CENTER FOR TAX AND ACCOUNTING RESEARCH

Center for Risk Management

TAXATION, ACCOUNTING, AND FINANCE

TAF WORKING PAPER

No. 93 / July 2024
revised May 2026

Tax Complexity and Tax Risk: The Role of Tax Employees

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Tax Complexity and Tax Risk: The Role of Tax Employees

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Earlier versions of this study were titled
Tax complexity and tax department structure: The hidden cost of complex tax systems and
Where to locate tax employees? The role of tax complexity and tax risk implications

ABSTRACT: We investigate whether and how tax complexity is associated with multinationals' tax risk and how the organization of their internal tax function relates to complexity. Using panel data on more than 15,780 tax employees from 345 European multinationals and cross-country measures of tax complexity, we document that greater exposure to tax complexity is associated with higher consolidated tax risk, that multinationals have more tax employees in more complex countries, particularly where tax procedures are more complex, and that more tax employees in these countries are associated with lower tax risk. Altogether, we provide evidence that tax complexity is related to tax risk and highlight local tax workforce as crucial organizational feature, consistent with firms expanding human capital to address tax risk arising from complex tax procedures, despite other available channels.

Keywords: tax complexity; tax complexity cost; tax department; tax employees; tax risk
JEL Classifications: H25, H26, M12
Data Availability: Data are available from the public sources cited in the text.

Acknowledgements: We thank Andrew Belnap, Sarah Clifford, Samuel Delpeuch (discussant), Scott Dyreng, Philipp Dörrenberg (discussant), Christina Elschner (discussant), John Gallemore (discussant), Nathan Goldman, Inga Hardeck (discussant), Lisa Hillmann, Martin Jacob, Alisson Koester, Saskia Kohlhase, Rebecca Lester, Frank Murphy, David Samuel, Dirk Schindler, Jeri Seidman, Martin Simmler (discussant), Barbara Stage, Arthur Stenzel, Cinthia Valle Ruiz, Johannes Voget, Jacco Wielhouwer, Brady Williams, Kaishu Wu, and participants at the 44th Annual Congress of the European Accounting Association in Bergen, 77th Annual Congress of the IIPF (virtual), 9th Annual MannheimTaxation Conference, 105th Annual Meeting of the American Accounting Association (virtual), 2023 Annual Meeting of the Section Business Taxation of the German Academic Association for Business Research (VHB), 2022 Autumn Meeting of the Working Group Taxation of the Schmalenbach-Gesellschaft für Betriebswirtschaft, 3rd Dutch Workshop on Corporate Taxation in Rotterdam, 80th Annual Congress of the International Institute of Public Finance, TRR 266 Annual Conference 2022, TRR266 Brownbag Seminar 2023, 2022 VHB Annual Meeting in Prague, and the 2022 Waterloo | Austin Biennial Global Taxation Symposium in Toronto. Henning Giese and Caren Sureth-Sloane gratefully acknowledge financial support by the German Research Foundation (DFG) - Collaborative Research Center (SFB/TRR) Project-ID 403041268 - TRR 266 Accounting for Transparency.

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I. INTRODUCTION

Tax complexity has increased substantially in recent years (Devereux 2016; Hoppe, Schanz, Sturm, and Sureth-Sloane 2023) and is expected to rise further with the implementation of global minimum taxation and related reforms (Hanlon and Nessa 2023). Despite its growing importance, we lack large-sample evidence on whether tax complexity is systematically related to firm-level tax risk and how the organization of firms' internal tax functions relates to this complexity. We investigate whether and how tax complexity is associated with multinationals' tax risk and how the organization of their internal tax function relates to tax complexity. Survey evidence and practitioner reports suggest that rising complexity is associated with greater uncertainty in tax positions, driven by ambiguous rules, frequent regulatory changes, and heterogeneous enforcement across countries (Zangari, Caiumi, and Hemmelgarn 2017; Devereux 2022; Deloitte 2025; European Commission 2025). While related, we conceptualize tax complexity and tax risk as distinct constructs: complexity refers to features of the tax system, whereas tax risk reflects the unpredictability of realized tax outcomes.

Tax complexity is widely perceived as a key challenge for multinationals, affecting investment decisions, compliance processes, and interactions with tax authorities. Prior research primarily examines the real effects of tax complexity on investment and location choices (Edmiston, Mudd, and Valev 2003; Mueller and Voget 2012; Lawless 2013; Zwick and Mahon 2017; Esteller-Moré, Rizzo, and Secomandi 2021; Euler, Harst, Schanz, Sureth-Sloane, and Voget 2024; Amberger, Gallemore, and Wilde 2026a). In addition, survey-based and descriptive evidence suggests that greater tax complexity is associated with higher compliance costs (e.g., Marcuss et al. 2013). While this literature primarily establishes that tax complexity imposes costs on firms and can deter investment, some studies also document potential benefits of tax complexity, such as planning advantages arising from allowances, deductions, or exemptions

(Lawless 2013). However, these studies leave several important questions unanswered. It remains unclear whether tax complexity is associated with higher consolidated tax risk at the firm level, and we still know little about the organizational channels through which firms respond to tax complexity, in particular whether firms can attenuate such risk through investments in tax-specific human capital. On the one hand, recent evidence shows that internal actors play an important role in shaping corporate tax outcomes (Belnap, Hoopes, and Wilde 2024; Osswald and Pierk 2026). On the other hand, it is not obvious that firms respond to tax complexity by expanding their internal tax function, as alternative channels such as external advisors or technology may substitute for in-house resources (Klassen, Lisowsky, and Mescall 2016). Identifying these channels is critical for understanding how tax complexity is related to firm outcomes and whether its consequences can be mitigated.

