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Tax control and corporate VAT compliance: An empirical assessment of the moderating role of tax strategy

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ABSTRACT

Tax control frameworks (TCF) of higher quality are seen by tax authorities and the OECD as a prerequisite for corporate tax compliance. However, a higher quality TCF can also enable organizations to reduce their tax burden by providing information that allows them to make the best use of opportunities within the boundaries of the tax law. We investigate the effect of TCF quality on tax compliance by looking at the tax strategy of the organization and whether the organization unintentionally or intentionally fails to comply. We focus on Value Added Tax (VAT) and test our hypotheses using a sample of large organizations, using a combination of survey data and tax audit results from the Netherlands. Our results show that a TCF of higher quality is positively associated with VAT compliance, resulting in both less unintentional and less intentional errors requiring tax adjustment. For organizations with a more conservative tax strategy, we find that the quality of the TCF does not affect the level of intentional non-compliance. For organizations with a more aggressive tax strategy, however, the level of intentional non-compliance is conditional upon the quality of the TCF, with a lower (higher) quality TCF leading to more (less) intentional non-compliance.

1. Introduction

The component of internal control that assures accuracy, timeliness, and completeness of tax returns and all other tax disclosures is known as the Tax Control Framework (TCF) (OECD, 2013). The TCF supports organizations in controlling their tax risks and includes building blocks for managing tax, such as tax strategy, tax policy, and roles and responsibilities relating to tax functions (OECD, 2016). The quality of each organization's TCF exists on a continuum. A high quality TCF is assumed to detect mistakes and possible tax risks, and thus, help organizations increase tax compliance. This assumption is central in the Organisation for Economic Co-operation and Development (OECD) documents and reports on cooperative compliance programs (OECD, 2013; 2016). Besides the role the TCF plays in such programs, many tax authorities benefit from a higher quality TCF to the extent that it helps improve the efficiency and effectiveness of their tax audits. Tax authorities and the OECD view a high quality TCF as a prerequisite for corporate tax compliance (Goslinga et al., 2019), and many tax authorities actively

advocate for large organizations (both profit and not-for-profit) to establish and/or improve their TCF.

Depending on the tax strategy, a TCF might be directed towards tax compliance, but it could also be directed towards facilitating more tax avoidance, utilizing opportunities within the boundaries of the tax law (Bauer, 2016; Gallemore & Labro, 2015). A better TCF helps tax aggressive organizations stick to the letter of the law, but perhaps not necessarily to the spirit of the law. In line with this reasoning, Blaufus et al. (2023) find that when organizations perceive increased (audit) attention from the tax authority, they do not alter their tax planning behavior but, rather, invest in the quality of their TCF to (better) prevent errors. These findings raise an important question for tax authorities: is it wise to promote high quality TCFs among large organizations? Specifically, does a high quality TCF raise tax revenues through improving tax compliance, or does it facilitate aggressive tax planning, and is the answer to these questions conditional upon the tax strategy of an organization? Our paper is aimed at answering these questions.

Important to this discussion is the distinction made in the tax

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compliance literature (e.g. James & Alley, 2002; D'Ascenzo, 2015; Siglé et al., 2022) between unintentional and intentional (non-) compliance. Unintentional non-compliance refers to unconscious violations of tax laws and regulations due to ignorance about, or lack of understanding of, tax law and regulations, or as a result of unintentional errors in the preparation of accounting information or in calculations. In this context, advocating for a better TCF is clearly beneficial for the tax authority because it prevents errors before they occur.

Intentional non-compliance ranges from outright tax evasion, which represents clear non-compliance (e.g., deliberate under-reporting of income or sales), to tax avoidance, which often involves complex tax strategies designed to exploit uncertainty in the tax code for the benefit of the taxpayer. Tax avoidance strategies can run contrary to the spirit of the law, but typically involve at least some legal justification for the position (Jallai, 2020). Large and complex organizations have greater opportunity to engage in tax avoidance due to the issues that arise from multi-state and international tax legislation, such as the treatment of intangible assets. Gallemore and Labro (2015) find that organizations with greater coordination needs arising from a dispersed geographic presence benefit more from high internal information quality. They also find that organizations with high information quality can achieve lower tax rates without altering their level of tax risk. In this context, a higher quality TCF would seem to clearly benefit the organization, but the benefits for the tax authority are less clear.

The focus of the OECD and tax authorities regarding the quality of the TCF is mainly on so-called hard controls (i.e., the more formal and explicit internal controls in an organization), as these controls will enable organizations to detect risks and errors. That is not to say that the OECD and tax authorities neglect the role of soft controls (i.e., the more informal controls that focus on organizational culture, such as the tax strategy), but the emphasis appears to be on hard rather than soft controls. Through a tax strategy, top management can communicate the moral and ethical values of the organization ('tone at the top') (OECD, 2013). Well-functioning soft controls can, thus, create an organizational environment in which intentional non-compliance is considered non-acceptable.

To examine the implications of a better TCF for tax compliance, we use a combination of survey data, and the results of value added tax (VAT) field audits performed by the Netherlands Tax Administration (NTA). We use survey data to measure the quality of the TCF, and the (self-reported) degree of tax aggressiveness to differentiate between more tax conservative and tax aggressive organizations. This last measure allows us to examine how (profit and not-for-profit) organizations characterize their approach to tax compliance. In this sense, it is a direct measure of organizations' culture around taxes.

To measure VAT (non-) compliance, we use the results from the field audits as reported by the lead tax auditors, focusing on the number of audit adjustments as well as the scaled amount of audit adjustments. We use the number of audit adjustments as a proxy for more unintentional non-compliance and the scaled amount of audit adjustments as a proxy for more intentional non-compliance. This distinction assumes that the higher the financial importance of a transaction (as measured in the scaled amount), the more likely it is that the transaction was subject to more stringent internal controls and, therefore, to more management involvement. As a result, it is also more likely that the audit adjustments concern an issue that was intentionally created by management. Contrary to this, issues concerning small adjustments are less likely to have been intentionally evaluated by management. As such, we use the number of small adjustments as a proxy for unintentional non-compliance.¹ To amplify these differences, we additionally calculate the total number of adjustments below € 10,000 (on an individual adjustment level) as a proxy for more unintentional non-compliance and the total

scaled amount of adjustments above € 10,000 as a proxy for more intentional non-compliance.

Many countries rely on a VAT, also called Goods and Services Tax, as an important source of revenue (Bergman & Nevarez, 2006; Datt et al., 2017). Like other forms of taxation, VAT can lead to various forms of non-compliance (De Mello, 2009; Schenk et al., 2015). The European Union (EU) publishes, on an annual basis, studies on the VAT GAP in the EU. These reports state that non-compliance with VAT represents more than fraud and evasion, explaining that "the VAT GAP also covers VAT lost due to, for example, (...) legal tax optimization" (European Commission et al., 2021, p. 10). VAT law provides opportunities for tax aggressive organizations to try to minimize taxes paid. Examples of such opportunities are highly dependent on specific regulations in national VAT law. Within the Dutch context, one way an organization can be aggressive in its VAT strategy is by structuring intercompany transactions in a way that maximizes VAT tax deductions. This can, for example, be done by using special purpose vehicles and sale and lease back constructions. Because VAT is subject to both unintentional and intentional non-compliance, the Dutch setting allows us to investigate the interactions between the TCF, corporate culture around taxes, and intentional and unintentional non-compliance. We assume that the organizational dynamics of VAT- and Corporate Income Tax (CIT-) compliance are the same or similar enough to make our analyses meaningful to both types of taxes. An advantage of studying VAT-compliance is that we can focus on a broader set of organizations, including profit and not-for-profit organizations, where studies focusing on CIT are limited to profit organizations. From a government or tax authority perspective, both profit and not-for-profit organizations are a point of focus when tax compliance is concerned.

We find, that a better TCF is negatively associated with the number and scaled amount of VAT adjustments and, thus, positively associated with VAT compliance. When we take the moderating effect of the tax strategy into account, we find that the level of *intentional* non-compliance is not affected by the quality of the TCF for organizations with a self-reported conservative tax strategy. However, organizations inclined to be more aggressive in their tax planning display more *intentional* non-compliance if they have a TCF of lower quality, and less *intentional* non-compliance when their TCF is of higher quality. We take this result as an indication that a high quality TCF helps organizations with a more aggressive tax strategy to minimize tax without increasing the risk of audit adjustments.² Finally, we find that a better TCF is negatively associated with more *unintentional* non-compliance for more conservative as well as for more aggressive organizations.

