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ABSTRACT

Tax authorities increasingly rely on a cooperative approach to support corporate tax compliance. This approach, however, lacks empirical substantiation, and it is unclear whether it delivers on its expected benefits. We identify the underlying principles of this approach using reports and policy recommendations of the Organization of Economic Cooperation and Development (OECD) and formalize these in a working theory. We test this working theory in a sample of large businesses, using a unique combination of survey data and tax audit results from the Netherlands. We find that corporate taxpayers' perceived procedural justice and transparency from these taxpayers in their dealings with the tax authority are positively associated with the quality of the relationship between taxpayer and tax authority. The increased quality of this relationship affects corporate income tax compliance but not value added tax (VAT) compliance. Furthermore, our results suggest that the quality of internal tax control contributes to taxpayer transparency and compliance, the latter via the prevention of unintentional errors. Overall, our results suggest that the cooperative approach can help improve the way taxpayer and tax authority interact, but that its ultimate contribution to tax compliance can differ between various taxes and various types of non-compliance.

1. Introduction

Over the last two decades, tax authorities around the world have introduced cooperative compliance approaches to increase corporate tax compliance. These approaches open the possibility for tax authorities and corporate taxpayers to move away from an adversarial and often costly relationship and to instead establish a more constructive and cooperative modus operandi. This new way of working may take the form of formal participation in so-called cooperative compliance

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programs as introduced, for example, by the tax authorities of Australia, the Netherlands, South Africa, the United Kingdom, and the United States, but cooperative relationships may also be established without formal participation in such programs.[2] Cooperative approaches have been implemented without a thorough assessment of their effects on tax revenue and compliance (De Widt & Oats, 2017; Stevens committee, 2012). The goal of this study, therefore, is to provide some empirical evidence on the very fundamental question as to the effectiveness of cooperative approaches in supporting corporate tax compliance. To this effect, we first identify the essential building blocks of cooperative approaches and the underlying logic that ties these blocks together. We then test the resulting model, using a unique combination of empirical results from tax audits and survey data from large firms in the Netherlands and from staff of the Netherlands Tax Administration (NTA).

Cooperative approaches are based on a key idea of Responsive Regulation Theory (RRT) (Ayres & Braithwaite, 1992), i.e., the notion that the first step towards effective regulation is for the regulator to create a setting in which subjects are stimulated to accept responsibility for regulating themselves in a manner that is consistent with the law (Braithwaite, 2007; Ventry, 2008). Such a setting is created by building and maintaining a constructive working relationship between regulator and subjects, and by promoting openness, transparency, and justice in the dealings between the two parties; this should lead to higher levels of voluntary compliance. The importance of voluntary compliance is also emphasized in the so-called Slippery Slope Framework (SSF) (Alm et al., 2012; Kirchler et al., 2008; Kirchler et al., 2014). Integrating economic and psychological perspectives on tax compliance, the SSF makes a distinction between voluntary compliance and enforced compliance. Enforced compliance results from the fear of detection and fines, whereas voluntary compliance rests on a taxpayers' trust in the tax authorities. Both RRT and the SSF suggest that rational regulatory strategies should give due emphasis to policies that support voluntary compliance.

Most studies on cooperative approaches focus on the incentives for corporate taxpayers to participate in a cooperative compliance program and the benefits that result from working cooperatively with the tax authority (Colon & Swagerman, 2015; De Widt et al., 2019; Eberhartinger & Zieser, 2021; Freedman et al., 2009). These studies show that corporate taxpayers' wish to reduce tax uncertainty is an important driver for participation (Beck & Lisowsky, 2014; Goslinga et al., 2019). For corporate taxpayers, a cooperative working relationship can increase tax certainty because it provides opportunities to discuss the tax treatment of complex transactions with the tax authority at an early stage. However, there is a potential downside for firms as well: establishing a working relationship based on mutual trust and transparency may imply the need for taxpayers to refrain from using potentially profitable (but possibly aggressive) tax planning strategies (Organization for Economic Cooperation and Development (OECD), 2008). This may create a barrier for taxpayers to participate in a cooperative approach (Freedman et al., 2009; Björklund Larsen, 2016).

Besides these articles studying taxpayer incentives, a stream of legal literature has emerged that addresses the potential benefits of the cooperative approach for tax authorities (e.g., Van der Hel and Siglé, 2015; Ventry, 2008), while some analytical papers in economics explore the mutual benefits for both taxpayers and the tax authority (e.g., DeSimone et al., 2013). Studies that empirically address the actual tax compliance effects of the cooperative approach, however, are in short supply, and our paper seeks to redress this imbalance. To assess these compliance effects, we first explicate the underlying logic of cooperative approaches in a testable model. This is a non-trivial step, because the cooperative approach is pragmatic rather than academic, and its logic is instrumental and implied rather than explicit and theoretically substantiated. Furthermore, cooperative programs and arrangements implemented around the world differ in various important dimensions, such as the eligibility criteria and their legal basis (Björklund Larsen & Oats, 2019; Goslinga et al., 2021). Nonetheless, these approaches share a common core of key principles, and for the purposes of this paper, we are interested in this shared foundation rather than in local differences. To identify these key principles, we build from a series of reports from the OECD. The OECD has always strongly promoted the cooperative approach to tax compliance (Colon & Swagerman, 2015), and its reports and policy recommendations had a large influence on adopters of the cooperative approach. These documents, thus, allow us to identify the key building blocks of the rationale of the cooperative approach and to capture these in a 'working theory of the cooperative approach'.[3] In short, this working theory holds that taxpayers' perceived procedural justice and their transparency contribute to a higher quality working relationship between those taxpayers and the tax authorities, which, in turn, should lead to increased tax compliance. Furthermore, a higher quality of internal tax control results in increased taxpayer transparency and compliance.

We test this working theory in a structural equation model using findings from in-depth field audits – randomly selected for the purpose of this study - carried out by the NTA, combined with survey data from large corporate taxpayers located in the Netherlands. The field audits comprised both the value added tax (VAT) and corporate income tax (CIT) returns. The surveys were completed by tax managers in 169 of the largest firms. In addition, we obtained survey information from NTA's client coordinators who were in charge of handling the interactions with these firms to validate the data provided by the firms. This unique multi-source dataset allows us to use the audit results to measure corporate tax compliance as the ultimate outcome variable, while relying on the survey data to examine (relationships between) the determinants of compliance.

Consistent with the working theory of the cooperative approach, our results suggest that a better working relationship between taxpayer and tax authority is related to the way in which the tax authority treats taxpayers, as well as to the degree

[2] In practice, some taxpayers work along the lines of the cooperative approach but cannot or do not wish to formally participate in the program or are not yet formally accepted in the program (OECD, 2013). In our study, we therefore focus on the general components of cooperative approaches rather than their manifestation in a specific program.

[3] See also Verbeeten and Speklé (2015) for a similar approach in the context of performance management practices.

of transparency about tax matters of these taxpayers in their dealings with the tax authority. Inconsistent with the working theory, but in line with our expectations, we report mixed findings for the ultimate effect of the quality of internal tax control and the working relationship on corporate tax compliance. These mixed findings appear to be related to differences between types of taxes. Specifically, our results suggest that a good working relationship may contribute to the management of complex CIT issues but is less important in the context of the management of transaction taxes such as VAT. Our findings furthermore suggest that the quality of internal tax control is especially important for the reduction of unintentional errors but does not help to address intentional non-compliance.

The remainder of this paper is structured as follows. In section two, we provide institutional and theoretical background to the cooperative approach, and then discuss the underlying principles of this approach to develop the working theory. In section three, we present our research design and discuss measurement issues. Data analysis and results are presented in section four. In section five, we discuss the contributions and implications of this paper, as well as its limitations and avenues for future research.

2. Institutional and theoretical background

2.1. The building blocks of the cooperative approach

The aim of the cooperative approach is to promote corporate tax compliance (OECD, 2007, 2009a, 2009b, 2009c, 2017). According to the OECD (2007), the relationship between tax authorities and taxpayers used to be adversarial, with tax authorities being engaged in a constant enforcement battle with unwilling subjects. In such a contentious relationship, compliance and enforcement costs are considerable, which encouraged tax authorities to develop a cooperative approach to compliance (Majdanska & Leigh Pemberton, 2019).

The starting point of the cooperative approach is that compliance requires a consistent, objective, and fair treatment of taxpayers by the tax authority; that is, the tax authority should ensure a minimum level of perceived procedural justice (Tyler, 2006). This is thought to be a prerequisite for the development of a trust-based working relationship (OECD, 2007), which can be beneficial for both parties involved due to lower enforcement and compliance costs (DeSimone et al., 2013; Huiskers-Stoop & Gribnau, 2019). In the cooperative approach, taxpayers are expected to contribute to this working relationship by being transparent about relevant tax risks to help overcome information asymmetries (Ventry, 2008). Disclosure of these risks enhances the tax authority's information position, allowing a more effective risk assessment and better resource allocation (OECD, 2008).[4] The OECD (2013) suggests that transparency requires the presence of a sound tax control framework where an internal control system assures the accuracy, timeliness, and completeness of tax returns and disclosures. Fig. 1 summarizes the working theory of the cooperative approach.[5] The propositions implied in this figure are developed further in the next section.