We address these questions by examining how cross-country and over-time variation in tax complexity relates to multinational-level tax risk and to the geographic adjustments in tax employees across affiliates. Following Hoppe et al. (2023), we conceptualize tax complexity as a multidimensional construct and distinguish between (i) tax code complexity, reflecting the difficulty of interpreting and applying statutory tax rules, and (ii) tax framework complexity, capturing administrative and procedural burdens such as filing requirements, documentation, tax audits, and dispute resolution. This distinction is central to our setting because these dimensions likely differ both in the tax risk they create and in the extent to which firms can manage it.

Theory suggests that firms respond to tax uncertainty by investing in mechanisms that help them manage this uncertainty, provided that the benefits exceed the associated costs (Diller, Kortebusch, Schneider, and Sureth-Sloane 2017; Chen, Hieber, and Sureth-Sloane 2025). One such mechanism is tax employees in foreign affiliates. These employees provide local expertise,

monitor regulatory changes, ensure compliance, and facilitate interactions with tax authorities. We therefore interpret tax employees not merely as a location decision, but as an investment in the internal tax function that enables firms to cope with complexity-induced uncertainty. In this sense, the presence of tax employees reflects the demand for tax-related activities generated by local tax complexity, rather than the deployment of a fixed pool of employees across locations. This perspective is consistent with evidence that firms expand accounting expertise in response to financial reporting complexity (Chychyla, Leone, and Minutti-Meza 2019) and tax enforcement (DePaul, Krupa, and Mullaney 2026). In line with this perspective, anecdotal evidence from practitioners highlights the substantial resource demands created by tax complexity:

> Brazil is, I think, a very, very good example. They have a tax administration that is already extremely highly digitalized, … and in the end it still doesn't help them because they administer such a complex tax system. ... We had clients with whom … we visited various … companies on site and visited their tax departments, … and there was also a large … manufacturer with the tax department, there were several hundred people sitting there and they do nothing other than manage all the [tax assessment] notices that go in and there are dozens of notices. … Thus the resources must be increased to such an extent that you are ultimately able to deal with the situation [of the complex tax system].
>
> *European Big Four tax partner on experiences in countries with complex tax systems*

This example illustrates that tax framework (procedural) complexity can generate sustained compliance burdens that firms address through internal resource allocation.

We test three related predictions: First, whether average exposure to tax complexity is associated with higher consolidated tax risk; second, whether firms exhibit more tax employees in more tax-complex countries, particularly those characterized by higher tax framework complexity; third, whether employees in highly complex countries are associated with lower tax risk. We focus on the complexity of profit taxation and disregard payroll and value-added taxes, as profit taxes are particularly relevant for corporate location choices (Hines 1999).

We draw on panel data from Revelio Labs, which compiles employee career histories from the online professional platform LinkedIn.[4] This allows us to track the location of tax employees across countries and over time for a broad sample of publicly listed European multinationals. We combine these data with country-level information on tax complexity from the Global Tax Complexity Surveys by Hoppe et al. (2023)[5] and the Paying Taxes measures of PwC et al. (2018). We measure tax complexity using these data and distinguish between tax code complexity and tax framework complexity, capturing statutory rules and administrative, judicial, and legislative procedures, respectively. We measure tax risk using firm-level financial statement data from Compustat on the three-year standard deviation of cash or GAAP effective tax rates (ETRs), prior-year tax payments, and current-year tax-related key audit matters.

We document three main findings that reflect our empirical sequence. First, a multinational's consolidated tax risk is positively associated with the average tax complexity of the countries in which it operates. Economically, a one-standard-deviation increase in average overall tax complexity is associated with a 9.3% increase in tax risk relative to the sample mean, underlining the relevance of complexity-induced tax risk.

Second, multinationals are more likely to have and to employ more tax employees in more complex countries. A one-standard-deviation increase in tax complexity is associated with 0.26 more tax employees per foreign country, which corresponds to 28% of the sample mean. We find particularly strong associations for tax framework complexity, and these patterns are robust to controlling for foreign direct investment. These findings are consistent with firms using targeted

[4] For descriptive analyses of employees' occupations and study locations, we supplement these data with more detailed hand-collected LinkedIn information for 2018.
[5] Data can be retrieved from https://www.taxcomplexity.org. For further information on the survey and index construction, see Hoppe et al. (2023).

in-house expertise to manage procedural burdens, and with tax framework complexity, rather than tax code complexity, requiring more continuous local engagement.

Third, more employees in highly complex countries are associated with a partial mitigation of complexity-induced tax risk. A one-standard-deviation increase in tax employees in such countries is associated with an 8.4% reduction in tax risk relative to the sample mean, yet firms offset less than 10% of the additional tax risk. This pattern is consistent with internal tax expertise being particularly effective for risks arising from tax framework complexity that firms can actively manage, but less effective for risks from complex statutory rules outside firms' control. One explanation is that tax employees are well suited to manage compliance processes and interactions with tax authorities, but have more limited ability to reduce risks stemming from statutory tax rules, including ambiguity and inconsistent interpretation across countries.

Our study makes three primary contributions. First, it advances research on the *determinants of tax risk*. Understanding these drivers is essential, as tax risk has real effects (Sialm 2006; Niemann 2011; Hutchens and Rego 2015; Drake, Lusch, and Stekelberg 2017; Guenther, Matsunaga, and Williams 2017; Saavedra 2019; Jacob, Wentland, and Wentland 2022). We provide the first large-sample empirical evidence that tax complexity is positively associated with firms' tax risk, thereby showing a mechanism that prior work has only discussed conceptually (e.g., Mills, Robinson, and Sansing 2010; Neuman, Omer, and Schmidt 2020).