Our study has direct relevance for tax authorities. The results can be seen as a reminder to tax authorities not to focus solely on a high quality TCF, but to emphasize that a better TCF must be coupled with a tax strategy aimed at compliance with both the letter and spirit of the tax law. Our study also contributes in several ways to the academic literature. Ours is the first study attempting to incorporate proxies for the difference between intentional and unintentional non-compliance into the development and the empirical tests of our hypotheses, and in doing so provides more insight into the role the TCF plays in tax compliance. Further, whereas most previous tax compliance research focuses on CIT, we focus on the VAT, which is an equally important type of tax in terms of revenue (OECD, 2021) but has, compared to CIT-compliance, scarcely been studied (Datt et al., 2017). Our study sheds new light on the role of intentional and unintentional tax non-compliance, as well as on the interaction between organizational culture around taxes and TCF quality in VAT compliance.

The remainder of the paper is structured as follows. In the next

¹ See section 3.2 for a complete discussion of our selection of these proxies for intentional and unintentional tax avoidance.

² This interpretation assumes that aggressive organizations with a high quality TCF are also taking steps to avoid VAT taxes, but their high quality TCF results in fewer adjustments. Unfortunately, our data does not allow us to observe the ex-post VAT tax burden of the sample organizations.

section we provide theoretical background on internal control and tax compliance and develop our hypotheses. Then, we summarize the research method, and present the data analyses and results. In the last section, we conclude with a discussion of our findings, their limitations, and suggestions for future research.

2. Literature review and hypothesis development

Internal control is a process effected by the management of an organization with the aim to provide reasonable assurance regarding the achievement of objectives related to operations, reporting, and compliance with rules and regulations (Committee of Sponsoring Organizations of the Treadway Commission (COSO), 1992). A TCF is that part of internal control that relates to tax (Huiskers-Stoop & Gribnau, 2019) and is implemented and maintained by management to achieve tax objectives, such as assuring the accuracy and completeness of the tax returns and to identify and disclose tax risks (OECD, 2016). The term TCF was introduced after legislation like the Sarbanes-Oxley Act (in 2002) increased governmental interest in control frameworks in general. There is nothing novel about the substance of a TCF; all organizations always have tax related control measures in place to be able to submit accurate and complete tax returns. This means that every organization has, to some extent, a TCF (Hein, 2022). However, TCFs can differ in their degree of formalization (i.e., the degree to which tax control is an explicit and formalized part of the overall control framework) and quality.

Defining the quality of a TCF is inherently difficult because organizational controls must adjust to the circumstances of the individual organization. A larger, more complex organization will generally have more risk around tax compliance, which requires a larger investment in the TCF. This fact alone does not mean that such an organization has a 'better' TCF, unless it is compared to organizations of similar size and complexity. As a result, even when prescribing TCFs, tax authorities, and other stakeholders (e.g., OECD, 2016; Owens & Leigh-Pemberton, 2021) only provide building blocks for designing TCFs, often based on the COSO framework (1992). Examples of such building blocks are the implementation of a clear tax strategy by top management, a process that identifies the relevant tax risks, and monitoring of the correct working of control mechanisms.

A high quality TCF has various benefits for organizations. First, it can help organizations achieve higher levels of tax certainty (Gallemore & Labro, 2015; Plesner Rossing, 2013). Second, it can protect organizations from reputational harm resulting from non-compliance (Lanis & Richardson, 2012; Goslinga et al., 2019). Third, when a TCF is perceived as a demand from the tax authority, for example within the context of a cooperative compliance program, implementing a TCF can be a way to gain trust (and less audit activity) from the tax authority (Parker & Gilad, 2011). Fourth, it can increase tax compliance by helping to prevent unintentional non-compliance (OECD, 2014). Fifth, it can also increase tax compliance by improving managerial decision making around tax planning strategies and thus preventing overly aggressive tax behavior (Bauer, 2016). From the perspective of the tax authority, these last two benefits are the most important (Van der Hel & Siglé, 2015). Because we focus on the effects of a higher quality TCF and thus on the relationship between the quality of the TCF and tax compliance, whether organizations implement and/or improve their TCF for these reasons is not relevant to our paper.

To test the role of internal control on tax compliance, we specifically focus on VAT because it involves decision making both on an operational level and on a managerial level. VAT compliance is related to transactions, and because the decision making regarding these transactions takes place at the operational level, VAT is vulnerable to – from the perspective of the management of the organization – *unintentional* errors. In this context, the above discussed examples of building blocks of a higher quality TCF that focus on risk identification and monitoring play an important role. At the same time, VAT compliance is related to

(aggressive) tax planning activities, a strategy decided at the managerial level. VAT avoidance can take numerous forms to minimize tax payments, for example, (re)structuring operations aimed at maximally exploiting VAT exemptions and zero-rates, fragmenting business aimed at maximally using certain thresholds, or manipulating the allocation of inputs to taxable supplies (Schenk et al., 2015). In this context, the other example of a building block of a higher quality TCF (i.e., the implementation of a clear tax strategy by top management) plays an important role. Both types of non-compliance can be related, for example when aggressive tax planning activities are the impetus for management to prevent unintentional errors since this could undermine their efforts at more intentional strategic avoidance.

Better control can achieve higher VAT compliance by ensuring management is provided with sufficient internal information to deal with the high level of complexity that is part of making tax related decisions (e.g., Gleason et al., 2017) and because it increases the ability of the organization to identify potential tax risks and to prevent these risks from becoming actual errors (Siglé et al., 2022). Where tax errors do occur, a higher quality TCF detects and corrects these errors before such errors are included in tax returns. Siglé et al. (2022) provide some tentative empirical evidence that a higher quality TCF improves VAT compliance by preventing unintentional errors. Regardless of whether an organization is aggressive or conservative in approaching tax planning, we expect organizations will have fewer *unintentional* errors when their TCF is better.

The relationship between the quality of the TCF and *intentional* non-compliance is less straightforward. On the one hand, a TCF of higher quality could enable organizations to initiate more risky tax behavior, which could result in less compliance (and consequently more audit adjustments). On the other hand, a TCF of higher quality could help organizations to better streamline (or even conceal) their non-compliance (and consequently reduce audit adjustments). A priori, it is unclear which of these potential effects dominates. This leads to the following hypotheses:

H1a: A higher quality TCF is negatively associated with unintentional VAT non-compliance.

H1b: A higher quality TCF is associated with intentional VAT non-compliance.

An improved TCF can also be utilized for maximizing organizational value, in ways not immediately connected with tax compliance, such as managerial decision making. However, improved managerial decision making can also be used to both decrease or increase tax avoidance (Bauer, 2016; Gallemore & Labro, 2015). In this role, the TCF is part of the governance mechanism that acts to align the interests of managers and shareholders (Bauer, 2016). To what end the TCF is deployed is therefore likely to depend on other variables within the corporate governance structure, such as incentive alignment between management and shareholders. The benefits of corporate tax avoidance accrue primarily to the shareholders (Lanis & Richardson, 2011), whereas the costs (e.g., reputational risks, lower compensation) of such behavior mainly fall on the shoulders of the managers (Rego & Wilson, 2012). Rego and Wilson (2012) find equity incentives are positively associated with tax avoidance consistent with the idea that when managers can share in some of the benefits of tax avoidance, they are more willing to incur the associated risks. Tax managers must walk a tightrope when balancing these incentives. Better internal control can help tax managers find 'the sweet spot' of an optimal level of tax avoidance (Chang et al., 2020; Chen et al., 2020). However, from the perspective of the tax administrator, improved tax compliance on its own has very different implications than improved tax compliance in conjunction with more effective tax avoidance.

TCF is a broad concept, and we expect the implications of a TCF for tax compliance to be a function of the components of the TCF. The OECD (2016) identifies six essential building blocks for TCF quality that are based on the COSO model (1992) for internal control. At the top of the COSO model, is an organization's control environment, which focuses

on soft controls such as the tone at the top. The control environment reflects how objectives are defined and structured within an organization. The other elements of control (risk assessment, control activities, information and communication, and monitoring) are then critical to assuring objectives around control are met.