2.2. Development of propositions

2.2.1. Background theory: Social Exchange Theory and Responsive Regulation Theory

Many of the key ideas underlying the cooperative approach to corporate tax compliance seem to derive directly from Social Exchange Theory (SET) and RRT. SET conceptualizes and analyses human interaction as a series of self-interested but mutually beneficial exchanges between parties that are motivated by the returns they are expected to bring for both parties (Blau, 1964; Cropanzano & Mitchell, 2005; Molm, 1994). A key idea of SET is that individuals evaluate social exchanges from a rational cost-benefit perspective and are willing to participate in such exchanges if the benefits outweigh the cost of participation (Blau, 1964). Social exchange is forward-looking, factoring in expectations of future returns in exchange for current contributions, and individuals are willing to invest in the relationship without certain knowledge of the future benefits (Konovsky & Pugh, 1994). In many ways, RRT is the applied, normative counterpart of SET. RRT holds that regulators should base their regulatory activities initially on trust-based approaches (such as the cooperative approach) that support voluntary compliance and self-regulation. This argument is also consistent with the SSF, which likewise suggests that voluntary compliance should be a cornerstone of regulatory strategies (Kirchler et al., 2008). Such trust-based approaches are argued to be sufficient to extract compliant behavior from most taxpayers and are a cost-effective way to support compliance for both the tax authority and the taxpayer. Moreover, RRT argues that a trust-based approach could lead to higher absolute levels of compliance than can be achieved with a deterrence-based approach (Siglé et al., 2018).

[4] In the cooperative approach, tax authorities are supposed to offer real-time evaluation of risks and compliance concerns in return for transparency (OECD, 2009b), providing for prompt settlement of tax issues and increased certainty for taxpayers on the tenability of their tax positions. This "transparency in exchange for certainty" (OECD, 2013, p. 28) is one of the key benefits for taxpayers of the cooperative approach (Beck & Lisowsky, 2014; De Widt et al., 2019; OECD, 2007, 2009b). However, we focus on compliance effects rather than on the incentives for taxpayers to participate in the cooperative approach, so tax certainty is not included in our analysis.

[5] Note that this figure does not include a direct path from procedural justice to compliance. Considering the abundant empirical support for such a direct effect in the literature on individual tax compliance (e.g., Murphy, 2008; Verboon & Van Dijke, 2011; Wenzel, 2006), it is remarkable that this is not discussed in any of the OECD documents on cooperative compliance we studied. We will, however, control for this direct effect in our analyses.

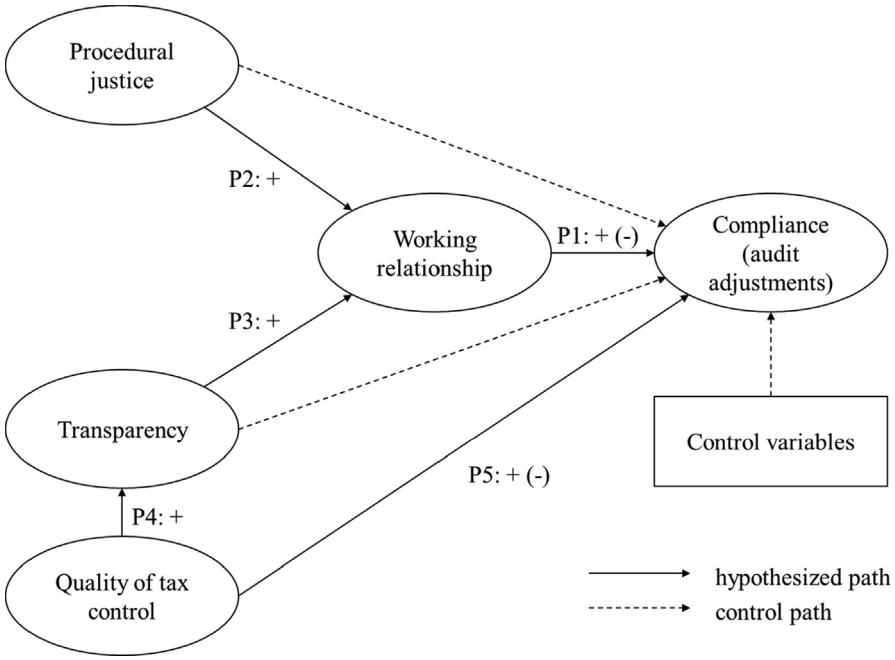

Fig. 1. Research model.

RRT posits that an investment in trust leads to a reciprocal relationship in which subjects repay by regulating themselves (Leviner, 2008). Longer-term social exchange relationships, however, can only be established if parties abide by the social rules that govern the exchange, particularly the rule of reciprocity. Reciprocity is a fundamental and universal social norm that permeates all spheres of social interaction (Gouldner, 1960). It is a function of perceived (un)fairness (Fehr & Gächter, 2000), and means that people feel obliged to return a corresponding benefit to those they receive benefits from and, vice versa, that they feel entitled to retaliate if they are mistreated (Gouldner, 1960). If parties play by these rules in a series of sequential interactions, cooperation is encouraged (Molm, 1994) and continuing, mutually beneficial relationships emerge over time. If, however, such a beneficial relationship fails to emerge, RRT prescribes that the regulator should move on to increasingly more punitive actions, such as fines and audits, to enforce compliance (Freedman, 2011); another suggestion which RRT shares with SSF (Kirchler et al., 2008).

2.2.2. The working relationship

Improvement of the quality of the working relationship is a key component of the cooperative approach, because a better relationship is believed to increase taxpayers' commitment to compliance (OECD, 2008). Furthermore, improving the working relationship helps tax authorities to better understand the taxpayer, to identify relevant tax risks and, subsequently, to help the taxpayer to comply by providing clear expectations, clear escalation points, and an ongoing dialogue (OECD, 2009c). Accordingly:

P1: The quality of the working relationship is positively related to corporate tax compliance, i.e., with fewer or less substantial audit adjustments.[6]

Our first proposition (P1) is in line with both SET and RRT: an agreeable, constructive working relationship creates a reciprocal interdependent relationship that encourages cooperation and leads to reduced risks for both parties (Ayres & Braithwaite, 1992; Cropanzano & Mitchell, 2019; Leviner, 2008). Viewed from this perspective, a well-functioning working relationship initiates a self-reinforcing virtuous cycle in which positive interactions stimulate mutually beneficial behavior from both parties.

There is, however, also reason to believe that the effects work the other way. It has been argued that taxpayers may acquire an information advantage regarding audit probabilities and techniques, and tax inspectors' focus and skillsets that could be exploited to minimize taxes, through both legal tax planning and intentional, aggressive non-compliant behavior (Kubick et al., 2017). A better working relationship with the tax authorities might provide taxpayers with such an information advantage. Kubick et al. (2017) provide indirect evidence in favor of this argument. Their analysis indicates that taxpayers who are geographically close to the relevant regional tax office (which they argue to be conducive for taxpayers knowing

[6] This somewhat wordy formulation is necessary to bridge the gap between the working theory, which focuses on compliance, and the subsequent operationalization, which is founded on observed noncompliance.

the tax authority's enforcement strategy) engage in more aggressive tax behavior. This finding may carry over to relational proximity, unless reciprocity is sufficiently powerful to curb such behavior.

The OECD publications on the cooperative approach apply to tax compliance in general, and do not differentiate between specific taxes, such as VAT and CIT. However, there are fundamental differences between VAT and CIT (Russo, 2016). One key difference is that the correct application of VAT law is more routine and programmable, allowing it to be delegated to operational personnel and be subjected to standardized administrative procedures and automated controls. In contrast, a correct drafting and filing of CIT returns is less programmable, and responsibility for these matters is assigned to senior management in consultation with external tax advisors. This difference is likely to affect the role of the working relationship in compliance. As this relationship is established at the managerial level, its effects may be more salient for CIT (which is managed at that level) than for VAT (which is managed by individuals who do not directly interact with the tax authority). In addition, as the handling of VAT is much more entrenched in automated systems, the importance of personal interaction is substantially reduced. Given this potential difference between CIT and VAT compliance, we examine the proposition with separate proxies for VAT and CIT compliance.

2.2.3. Procedural justice

According to the OECD (2013), tax authorities should make the first move to improving the working relationship with taxpayers by ensuring a consistent, objective, and fair treatment of taxpayers, i.e., they should invest in perceived procedural justice. Accordingly:

P2: Perceived procedural justice is positively related to the quality of the working relationship.

