate-determining vs. effective taxable wealth disclosed, 2010–2020

Note: This figure shows rate-determining (black line with circles) and effective (blue line with diamonds) taxable wealth disclosed from 2010–2020. The key difference is that real estate (but also business operations and permanent establishment) owned outside the canton of residence (Bern) is included in the rate-determining series, but not in the effective series.



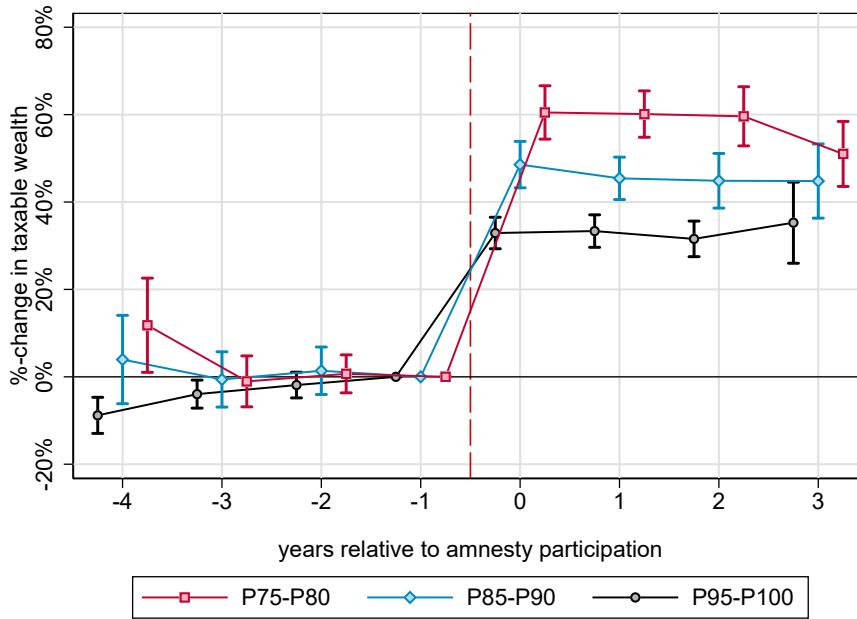
(a) Full observation period, 2010–2020



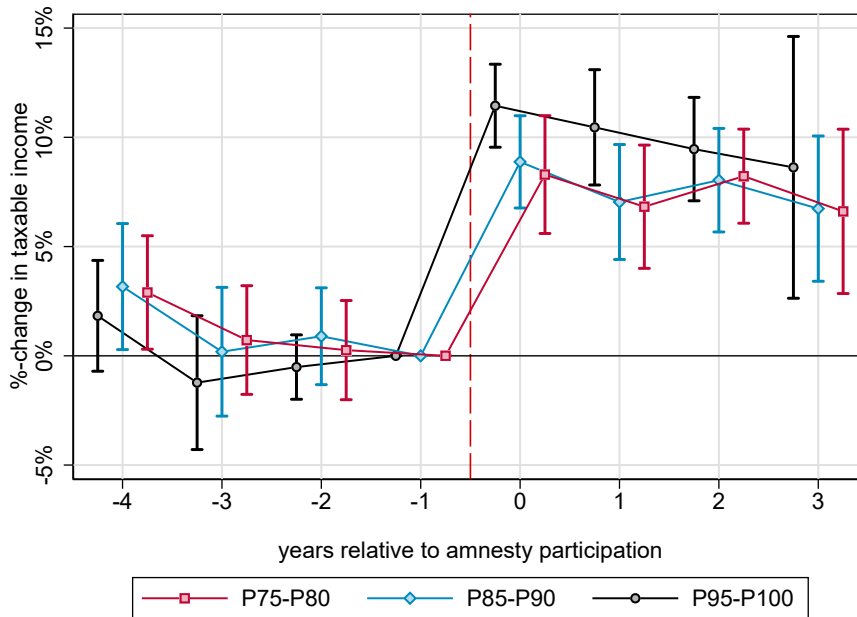
(b) Selected observation periods w.r.t the introduction of the AEOI

Figure B6: Distribution of rate-determining vs. effective taxable wealth disclosed

Note: This figure shows the distributions of rate-determining and effective taxable wealth disclosed under the amnesty. The key difference between the two is that real estate (but also business operations and permanent establishment) owned outside the canton of residence (Bern) is included in the rate-determining taxable wealth, but not in the effective taxable wealth. In Panel (a) rate-determining taxable wealth is depicted by a black line with circles and effective taxable wealth by a blue line with diamonds. Panel (b) presents the same analysis, but for distinct time periods, as indicated in the figure legend. Here, the solid lines show rate-determining taxable wealth, while the dashed lines represent effective taxable wealth.