Depending on the tax objectives of the organization, a TCF can be used to a smaller or larger degree to prevent unintentional mistakes and/or to facilitate complex tax avoidance. These objectives should be clear in the tax strategy, which sets out the organization's standards for tax decisions made in supporting the organizational objectives and which are communicated through the tone at the top. Such strategies can be scaled on a continuum of tax avoidance, with conservative strategies on one end and highly aggressive strategies on the other (Blouin, 2014; Krupa, 2021). Organizations with a more conservative tax strategy are more concerned about risks to the organizational reputation (Graham et al., 2014), and more likely to refrain from abusive transactions. We assume these organizations are not looking to take on more tax risks and would prefer to avoid adjustments to their tax return resulting from audits of the tax authorities (audit adjustments). As a result, they are more likely to primarily use the TCF to prevent unintentional mistakes.

Organizations with a more aggressive tax strategy are more likely to pursue abusive transactions, such as tax shelters that are devoid of economic substance and primarily motivated by tax savings (Penno, 2021), and relatedly, to create complex structures involving related parties (Chen et al., 2020). Thus, organizations with a more aggressive tax strategy are more likely to use the TCF to maximize organizational value by pursuing arguably abusive transactions, implementing complex tax avoidance strategies, and exploiting tax loopholes. A high quality TCF can help aggressive organizations provide the documentation and support necessary to justify aggressive tax positions in a manner that mitigates the risk of an in-depth audit by the tax authority and thereby reduces tax adjustments related to intentional non-compliance. However, if the TCF is not sufficient to mitigate scrutiny from tax authorities of those aggressive positions, aggressive organizations may exhibit more intentional non-compliance than conservative organizations. This leads to our final hypothesis:

H2: *Organizations with an aggressive tax strategy will have more (similar) intentional VAT non-compliance than (as) conservative organizations, when their TCF is of lower (higher) quality.*

For aggressive organizations, the question is whether a better TCF is a necessary condition to engage in aggressive tax avoidance, or whether a better TCF is simply helpful in allowing organizations to avoid audit adjustments after aggressive strategies are employed. To the extent the former case is descriptive, we would not necessarily expect to observe differences in the number of audit adjustments for intentional tax avoidance among aggressive organizations contingent on the quality of their TCF. If anything, organizations with a better TCF may still have more audit adjustments than organizations with a poor TCF that are unable to implement aggressive tax strategies. If the latter case is descriptive, we would expect aggressive organizations with a better TCF to exhibit fewer audit adjustments than aggressive organizations with a poor TCF. Thus, ultimately for aggressive organizations, the relation between TCF quality and tax compliance is an empirical question.

3. Method

3.1. Research design and sample selection

We use a dataset created by the Netherlands Tax Administration (NTA), as part of an internal research project.³ The NTA has made the

³ Two of the authors of this paper are part of the NTA research team and were directly involved with the development of the research instruments. We received permission from the NTA to perform our analyses on the data and report our results in this paper.

promotion of a good TCF an important part of its regulatory strategy. At a substantial share of the large organizations (i.e., those with whom the NTA has concluded a cooperative compliance agreement) the NTA actively promotes further development of the TCF. As a result, there is considerable variance amongst Dutch large organizations regarding the maturity of their TCF. This makes the Netherlands a powerful setting for the purposes of our study.

Given the large scale of the research project, the NTA selected the sample of 368 organizations in three parts (168 in 2014, 100 in 2016, and 100 in 2018). The research population in each of these three years consists of about 5,000 large (profit and not-for-profit) organizations in the Netherlands.⁴ The samples were stratified by the NTA for reasons outside of our paper, namely 1) to include enough organizations that participate in the Dutch cooperative compliance program, 2) to include a sufficient number of organizations that only recently met the criteria to qualify as large organizations, and 3) to ensure an even distribution over all five regional offices of the NTA.

We collected data for each organization in the sample in the following manner. First, we use a survey among the senior staff responsible for tax matters at the organizations in the sample (we refer to this as the organization survey). This survey was pre-tested by 52 randomly selected tax managers of large organizations. These tax managers and the organizations they work for are not part of our sample. This pre-test led to various adjustments to the wording of the questions in the survey. To protect the anonymity of the respondents, the NTA commissioned the administration of the survey to an external agency.⁶ All prospective respondents were assured that the NTA could not link responses to the respondents' organization. The NTA informed all prospective respondents by telephone call and with an official announcement letter from the director of the NTA.

We use the organization survey to collect data on our independent and control variables. For each year the survey was conducted the response rate was at least 58 % and thus relatively high for this type of research. The NTA noted that this was to a large degree due to the importance of the subject for the respondents as well as the great care that was taken to protect anonymity.

Second, after the completion of the surveys, the VAT returns of all organizations were audited (regardless of participation in the survey) for the most recently fiscal year (this usually concerns the year prior to the sample, so 2013 for the 2014 sample, and 2015 and 2017 for the 2016 and 2018 samples respectively). These audits were not part of the NTA's regular audit efforts that are based on risk driven audit selection; the research samples were drawn at random without any risk assessment up front on the part of the NTA. All audits were performed by experienced audit teams from the NTA and were fully in line with the design, execution, and settlement of regular audits.⁷

Results from the audits were reported in an 'audit format'. This audit report format was pre-tested by 17 NTA audit employees with different backgrounds, including VAT, CIT, and statistical auditing. This pre-test led to some adjustments in the order and the wording of the items included in this study. The final audit report format included questions

⁴ The research population differs slightly between the three years due to mergers and bankruptcies.

⁵ The NTA distinguishes large organizations from other taxpayers based on the following criteria: a) turnover exceeds ten million euros and gross wages exceed two million euros; or b) gross wages exceed eight million euros; or c) assets exceed one billion euros. For the purposes of the internal research project, the 3,500 largest organizations of the 8,500 large organizations in the Netherlands were excluded from the research population and thus 5,000 large organizations remained.

⁶ This external agency also merged the data from the three data sources into one dataset.

⁷ The audit teams were led by lead auditors, who are usually certified public accountants (85% of lead auditors were either a certified public accountant or in training to become one) with 12 years of audit experience on average.

Table 1
Sample.

Year	Sample	Audit VAT completed	NTA Survey completed	Data from both sources
2014	168	158	166	123
2016	100	90	98	58
2018	100	81	91	59
Total	368	329	355	240

related to the findings of the audits, such as the size of audit adjustments (if any), the nature and cause of these audit adjustments, and some general perceptions of the auditor regarding the compliance of the organization.⁸ The NTA subjected each audit to at least one internal quality review, both during and after the conclusion of the audit. We use this audit format to collect data to construct our dependent variables.

A small number of audit reports that contain inaccuracies and/or that were not fully completed at the time we started our analyses were dropped from our analysis. Furthermore, due to a variety of other reasons, such as the bankruptcy of the organization, not all planned field audits could be conducted. Our final sample consists of 240 large organizations, of which the audit reports and the organizational survey were completed (see Table 1). About 18 % of these organizations are not-for-profit organizations, and about 20 % participate in the Dutch cooperative compliance program. Almost all these organizations have a yearly net turnover of € 10 million or more, and about half have at least 100 employees.

To protect anonymity, the external agency administered the collection of data through the organization survey and the audit report format. Subsequently, the external agency connected both data sources and provided the researchers with an anonymized dataset.

3.2. Measures

3.2.1. Non-compliance

We use the results from the field audits performed by the NTA to measure the degree of VAT non-compliance. Following Siglé et al. (2022), we divide our proxies for non-compliance in two categories: the *number of audit adjustments* and the *scaled amount of audit adjustments*.

The audit methods of the NTA focus on detecting misstatements that decrease the tax burden, i.e., the focus is on adjustments that increase the tax burden for organizations. However, audits may also detect misstatements that lead to an overstatement of taxes due. The detection of such overstatements is not systematic, because generally, auditors are not actively looking for adjustments that might decrease the tax burden. This may lead to uneven treatment across the organizations in our sample for these misstatements. Therefore, we exclude such misstatements in calculating the total number of audit adjustments. We divide the total amount of adjustments by the materiality threshold used in the audit to calculate the *scaled amount* of audit adjustments.⁹ To normalize these two variables, we categorized the scores into five clusters of approximately equal size (*Number of audit adjustments*: 1 = 0 adjustments, 2 = 1 adjustment, 3 = 2 adjustments, 4 = 3 adjustments, and 5 = more than 3 adjustments; *Scaled amount of audit adjustments*: 1 = 0, 2 = 0 to 0.01, 3 = 0.01 to 0.03, 4 = 0.03 to 0.09, and 5 = 0.09 or more), although the zero-adjustment category is inevitably larger than

⁸ The reported audit adjustments concern: wrong application of complex tax law, deduction of non-deductible costs (mainly personnel related), use of wrong tariff (e.g., based on the type of services delivered), wrong application of exemptions, intercompany transactions, etc.