There is a large stream of academic literature examining procedural justice in interorganizational relationships (e.g., Lind, 2001; Liu et al., 2012; Luo, 2005), and the OECD (2010a) explicitly refers to this line of work in arguing its belief regarding the importance of procedural justice. According to this literature, perceived procedural justice depends on the fairness of the decisions and acts in the process, and is affected by various facets of the interactions between actors, such as respect, consistency, control, accuracy, and impartiality (Makkai & Braithwaite, 1996; Tyler & Lind, 1992). Perceived fairness of the decision process can positively affect acceptance of the outcomes of this process (Wenzel, 2002) because people generally believe that fair procedures lead to fair outcomes (Van Dijke & Verboon, 2010). But the process itself is valued too, and people sometimes prefer less favorable outcomes that result from a fair process to more favorable outcomes obtained through a process perceived to be unfair (Hartner et al., 2011; Makkai & Braithwaite, 1996).

The positive effect of perceived procedural justice is well documented in the context of individuals' tax compliance (e.g., Gobena & Van Dijke, 2016; Murphy, 2008; Van Dijke & Verboon, 2010; Wenzel, 2006). While these studies typically focus on the direct effects of procedural justice on tax compliance,[7] Kirchler et al. (2014) theorize that procedural justice also contributes to more cooperation between taxpayer and tax authority. This argument is in line with RRT, in which procedural justice is seen as an important antecedent of a trust-based relationship between regulator and subject (Six, 2013). Overall, the proposition regarding the contribution of procedural justice has a relatively solid basis in the literature.

2.2.4. Transparency

Taxpayers are expected to contribute to a better working relationship by being transparent about tax matters (OECD, 2013). In this context, transparency refers to the willingness of the taxpayer to disclose in a timely manner all tax issues that give rise to a material degree of risk or uncertainty, even if the law does not require such openness (OECD, 2008). This disclosure helps the tax authority to "understand the significance of issues, deploy the appropriate level of resources and reach the right tax conclusions" (OECD, 2007, p. 5). Thus:

P3: Taxpayer transparency is positively related the quality of the working relationship.

Through the lens of SET and RRT, transparency can be seen as what the taxpayer 'brings to the table' to improve the quality of the relationship (Nielsen & Parker, 2009). In this perspective, non-mandatory transparency on tax matters is interpreted as a token of commitment to the relationship, stimulating development of reciprocal exchanges (Gribnau & Van Steenbergen, 2020). P3 has a certain intuitive appeal and finds, for instance, backing in the literature on interorganizational relationships. For example, Klein Woolthuis et al. (2005) argue that transparency is needed to negotiate sensitive issues as it prevents mutual distrust and conflict between partners in interorganizational arrangements. This is because transparency positively affects dissemination and shared interpretation of information, which, in turn, leads to mutual commitment in the relationship (Ritter & Gemünden, 2003).

2.2.5. The role of the tax control framework

Higher quality of internal tax control can contribute to increased compliance, both directly as well as indirectly through increased transparency. To be able to disclose tax issues, taxpayers need to be aware of them. Because tax issues can arise from a variety of business transactions, taxpayers need to be in control of all relevant processes so that they are informed about these issues. A high quality of internal tax control should ensure this (OEDC, 2013; 2016).[8] Thus:

[7] Recall that these direct effects are not part of the OECD approach to cooperative compliance.

[8] Improving the quality of the tax control framework is an integral part of many cooperative compliance approaches. Therefore, besides enabling the organization to detect and subsequently disclose tax issues, building a better tax control framework can also signal to the tax authority the willingness of an organization to be cooperative and transparent.

P4: The quality of internal tax control is positively related to the degree of taxpayer transparency.

One of the main principles of RRT is that subjects accept responsibility for regulating themselves in a manner that is consistent with the law (Braithwaite, 2007). For taxpayers that are willing to regulate themselves, RRT holds that regulators should be prepared to build a relationship with subjects to assist them in their compliance efforts (Burton, 2007; Leviner, 2008). The assumed relationship between the quality of internal tax control and transparency, as part of a cooperative approach, is in line with this thinking. Within the cooperative approach, investing in the quality of internal tax control is the way in which taxpayers underpin their commitment to taking responsibility for regulating themselves (Majdanska & Leigh Pemberton, 2019). Taxpayers with sufficient levels of internal tax control are expected to share relevant information on tax matters with the tax authority. The tax authority can subsequently assist them in their compliance efforts, such as by providing feedback on these tax matters (De Widt & Oats, 2017).

This effect of internal control on transparency has been studied in the context of financial reporting. The findings of these studies, however, are inconclusive. Andrade et al. (2014) report increased corporate transparency after enactment of Sarbanes-Oxley. They are unsure, however, whether this increase should be attributed to improved internal control or to another factor associated with Sarbanes-Oxley, such as increased litigation risks. Price et al. (2011) studied the association between transparency and compliance with the Mexican corporate governance code, which includes many aspects of internal control. The Mexican corporate governance code has substantial overlap with the OECD (2016) description of tax control frameworks and is, therefore, of interest to our study. However, they find no association between internal control quality as manifested in compliance with the code and transparency.

By helping to prevent unintentional noncompliance, improving the quality of internal tax control can also directly support corporate tax compliance (OECD, 2014). The OECD expects the tax control framework to increase the ability of the firm to identify potential tax risks and to prevent these risks from becoming actual errors. If tax errors nonetheless occur, the tax control framework should include a monitoring mechanism that detects and corrects these errors. Therefore:

P5: The quality of internal tax control is positively related to corporate tax compliance, i.e., with fewer or less substantial audit adjustments.

We noted before that RRT assumes that subjects seek to promote their own compliance (Nielsen & Parker, 2009). The relationship between internal tax control and compliance as expected by the OECD is an expression of that thinking, suggesting that improving the quality of internal tax control is a way in which taxpayers can improve their tax compliance (Björklund Larsen et al., 2018). However, various authors argue that internal control systems do not necessarily contribute to policy purposes such as compliance (Gunningham & Sinclair, 2009; Parker & Gilad, 2011). Higher quality internal control may alternatively be used to manage risks and to strengthen one's negotiation position when non-compliance is detected (Parker & Gilad, 2011) or used as a tool to increase firm value by enabling the firm to increase tax avoidance (Chen et al., 2020).

Evidence for the association between internal control and compliance is inconsistent. For example, some studies in the field of financial accounting suggest that internal control quality is positively related to the quality of reported accruals (e.g., Ashbaugh-Skaife et al., 2008; Doyle et al., 2007). Furthermore, firms improving their internal procedures by instituting ISO 14000-type internal management procedures show improved compliance with environmental regulation (Potoski & Prakash, 2005). However, some research findings point in the opposite direction. One could argue that taxpayers pursuing an aggressive tax strategy also require good internal control to be able to argue their (sometimes self-disbelieved) positions more forcefully and convincingly. Gallemore and Labro (2015), Bauer (2016), and Chen et al. (2020) provide empirical evidence in support of this expectation, finding that internal control quality is (sometimes) positively associated with tax avoidance.

As discussed earlier, a key difference between VAT and CIT is that responsibility for the correct application of VAT compliance is typically standardized, automated, and delegated to operational personnel, while CIT compliance is subject to more discretionary decision making by senior management. This difference is likely also to affect the role of the tax control framework in compliance. In the case of CIT, the framework will primarily be relied upon to ensure high-quality information decision making. However, in VAT matters the framework will primarily be important as a tool for senior management to monitor administrative processes and control the behavior of employees involved in these matters and, thus, prevent unintentional noncompliance. Therefore, we examine P5, like P1, with separate proxies for VAT and CIT compliance.

3. Method

3.1. Research design and sample selection

The Netherlands was among the first to adopt a cooperative approach and has played a pioneering role in shaping cooperative thinking internationally. In the Netherlands, the tax authority's default position is that all large businesses could be included in its cooperative compliance program, but the NTA seeks to adjust individual taxpayers' treatment to their observed or avowed compliance attitude. Large businesses are offered the opportunity to enter a covenant with the NTA in which both parties formalize their cooperative intentions. In these so-called horizontal monitoring arrangements, both parties commit to base their relationship on trust, mutual understanding, and transparency. Such covenants, however, are not a precondition for investing in a more cooperative relationship with individual firms. The NTA acknowledges that such a relationship needs to develop over time and that both parties learn to cooperate in a series of interactions. Accordingly, the

Table 1
Sample descriptive statistics on nominal control variables.