Second, it extends the literature on the *real effects of tax complexity* beyond capital investment and location choices by showing that complexity is associated with tax-specific labor investments and that these investments relate to economically meaningful differences in tax risk. Importantly, while prior evidence interprets higher complexity primarily as a cost driver (e.g., Marcuss et al. 2013), we show that the number and location of tax employees is systematically

related to this complexity. Unlike Amberger et al. (2026a), who show that complexity moderates the link between tax rates and overall labor demand, we focus on tax departments and document that tax complexity is positively associated with tax employee deployment. Multinationals expand in-house expertise when tax complexity is high even as general labor inputs may decline.

Third, it contributes to research on the *organization of the tax function*. Recent surveys show that firms expand tax department resources to address complexity, manage disputes, comply with regulation, and exploit planning opportunities (EY 2021; KPMG 2025). Although the internal tax function has evolved "from a compliance-focused activity to a profit-enhancing endeavor to a risk management center" (Donohoe, McGill, and Outslay 2014, 851), little is known about how this translates in complex environments into the number of tax employees and their presence across countries. While prior studies link tax department human capital to tax outcomes (e.g., Mills, Erickson, and Maydew 1998; Robinson, Sikes, and Weaver 2010; Chen, Cheng, Chow, and Liu 2021; Barrios and Gallemore 2024), they do not examine how these relations vary with tax complexity or how the number of tax employees differs across countries. We find that tax employees in high-complexity countries are associated with lower incremental tax risk, consistent with firms using internal tax resources to manage complexity-related risk.

Our findings have implications for managers and policymakers. For managers, they suggest that investments in local tax expertise can be an effective tool to help manage tax risk in complex countries, although only incompletely. For policymakers, they highlight that the costs of tax complexity extend beyond compliance expenditures to include greater tax risk and additional internal employee needs, with potential efficiency losses if skilled labor is reallocated toward compliance-related activities. More broadly, our evidence links tax complexity, tax department

structure, and tax risk, contributing to a better understanding of the organizational mechanisms underlying the black box of tax planning (Dyreng and Maydew 2018).

II. HYPOTHESES

Tax risk in multinationals is shaped by the complexity of the tax environments in which they operate. Complex tax systems create uncertainty that arises locally and directly affects firms' tax outcomes. As tax complexity increases, so does the difficulty of interpreting, applying, and complying with tax rules, implying a higher likelihood of unexpected tax outcomes.

We expect tax complexity to affect firms' tax risk through two broad channels. First, tax complexity can increase tax risk directly by creating uncertainty. Ambiguous rules, frequent regulatory changes, and heterogeneous enforcement may lead to confusion and information overload, increasing the likelihood of inconsistent interpretations by taxpayers, tax authorities, and courts (Mills et al. 2010; Jacob and Schütt 2020; Neuman et al. 2020; Diller, Lorenz, Schneider, and Sureth-Sloane 2025).

Second, tax complexity may affect tax risk by influencing firms' tax avoidance behavior, which in turn affects tax risk. Prior literature shows that aggressive tax avoidance is, ceteris paribus, associated with higher tax risk (e.g., Blouin 2014; Dyreng, Hanlon, and Maydew 2019). However, the direction of this second channel is theoretically ambiguous. On the one hand, ambiguity arising from tax code complexity may provide multinationals with additional leeway for tax avoidance (Laplante, Skaife, Swenson, and Wangerin 2019; Krause 2000; Euler et al. 2024), potentially increasing tax risk. On the other hand, higher tax complexity may be associated with stricter regulations or greater perceived fairness, which may limit aggressive tax planning and thereby reduce tax risk (Hoppe et al. 2023). Taken together, although the second channel is

theoretically ambiguous, the uncertainty channel suggests that, on average, greater tax complexity is associated with higher tax risk.

H1: Greater exposure to tax complexity is associated with higher tax risk for multinational firms.

If tax complexity increases tax risk, firms have incentives to adopt organizational structures that help manage this risk. One important response margin is the number of tax employees within countries. The broader literature on labor location and labor investment decisions (e.g., Combes and Duranton 2006; Almazan, De Motta, and Titman 2007) emphasizes that firms adjust the distribution of labor across locations in response to local frictions, skill needs, and the costs of acquiring and retaining specialized human capital. In our setting, the relevant margin is not whether to operate in a country, since that decision is determined by prior investment choices, but whether firms maintain tax-specific human capital in countries in which tax conditions make such expertise more valuable.