⁹ The audit materiality is a threshold that defines when a reporting issue is important enough to warrant attention from the audit team. The NTA uses a materiality table based on the net turnover of taxpayers to calculate the materiality threshold.

the other four categories. See Table 2 for descriptive statistics on the audit adjustments.

To test our hypotheses regarding the two potential roles of internal control, we create a measure of intentional and unintentional non-compliance (cf. D'Ascenzo, 2015; James and Alley, 2002; Siglé et al., 2022). To do so, we divide audit adjustments into proxies that are more likely to reflect intentional non-compliance, and those that more likely to reflect unintentional non-compliance. Following Siglé et al. (2022), we regard the number of audit adjustments (*Number of audit adjustments overall*) as a better proxy for more unintentional non-compliance and the scaled amount of audit adjustments (*Scaled amount of audit adjustments overall*) as a better proxy for more intentional non-compliance. This distinction assumes that the higher the financial importance of a transaction (as measured in the scaled amount), the more likely it is that the transaction was subject to more stringent internal controls. As a result, it is also more likely that management is aware of this transaction and, thus, that the audit adjustments concern an issue that was intentionally created by management. Therefore, the higher the scaled amount of audit adjustments, the more intentional the non-compliance is assumed to be. For example, there is one organization with an adjustment of over € 100,000 in which an intercompany transaction from a taxable entity to a non-taxable entity was kept outside the VAT. For this transaction, the organization was provided with external advice on how to 'creatively' prevent taxation. Given the size of the transaction and the fact that outside advice was sought, it is highly unlikely that top management was unaware of this transaction.

We proxy for unintentional non-compliance using the number of audit adjustments (*Number of audit adjustments below €10k*). The number of audit adjustments, as opposed to the amount of audit adjustments, is more likely to reflect more unintentional non-compliance because the financial importance of a transaction has no influence on this proxy. For example, there are several organizations with a large number of small adjustments (a few hundred euros) related to incorrect application of VAT law regarding non-financial benefits for personnel. This part of the VAT law is considered complicated to apply and is often not well understood by organizations. Therefore, it is highly likely that top management was unaware of these errors.

The distinction between the scaled amount and the number of audit adjustments is more a difference in degrees than an absolute division between intentional and unintentional non-compliance (that is why we

Table 2
Descriptives of audit adjustments.

	Including audits without adjustment (s)	Excluding audits without adjustment (s)
Number of adjustments overall	159 (66 %)	159 (100 %)
Maximum number of adjustments	23	23
Average number of adjustments	1.83	2.75
Standard deviation of the number of adjustments	2.39	2.46
Maximum amount of adjustments	€ 719,920	€ 719,920
Maximum amount of scaled adjustments	1.77	1.77
Average amount of adjustments	€ 26,211	€ 38,821
Standard deviation of the amount of adjustments	€ 75,774	€ 90,407
Average amount of scaled adjustments	0.06	0.09
Standard deviation of the amount of scaled adjustments	0.20	0.24

Note: Descriptive statistics from field audits of the VAT, reported in payable taxes.

label these proxies as *more intentional* or *more unintentional*). To further amplify the differences between the scaled amount and number of audit adjustments, we use two additional proxies to better differentiate between less or more intentional non-compliance. These two additional proxies are variations on the two main proxies, for which we exclude audit adjustments with either a large (for more unintentional non-compliance) or small (for more intentional non-compliance) monetary value. The number of audit adjustments (*Number of audit adjustments overall*) is seen as a better proxy for more unintentional non-compliance because it does not take the amount of the audit adjustments into account and, therefore, gives more weight to smaller audit adjustments (as compared to the scaled amount of adjustments). To amplify this difference, we calculate the total number of adjustments *below* € 10,000 (on an individual adjustment level) (*Number of audit adjustments below €10k*) as a proxy for more unintentional non-compliance and the total scaled amount of adjustments *above* € 10,000 (*Scaled amount of audit adjustments above €10k*) as a proxy for more intentional non-compliance.

Like our two main proxies, we categorized the scores of these two additional proxies in five clusters of approximately equal size to normalize these variables (*Number of audit adjustments below €10k*: 1 = 0 adjustments, 2 = 1 adjustment, 3 = 2 adjustments, 4 = 3 adjustments, and 5 = more than 3 adjustments. *Scaled amount of audit adjustments above €10k*: 1 = 0, 2 = € 10,001 to € 40,000, 3 = € 40,000 to € 60,000, 4 = € 60,000 to € 100,000, and 5 = more than € 100,000.).¹⁰ To validate our proxies for more unintentional and more intentional non-compliance, we use data on whether the audited firm was imposed a fine based on the highest level of culpability. In the Netherlands, this equates to a level of culpability that is known as ‘intentional’. Our two proxies for more unintentional non-compliance are not correlated with the imposition of such a fine (respectively $\rho = -0.08$, $p = 0.33$ and $\rho = 0.02$, $p = 0.80$), while our two proxies for more intentional non-compliance are (respectively $\rho = 0.15$, $p = 0.06$ and $\rho = 0.13$, $p = 0.10$).

3.2.2. Tax control framework and tax strategy

A TCF is a general concept with many facets. The OECD (2016), for example, identifies six essential building blocks that comprise a TCF. The building blocks identified by the OECD are derived from the model for internal control of the COSO (1992; 2004). Like the OECD, we follow the COSO framework to construct a measure of the quality of the TCF (*Quality TCF*) (see also Goslinga et al., 2021; Siglé et al., 2022). Respondents answered 21 survey questions developed to assess the different aspects of internal control as described by COSO (see Appendix A for the wording of all items). Principle Components Analysis yielded four factors with an Eigenvalue above 1. Of the original 21 items, 5 items were dropped which decreased the reliability of the four factors. Our general TCF measure was constructed as the average of these 16 items, which formed a reliable scale with a Cronbach’s alpha of 0.91 (we use the separate factors in our additional analyses below).¹¹ We measure the aggressiveness of the *Tax Strategy* with a single-item measure (“My organization explores the boundaries of tax legislation”, 1 = Totally disagree, 7 = Totally agree).

¹⁰ Due to the relatively low number of audits with a total of adjustments above € 10,000, the zero-adjustment category is larger for this proxy than for the other four proxies.

¹¹ By definition, the TCF is part of the overall control framework of an organization. From this perspective it makes sense that for 3 of our 16 items for the quality of the TCF no mention is made of ‘tax’ or ‘fiscal’ (13 of the 16 items do mention this). We have re-performed our primary analyses using only the 13 items that do mention ‘tax’ or ‘fiscal’. Results from these analyses are qualitatively similar to our primary analyses.

3.2.3. Control variables

We include a control for whether the organization is a for profit versus non-profit entity¹² (cf. Goslinga et al., 2021), turnover, complexity, formal participation in horizontal monitoring¹³ (all three cf. Siglé et al., 2022), and whether the organization is audited by a big four audit firm or not (cf. Kanagaretnam et al., 2016). *Non-profit* is a dummy variable coded 1 if an organization is a non-profit organization, such as a care provider, a university, or a pension fund, and 0 if a for profit organization. We measure *Complexity* with the number of ‘fiscal identification codes’, i.e., the number of individual fiscal entities subsumed in the organization. The external agency involved in the administration of the surveys categorized these variables in five classes to protect anonymity. *Horizontal Monitoring* is a dummy variable coded 1 if the organization has closed a horizontal monitoring covenant with the NTA, and otherwise 0. *Big4 Auditor* is a dummy variable coded 1 if the organization is audited by a big four audit firm (Deloitte, EY, KPMG, or PWC, and otherwise 0. See Table 3 for all descriptive statistics.

The mean score of our measure for the aggressiveness of the *Tax Strategy* is quite low (2.69), indicating that most organizations report having a more conservative tax strategy. The mean score of our *TCF* variable is somewhat above midpoint (4.37).