Size (Turnover (€))	Number of organizations	% organizations	**Complexity (Fiscal entities)**	Number of organizations	% organizations	**Domestic employees**	Number of organizations	% organizations
<10 million	15	9%	1–3	17	10%	≤100	70	41%
10–25 million	40	24%	4–7	29	17%	101–250	54	32%
25–50 million	47	28%	8–15	33	20%	251–500	20	12%
50–200 million	46	27%	16–31	48	28%	>500	25	15%
>200 million	21	12%	≥ 32	42	25%	*Total*	*169*	
Total	*169*		*Total*	*169*				
Publicly traded (Quoted on a public stock exchange)	Number of organizations	% organizations	**Multinational**	Number of organizations	% organizations	**Horizontal monitoring**	Number of organizations	% organizations
yes	29	17%	yes	74	44%	yes	47	28%
no	140	83%	no	95	56%	no	122	72%
Total	*169*		*Total*	*169*		*Total*	*169*	

Note: See Appendix 1 for variable definitions.

NTA adopts a step-by-step process (Huiskers-Stoop & Gribnau, 2019), and there is considerable heterogeneity in the Dutch setting regarding the phase in which individual relationships find themselves. This makes the Netherlands an interesting setting for the purposes of our study.

The research population consists of the about 7000 largest for-profit businesses in the Netherlands, from which the NTA selected a sample of 274 firms.[9] We use a unique combination of audit data and two different surveys. This multi-source research minimizes the risk of common method bias. The data were collected by the NTA as part of an internal policy evaluation study, but the research instruments (the surveys and the audit report formats) are developed for that study by the authors of this paper.[10]

Primary data on the predictors in our model are collected through a survey among firms' senior staff responsible for tax matters (the so-called firm survey). The firm survey was pre-tested in a random selection of 52 tax managers of large businesses. These managers and the information they provided are not included in our final sample. The NTA commissioned the administration of the surveys to an external agency to protect respondents' anonymity and to alleviate potential evaluation apprehension. This was made clear in advance to prospective respondents, who were assured that the NTA would never be able to link responses to individual firms or respondents. The NTA informed prospective respondents about the research project in a telephone call. Next, the NTA sent an official announcement letter that explained the objectives and procedure of the research project, followed by an email from the external agency sent with a link to the web-based survey. After two weeks the agency sent a reminder to all non-respondents. Approximately one month after the first invitation was sent, the survey was closed. A total of 208 out of 274 firms completed the firm survey; an initial response rate of 76 percent. Respondents of the firm survey within the final sample were mostly male (89%) and the mean age was 47 years. Respondents included the highest ranked general managers or owners (8%), CFOs (29%), heads of the financial department (7%), controllers (41%), tax managers (7%) and other respondents (8%). On average, respondents held their position within the firm for over nine years. Additional information about the 169 organizations is presented in Table 1, and the information presented is more fully explained in Section 3.3.4 and in Appendix 1.

In addition to the firm survey, we surveyed NTA employees responsible for the daily handling of the interactions with individual firms (referred to as the client-coordinator survey). This survey was pre-tested by a random selection of 13 client coordinators of the NTA that were not otherwise involved in the research project. As some client coordinators are assigned to more than one firm, the client-coordinator data on our sample of 169 organizations come from 131 unique individuals. We use the information from this survey to validate the information coming from the firm survey.

Between June 2014 and September 2016, after the conclusion of the surveys, the NTA audited all firms in the sample. The scope of these field audits included the 2013 VAT returns and the most recently filed CIT returns. Typically, these would concern the year 2012, but occasionally the most recently filed CIT returns applied to 2013, 2011, or 2010. These in-depth field audits were performed by teams of NTA audit staff, led by experienced lead auditors.[11] These audits were not part of the NTA's regular audit efforts, but specifically done for the purpose of the research project. Since these audits were performed as part of

[9] The NTA distinguishes large businesses 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.

[10] Note that three of the four authors of this article are affiliated with the NTA.

[11] Lead auditors are usually Dutch certified public accountants with 12 years of audit experience on average.

the research project and randomly selected,[12] we have no selection bias from the risk-based audit selection that usually drives field audits of tax authorities. We used an audit report format to collect the audit data. 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 both the order and wording of the items included in this study. The audit report format included a series of detailed questions relating to the findings of the audits. Included were questions about the size of audit adjustments (if any), nature and cause of these audit adjustments, and some general perceptions of the auditor regarding the compliance of the organization. The NTA subjected each audit to at least one internal quality review, both during and after conclusion of the audit. The audit findings are used to measure compliance as the ultimate dependent variable in our study.

For a variety of reasons, such as the bankruptcy of the firm, not all planned field audits could be conducted. Furthermore, audit reports that contained inaccuracies and were not fully completed at the time we started our analyses were dropped from further analysis. Our final sample consists of 169 large businesses that completed both the audit reports and the firm survey.[13]

3.2. Measures

3.2.1. Compliance

Following Chan et al. (2010) and DeBacker et al. (2015), we use the *scaled amount* of audit adjustments as a proxy for the level of compliance (or rather: noncompliance), using the materiality threshold used in the audit as the denominator.[14] Hanlon and Heitzman (2010, p. 137) see noncompliance as part of a continuum of tax avoidance, which they define "broadly as the reduction of explicit taxes". This continuum ranges from perfectly legal tax planning to intentional, aggressive non-compliant behavior. Whereas the beginning of this continuum can be described as responsible structuring of tax affairs (Gribnau, 2017), the tail-end of this continuum is often equated to tax evasion, i.e., violating both the letter as well as the spirit of the law (Jallai, 2020). Our proxy for compliance is closer to the latter end of this continuum, which is the part of the continuum that receives the most interest from policy makers (Hanlon & Heitzman, 2010). Most other studies regarding tax avoidance in general, or tax noncompliance more specifically, use proxies obtained from financial statements with all associated limitations (Hanlon & Heitzman, 2010). Our use of a proxy based on tax return audits ensures that our study is not restricted by these limitations.

The audit methods applied are geared towards detecting misstatements that (incorrectly) decrease the tax burden, although they may more or less by coincidence also pick up on mistakes that lead to an (incorrect) overstatement of due taxes. As the detection of the latter type of misstatements is not systematic, we only use the first type in our main analysis.[15] To normalize the variable, we categorized the scores in five clusters of approximately equal size, although the zero-adjustment category is larger than the other four categories.

In Table 2, Panel A we report summary statistics of the results of the field audits. In cases where VAT adjustments were necessary, the average number of imposed adjustments was 2.44, summing up to a total average € 69,845 in payable taxes. In cases where CIT adjustments were necessary, the average number was 2.49, representing an average total amount of € 1,826,105 in taxable income. As noted, we scale the size of adjustments with the materiality threshold used in the audit as the denominator, and subsequently categorized the amounts in five categories (see Table 2, Panel B).

3.2.2. Survey measures

Appendix 2provides detailed information for all survey-based variables, including the exact wording of the items we used to measure the constructs. Descriptive statistics are in Table 3.

The perceived *Working relationship* with the NTA is measured using the mean of four items, based on descriptions of the working relationship in internal documents of the NTA. We measure *Procedural justice* using the mean of six items based on Verboon and Van Dijke (2011). *Transparency* is measured using the mean of three items purposely developed for this project. These three items were chosen because they reflect the information on the relevant tax risks the NTA wishes to receive from large businesses. To test the dimensionality of these constructs, we perform a confirmatory factor analysis (cf. Bedford & Speklé, 2018), constraining each indicator to load on its expected construct. All indices indicate acceptable fit, with TLI = 0.95, CFI = 0.96, NNCP = .96, and RMSEA = 0.07.[16] Furthermore, the Chi-square to degrees of freedom ratio is satisfactory

[12] Because the NTA wanted to ensure that the sample included a substantial number of firms participating in its horizontal monitoring program, as well as a certain number of organizations that only recently met the criteria to qualify as a large business, the NTA decided to stratify the sample. This implies that our sample is not fully random. For our purposes -which is to test theory rather than to make claims that generalize to a population- random sampling is not necessary provided that the sample is relevant to address the research question (Speklé & Widener, 2018). We nevertheless perform additional analyses based on a randomized sample. Results (untabulated) show that our results are robust to sample variations.

[13] Due to additional nonresponse in the client coordinator survey, we lose five observations, leaving a sample of 164 for validation purposes.

[14] The audit materiality is a threshold that defines when a reporting issue is important enough to warrant attention. The NTA uses a materiality table based on the turnover of taxpayers. An alternative scaler would have been turnover itself, but to protect respondents' anonymity, this information was not made available to us in sufficient detail.

[15] In an additional analysis (untabulated), we use the balance of both types of misstatements to measure compliance. The results from this sensitivity check do not affect our inferences.

[16] We follow Sharma, Mukherjee, Kumar, and Dillon (2005) and assess model fit using the Tucker-Lewis index (TLI), comparative fit index (CFI), root mean square error of approximation (RMSEA), and normed noncentrality parameter (NNCP). For smaller sample sizes, Sharma et al. recommend cut-off values of < 0.08 for RMSEA and >0.90 for TLI, NNCP and CFI.

Table 2
Audit adjustments (n = 169).