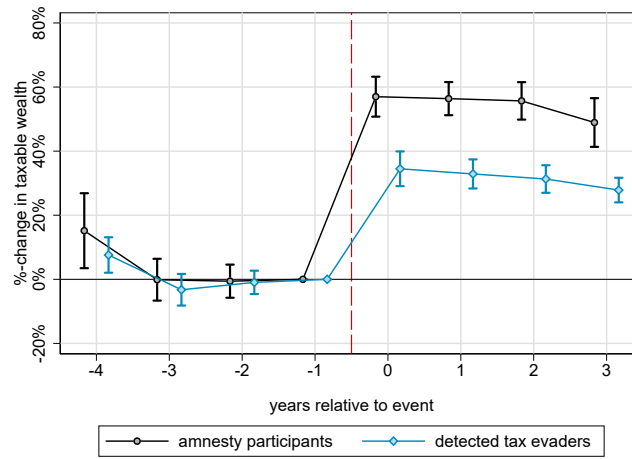
(a) Reported taxable wealth



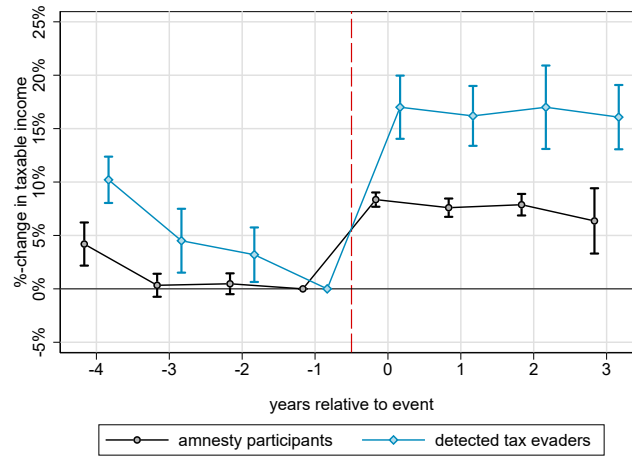
(b) Reported taxable income

Figure B7: Heterogeneous tax compliance response for amnesty participants

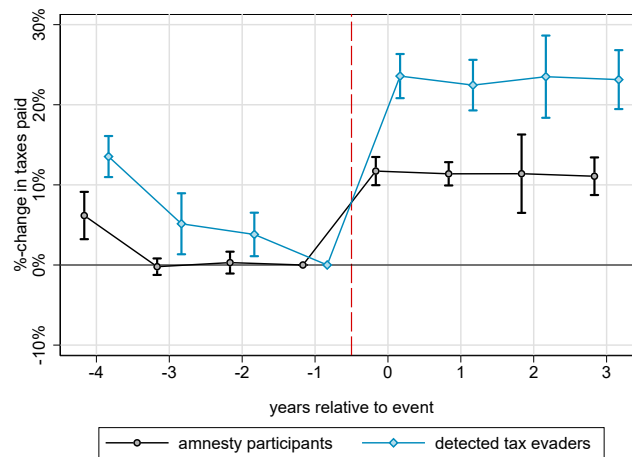
Note: This figure illustrates heterogeneity in compliance behavior among amnesty participants coming from different parts of the wealth distribution. Panel (a) shows the estimation result for reported taxable wealth for taxpayers from three distinct parts of the wealth distribution: P75-P80, P85-P90, P95-P100 (indicates the range of specific percentiles covered; i.e., P95-P100 covers the top 5% of the distribution). Panel (b) of illustrates the same analysis, but for taxable income, and again shows heterogeneity in terms of the wealth distribution. The corresponding average responses are shown in Figure 5.