4. Results

4.1. Correlations

The Pearson correlation results are presented in Table 4. As expected, our four proxies for non-compliance are positively correlated. The quality of the TCF (*Quality TCF*) is negatively correlated with three out of four of our proxies for non-compliance. These correlations are consistent with our expectations in Hypothesis 1. The strength of these correlations does not seem to differ much between our proxies based on the number of audit adjustments and our proxies based on the scaled amount of audit adjustments. Furthermore, the aggressiveness of the tax strategy (*Tax Strategy*) is not correlated with any of the proxies for non-compliance.

Noticeably, non-profit organizations are confronted with a higher number and a higher *Scaled amount of audit adjustments overall* (we observe a significant relationship with all four proxies of non-compliance). We also observe that organizations with more turnover have a more aggressive tax strategy and that organizations participating in horizontal monitoring have a TCF of higher quality. Organizations that are audited by a big four auditor are confronted with a higher scaled amount of audit adjustments (for both proxies), are more likely to be a non-profit organization, and are less complex. Furthermore, whether an organization participates in horizontal monitoring is not associated with any of the proxies for non-compliance. Finally, more complex organizations are not necessarily less compliant, but we do find that more complex organizations have significantly fewer audit adjustments above € 10,000.

4.2. Multivariate analyses

4.2.1. Test of H1a and H1b

Based on our first hypothesis, H1a, we expect that organizations with a better TCF will be more compliant and, thus, have fewer audit

¹² The organizations in our sample come from more than twenty different industries and, thus, leave us with too few observations per industry to include industry fixed effects. However, within the context of Dutch VAT law, the differences between for profit and non-profit organizations are the most relevant differences related to industry and we do control for this.

¹³ Horizontal monitoring is a so-called cooperative compliance strategy (Goslinga et al., 2019). As part of this supervisory strategy, the NTA actively promotes good internal control, more conservative tax strategies, and corporate tax compliance.

Table 3
Descriptives (n = 240).

	Min	25 %	Mean	75 %	Max	Sd	Skewness	Kurtosis
<i>Number of audit adjustments:</i>								
– Number of audit adjustments overall	1	1	2.54	4	5	1.47	0.50	–1.15
– Number of audit adjustments below € 10 k	1	1	2.25	3	5	1.35	0.77	–0.64
<i>Scaled amount of audit adjustments:</i>								
– Scaled amount of audit adjustments overall	1	1	2.52	4	5	1.44	0.47	–1.17
– Scaled amount of audit adjustments above € 10 k	1	1	1.53	2	5	1.03	2.22	4.27
Tax Strategy	1	1	2.69	4	6	1.50	0.49	–0.95
Quality TCF	1	3.75	4.37	5.13	7	1.09	–0.17	0.38
Non-profit	0	0	0.18	0	1	0.38	1.68	0.84
Turnover	1	2	2.31	3	4	0.87	0.34	–0.50
Complexity	1	2	3.25	4	5	1.37	–0.27	–1.15
Horizontal Monitoring	0	0	0.21	0	1	0.41	1.45	0.09
Big4 Auditor	0	0	0.41	1	1	0.49	0.38	–1.88

Note: See [Appendix B](#) for all variable definitions.

Table 4
Pearson correlations of variables (n = 240).

	2	3	4	5	6	7	8	9	10	11
<i>Number of:</i>										
1 – audit adjustments overall	0.93***	0.75***	0.48***	0.01	–0.15**	0.24***	0.12*	0.01	–0.04	0.10
2 – audit adjustments below € 10 k		0.55***	0.26***	0.01	–0.13**	0.15**	0.11*	0.07	–0.03	0.05
<i>Scaled amount of:</i>										
3 – audit adjustments overall			0.74***	–0.02	–0.15**	0.27***	–0.06	–0.07	–0.07	0.19***
4 – audit adjustments above € 10 k				0.05	–0.10	0.37***	0.10*	–0.22***	–0.05	0.26***
5 Tax Strategy					0.03	–0.03	0.16**	0.02	0.08	–0.02
6 Quality TCF						0.00	0.02	–0.01	0.26***	0.10
7 Non-profit							–0.01	–0.56***	–0.05	0.36***
8 Turnover								0.06	0.04	0.04
9 Complexity									0.15**	–0.39***
10 Horizontal Monitoring										–0.13*
11 Big4 Auditor										

Notes: *= $p < 0.10$ **= $p < 0.05$ ***= $p < 0.01$ (all p-values are two-tailed). See [Appendix B](#) for all variable definitions.

adjustments due to more unintentional errors. Based on our second hypothesis, H1b, we expect that a higher quality TCF is associated with intentional VAT non-compliance (without clear expectations about the direction).

We first employ two OLS regressions with our main proxies for non-compliance (*Number of audit adjustments overall* and *Scaled amount of audit adjustments overall*) as dependent variables to test these expectations. Results for these regressions are shown in [Table 5](#). We include *Quality TCF*, *Tax Strategy*, and the interaction between these two variables as predictors, and several control variables. In line with H1a, we find that *Quality TCF* is significantly and negatively associated with *Number of audit adjustments overall* ($\beta = -0.16$, $p < 0.05$). Regarding H1b, we find that the quality of the TCF is significantly and negatively associated with *Scaled amount of audit adjustments overall* ($\beta = -0.18$, $p < 0.01$).

We argue that our two main proxies for non-compliance – the scaled amount and number of audit adjustments – reflect a difference in degree rather than an absolute division between intentional and unintentional non-compliance, which is why we label these proxies as *more intentional* or *more unintentional*. To further amplify the differences between the scaled amount and number of audit adjustments, we use *Number of audit adjustments below €10 k* and *Scaled amount of audit adjustments above €10 k* as two additional proxies to better differentiate between more or less intentional non-compliance. We employ two additional OLS regressions to test our first two hypotheses in the context of these proxies of VAT non-compliance (also shown in [Table 5](#)). We find a significant effect of *Quality TCF* on non-compliance for both proxies. Overall, we find support for H1a and, regarding H1b, a similar negative association between *Quality TCF* and more intentional non-compliance. We do not find a direct effect of *Tax Strategy* on any of our four proxies for non-compliance.

Regarding the control variables, we find that non-profit organizations are less VAT compliant than profit organizations. More complex organizations are also less VAT compliant, and this effect seems stronger for more unintentional non-compliance. This finding is in line with the intuition that more complex organizations have more difficulty being in control. We find that organizations that are audited by a big four auditor are less VAT compliant, but only with regard to more intentional non-compliance. This might indicate that big four auditors are less able to detect intentional VAT non-compliance or that they actively assist organizations in structuring their VAT to minimize their tax burden, with a risk of higher audit adjustments as a result.

4.2.2. Test of H2

Based on H2, we expect that organizations with an aggressive tax strategy will have more intentional VAT non-compliance than conservative organizations, but only when their TCF is of lower quality. The results presented in [Table 5](#) for the *Scaled amount of audit adjustments* provide some support for this hypothesis. We find a significant interaction effect between *Quality TCF* and *Tax Strategy* in the regressions of the *Scaled amount of adjustments* ($\beta = -16$, $p = 0.01$) and the *Scaled amount of all audit adjustments above € 10 k* ($\beta = -0.11$, $p < 0.10$).

Taken together, we find one significant interaction effect and one marginal significant interaction effect, between *Quality TCF* and *Tax Strategy* on our proxies for more intentional non-compliance. To interpret these interaction effects, we created [Fig. 1](#). Results show that organizations with a more aggressive tax strategy have more intentional mistakes than organizations with a more conservative tax strategy when the TCF is worse. However, when the TCF quality is good, organizations with a more aggressive tax strategy have less intentional non-compliance as compared to organizations with a more conservative tax strategy.

Table 5
Regression analyses results (n = 240).

	Number of audit adjustments				Scaled amount of audit adjustments			
	Overall		Below €10 k		Overall		Above €10 k	
	B	p	B	p	B	p	B	p
Quality TCF (H1a/b)	-0.16**	0.01	-0.13**	0.05	-0.18***	0<.01	-0.13**	0.03
Tax Strategy	0.01	0.88	0.01	0.93	0.02	0.71	0.06	0.34
Quality TCF x Tax Strategy (H2)	-0.04	0.50	-0.01	0.90	-0.16**	0.01	-0.11*	0.07
Non-profit	0.33***	0<.01	0.26***	0<.01	0.29***	0<.01	0.31***	0<.01
Turnover (of firm)	0.10	0.12	0.09	0.16	-0.10	0.13	0.08	0.22
Complexity (of firm)	0.22***	0<.01	0.23***	0<.01	0.16**	0.04	0.00	0.99
Horizontal Monitoring	-0.01	0.84	-0.01	0.86	-0.02	0.79	0.00	0.95
Big4 Auditor	0.07	0.31	0.05	0.47	0.16**	0.02	0.15**	0.03
	Adj. R2	0.10		0.05		0.12		0.16
p	0.00		0.01		0.00		0.00	

Notes: *= $p < 0.10$ **= $p < 0.05$ ***= $p < 0.01$ (all p-values are two-tailed). See Appendix B for all variable definitions.