Panel A: Summary statistics		
	VAT	*CIT*
Number of audits with adjustments	96 (57%)	99 (59%)
Maximum number of adjustments	17	14
Average number of adjustments	2.44	2.49
Maximum amount of adjustments	€ 1,240,999	€ 57,000,000
Maximum amount of scaled adjustments	1.34	21.84
Average amount of adjustments	€ 69,845	€ 1,826,105
Average amount of scaled adjustments	0.08	1.44

Panel B: Categories of non-compliance

	Amount of Adjustments				**Number of adjustments**			
	VAT		**CIT**		**VAT**		**CIT**	
	cut-off	*N*	*cut-off*	*n*	*cut-off*	*n*	*cut-off*	*n*
Cat 1	0	*73*	0	*70*	0	*73*	0	*70*
Cat 2	>0 <0.006	*24*	>0 <0.06	*25*	1	*35*	1	*40*
Cat 3	>0.006 <0.012	*24*	>0.06 <0.24	*25*	2	*28*	2	*27*
Cat 4	>0.012 <0.045	*24*	>0.24 <0.75	*25*	3	*15*	3	*14*
Cat 5	>0.045	*24*	>0.75	*24*	>3	*18*	>3	*18*

Notes: Panel A provides descriptive statistics from field audits of the VAT and corporate income tax returns. VAT amounts are reported in payable taxes, CIT amounts in taxable income. The reported average amounts and numbers of adjustments exclude cases in which the field audits did not result in adjustments. For subsequent tests, we use the scaled amount of the adjustments as our primary proxy for non-compliance, using the materiality threshold applied in the audit as the scalar. We use the number of adjustments as an alternative measure of non-compliance. Panel B gives details of the categorization applied to normalize both the scaled amount and the number of adjustments as our measures of non-compliance. See Appendix 1 for variable definitions.

Table 3
Descriptive statistics of the latent and non-nominal manifest variables (n = 169).

	Range	Mean	Standard deviation	Cronbach's alpha	Average Variance Extracted
Amount VAT adjustments	1.00–5.00	2.42	1.50	–	–
Amount CIT adjustments	1.00–5.00	2.46	1.50	–	–
Number VAT adjustments	1.00–5.00	2.23	1.35	–	–
Number CIT adjustments	1.00–5.00	2.23	1.37	–	–
Working relationship	1.75–7.00	5.58	1.07	0.84	0.60
Procedural justice	2.67–7.00	5.24	0.96	0.88	0.56
Transparency	1.00–7.00	4.44	1.81	0.94	0.84
Quality of tax control	-/-3.24–2.34	0.00	1.00	–	–
- Tax strategy	*1.33–7.00*	*5.39*	*1.07*	*0.88*	*0.57*
- Tax processes	*1.00–7.00*	*3.78*	*1.51*	*0.87*	*0.57*
- Tax performance indicators	*1.00–7.00*	*3.69*	*1.69*	*0.86*	*0.70*
- Tax staff	*1.00–7.00*	*5.22*	*1.19*	*0.74*	*0.54*
Size	1.00–5.00	3.11	1.17	–	–
Complexity	1.00–5.00	3.41	1.30	–	–

Notes: This table also reports reliability statistics (Cronbach's alpha) and convergence statistics (average variance extracted; AVE) for reflectively measured constructs (including the reflectively measured first-order constructs that are formative indicators of the second-order construct Quality of tax control). The details of the CIT and VAT adjustments refer to the categorized variable as explicated in Table 2, Panel B. See Appendix 1 for variable definitions.

at 1.89. Convergent validity is quite acceptable, with all Average Variance Extracted (AVE) scores exceeding 0.50 (Hulland, 1999). Discriminant validity and scale reliability are also satisfactory. The square root of the AVE score of each construct exceeds the bivariate correlations of that construct with the other exogenous constructs in the model (see Table 4), while both Cronbach's alpha and composite reliability for each construct exceed 0.7 (Hair et al., 1998).

The OECD (2013) suggests that implementing the Committee of Sponsoring Organizations of the Treadway Commission (COSO) principles, instruments, and procedures will lead to a high quality of tax control. Redefining the basic COSO ideas to suit the tax context, we identify four key dimensions that collectively define the *Quality of tax control*: the clarity the organization's fiscal (compliance) strategy, the structuring of fiscal processes, the measurement and monitoring of fiscal performance, and the competence of fiscal staff. These four dimensions are formative indicators of the (second-order) internal tax

control construct. To measure these first-order dimensions, we use a series of items developed by Heeren-Bogers et al. (2013), which we adjust to suit the specific focus of our study. We first evaluate convergent validity and internal consistency of the four dimensions and construct the measures by taking the mean of the relevant item scores. We then use the scores on these four first-order constructs to create a composite index to measure the quality of tax control, after verifying the significance of the indicator weights and excluding multicollinearity concerns (Petter et al., 2007).

3.2.3. Validation of measures

We validate the variables *Transparency*, *Working relationship,* and the *Quality of tax control* with data from the client coordinator survey.[17] In this second survey, client coordinators were presented with equivalent statements about *Transparency* and the *Working relationship* as respondents in the firm survey. The scores from both surveys on *Transparency* and the quality of the *Working relationship* are significantly correlated, with $r = 0.38$ ($p < .001$) for *Transparency* and $r = 0.43$ ($p < .001$) for the *Working relationship*. The client coordinators were also presented with four statements about the tax control framework, such as 'The internal tax control system of the organization covers the relevant fiscal risks' and 'The organization determines the correct functioning of the fiscal controls by means of internal monitoring'. We combine the scores on these statements in a composite construct and find that this construct is significantly correlated with the *Quality of tax control* according to the firm survey ($r = 0.25$, $p < .01$).

3.2.4. Control variables

We use five control variables in our analyses (see Table 1 for their descriptive statistics and Appendix 1 for further details). *Horizontal monitoring* is a dummy variable that captures whether the firm has closed a horizontal monitoring covenant with the NTA. *Size* is measured using yearly turnover (revenue) as reported in the survey. *Complexity* is the number of individual fiscal entities or 'fiscal identification codes' in the organization. The external agency involved in the administration of the surveys categorized the size and complexity variables in five classes to protect anonymity. *Publicly traded* is a dummy variable indicating whether a firm is or is part of an organization that is publicly traded on a stock exchange. *Multinational* is a dummy variable that measures if the firm has establishments in foreign countries. Additionally, we display the number of employees as part of Table 1, but due to a high correlation with turnover we excluded this variable from our analyses.

4. Results

4.1. Correlations

The Pearson correlation results are presented in Table 4. The *Working relationship*, *Transparency*, *Procedural justice*, and the *Quality of internal tax control* are all positively correlated. As might be expected, we also observe that firms that participate in horizontal monitoring report higher levels of these variables. The measures of tax compliance are significantly correlated, but their association with the independent variables is limited.

4.2. Structural model

We use structural equation modelling (Amos 22) to test the OECD propositions from section 2.[18] The structural model is visualized in Fig. 1. *Horizontal monitoring, Size*, *Complexity*, *Publicly traded*, and *Multinational* are added as control variables by modelling direct paths to the dependent variable. We run separate models for VAT (Model 1) and CIT (Model 2). Model fit indices are quite acceptable for both the CIT and the VAT models. Because some correlations between our independent variables were relatively high, we calculated variance inflation factors (VIF). The results give no reason for concern, with all VIF scores below 1.96.

Table 5 shows the standardized path coefficients and their significance for the analyses of both the VAT and CIT compliance proxies. In line with the expected fundamental differences between VAT and CIT, we observe a negative relationship between the quality of the *Working relationship* and the *Amount of CIT adjustments*, but not for the *Amount of VAT adjustments*. These findings provide partial support for proposition P1. Contradicting P5, we find no relationship between the *Quality of tax control* and both compliance proxies.

[17] The client coordinators are well-positioned to form an opinion about the quality of taxpayers' tax control and their clients' transparency. However, these assessments remain an 'outsider view' that need not be aligned perfectly with the insider view we obtain from the company itself. In addition, as representatives of the tax authority, client coordinators may have quite different expectations regarding the working relationship and may, consequently, value the quality of this relationship differently than the taxpaying organization. Moreover, the responses from the client coordinator are more likely to be susceptible to halo effects. For these reasons, we do not expect correlations between the insider and outsider-based constructs to be high in any absolute sense. Finding significant correlations, however, would still add credibility to our measurement.

[18] The proxies we use in our main and additional analyses for noncompliance are based on the number and scaled amount of audit adjustments. These proxies are right skewed due to the relatively large number of audits without adjustments. SEM is believed to be robust enough to deal with the resulting nonnormality (Lei & Lomax, 2005). We nevertheless repeat our analyses using PLS-SEM, which is very robust when used on non-normal data (Hair et al., 2012). Results from these analyses (untabulated) are very similar to the original analyses and do not affect any of our inferences.

Table 4
Bivariate Pearson correlations, square root of the AVE score in diagonal (n = 169).