(a) Reported taxable wealth



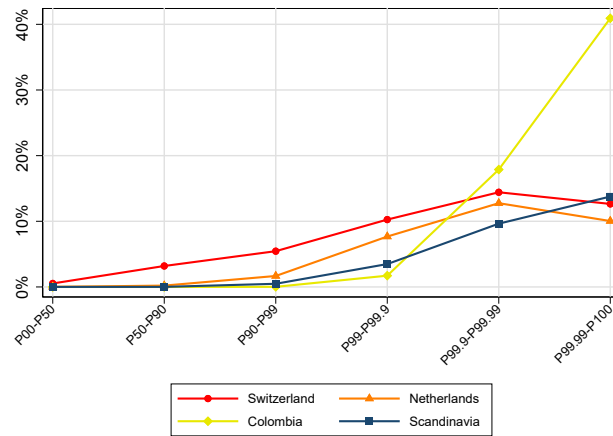
(b) Reported taxable income



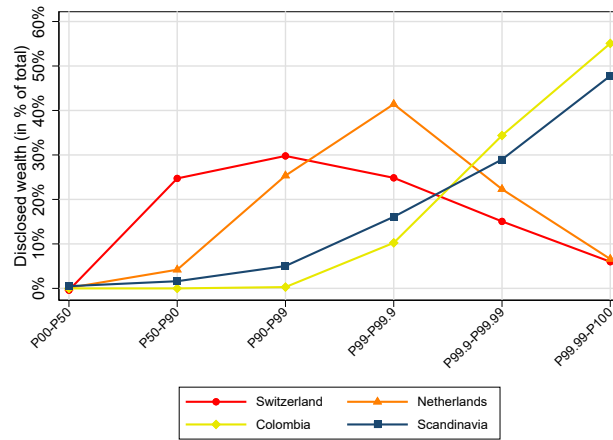
(c) Total personal taxes paid.

Figure B8: Tax compliance response for amnesty participants and detected tax evaders

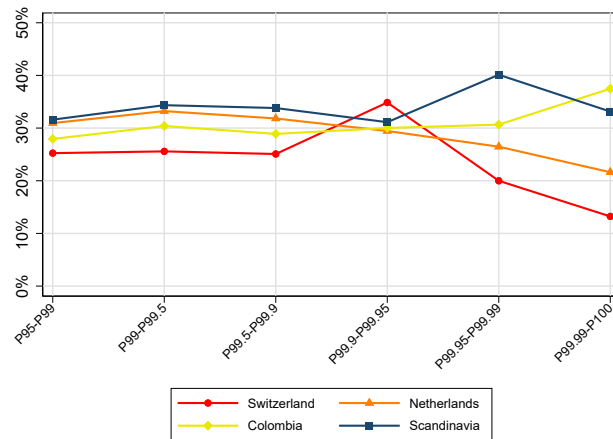
Note: This figure shows the results of estimating Equation 1 for amnesty participants (black line with dots) and detected tax evaders (blue line with diamonds). Panel (a) reports the estimation result for reported taxable wealth, Panel (b) for reported taxable income, and Panel (c) for total personal taxes paid. The point estimates are reported with their 95% confidence intervals based on two-way clustered standard errors by individual and year.



(a) Probability to participate in the amnesty



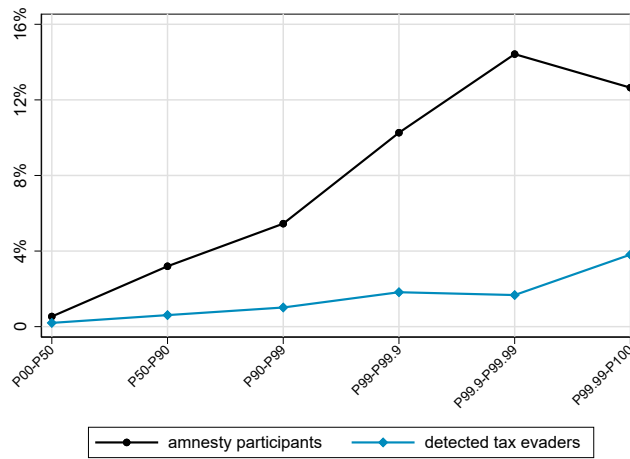
(b) Share of amnesty wealth



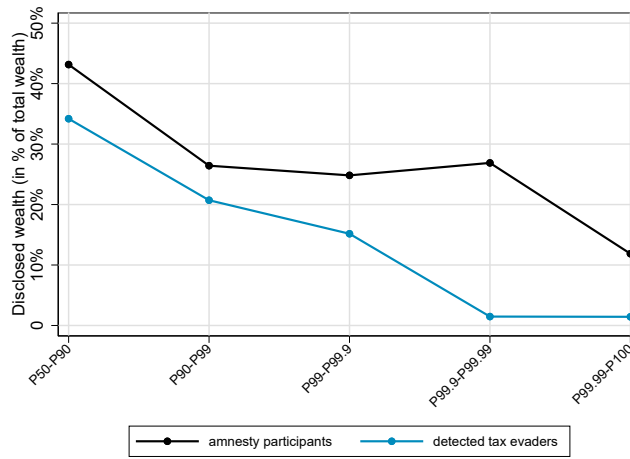
(c) Amnesty wealth as share of total taxable wealth