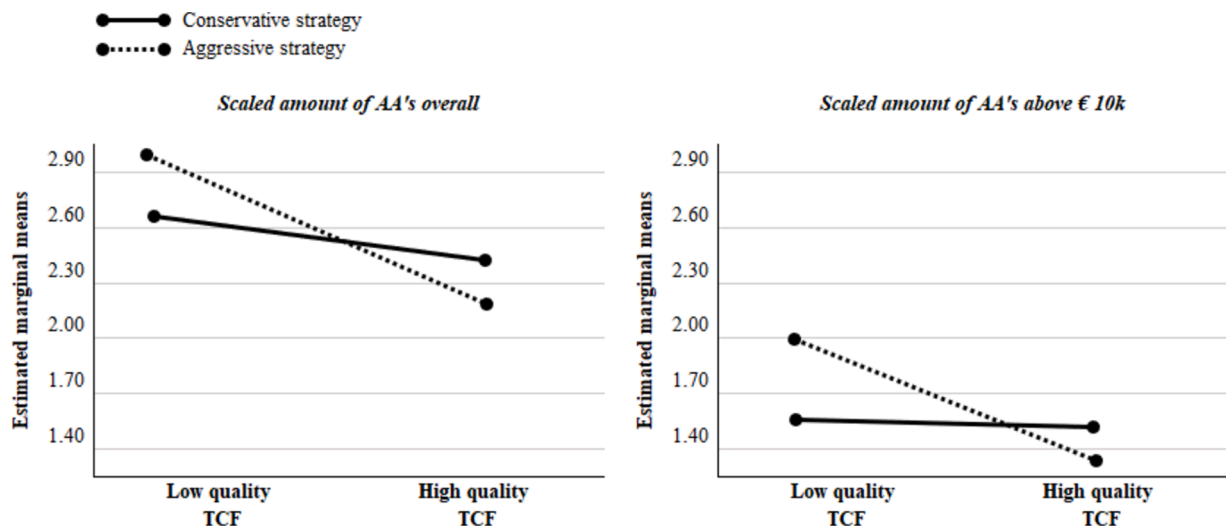


Fig. 1. Interaction effects.

To gain more insight into the role the TCF plays for more conservative and more aggressive organizations, we split our sample into more conservative (those that score 3 or lower on the degree of aggressiveness, n = 160) and more aggressive organizations (those that score 4 or higher on the degree of aggressiveness, n = 80). We perform the same analyses (without the interaction variable) as reported in Table 5 in

Table 6
Additional analyses based on subsamples of tax strategy.

Effect of the quality of the TCF on:	Conservative organizations (n = 160)		Aggressive organizations (n = 80)	
	B	p	B	p
<i>More unintentional audit non-compliance:</i>				
- Number of audit adjustments overall	-0.16**	0.05	-0.12	0.28
- Number of audit adjustments below € 10k	-0.17**	0.05	-0.05	0.66
<i>More intentional audit non-compliance:</i>				
- Scaled amount of audit adjustments overall	-0.09	0.27	-0.26**	0.02
- Scaled amount of audit adjustments above € 10k	-0.05	0.58	-0.22**	0.04

Notes: *= $p < 0.10$ **= $p < 0.05$ ***= $p < 0.01$ (all p-values are two-tailed). The regression models are the same as reported in Table 5, with the exclusion of the interaction variable. Reported are the standardized coefficients of the quality of the TCF. See Appendix B for all variable definitions.

these samples and report the standardized coefficients and p values for the quality of the TCF in Table 6.

In the sample of more conservative organizations, we find significant effects of Quality TCF on both proxies for more unintentional non-compliance but none of the proxies for more intentional non-compliance. In the sample of more aggressive organizations the results are the opposite: we find significant effects for both proxies for more intentional non-compliance but none of the proxies for more unintentional non-compliance. These results suggest that the results of our primary analyses, as reported in Table 5, concerning unintentional (intentional) non-compliance are mainly driven by more conservative (more aggressive) organizations.

4.3. Additional analyses

4.3.1. Overstatements

As mentioned in Section 3, we excluded misstatements that lead to an overstatement of taxes because the audit methods of the NTA do not focus on such misstatements. However, such misstatements can be seen as an alternative proxy for unintentional non-compliance since it is very likely that any such misstatements in which an organization overpays on taxes are unintentional. Therefore, we replicate our analyses for H1a using only such 'overstatements'. Results from these analyses (untabulated) show that Quality TCF is negatively and significantly associated with both the Number of audit adjustments overall and the Number of audit adjustments below €10 k (both $\beta = -.20$ and both $p = 0.01$). This validates the claim that organizations can use their TCF to prevent unintentional

non-compliance.

4.3.2. Subscales TCF

As mentioned in Section 3, the items with which we measure *Quality TCF* were based upon the different aspects of internal control as described by COSO (1992), COSO (2004).¹⁴ The OECD (2016) used COSO and other sources to further specify the components of the TCF. In order to identify different factors composing our general TCF measure, we conducted Principal Components Analysis with the 16 TCF-items. This yielded 4 factors with an Eigenvalue above 1 that accounted for 75 % of the total variance. The items belonging to the four factors had sufficient internal reliability (Cronbach's alphas between 0.79 and 0.92, see Table 7) and four subscales were constructed based on the unweighted means.

Comparable with COSO (1992 and 2004) and OECD (2016), we labelled these four factors *Tax Awareness*, *Formalized Processes*, *Performance Indicators*, and *Roles & Responsibilities* (see Appendix A for the corresponding items). The items of the subscale *Tax Awareness* focus on a clear strategy and objectives from the top (the so-called tone at the top) and clear insight into where the line between compliance and non-compliance (risk appetite) is drawn. The subscale *Formalized Processes* focuses on a process-oriented approach in which all processes related to tax are described and documented to create a comprehensive TCF throughout the organization. The subscale *Performance Indicators* focuses on keeping accurate track of tax risks and regularly reporting to top management. Finally, the subscale *Roles & Responsibilities* focuses on making sure that responsibilities delegated to staff are carried out correctly by personnel that are qualified to perform the tasks at hand. Table 7, Panel A shows the correlations between these four subscales and their correlation with the original TCF construct. All correlations are above 0.30 and highly significant ($p < 0.01$).

Given our results concerning H2, actively promoting increased TCF quality might be a double-edged sword for tax authorities. It is interesting which of these subscales are most relevant in the context of our hypotheses, so tax authorities could perhaps better target their activities towards specific components of a TCF. If some subscales are more relevant in the context of unintentional non-compliance and less so in the context of intentional non-compliance, these might be the part of the TCF that tax authorities should aim to accentuate. Further, more conservative taxpayers might utilize other parts of a TCF than more aggressive taxpayers. We do not formulate formal hypotheses concerning such differences, but we do have some a priori intuitions regarding how taxpayers with different strategic concerns might make use of the TCF.

First, aggressive tax strategies using abusive transactions, such as tax shelters that are devoid of economic substance and primarily motivated by tax savings (Penno, 2020) and complex structures involving related parties (Chen et al., 2020), are developed by top management (and oftentimes supported by tax advisors). Given this, the part of the TCF that focuses on the strategic level of the organization is likely the most helpful in supporting such a strategy. Therefore, we expect that our subscale *Tax Awareness* plays an important role for more aggressive taxpayers in streamlining their intentional non-compliance to prevent audit adjustments. Additionally, we expect that more aggressive organizations will try to avoid attention from the tax authorities and, therefore, can also be expected to prevent unintentional errors from drawing unwanted attention. As a result, *Tax Awareness* also helps more aggressive organizations in reducing unintentional non-compliance. Furthermore, more aggressive organizations can also use *Formalized Processes*, *Roles & Responsibilities* and *Performance Indicators* to achieve reduced unintentional non-compliance. These parts of a TCF focus on

clear processes and responsibilities for all personnel, on ensuring that personnel are qualified to perform the tasks at hand, and on keeping accurate track of tax risks and regularly reporting to top management, thus helping to prevent unintentional non-compliance. We expect that these subscales are less important for more aggressive organizations regarding more intentional non-compliance because such intentional non-compliance is enacted at the top management level.