		1	2	3	4	5	6	7	8	9	10	11	12
1	Amount of VAT adjustments	–											
2	Amount of CIT adjustments	0.34***	–										
3	Number of VAT adjustments	0.82***	0.28***	–									
4	Number of CIT adjustments	0.43***	0.76***	0.43***	–								
5	Working relationship	0.01	−0.05	0.02	−0.11	*0.75*							
6	Procedural justice	−0.03	0.09	0.02	0.05	0.61***	*0.73*						
7	Transparency	−0.02	−0.04	0.01	0.01	0.49***	0.40***	*0.92*					
8	Quality of tax control	−0.10	−0.04	−0.16**	−0.13*	0.45***	0.41***	0.49***	–				
9	Horizontal monitoring	−0.03	−0.12	−0.05	−0.07	0.35***	0.17**	0.52***	0.31***	–			
10	Size	0.04	0.06	0.06	−0.04	0.30***	0.06	0.15*	0.07	0.16**	–		
11	Complexity	0.13*	0.07	0.14*	0.10	−0.03	−0.06	−0.05	−0.09	0.07	0.01	–	
12	Publicly traded	−0.11	−0.01	−0.05	−0.01	0.16**	0.15*	0.18**	0.13*	0.03	0.28***	−0.17**	–
13	Multinational	0.15**	−0.01	0.07	0.02	−0.11	−0.07	−0.03	−0.09	−0.01	0.26***	0.10	−0.36***

Notes: On the diagonal (set in italics) are the square root of average variance extracted (AVE) for all reflectively measured constructs to provide evidence of discriminant validity (Fornell & Larcker, 1981). * p < .10; ** p < .05; *** p < .01. See Appendix 1 for variable definitions.

We find positive associations between both perceived *Procedural justice* and *Transparency* on the one hand, and the quality of the *Working relationship* on the other. These findings provide support for P2 and P3. In support of P4, we also find a positive and significant association between the *Quality of tax control* and *Transparency*. Interestingly, and contrary to expectations, we find a significantly positive association between perceived *Procedural justice* and the *Amount of CIT adjustments*. None of the control variables are significant. This also applies to the *Horizontal monitoring* variable, which may appear somewhat surprising given that this variable captures participation in the NTA's main formal cooperative compliance program. However, it should be noted that formal participation in this program is positively correlated with *Procedural justice*, *Transparency*, the quality of the *Working relationship*, and the *Quality of tax control* (see Table 4), suggesting that the contribution of participation in *Horizontal monitoring* to compliance is already captured in these associated constructs.

To establish whether the quality of the *Working relationship* is a mediator of the effects of *Procedural justice* and *Transparency* on the *Amount of CIT adjustments*,[19] we use bootstrapping to test the significance of the indirect paths. This analysis (untabulated) shows that both indirect effects are significant and negative (β = -0.17 and p = .02 for *Procedural justice*; β = -0.05 and p = .03 for *Transparency*). The indirect path of the *Quality of tax control* via *Transparency* on the quality of the *Working relationship* is positive and significant (β = 0.08 and p = .05), but the effect of this path on the *Amount of CIT adjustments* is not significant.

4.3. Additional analyses with the number of adjustments

Using the amount of adjustments as a proxy for tax noncompliance has limitations. For instance, a taxpayer may have taken in good faith a defensible position on a tax risk that nevertheless is challenged by the tax authorities, resulting in a large adjustment. It could be argued, though, that this taxpayer is more compliant than a firm where a smaller amount was adjusted for reasons of fraud. On the other hand, if firms that actively seek tax minimization primarily focus on the areas where there is a lot to be gained, large adjustments could also indicate deliberate aggressiveness. In addition, it is reasonable to assume that transactions with a higher financial impact were subject to more stringent internal controls, so if anything is wrong with these transactions, one could argue that the compliance issue is likely intentionally created by management.

[19] Note that the association between the working relationship and VAT compliance was not significant in the first place, so we do not have to run this analysis for the VAT model.

Table 5
Structural models (n = 169).

			Dependent variables							
			Model 1: Amount of VAT adjustments		Model 2: Amount of CIT adjustments		Model 3: Number of VAT adjustments		Model 4: Number of CIT adjustments	
	PROPOSED RELATIONSHIPS									
	Path from:	***Path to:***	***β***	***p***	***β***	***p***	***β***	***p***	***β***	***p***
P1: -	Working relationship	Adjustments	0.13	0.19	**−0.27**	**0.04**	0.05	0.36	**−0.29**	**0.02**
P2: +	Procedural justice	Working relationship	**0.62**	**0.00**	**0.62**	**0.00**	**0.62**	**0.00**	**0.62**	**0.00**
P3: +	Transparency	Working relationship	**0.17**	**0.02**	**0.17**	**0.02**	**0.17**	**0.02**	**0.17**	**0.02**
P4: +	Quality of tax control	Transparency	**0.48**	**0.00**	**0.48**	**0.00**	**0.48**	**0.00**	**0.48**	**0.00**
P5: -	Quality of tax control	Adjustments	−0.11	0.11	−0.02	0.43	**−0.22**	**0.01**	**−0.16**	**0.04**
	OTHER RELATIONSHIPS									
	Path from:	***Path to:***	***β***	***p***	***β***	***p***	***β***	***p***	***β***	***p***
	Procedural justice	Adjustments	−0.05	0.72	**0.29**	**0.04**	0.07	0.60	**0.27**	**0.05**
	Transparency	Adjustments	0.03	0.78	0.05	0.62	0.09	0.38	0.15	0.16
	Horizontal monitoring	Adjustments	−0.07	0.47	−0.12	0.20	−0.08	0.39	−0.05	0.60
	Size	Adjustments	0.07	0.44	0.15	0.10	0.07	0.40	0.03	0.77
	Complexity	Adjustments	0.10	0.18	0.08	0.29	0.13	0.10	0.11	0.17
	Publicly traded	Adjustments	−0.06	0.48	−0.05	0.58	−0.04	0.66	0.00	0.99
	Multinational	Adjustments	0.14	0.09	0.00	0.97	0.06	0.48	−0.01	0.95
		Model fit								
		Df		149		149		149		149
		Chi^2		218.87		218.93		213.32		210.85
		Chi^2/df		1.47		1.47		1.43		1.42
		p		0.00		0.00		0.00		0.00
		TLI		0.95		0.94		0.95		0.95
		CFI		0.96		0.96		0.96		0.96
		NNCP		0.96		0.96		0.96		0.96
		RMSEA		0.05		0.05		0.05		0.05

Notes: Reports the results of the structural equation models to test the OECD's working theory of cooperative compliance. Model 1 measures non-compliance with the (categorized) scaled amount of VAT adjustments, while Model 2 is based on the (categorized) scaled amount of CIT adjustment as proxy for non-compliance. Model 3 measures non-compliance with the (categorized) number of VAT adjustments, while Model 4 is based on the (categorized) number of CIT adjustment as proxy for non-compliance. We report standardized path coefficients (β) and p-values (1-tailed p for hypothesized relationships; 2-tailed p for other relationships). Significant coefficients are set in bold. See Appendix 1 for variable definitions.

For these reasons, we use the number of audit adjustments as a second measure of tax compliance in Models 3 and 4, thus, eliminating the size of the adjustment as a factor. Because this alternative measure is less sensitive to large adjustments resulting from both sincere differences of opinion and blatant aggressiveness, the alternative measure may be a better reflection of unintentional noncompliance than our initial operationalization based on the amount of the adjustment. The distinction between intentional and unintentional errors as different manifestations of noncompliance is often made, both in the literature (e.g., D'Ascenzo, 2015; James & Alley, 2002) and by the OECD (2009a, 2010b). Like the original compliance metric, this variable is grouped in five approximately equal categories, again with a larger zero-adjustment group. Details are reported Table 2, Panel B.

The findings for alternative models 3 and 4 are reported in Table 5. We again find positive associations between the *Working relationship* and both *Procedural justice* and *Transparency*, and between the *Quality of tax control* and *Transparency* (P2, P3, and P4). Also in line with our base model results, we find no relationship between the quality of the *Working relationship* (P1) and the *Number of VAT adjustments* while we do find a relationship with the *Number of CIT adjustments*. Furthermore, we again find the counterintuitive direct relationship between *Procedural justice* and the (number of) CIT adjustments.

In addition, and in contrast with the base models, we now also find a negative association between the *Quality of tax control* and the number of both CIT and VAT adjustments. Earlier, we argued that the tax control framework is especially important to prevent unintentional errors, and we expected this to translate in stronger effects of this variable on the number of adjustments than on their amount. Our findings are consistent with this argument.