Figure B9: The distribution of amnesty wealth in international comparison

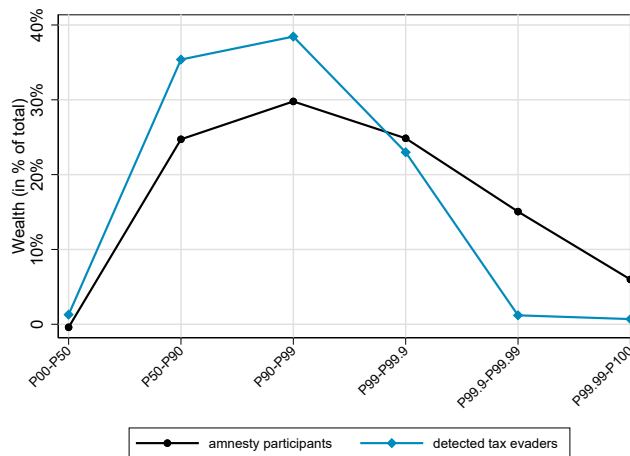
Note: This figure shows the distributional patterns of amnesty wealth in Switzerland, the Netherlands, Scandinavia, and Colombia. Panel (a) indicates the probability of amnesty participation for taxpayers in different parts of the wealth distribution (i.e., the extensive margin response). Panel (b) reports the fraction of total amnesty wealth held by the different wealth groups. Panel (c) shows the the share of hidden wealth disclosed relative to total taxable wealth conditional on amnesty participation (i.e., the intensive margin response). Note that the international data for the intensive margin response are restricted to the top 5% of the wealth distribution. Figure B10 presents the intensive margin of tax evasion for Switzerland for a wider range of the wealth distribution. The data for the Netherlands are taken from Leenders et al. (2023), from Alstadsæter et al. (2019) for Scandinavia, and from Londoño-Vélez and Ávila-Mahecha (2021) for Colombia.



(a) Probability of amnesty participation versus getting caught



(b) Hidden wealth as share of total taxable wealth



(c) Share of hidden wealth

Figure B10: The distribution of evaded wealth: amnesty participants vs. detected tax evaders

Note: This figure shows the distributional patterns of hidden wealth by amnesty participants and detected tax evaders, respectively. For both types of tax evaders, the data refer to the period 2010–2020. Panel (a) reports the probability of amnesty participation or getting caught for different wealth groups (i.e., the extensive margin response). Panel (b) shows the the share of hidden wealth disclosed relative to total taxable wealth conditional on amnesty participation or getting caught for different wealth groups (i.e., the intensive margin response). Finally, Panel (c) reports the fraction of hidden wealth held by the different wealth groups.

B.3 Is the Swiss withholding tax an effective tax compliance instrument?

The primary purpose of the (Swiss) withholding tax is to limit tax evasion. To this end, a withholding tax of 35% is levied at source on all *Swiss* capital income (see Section 2.2). Only if the capital earnings (and the related financial assets) are properly declared in the tax return (and thus taxed at ordinary rates), the 35% withholding tax will be refunded, otherwise it will be definitively incurred. Consequently, when deciding whether or not to properly declare a **marginal** Swiss franc in financial wealth W , taxpayer i faces a specific marginal financial trade-off, which can be described as follows⁷⁴:

$$W_i\tau_i^w + r_iW_i\tau_i^y = r_iW_i\tau^{WH} + p_i[2(W_i\tau_i^w + r_iW_i\tau_i^y)] \quad (2)$$

The left-hand side of Equation 2 shows the taxes due when taxpayer i , *belonging to a specific part of the wealth distribution*, decides to declare his or her marginal unit of wealth truthfully in the tax return. In this case, taxpayer i owes the marginal wealth tax τ_i^w on additionally reported wealth W_i and pays the marginal income tax τ_i^y on the capital income r_iW_i earned from that marginal wealth reported. Here, the marginal wealth tax τ_i^w , the marginal income tax τ_i^y , and the return on wealth r_i are i -specific (i.e., they all depend on how wealthy taxpayer i is).