Second, organizations with a more conservative tax strategy that aim to prevent (intentional and unintentional) non-compliance, can be expected to use their TCF for this aim. The decision making regarding most transactions takes place at the operational level and top management must ensure that potential risks are communicated to the personnel at this level, that personnel are capable, and that they are provided with clear instructions on how to act regarding these risks. Therefore, we would expect that the subscales *Formalized Processes*, *Roles & Responsibilities*, and *Performance Indicators* are relevant for more conservative organizations in preventing non-compliance.

To test these expectations, we replicate our analyses on both the full and the split sample whereby we substitute our TCF variable with one of these subscales at a time.¹⁵ Results from these analyses are reported in Table 7, Panels B, C, and D. Comparing these panels we see clear differences between more conservative and more aggressive organizations, but the results from these analyses are not fully in line with our expectations. Regarding the subscale *Tax Awareness* we find, in line with our expectations, that more tax aggressive organizations seem to have less intentional and unintentional non-compliance when their tax awareness is higher. For more conservative organizations, tax awareness does not affect the number nor the scaled amount of audit adjustments. Regarding the subscale *Formalized Processes* we find, also in line with our expectations, that this part of the TCF helps more conservative organizations in preventing unintentional non-compliance.¹⁶ We expected similar results for the subscale *Roles & Responsibilities* but did not find this (although we did find one significant effect of this subscale on the scaled amount adjustments, one of the proxies for more intentional non-compliance). Regarding the subscale *Performance Indicators*, we expected similar effects for conservative and aggressive organizations. In line with this, we find a significant effect in both subsamples for one of our two proxies for non-compliance.

5. Conclusions and discussion

A high-quality tax control framework (TCF) is seen by tax authorities and the OECD as a prerequisite for corporate tax compliance. The assumption is that a high quality TCF detects mistakes and possible tax risks and thus helps organizations to increase tax compliance. There is some empirical evidence that substantiates this assumption (e.g., Bimo et al., 2019; Siglé et al., 2022). Based on this assumption, tax authorities actively promote better internal control in organizations to increase tax compliance (e.g., OECD, 2013). However, a better TCF can also help organizations to effectuate their desired tax strategy, and several studies show that a better TCF enables organizations to reduce their tax burden to maximize organizational value (e.g., Bauer 2016; Gallemore & Labro, 2015). So, an important question for tax authorities is how internal control (the TCF) relates to tax compliance. In this paper we focus on VAT (non-)compliance and try to answer this question by differentiating between more unintentional and more intentional VAT non-compliance and between organizations with a more conservative and a more aggressive tax strategy.

Our results provide empirical support for the role of a TCF in

¹⁴ Later updates of the COSO model – most importantly the change in 2017 to the Helix model instead of the cube – are notably lacking as an inspiration for TCFs. As a result, we have not included this in our paper.

¹⁵ Additional T-tests show that the four subscales do not differ significantly between more conservative and more aggressive organizations (untabulated, all $p > 0.10$).

¹⁶ Our results for this are only significant at the 10%-level, but given our smaller sample size for these analyses we find this sufficient.

Table 7
Additional analyses with subscales of the quality of the TCF (n = 240).

Panel A: Pearson correlations and reliability (in diagonal) statistics for subitems of TCF Quality									
	Tax Awareness		Formalized Processes		Performance Indicators		Roles & Responsibilities		
TCF Total	0.83***		0.77***		0.69***		0.72***		
Tax Awareness	0.91		0.44***		0.48***		0.56***		
Formalized Processes			0.87		0.40**		0.46***		
Performance Indicators					0.88		0.31***		
Roles & Responsibilities							0.79		

Panel B: Test of H1 with subitems of TCF Quality for full sample (n = 240)									
	Number of audit adjustments overall		Number of audit adjustments below €10k		Scaled amount of audit adjustments overall		Scaled amount of audit adjustments above €10k		
	B	p	B	p	B	p	B	p	
Tax Awareness	-0.15**	0.02	-0.15**	0.02	-0.12**	0.05	-0.11*	0.08	
Formalized Processes	-0.10	0.14	-0.08	0.26	-0.08	0.21	-0.05	0.44	
Performance Indicators	-0.09	0.16	-0.07	0.30	-0.12**	0.05	-0.13**	0.03	
Roles & Responsibilities	-0.10	0.11	-0.08	0.20	-0.15**	0.02	-0.06	0.37	

Panel C: Test of H1 with subitems of TCF Quality for Conservative organizations (n=160)									
	Number of audit adjustments overall		Number of audit adjustments below €10k		Scaled amount of audit adjustments overall		Scaled amount of audit adjustments above €10k		
	B	p	B	p	B	p	B	p	
Tax Awareness	-0.09	0.25	-0.11	0.17	-0.02	0.76	-0.02	0.84	
Formalized Processes	-0.14*	0.10	-0.15*	0.08	-0.04	0.60	0.00	0.95	
Performance Indicators	-0.14*	0.09	-0.11	0.18	-0.10	0.19	-0.10	0.18	
Roles & Responsibilities	-0.12	0.15	-0.12	0.15	-0.14*	0.08	-0.03	0.68	

Panel D: Test of H1 with subitems of TCF Quality for Aggressive organizations (n=80)									
	Number of audit adjustments overall		Number of audit adjustments below €10k		Scaled amount of audit adjustments overall		Scaled amount of audit adjustments above €10k		
	B	p	B	p	B	p	B	p	
Tax Awareness	-0.28**	0.01	-21*	0.07	-0.31***	0.01	-0.23**	0.02	
Formalized Processes	0.01	0.96	0.08	0.49	-0.15	0.18	-0.13	0.21	
Performance Indicators	0.03	0.79	0.03	0.77	-0.15	0.15	-0.19*	0.06	
Roles & Responsibilities	-0.04	0.73	0.02	0.89	-0.15	0.19	-0.11	0.32	

Notes: *= $p < .10$ **= $p < .05$ ***= $p < .01$ (all p-values are two-tailed). All regression for Panel B and C are similar to Table 6, except for the replacement of TCF with the reported subitem of TCF. Reported are only the coefficients and p-values of the subitems. See Appendix B for all variable definitions.

preventing unintentional non-compliance. We hypothesize, and find, that organizations with a higher quality TCF are more VAT compliant. When we take the moderating effect of the tax strategy into account, we find that the level of *intentional* non-compliance is not affected by the quality of the TCF for organizations with a conservative tax strategy. However, organizations inclined to be more aggressive in their tax planning display more *intentional* non-compliance if they have a TCF of lower quality and less *intentional* non-compliance when the TCF is of higher quality. We take this as an indication that a high quality TCF can help organizations with a more aggressive tax strategy in preventing audit adjustments, for example by providing better justification when tax loopholes are being exploited. This interaction between strategy and tax control is in line with Richardson, et al. (2013), who find that the interaction effect between the composition of the board of directors (i.e., a higher proportion of independent directors on the board) and effective internal controls reduces tax aggressiveness.

From the additional analyses it seems that tax awareness is the most important part of the TCF in the context of our study for more aggressive organizations. Higher tax awareness includes increased consciousness of tax compliance risks and a clearer picture of the divide between compliance and non-compliance, with less audit adjustments as a logical result. If this is indicative of more sophisticated tax avoidance by aggressive organizations, promoting tax awareness is not in the interest of the tax authority. In the context of more conservative organizations, it seems wise to promote formalized processes, and roles and responsibilities to prevent unintentional non-compliance. The parts of the TCF that we dubbed *Performance Indicators* seem relevant in the context

of both more aggressive and more conservative organizations, for example by improving the timeliness of communication within the organization (Chen et al., 2020). This might indicate that actively promoting improvement of the TCF is inherently a double-edged sword for tax authorities and should, therefore, be pursued carefully. Thus, it is crucial to know the tax strategy, intentions and tone at the top of organizations, and finding ways to influence these kinds of soft controls also.