Tax employees provide local expertise, monitor regulatory changes, ensure compliance, and facilitate interactions with tax authorities. We therefore interpret local tax employees in a country as an investment in the internal tax function that enables firms to cope with complexity-induced risk. In this sense, the presence of tax employees reflects the demand for tax-related activities generated by local tax complexity rather than the deployment of a fixed pool of employees across locations. Firms nevertheless face a trade-off between centralized and local tax expertise. Centralized structures may be more efficient and better aligned with firm-wide tax strategy, but they are less well positioned to process country-specific information (Kohlhase and Wielhouwer 2023). Local tax employees, by contrast, provide direct access to the knowledge needed to manage locally arising tax risks, but establishing such decentralized expertise is costly (e.g., Nagar 2002; Deller and Sandino 2020), as is transferring this knowledge within the firm

(Demsetz 1988; Jensen and Meckling 1995). Tax complexity intensifies this trade-off by increasing the informational disadvantages of centralized tax management and the benefits of local expertise (Hayek 1945). This logic should apply particularly strongly to tax framework complexity. Administrative and procedural burdens—such as filing obligations, documentation requirements, audits, and dispute resolution—typically require continuous local engagement, timely responses, and familiarity with country-specific administrative practices. Because these demands are difficult to centralize and often cannot be addressed effectively without local knowledge, they should increase the value of local tax employees more strongly than tax code complexity. Moreover, some aspects of tax code complexity can be handled more centrally or through external advisors, as they rely less on repeated interaction with local administration. Accordingly, we expect the association between tax complexity and the number of tax employees in a country to be stronger for tax framework complexity than for tax code complexity.

Still, it is not self-evident that firms respond to tax complexity by increasing the number of internal tax employees. Compliance and risk management may also be supported by digital tools, shared service centers, or external advisors (Bustos, Pomeranz, Serrato, Vila-Belda, and Zucman 2023; Kroeger 2026). Thus, whether firms respond to tax complexity through local in-house tax expertise is ultimately an empirical question. Nevertheless, if firms rely on local tax employees to address complexity-induced demands, they should increase tax employees in more tax-complex countries, particularly where complexity is procedural in nature.

H2: Multinational firms have tax employees in countries with greater tax complexity, particularly in countries with higher procedural complexity.

If firms have more tax employees in highly tax-complex countries, an important next question is whether these employees are associated with lower overall tax risk. Local tax employees can help interpret complex regulations, ensure compliance, and manage interactions with tax authorities,

thereby reducing the likelihood of unexpected tax outcomes. Consistent with this view, Chen et al. (2021) document that incremental investment in the tax department is associated with lower tax risk. We expect this risk-reducing effect to be particularly relevant in complex tax environments, where local expertise is most valuable.

Nevertheless, to what extent tax employees in highly tax-complex countries actually reduce tax risk remains an empirical question. Although local tax employees can improve compliance-related tasks, some sources of tax risk may not be amenable to managerial mitigation even with local expertise. In particular, risks arising from ambiguous statutory tax rules, inconsistent interpretation across tax authorities, or uncoordinated enforcement across countries may lie beyond the control of local tax employees. In addition, even when local expertise is valuable, firms may choose not to invest to the point of full risk mitigation if the marginal costs of additional tax employees exceed the expected benefits (Diller et al. 2017; Chen et al. 2025).

H3: Multinational firms with more tax employees in tax-complex countries have a lower overall tax risk.

III. RESEARCH DESIGN

Our empirical strategy has three steps. First, we examine whether greater exposure to tax complexity is associated with higher tax risk (Hypothesis 1). Second, we test whether firms have more tax employees in more complex countries (Hypothesis 2). Third, we assess whether tax employees in highly complex countries are associated with lower tax risk (Hypothesis 3).

Tax Complexity Exposure and Firm-Level Tax Risk (H1)

To test Hypothesis 1, we estimate the association between tax complexity and tax risk using a two-way fixed effects model. Specifically, we regress multinational-level tax risk on average exposure to tax complexity, including multinational and year fixed effects.

$$TaxRisk_{it} = \beta_0 + \beta_1 AvgTaxComplexity_{it} + \beta_2 TaxEmpl_{it} + \gamma\ Controls_{it} + \eta\ MNE_i + \delta\ Year_t + \varepsilon_{it} \quad (1)$$

Identification relies on within-multinational changes in tax complexity exposure over time, controlling for time-invariant multinational characteristics and common macroeconomic shocks.

Following prior literature (Guenther et al. 2017; McGuire, Rane, and Weaver 2018), we measure tax risk using the forward-looking three-year standard deviation of the cash effective tax rate (*SD_CashETR*). We additionally use alternative proxies capturing different dimensions of tax risk, including longer-horizon cash ETR volatility (SD_*CashETR5*), GAAP ETR volatility (*SD_GAAPETR*), the Henry and Sansing (2018) tax risk measure (*SD_HSETR*), prior-year tax payments as a proxy for tax settlements (*PriorYearTaxes*), and an indicator for tax-related key audit matters (*TaxKam*; Beuselinck, Goldman, Pierk, and Valle-Ruiz 2024). Using multiple proxies mitigates concerns that results are driven by measurement error in any single metric.

Our main explanatory variable, *AvgTaxComplexity*, captures multinational-level exposure to tax complexity as the subsidiary-weighted average of country-level tax complexity across all countries in which the multinational operates. It is calculated over a three-year period. Alternative weighting schemes based on assets, employees, or equal weights per location are highly correlated with this measure (between 0.58 and 0.62) and yield very similar coefficient estimates.

Following prior literature (De Simone, Ege, and Stomberg 2015; Guenther et al. 2017; McGuire et al. 2018; Chen et al. 2021), we control for a comprehensive set of time-varying firm characteristics commonly associated with tax risk (e.g., size, profitability, leverage, investment, and business complexity), as well as measures of tax avoidance, earnings volatility, international exposure, and tax haven intensity. We also control for overall tax department size (Chen et al. 2021) and auditor-provided tax services, which may act as substitutes or complements to internal tax employees. All variables are measured over a forward-looking three-year window consistent with the definition of tax risk. We cluster standard errors at the multinational-level, and

continuous control variables are winsorized at the 1st and 99th percentiles. Variable definitions and descriptive statistics are reported in Tables 1 and 2.