We again use bootstrapping to test the significance of the indirect paths via the *Working relationship* on the *Number of CIT adjustments*. This analysis shows that both indirect effects are significant (β = -0.18 and p = .01 for *Procedural justice* and β = -0.05 and p = .04 for *Transparency*). However, the indirect path of the *Quality of tax control* via *Transparency* and, subsequently, the quality of the *Working relationship* is not significant. Fig. 2 provides a visual overview of the outcomes of the different models.

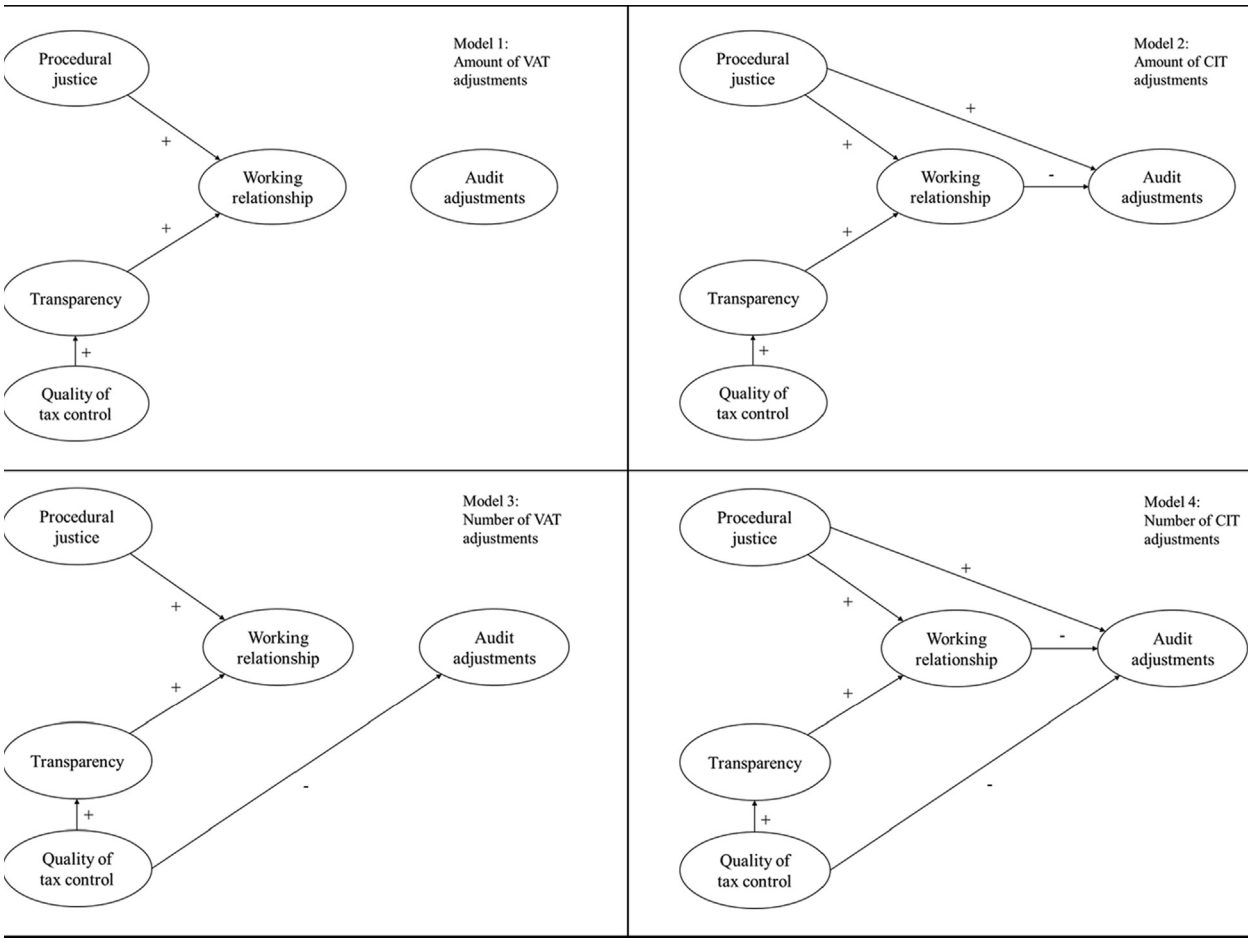

Fig. 2. Overview of findings.

5. Conclusions and discussion

Many tax authorities worldwide have introduced – or are in the process of developing – a cooperative approach to corporate tax compliance. In this paper, we use OECD reports to explicate the generic underlying principles of these approaches and examine these both theoretically and empirically. We use a unique dataset for our analyses, combining survey data with in-depth, field audits performed by the NTA.

Our results provide empirical support for some of the underlying principles of the cooperative approaches. First, we find support for the assumed relationship between procedural justice and the working relationship in all four models: treating taxpayers in a consistent, objective, and fair way indeed appears to improve the working relationship between tax authorities and taxpayers (Six, 2013). Second, in all our models we find support for the link between transparency and the working relationship. The OECD sees transparency on the part of the taxpayer as an essential component of building and maintaining a trust-based working relationship (Molm, 1994), and our findings appear to corroborate this. Third, the results of all four models support the relationship between the quality of internal tax control and transparency. This is in line with the reasoning of the OECD (2013) that investments in the quality of the tax control framework appear to be associated with increased transparency and improved disclosure (Nielsen & Parker, 2009). Overall, our results suggest that the key tenets of the cooperative approach contribute to the quality of the working relationship between taxpayer and the tax authority.

The impact of this improved working relationship on tax compliance, however, is not straightforward. Irrespective of whether we use the amount or the number of adjustments to measure compliance, we find that the working relationship only affects CIT (Models 2 and 4) but not VAT compliance (Models 1 and 3). As suggested in section 2, this may be attributed to the fact that CIT matters are usually dealt with at relatively high levels in the organizational hierarchy; the same level that is involved in the development of the working relationship. In line with both SET (Cropanzano & Mitchell, 2019) and RRT (Ayres & Braithwaite, 1992), we expected the working relationship to affect compliance by creating a reciprocal interdependent relationship that encourages positive behavior. For VAT, settlement is much more routinized in impersonal administra-

tive processes, managed by operational personnel that do not directly interact with the tax authorities. In such a setting, reciprocal relationships are less important and less likely to be formed.

As expected, we furthermore find a positive and significant relationship between the quality of internal tax control and tax compliance. However, this only holds for the number of VAT and CIT adjustments (Models 3 and 4), but not for their amount (Models 1 and 2). This difference might be linked to the nature of the errors. We argued that the number of adjustments is a better proxy for unintentional errors in the tax filings, whereas the amount of the adjustment more likely picks up on intentional non-compliance, i.e., tax aggressiveness. The tax control framework is especially useful to prevent unintentional mistakes, and our results seem to reflect this. These results, however, also support a more cynical interpretation, namely that the internal control system is apparently quite useful to mask intentional non-compliance. It has been argued in the literature that the tax control framework can be used as a tool to increase firm value by enabling the firm to intentionally exploit less compliant tax strategies (Chen et al., 2020). The fact that we do not find evidence for a relationship between the quality of internal control and the amount of CIT and VAT adjustments may be a manifestation of the control system's ability to systematically hide intentional misstatements from the tax auditors. Alternatively, one could argue that deliberate decisions not to comply are typically made outside the usual organizational routines. As internal control systems are largely designed around regular, standardized processes, such systems should perhaps be expected to overlook what transpires outside the usual decision channels. As our data do not allow further examination of these suggestions, we leave these matters to future research.

An additional and unexpected result is that we document a positive relationship between procedural justice and the number and amount of CIT adjustments. RRT posits that increased procedural justice leads to a reciprocal relationship in which subjects repay by regulating themselves (Six, 2013). We do find support for this claim in the indirect path via the working relationship, but the direct effect turns out to be positive, suggesting that procedural justice is associated with more and larger adjustments to CIT filings (not to VAT filings). We do not have a good explanation for this and hope future research will shed new light on this finding.

Our study has some limitations that should be taken into consideration when interpreting the findings. First, our multi-source, multi-method research design in which information on the dependent and independent variables comes from different sources and are collected using different methods minimizes common method bias, but could come at the expense of increased attenuation bias due to an accumulation of measurement noise (Lance et al., 2010; Speklé & Widener, 2018). The implication is that our study is more vulnerable to type II errors than single method studies, possibly leading us to overlook actually existing relationships in the data. This risk, however, is not too large considering that to the extent that we do not find support for the propositions of the working theory of cooperative compliance, the coefficients are so small that better measurement is unlikely to have made a substantive difference. Second, we use Dutch data, and our results may be influenced by the specific social and institutional characteristics of the Netherlands, which may limit the generalizability of the findings. Furthermore, our study is based on cross-sectional data and, thus, provides evidence on associations rather than on causality. Our interpretation of the direction of the associations is based on the logic of the cooperative approach, but for some of these, a case could be made that the causality is either bi-directional or runs the other way. For example, one could argue that the perceived quality of the working relationship drives the willingness to be transparent, rather than vice versa.[20]

Despite these limitations, our study contributes to the literature in several ways. First, our study provides empirical support for the tenability of the key assumptions of the cooperative approach. Previous studies explored the incentives for corporate taxpayers to cooperatively work together with the tax authority (Hanlon & Heitzman, 2010) and the consequences for their tax certainty (e.g., Beck & Lisowsky, 2014), but we are the first to examine empirically whether and how the cooperative approach helps to improve corporate tax compliance. In doing so, we focus on previously neglected elements associated with the relationship between large business taxpayers and tax authorities. Specifically, we explore the effect of the working relationship on corporate tax compliance. This relationship is central to the cooperative approach, and although it has been discussed in the literature (e.g., DeSimone et al., 2013; Ventry, 2008), it has hitherto escaped empirical examination. Our finding that the quality of the working relationship affects CIT compliance but not VAT compliance and the tentative explanation that this may be due to the way in which firms organize their tax function and management contributes to a more detailed understanding of the underlying processes of corporate tax compliance.