Limitations and future research

Although our findings are robust to alternative proxies for non-compliance, the following limitations should be taken into consideration. First, our data is limited to Dutch organizations and the Dutch tax system, and the generalizability of our findings can be limited by specific characteristics of the Netherlands. Second, our study is based on cross-sectional data and, thus, provides evidence on associations rather than on causality. Third, we use different sources for the collection of our independent variables (the organization survey) and dependent variables (audit data). While this minimizes common method bias, it might make our study more vulnerable to type II errors. Fourth, we rely on a one item measure to capture an organization's tax strategy. Perhaps future research could use the effective tax rate as an alternative proxy for tax strategy. Reporting of the tax strategy under the Global Reporting Initiative (GRI 207) also provides an opportunity for measuring tax strategy.

Fifth, our measures for compliance depend on the quality of the audits performed by the NTA. It might be that the NTA was unable to detect certain types of non-compliance, for example due to advanced tax

avoidance techniques used by the audited organizations. To the degree that this is because some organizations utilized their TCF to better conceal non-compliant behavior, this might have affected our results regarding H1b. The NTA did, however, implement various additional quality control checks to ensure the highest possible quality for the audits performed. Sixth, some of our findings in the additional analyses were only significant at the 10 percent level. While we consider this significance level, given our sample size, to be adequate, future research is required to ascertain whether our results can be replicated in other settings. Seventh, our sample was not fully random due to stratification of our sample. Although this stratification was not related to any of the variables of interest, it might impact the generalizability of our results. As our purpose is to test theory rather than to make claims that generalize to a population, we believe the sample is relevant to address the research question (Speklé & Widener, 2018).

Despite these limitations, our study contributes to the literature in several ways. Foremost, previous literature does not provide a clear picture regarding the role of internal control in corporate tax compliance. We introduce the moderating role of the tax strategy of an organization as a potential explanation for the contradictory findings that emerge from previous studies. Furthermore, we are the first study to incorporate the difference between intentional and unintentional non-compliance into the development and the empirical tests of our hypotheses, and in doing so, provide more insight into the role the TCF plays in tax compliance. Also, whereas most previous tax compliance research focusses on CIT, we focus on the VAT, which is an equally important type of tax in terms of revenue (OECD, 2021) but has, compared to CIT-compliance, scarcely been studied (Datt et al., 2017).

Our study provides various avenues for future research. First, it would be interesting to see whether our results hold for other types of taxes such as corporate income taxes and payroll taxes. Compared to VAT, corporate income tax is managed at a higher level within the organization, while payroll taxes generally provide fewer tax planning opportunities. These differences suggest that the role of the TCF concerning unintentional (intentional) non-compliance is less important regarding corporate income taxes (payroll taxes). Future research could delve deeper into these a priori expectations. Second, besides tax authorities, more regulatory fields, such as finance, occupational safety, food and drug safety, consumer product safety, and environmental protection (Earnhart & Glicksman, 2015) stimulate internal control quality to increase compliance. Future research could test our hypotheses in these settings. Third, we find that not-for-profit organizations are

significantly less compliant than for-profit organizations. This might be due to more complex laws and regulations that face not-for-profit organizations. Interestingly, we find no difference in the quality of the TCF between profit and not-for-profit organizations. Perhaps not-for-profit organizations should be held to a higher standard and have a better TCF to be better equipped to handle the more complex tax law. We suspect that more factors play a role in this somewhat surprising result and future research could delve deeper into this subject.

Based on our results, tax authorities would seem wise in promoting more control through better TCFs amongst large (profit and non-profit) organizations. However, our results also indicate that organizations inclined to be aggressive in their tax planning can use a better TCF to minimize their risk of audit adjustments. This indicates that better control enables more aggressive organizations to reduce their tax burden within the boundaries (of the letter) of the law. From the perspective of organizations, these results demonstrate that implementing a well-functioning TCF can help to effectuate their tax strategy and prevent tax errors. These results can be seen as a reminder to tax authorities not to focus solely on a high quality TCF, but to emphasize that a better TCF must be coupled with a tax strategy aimed at tax compliance with both the letter and spirit of the tax law.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Maarten Siglé and Sjoerd Goslinga work for the Netherlands Tax Administration (NTA). Their contribution to this paper is written in a personal capacity and does not necessarily reflect statements and/or opinions of the NTA. For Ryan Wilson and Lisette van der Hel there is no declaration of interest. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Data availability

The data that has been used is confidential.

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Appendix A

Questionnaire items, descriptive statistics, and reliability estimates for the quality of the Tax Control Framework (TCF) using Principal Components Analysis (n = 240).

Subscale	Items	Mean	Standard Deviation
Tax Awareness (CR = 0.91)	<i>In my organization...</i>		
	...the fiscal strategy is clear.	5.26	1.46
	...the fiscal targets are clear.	4.82	1.58
	...the fiscal targets are realistic.	4.90	1.54
	...the fiscal strategy contributes to compliance with tax laws and regulations.	5.02	1.69
	...fiscal risks are identified.	5.07	1.41
Formalized Processes (CR = 0.87)	...it is stated what fiscal risks must be avoided.	5.24	1.38
	...processes are formally described (for example, in a manual).	4.15	1.94
	...the descriptions of processes include tax risks.	3.21	1.71
	...the descriptions of processes include (formal) internal controls.	3.86	1.89
Performance Indicators (CR = 0.88)	...the monitoring of internal controls is described in a plan.	3.34	1.83
	... fiscal performance indicators are derived from the fiscal targets.	3.23	1.63
	... fiscal performance indicators are unambiguous.	3.46	1.71
	...the realization of fiscal targets is periodically reported to the board.	3.71	1.94

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(continued)

Subscale	Items	Mean	Standard Deviation
Roles & Responsibilities	...the roles and responsibilities of fiscal staff are clear.	4.87	1.66
	...we invest in training and education to keep the knowledge of fiscal staff up to date.	4.37	1.84
(CR = 0.79)	...employees in fiscal positions are competent enough to carry out these tasks.	5.42	1.34
Not included	...unambiguous fiscal targets are derived from the fiscal strategy.		
	...the identification of fiscal risks is updated yearly.		
	...fiscal risks are controlled using (formal) internal monitoring.		
	...the correct operation of fiscal internal controls is subject to monitoring.		
	...the roles and responsibilities of fiscal staff are formally stated.		

Appendix B

Variable definitions.

Variable name	Variable definition
Number of audit adjustments overall	Number of audit adjustments in 5 categories, with 1 = 0 adjustments, 2 = 1 adjustment, 3 = 2 adjustments, 4 = 3 adjustments, and 5 = more than 3 adjustments.
Number of audit adjustments below €10k	Number of audit adjustments smaller than € 10,000 in 5 categories, with 1 = 0 adjustments, 2 = 1 adjustment, 3 = 2 adjustments, 4 = 3 adjustments, and 5 = more than 3 adjustments.
Scaled amount of audit adjustments overall	Amount of audit adjustments scaled by the materiality in 5 categories, with 1 = 0, 2 = 0 to 0.01, 3 = 0.01 to 0.03, 4 = 0.03 to 0.09, and 5 = 0.09 or more.
Scaled amount of audit adjustments above €10k	Amount of audit adjustments greater than € 10,000 scaled by the materiality in 5 categories, with 1 = 0, 2 = € 10,001 to € 40,000, 3 = € 40,000 to € 60,000, 4 = € 60,000 to € 100,000, and 5 = more than € 100,000.
Tax Strategy	The aggressiveness of the tax strategy on a scale from 1 (totally disagree) to 7 (total agree) based on question "My organization explores the boundaries of tax legislation."
Quality TCF	The Tax Control Framework (TCF) is the component of internal control that assures accuracy, timeliness, and completeness of tax returns and all other tax disclosures. Quality of the TCF is measured as the mean of 16 items, all measured on a scale of 1 to 7 (see Appendix A).
Non-profit	Dummy variable coded 1 if a non-profit organization and 0 if a for profit organization.
Turnover	Turnover measured by the net sales of the organization in the audited year in 4 categories, with 1 = less than € 10 million, 2 = between € 10 million and € 25 million, 3 = between € 25 million and € 50 million, and 4 = more than € 50 million.
Complexity	Number of individual fiscal entities subsumed in an organization and put into 5 categories, with 1 = 1 to 3 entities, 2 = 4 to 7 entities, 3 = 8 to 15 entities, 4 = 15 to 31 entities, and 5 = more than 31 entities.
Horizontal Monitoring	Dummy variable coded 1 if organization participates in Horizontal Monitoring, and otherwise 0.
Big4 Auditor	Dummy variable coded 1 if organization is audited by a big four audit firm (Deloitte, EY, KPMG, or PWC) and otherwise 0.

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