Tax Complexity and the Location of Tax Employees (H2)

To test Hypothesis 2, we examine whether firms are more likely to employ tax employees in countries with higher tax complexity. Specifically, we estimate the following model using multinational–country–year observations:

$$TaxEmpl_{ict} = \beta_0 + \beta_1 TaxComplexity_{ct} + \gamma\ Controls_{ict} + \mu\ MNE_i + \delta\ Year_t + \varepsilon_{ict}. \quad (2)$$

Each observation corresponds to multinational *i* operating in foreign country *c* in year *t*, conditional on the firm operating at least one subsidiary in that country.[6]

The dependent variable, *TaxEmpl*, captures both the presence and intensity of tax employees in a given country. We measure this variable as (i) an indicator (*TaxEmpl_d*) equal to one if the multinational employs at least one tax employee in country *c* (extensive margin), and (ii) the number of tax employees located in that country (*TaxEmpl_c*, intensive margin). We estimate probit and linear probability models for the binary specification and Poisson pseudo-maximum likelihood (PPML) and linear models for the count specification.[7] Results are robust to scaling tax employees by total tax department size.

The key independent variable, *TaxComplexity*, measures the level of tax system complexity in country *c* at time *t*. Our primary measure is the Tax Complexity Index of Hoppe et al. (2023) and its subcomponents tax code complexity and tax framework complexity for the period 2016–

[6] In untabulated regressions, we include home country subsidiaries as well. We find similar but smaller inferences.
[7] Due to the nature of our data, the main estimation methods are probit and Poisson models. To account for overdispersion in the count variable, we use heteroskedasticity-robust standard errors when using the Poisson model (Wooldridge 2002, p. 657; see also Blackburn 2014 for an evaluation of the Poisson and negative binomial estimator and Gould 2011 for the advantages of Poisson estimation over log-linear regression). However, we also use a negative binomial and a logit model (untabulated) and find similar inferences.

2024.[8] In robustness tests, we rely on the "time to comply" component of the PwC Paying Taxes Index as an alternative measure of tax complexity.[9] We primarily rely on the Tax Complexity Index because it is designed to measure tax system complexity from the perspective of multinational firms, whereas the PwC measure reflects broader features of the corporate tax environment from the perspective of a hypothetical domestic firm. All tax complexity measures are transformed such that higher values indicate greater complexity.

We include controls for country characteristics (e.g., GDP, governance, statutory tax rates), multinational-level economic presence (e.g., share of subsidiaries or assets in country), and coordination and recruitment costs (e.g., common language, geographic distance, education, and labor regulation). These variables account for differences in institutional environments, scale of operations, and frictions related to local tax employees across countries. Identification exploits variation in tax complexity across countries over time. Our baseline specification includes multinational and year fixed effects, which absorb time-invariant firm characteristics and common shocks.

We do not include country fixed effects due to limited within-country time-series variation in the Tax Complexity Index over our sample period.[10] Standard errors are clustered at the country–

[8] We interpolate missing years by taking the average of the preceding and subsequent observations. Our results are robust to alternative imputation based on lagged values.

[9] The PwC Paying Taxes Index was discontinued in 2020 and is hence only available for 2016–2020 of our sample period. The time to comply component of the PwC Paying Taxes Index measures the annual number of hours a standardized medium-size firm is estimated to spend complying with the country's tax system (filing, paying, and related postfiling procedures).

[10] Descriptive evidence shows that most of the variation in tax complexity (75%) arises across countries rather than within countries over time. We observe a similar pattern for tax employees, where most variation reflects persistent cross-country differences in the number of local tax employees. Taken together, these patterns suggest that the primary variation exploited in our baseline specification is cross-sectional, which aligns with our focus on differences in the number of tax employees across persistently more or less complex tax environments, rather than on short-run fluctuations in tax rules.

year level in accordance with the variation in our tax complexity measure. Variable definitions and descriptive statistics are reported in Tables 1 and 3.

Mitigating Complexity-Induced Tax Risk Through Local Tax Employees (H3)

To test Hypothesis 3, we extend the baseline tax risk model in Equation (1) to examine whether tax employees in tax-complex countries are associated with lower tax risk. We estimate the following specification using multinational–year observations:

$$TaxRisk_{it} = \beta_0 + \beta_1 EmplComplex_{it} + \beta_2 AvgTaxComplexity_{it} + \beta_3 TaxEmpl_{it} + \gamma\ Controls_{ti} + \eta\ MNE_i + \delta\ Year_t + \varepsilon_{it}. \quad (3)$$

The key explanatory variable, *EmplComplex*, captures the number of tax employees of multinational *i* at time *t* located in the most tax-complex countries of the multinational's affiliate network, defined as the multinational-specific top decile of countries by tax complexity. Importantly, this specification does not test a general interaction or moderation effect between tax complexity and tax employees. Instead, it examines whether the number of tax employees in highly complex countries is associated with lower tax risk, conditional on the firm's overall exposure to tax complexity. By including both *AvgTaxComplexity* and overall tax department size, we isolate whether tax employees in tax-complex countries—rather than overall exposure to complexity or general expansion of the tax function—is associated with lower tax risk. In robustness tests, we weight the number of tax employees by the tax complexity of their country of employment (*EmplComplexTCI*) and alternatively scaled it by the worldwide average tax complexity level (*EmplComplexWorldScale*) or by the multinational's average tax complexity exposure (*EmplComplexFirmScale*). Moreover, we use the number of tax employees in the top decile of the most complex countries worldwide in year *t* (*EmplComplexWWTopDec*) and the number of employees in the ten most tax-complex countries in year *t* (*EmplComplexWWTopTen*).