The right-hand side of Equation 2 illustrates the situation that occurs when taxpayer i decides to hide a marginal Swiss franc in financial assets (and related income) from “ordinary” taxation. If so, taxpayer i cannot reclaim the withholding tax τ^{WH} on his or her marginal capital income r_iW_i , which means that it has definitely been incurred.⁷⁵ Moreover, in the case of tax evasion, there always exists some probability p_i —which varies along the wealth distribution (see Panel (a) of Figure B10)—that the tax authority will detect and punish that evasion. Upon detection, the standard penalty in Switzerland is 100% of the back-taxes owed. Consequently, as indicated in square brackets, the total amount owed (back-taxes + penalty) if caught is simply the regular marginal tax liability (as shown on the LHS of Equation 2) times two.⁷⁶ From the taxpayer’s perspective, the only uncertain parameter, but one that is critical to his or her decision whether or not to evade taxes, is the detection probability p_i .

Solving Equation 2 for the withholding tax, we can determine the size of $\bar{\tau}_i^{WH}$ that makes taxpayer i indifferent between properly declaring or evading an additional Swiss franc in financial wealth, i.e.:

⁷⁴Note that I here implicitly assume risk neutrality to simplify the exposition. Also, I do not consider any non-financial motives for (not) engaging in tax evasion.

⁷⁵Note that τ^{WH} is not i -specific, this is because the withholding tax is not progressive. I abstract here from the fact that withholding tax is not due on interest-bearing income below 200 Swiss francs.

⁷⁶For convenience, I omit interest on arrears here.

$$\bar{\tau}_i^{WH} = (1 - 2p_i) \left[\frac{\tau_i^w}{r_i} + \tau_i^y \right] \quad (3)$$

The intuition of the Equation 3 is straightforward. The higher either the marginal income tax rate τ_i^y or the marginal wealth tax rate τ_i^w , the greater the financial incentives for tax evasion, which consequently requires a higher withholding tax $\bar{\tau}_i^{WH}$ to prevent evasion. Conversely, the higher the probability of detection p_i , the less bite the withholding tax (i.e., the lower its rate) must have to prevent tax evasion. The reason that $\bar{\tau}_i^{WH}$ decreases with r_i is that, from a taxpayer's point of view, a wealth tax is worse when the returns on wealth r_i are very low. That is, the lower the returns on wealth, the higher the withholding tax must be to prevent (wealth) tax evasion.

Using the micro tax data of the canton of Bern (described in Section 3.2)⁷⁷, I estimate Equation 3 for individual taxpayers from the following wealth percentiles i : P20-P30; P30-P40; P40-P50; P50-P60; P60-P70; P70-P80; P80-P90; P90-P99; P99-P99.9; P99.9-P99.99; P99.99-P100.

To do so, I employ information on (i) marginal income tax rates τ_i^y , (ii) marginal wealth tax rates τ_i^w , (iii) the detection probability p_i , and (iv) on the returns of financial wealth r_i , that vary along the net wealth distribution i . In Figure B11, I show these inputs employed to estimate the size of $\bar{\tau}_i^{WH}$ using Equation 3. Below, I briefly discuss the specific inputs.

The marginal income tax rate τ_i^y is calculated by first ranking all individual taxpayers along the net wealth distribution. Next, I derive the average (rate-determining) taxable income for all the specific wealth groups (i.e., the wealth percentiles). Based on this average taxable income per wealth group, I compute the marginal tax rate based on the official statutory tax rates. The marginal tax rate shown in Panel (a) of Figure B11 includes income taxes at the municipal, cantonal and federal level.⁷⁸

The marginal wealth tax rate τ_i^w is calculated analogously. First, taxpayers are ranked based on their net wealth holdings. Second, the average (rate-determining) taxable wealth per wealth group is derived. Third, based on this average (rate-determining) taxable wealth the marginal wealth tax rate is computed.⁷⁹

The detection probability p_i is based on the results for detected tax evaders as

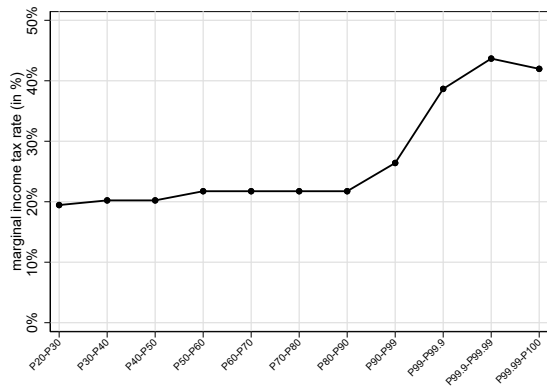
⁷⁷For computational convenience, this analysis is based only on the three tax years from 2014-2016. Except for the detection probabilities, which are based on the main analysis and cover the entire observation period 2010–2020.