Second, our study investigates the role of the quality of tax control. Our findings have relevance outside the field of corporate tax compliance and may speak to the larger literature on regulatory strategies more broadly. Over the last decade or two, government regulators introduced management-based regulatory strategies in a variety of different areas (Coglianese & Lazer, 2003). Many of these strategies rely on the internal control measures of subjects to ensure compliance with rules and regulations (Parker & Nielsen 2009). However, such reliance is typically ill-substantiated empirically. To the extent that the issue has been studied, results are conflicting (e.g., Earnhart & Glicksman, 2015; Gunningham & Sinclair, 2009), sparking a debate on the effectiveness of regulatory strategies that rely on the quality of internal control (e.g., Krawiec 2003). Our results add to this literature by suggesting that improving internal control might indeed improve compliance, but that the effects may be limited to unintentional noncompliance.

Our findings also provide valuable insights for tax authorities. In line with the cooperative approach, many tax authorities try to improve the quality of their interactions with taxpayers. Our findings suggest that establishing a better working relationship with large businesses is possible, and that improving perceived procedural justice and stimulating taxpayer transparency can help achieving this goal. Our findings, however, also suggest that such efforts may only pay off for CIT compliance and do not affect VAT compliance. Similarly, our finding that the contribution of the quality of tax control

may be limited to the prevention of unintentional mistakes also has practical relevance, supporting more realistic expectations on the side of the regulator as to the benefits of internal control. Overall, our findings provide building blocks for a more mature theoretical framework on the effect of both internal tax control and the working relationship on different types of corporate tax compliance.

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Declaration of interests

Maarten Siglé, Sjoerd Goslinga and Lisette van der Hel 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.

Appendix A

Variable Definitions	Variable Operationalizations
Amount of VAT adjustments	Measured with categories from 1 to 5, where 1 is 0, 2 is >0 < 0.006, 3 is >0.006 < 0.012, 4 is >0.012 < 0.045, and 5 is >0.045.
Amount of CIT adjustments	Measured with categories from 1 to 5, where 1 is 0, 2 is >0 < 0.06, 3 is >0.06 < 0.24, 4 is >0.24 < 0.75, and 5 is >0.75.
Number of VAT adjustments	Measured with categories from 1 to 5, where 1 is 0, 2 is 1, 3 is 2, 4 is 3, and 5 is >3.
Number of CIT adjustments	Measured with categories from 1 to 5, where 1 is 0, 2 is 1, 3 is 2, 4 is 3, and 5 is >3.
Working relationship	Measured using the mean of four items, based on descriptions of the working relationship in internal documents of the NTA.
Procedural justice	Measured using the mean of six items based on Verboon and Van Dijke (2011).
Transparency	Measured on a scale from 1 to 7 using three items to reflect information on the relevant tax risks the NTA wishes to receive from large businesses.
Quality of tax control	Measured using four key dimensions on the quality of tax control: tax strategy, tax processes, tax performance indicators, and tax staff. To measure these first-order dimensions, we adapted a series of items developed by Heeren-Bogers et al. (2013). We use the scores on these four first-order constructs to create a composite index to measure the quality of tax control.
Horizontal monitoring	A dummy variable that equals 1 if firm has closed a horizontal monitoring covenant with the NTA, and otherwise 0.
Size	Measured as yearly turnover (revenue) in Euros with categories from 1 to 5, where 1 is <10 million, 2 is 10–25 million, 3 is 25–50 million, 4 is 50–200 million, and 5 is >200 million.
Complexity	Measured as the number of individual fiscal entities or 'fiscal identification codes' with categories from 1 to 5, where 1 is 1–3 fiscal entities, 2 is 4–7, 3 is 8–15, 4 is 16–31, and 5 is $\geq$32.
Publicly traded	A dummy variable that equals 1 if it is quoted on a public stock exchange or if it is part of an organization that is quoted on a public stock exchange, and otherwise 0.
Multinational	A dummy variable that equals 1 if it has operations in a foreign country, and otherwise 0.

Appendix B

Survey instrument (abridged)
Working relationship
Firm survey

(1 = completely disagree; 7 = completely agree)	Factor loading
The tax authorities and my organization try to cooperate as much as possible	0.77
The tax authorities invest in the relationship with my organization	0.82
My organization invests in the relationship with the tax authorities (dropped)	–
The relationship between the tax authorities and my organization leaves much to be desired (reversed coded)	0.69
The tax authorities and my organization respect each other	0.80

Validation question Working relationship
Client coordinator survey

(1 = completely disagree; 7 = completely agree)	Factor loading
The organization and the tax authority try to cooperate as much as possible	0.81
The tax authority invests in the relationship with the organization	0.83
The organization invests in the relationship with the tax authority	0.90
The organization and the tax authority respect each other	0.66

Procedural justice
Firm survey

(1 = completely disagree; 7 = completely agree)	Factor loading
The tax office makes sure to have the necessary information available to take decisions	0.74
The tax office treats everyone in the same manner	0.68
The tax office takes the circumstances of individual taxpayers into account when taking decisions	0.76
The tax office acts accurately	0.74
People who disagree with the tax office are allowed to explain their point of view	0.73
The tax office acts fairly	0.83

Transparency
Firm survey

My organization actively shares:(1 = completely disagree; 7 = completely agree)	Factor loading
… its tax strategy with the tax authorities	0.93
… all relevant tax risks with the tax authorities	0.96
… the findings from its own monitoring of internal control	0.86

Validation question Transparency
Client coordinator survey

The organization actively shares:(1 = completely disagree; 7 = completely agree)	Factor loading
… its tax strategy with the tax authorities	0.83
… all relevant tax risks with the tax authorities	0.97
… the findings from its own monitoring of internal control	0.77

Quality of tax control: 1st order constructs

Firm survey
Tax control strategy

In my organization:(1 = completely disagree; 7 = completely agree)	Factor loading
… the fiscal strategy is clear	0.79
… the fiscal targets are clear	0.88
… the fiscal targets are realistic	0.81
… the fiscal strategy contributes to compliance with tax laws and regulations	0.63
… fiscal risks are identified	0.72
… it is stated what fiscal risks must be avoided	0.69

Tax control processes

In my organization:(1 = completely disagree; 7 = completely agree)	Factor loading
… processes are formally described, for example in a manual	0.72
… the descriptions of processes include tax risks	0.86
… the descriptions of processes include (formal) internal controls	0.78
… the monitoring of internal controls is described in a plan.	0.78
… the monitoring of internal controls is performed by a separate internal audit department or an internal auditor	0.60

Tax control performance indicators

In my organization:(1 = completely disagree; 7 = completely agree)	Factor loading
… are fiscal performance indicators derived from the fiscal targets	0.92
… are fiscal performance indicators unambiguous	0.90
… the realization of fiscal targets periodically reported to the board	0.66

Tax control staff

In my organization:(1 = completely disagree; 7 = completely agree)	Factor loading
… the roles and responsibilities of fiscal staff are clear	0.70
… we invest in training and education to keep the knowledge of fiscal staff up to date	0.88
… employees in fiscal positions are competent for these tasks	0.59

Dropped items (insufficient factor loadings)

In my organization:(1 = completely disagree; 7 = completely agree)
… 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
… monitoring of internal controls is performed by an external specialist (e.g., tax advisor)

Quality of tax control: 2nd order construct

	Indicator weights
Tax control strategy	0.37
Tax control processes	0.34
Tax control performance indicators	0.30
Tax control staff	0.34

Validation question Quality of tax control

Client coordinator survey

(1 = completely disagree; 7 = completely agree)	Factor loadings
The fiscal internal control of the organization detects the fiscal risks timely.	0.84
The fiscal internal control of the organization mitigates the relevant tax risks.	0.90
The organization determines with internal monitoring the adequate functioning of the internal control measures.	0.93
The organization determines with internal monitoring the completeness of the internal control measures.	0.92

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