Control variables and fixed effects follow Equation (1). Variable definitions and descriptive statistics are reported in Tables 1 and 2.

IV. DATA

Our analyses are mainly based on panel data from Revelio Labs, a labor market intelligence provider that aggregates employee-level career histories using online professional profiles from LinkedIn. Revelio Labs constructs a global, longitudinal dataset of employee roles, locations, job titles, and employer affiliations across firms, enabling firm-level and occupation-level tracking over time. The database has been used in recent academic research on corporate workforce composition and strategic human resource decisions. For example, Cai et al. (2024) study the announcement and impact of diversity targets, while Blann et al. (2026) examine how investments in training centers affect recruitment and retention.

We use this dataset to identify tax employees of publicly listed European multinationals included in the Stoxx600 index. We focus on Stoxx600 firms because they represent the largest and most important players in Europe. The index covers approximately 90% of the overall market capitalization of European stock markets. Moreover, Stoxx600 members are usually multinationals operating in complex and uncertain tax environments and are sufficiently large to have an internal tax department.

We exclude firms operating in the financial sector or with missing industry classification (161 firms), as industry-specific tax regulations may apply. To qualify for inclusion in the final sample, multinationals must have at least one direct tax employee during our sample period in the Revelio Labs database, which leads to the exclusion of 51 firms. We further drop one firm with a dual listing (Coca-Cola), one advisory firm that provides tax services (Capgemini), and firms that are majority-owned by other Stoxx600 firms (7) or are majority state owned (6). Moreover, we exclude 28 firms due to missing controls. These restrictions reduce our sample to 345 individual

firms (1,926 firm-year observations for our multinational-level regressions and 73,434 multinational–country–year observations for our multinational–country analysis).[11]

For each firm in our sample, we identify employees working in a tax position using Revelio Labs. We rely on Revelio Labs' classification of job titles (role_k1500_v2) to include all relevant employees. As we are interested in the worldwide structure of the tax department, we screen for tax employees of the head office and all worldwide subsidiaries included in Orbis. For each tax employee, we use information on the country of employment, the hierarchy level, and the academic background. We identify 15,780 tax employees for the 345 multinationals included in our sample, i.e., on average, 45.74 tax employees per multinational.[12] We further complement these employee data with financial, audit, and country-level information. We obtain financial statement information from Compustat Global and Thomson Reuters/LSEG. As the Tax Complexity Index is available from 2016 onwards, we collect financial statement data for the period 2016–2024. In addition, we use information on auditor-provided tax services (APTS) and key audit matters (KAMs) from Audit Analytics and segment reporting information from LSEG. We obtain subsidiary-level information from Orbis. Further, we use country-level information from CEPII, IMF, OECD, KPMG, the World Bank, Transparency International, and the United Nations. Finally, we use two sources for tax complexity measures. We use the Tax Complexity Index by Hoppe et al. (2023) for the years 2016–2024 as our main proxy for country-level tax complexity. Additionally, we use the time-to-comply component of the PwC Paying Taxes

[11] At the affiliate level, the average firm operates in about 38 foreign countries per year, and the average number of tax employees per foreign country-year is 0.92, or 4.75 conditional on having at least one local tax employee.
[12] In additional hand-collected LinkedIn data for 2018, we confirm that most foreign tax employees are local tax experts: 87.7% of them have at least one degree from the country they are working in, whereas only 1.2% of employees obtained a degree in the multinational's head office country. On average, 36.7% of the tax employees work in the home country, which is comparable to the 37% reported by KPMG (2016).

measure for 2016–2020 in robustness tests. Tables 1 to 3 provide definitions and descriptive statistics.

V. EMPIRICAL RESULTS

Tax Complexity and Tax Risk

We begin by examining the association between a multinational's average exposure to tax complexity and tax risk (Hypothesis 1). Across the specifications reported in Table 4, we employ our primary measure of tax risk—the three-year standard deviation of the Cash ETR (Column (1))—alongside five alternative proxies: the five-year standard deviation of Cash ETR, the standard deviation of GAAP ETR, the standard deviation of the Henry–Sansing ETR, the amount of taxes paid for prior years, and an indicator based on reported Tax KAMs.

Consistent with expectations, we find a positive association between tax complexity and tax risk. The coefficient on *AvgTaxComplexity* is positive and statistically significant for our primary risk measure as well as for four of the five alternative proxies. Based on the main specification, a one-standard-deviation increase in *AvgTaxComplexity* is associated with an increase of 0.011 in the standard deviation of Cash ETR. Relative to the sample mean of three-year Cash ETR volatility (0.117), this corresponds to a 9.3% increase in tax risk. This effect is economically meaningful and lies within the range of estimates obtained for our alternative tax risk proxies.

Importantly, the regressions in Table 4 control for tax department size, but not for cross-country differences in the number of tax employees, particularly the presence or intensity of tax employees in high-complexity countries. Accordingly, the coefficient on *AvgTaxComplexity* captures the average association between tax complexity and tax risk without separately accounting for firms' country-specific differences in tax employees. The positive and statistically significant coefficient therefore indicates that greater exposure to tax complexity is associated with higher tax risk, but does not preclude firms from partially managing this risk through tax

employees in complex countries. This leads to two related empirical predictions that we examine next: whether firms have more tax employees in more complex countries and whether tax employees in highly complex countries are associated with lower tax risk.