⁷⁸Cantonal income tax rates are taken from the cantonal tax law (I use the rates for singles with no children), see Art. 42 par. 2: https://www.belex.sites.be.ch/app/de/texts_of_law/661.11/versions/1040. This simple tax rates are multiplied by a factor of 4.687896 (cantonal multiplier of 3.06 + average municipality multiplier over the period 2014 to 2016). The tax rates for the direct federal tax (DBST) apply in addition to the municipal and cantonal taxes and can be found here: <https://www.estv.admin.ch/estv/de/home/direkte-bundessteuer/dbst-steuertarife.html>.

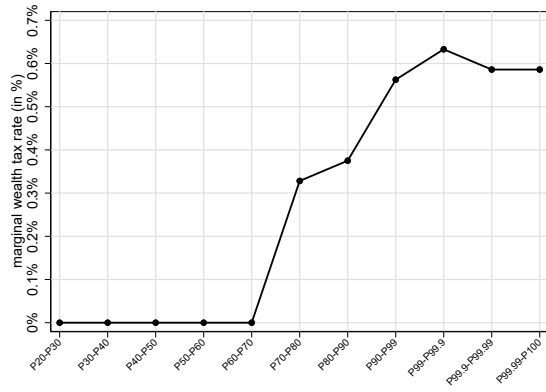
⁷⁹Cantonal wealth tax rates are again taken from the cantonal tax law, see Art. 64 par. 1: https://www.belex.sites.be.ch/app/de/texts_of_law/661.11/versions/1040. Again, this simple tax rates are multiplied by a factor of 4.687896 (cantonal multiplier of 3.06 + average municipality multiplier over the period 2014 to 2016). There is no federal wealth tax that is to be added.

presented in Panel (a) of Figure B10 (blue line with diamonds). Note that the detection probabilities given there are cumulated over 11 years. Thus, for estimating Equation 3, I simply used the annual average over the 2010-2020 period (see Panel (c) of Fig. B11).

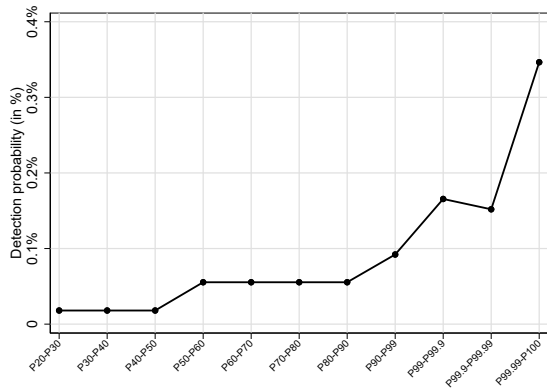
The return on financial wealth r_i is the most difficult of the parameters to obtain and is therefore subject to a certain degree of uncertainty. To estimate r_i , I proceed as follows. First, taxpayers are again ranked according to their net wealth. Second, I derive the (i) average net income from securities and (ii) the average net securities assets for each wealth group i . r_i is then simply derived by dividing (i) by (ii). The result of this estimation is depicted by the solid line in Panel (d) of Figure B11. As can be seen, this estimate yields relatively low returns (below 2% across the entire wealth distribution). The reason for this is that *capital gains* are tax-exempt in Switzerland and are thus not recorded in tax returns. Accordingly, the solid line represents a lower bound for the actual return on financial wealth. As the estimation of $\bar{\tau}_i^{WH}$ is sensitive to the level of r_i (see Equation 3), I perform a simple (and naive) robustness exercise by scaling r_i by a factor of two or three (as shown by the two dashed lines in Panel (d) of Fig. B11).



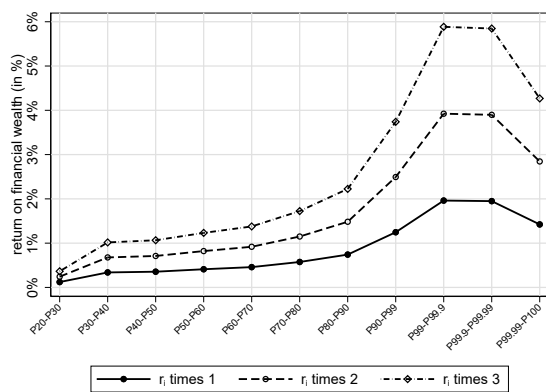
(a) marginal income tax rate τ_i^y



(b) marginal wealth tax rate τ_i^w



(c) detection probability p_i



(d) return on financial wealth r_i

Figure B11: Inputs for estimating Equation 3

Note: This figure shows the inputs used to estimate the size of $\bar{\tau}_i^{WH}$ using Equation 3. The single components are described in detail in the main text.

Finally, Figure B12 presents the main result. Specifically, it shows the evasion-preventing withholding tax rate $\bar{\tau}_i^{WH}$ along the entire wealth distribution for the three different wealth returns (as given in Panel (d) of Figure B11). The key insight from this exercise is the following. The statutory withholding tax of 35% (blue line with diamonds) is only high enough to effectively prevent tax evasion for taxpayers who are not liable for the wealth tax.⁸⁰ As soon as a taxpayer is facing the wealth tax, however—which is the case for about one third of all taxpayers in the canton of Bern—the financial benefits of evasion outweigh the associated costs. Moreover, this holds for all reasonable levels of asset return r_i . Yet, it can be noted that the higher the asset returns, the lower the incentives to evade (as can be inferred from the downward shift of the dashed lines).

In summary, this simple exercise shows that the current level of the Swiss withholding tax is not sufficient to prevent wealth tax evasion, provided that tax rates are as high as, for instance, in the canton of Bern, at least not within the top 10% of the wealth distribution, who own about three quarters of all taxable wealth (see Figure B1).

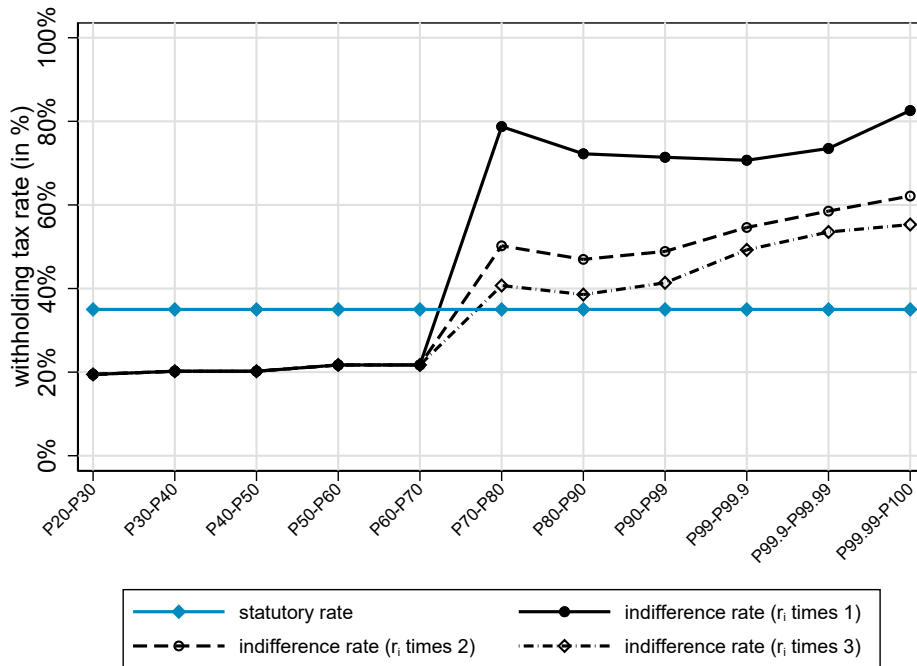


Figure B12: Evasion-preventing withholding tax rate, $\bar{\tau}_i^{WH}$

Note: This figure shows the results of estimating Equation 3 with the inputs shown in Figure B11. See the main text for details.

⁸⁰ $\bar{\tau}_i^{WH}$ crosses the statutory withholding tax rate in the wealth group P70-P80, that is, for taxpayers with positive marginal tax rates on wealth (see Panel (b) of Fig. B11).