Tax Complexity and the Location of Tax Employees

Next, we examine whether multinationals have more local tax employees in response to tax complexity, as predicted in Hypothesis 2. Using multinational–country–year–level data, we estimate eight specifications that relate tax complexity to (i) the probability of employing at least one tax employee in a country (extensive margin) and (ii) the number of tax employees in that country (intensive margin). The sample includes all countries in which a multinational operates through at least one foreign subsidiary. To capture local business activity, we alternatively control for the share of subsidiaries (Columns (1) to (4)) and total assets (Columns (5) to (8)).

Table 5 provides strong evidence that firms systematically increase tax employees in more complex tax environments. Across all specifications, *TaxComplexity* is positively associated with a higher likelihood of employing at least one tax employee in a given country. The coefficient is statistically significant at the one percent level in all models. Based on the linear probability model in Column (2), a one-standard-deviation increase in tax complexity (0.0598)[13] increases the probability of having a tax employee by 3.8 percentage points (19% of the sample mean (0.194)).

We find similar evidence along the intensive margin. The coefficient on *TaxComplexity* is positive and statistically significant in all specifications using the number of tax employees as the dependent variable. Economically, a one-standard-deviation increase in tax complexity is associated with an increase of 0.26 tax employees in a given country, or 28% of the sample mean.

[13] A comparable increase in tax complexity occurred in the United States following the implementation of the TCJA (+7.7 percentage points).

Taken together, the extensive- and intensive-margin results suggest that firms have more tax employees in tax-complex countries both by establishing a local tax presence and by having more tax employees there. The relatively large effect on the probability of employing at least one tax employee, compared with the more modest increase in headcount, suggests that firms are more likely to have a small local tax presence rather than large in-country tax teams.

These findings are robust to alternative measures of local business activity. As shown in Columns (5) to (8), using total assets instead of the share of subsidiaries to proxy for FDI yields similar coefficient magnitudes and statistical significance.[14]

The control variables provide additional insight into the non-tax determinants of tax employee location. Firms are more likely to employ tax employees in larger and faster-growing economies, as indicated by positive coefficients on *GDP* and *GDPgrowth*. Consistent with coordination and communication costs, firms are also more likely to locate tax employees in countries that share a common language with the head office. In contrast, stricter labor regulations are associated with fewer tax employees, suggesting that employment frictions constrain local tax employees. Finally, the scale of local operations (*FDI*) is positively associated with both the likelihood and number of tax employees, indicating that tax employees are to some extent concentrated in economically important countries (Table 5).

In Table 6, we decompose the overall tax complexity index into its two underlying components: tax code complexity and tax framework complexity. Panel A shows that both dimensions are positively associated with the likelihood of employing at least one tax employee in a country, and an F-test does not reject equality of the coefficients. Thus, both tax code complexity and tax framework complexity appear relevant for the initial decision to establish a

[14] We also obtain similar inferences in untabulated tests when measuring FDI using sales or total employees instead of the share of subsidiaries or total assets.

local tax presence. A more differentiated pattern emerges along the intensive margin. Tax framework complexity remains positive and statistically significant across specifications, whereas the coefficient on tax code complexity is smaller and statistically significant only in the PPML specification. Moreover, the difference between the two coefficients is statistically significant. These findings suggest that while both dimensions of complexity influence the decision to establish a tax presence, the number of tax employees is more strongly associated with procedural and administrative complexity than with the complexity of statutory tax rules.[15]

Panel B further decomposes tax framework complexity into two components aligned with the firm's tax workflow. We group them into (i) *PrefilingFiling*, which includes enactment, guidance, and payment and filing procedures, and (ii) *Postfiling*, which captures audits and appeals. This allows us to address multicollinearity across the five underlying dimensions. The results indicate that only pre-filing and filing complexity is positively and significantly associated with both the likelihood and number of tax employees, whereas post-filing complexity is not. This pattern is consistent with firms using internal tax resources to manage recurring, process-intensive tasks such as interpreting legislation, preparing filings, monitoring deadlines, and complying with payment procedures. In contrast, post-filing activities, such as audits and appeals, are less continuous and may be less amenable to internal tax employees, leading firms to rely more on external advisors.

Panel C examines heterogeneity within tax code complexity by grouping the 15 regulatory dimensions into three categories following Braun et al. (2025). *AntiBepsRegulations* capture cross-border rules affecting profit shifting (e.g., CFC rules, transfer pricing, and withholding

[15] This also aligns with descriptive evidence from tax employees' job descriptions. We find that the share of tax employees with compliance-oriented job descriptions is significantly higher in foreign countries than the share with tax-planning-oriented job descriptions.

taxes), *DomesticGroupRegulation* includes provisions relevant for corporate group structures (e.g., loss offset, group taxation, and reorganizations), and *OtherRegulations* cover remaining provisions such as depreciation rules and investment incentives. The results indicate that only *DomesticGroupRegulation* is significantly associated with an increase in tax employees. Hence, the number of tax employees appears to be particularly responsive to regulations governing group structures at the local level. In contrast, *OtherRegulations* appear less central to the number of tax employees in the internal tax function, while *AntiBepsRegulations* may be managed more centrally at headquarters, consistent with evidence in Amberger et al. (2026b).

Next, we examine whether the relation between tax complexity and tax employee location varies with firm characteristics (untabulated). Overall, the positive association between tax complexity and the number of local tax employees remains robust, with only limited evidence of heterogeneity across firms. In particular, we find no significant differences by ETR or firm size, suggesting that this relation is not primarily driven by tax-planning incentives and is broadly similar across smaller and larger multinationals. By contrast, the association is stronger for more international firms and weaker for firms with greater business complexity, consistent with international exposure increasing the value of local tax expertise and greater business complexity constraining firms' local tax employee presence.

We subject these findings to several robustness tests. First, Columns (1) to (4) of Table 7 replace the baseline tax complexity index with an alternative proxy—the time required to comply with tax regulations from the PwC Paying Taxes Index (2018). The positive association between tax complexity and tax employee location remains statistically significant across all specifications. We next consider the possibility that multinationals rely on external tax advisors rather than internal tax employees. Columns (5) to (8) incorporate country-level Big Four tax

advisory fees scaled by GDP.[16] Although these data substantially reduce the sample size, the positive and statistically significant association between *TaxComplexity* and tax employee location persists. The coefficient on *Big4TaxAdvisory* is negative and statistically significant in three of the four specifications, suggesting that greater external advisory intensity is generally associated with lower local tax presence. However, because the tax complexity coefficient remains stable, our main inferences are unchanged. We further examine whether relative, rather than absolute, tax complexity drives our results by using the difference between subsidiary-country and home-country tax complexity as the key explanatory variable (Columns (9) to (12)). The results remain unchanged, indicating that the association is driven by host-country rather than home-country tax complexity (Table 7). Consistent with this evidence, untabulated specifications that include subsidiary-country and home-country tax complexity separately show that the association is driven primarily by subsidiary-country tax complexity.

Second, we assess robustness to alternative definitions of the dependent variable and the tax complexity measure in a series of untabulated tests. For the dependent variable, we (i) scale the number of tax employees by total tax department size, (ii) use the natural logarithm of *TaxEmpl_c*[17], (iii) adjust the number of tax employees for country-level LinkedIn coverage, and (iv) construct a weighted measure that assigns greater importance to higher-ranking tax employees (e.g., head of tax versus lower-ranking tax employees). For the tax complexity measure, we replace index values with country ranks and indicator variables for the top quartile and quintile. None of these modifications affect our inferences.

Third, we explore whether firms adjust the number of tax employees in response to changes in tax complexity. To this end, we decompose tax complexity into level and first-difference

[16] In untabulated analyses, we also use non-audit fees scaled by GDP and find similar inferences.
[17] We increase $TaxEmpl\_c_{ic}$ by one before taking the logarithm to avoid losing meaningful zero values.

components and estimate specifications that additionally include lagged values of the index (untabulated). While the level of tax complexity remains strongly associated with the location of tax employees, short-term changes in complexity are economically small and statistically insignificant. However, consistent with Giese et al. (2025), lagged tax complexity—particularly at a two-year horizon—is positively associated with the likelihood of employing tax employees. These findings suggest that the number of tax employees across countries is more strongly associated with persistent, rather than transitory, differences in tax complexity.

Finally, to address concerns about reverse causality, we estimate country-level regressions of future tax complexity (both levels and changes) on lagged measures of local tax employees. We find no evidence that tax employee presence predicts subsequent increases in tax complexity. This evidence alleviates concerns that our results are driven by firms influencing the complexity of local tax systems and is instead consistent with local tax employees being associated with pre-existing cross-country differences in tax complexity.

Tax Risk and Tax Employees in High-Complexity Countries

Building on our findings that tax complexity increases tax risk and that multinationals increase tax employees in more complex countries, we next examine whether this organizational response mitigates tax risk. If tax employees in high-complexity countries serve as an internal mechanism for managing compliance burdens, planning uncertainty, and tax controversy, then firms with more tax employees in such countries should exhibit lower tax risk, conditional on their overall exposure to tax complexity.

To test this prediction, we augment the baseline tax risk specification with *EmplComplex*, our main measure of tax employees located in high-complex countries. It captures tax employees in the top decile of tax-complex countries within the multinational's affiliate network, identified separately for each year (Equation (3)). This specification allows us to examine whether tax

employees in highly complex countries are associated with lower tax risk, conditional on firms' overall exposure to tax complexity. In this way, the analysis moves beyond the reduced-form relation documented in Table 4 by directly testing whether the tax employees in complex countries are associated with lower tax risk, in line with an organizational role in managing complexity-induced tax risk.

Table 8 reports the results. The coefficient on *AvgTaxComplexity* remains positive in all six specifications and statistically significant in five out of six cases, consistent with our baseline findings in Table 4. At the same time, the coefficient on *EmplComplex* is negative in all six specifications and statistically significant in four out of six, indicating that more tax employees in highly complex countries are systematically associated with lower tax risk.

Focusing on our primary tax risk measure, the three-year standard deviation of Cash ETR, the coefficient on *EmplComplex* is -0.0007 and statistically significant. This estimate implies that a one-standard-deviation increase in tax employees located in highly complex countries (14.09) is associated with a reduction in tax risk of 0.010. Relative to the sample mean of this tax risk measure (0.117), this corresponds to an approximately 8.4% smaller tax risk (Table 8).

However, the estimates in Table 8 do not directly quantify the extent to which the association between tax complexity and tax risk varies with tax employees in complex countries. To assess this, we compare the coefficient on *AvgTaxComplexity* in Table 8 with the corresponding reduced-form estimate from Table 4. In the reduced-form model, the coefficient on *AvgTaxComplexity* is 0.4978, whereas it increases to 0.5401 when controlling for *EmplComplex*. This difference implies that firms offset approximately 8.5% of the tax risk associated with tax complexity through the placement of tax employees in highly complex countries. This finding

provides evidence that tax employees in complex countries are associated with an economically meaningful, albeit incomplete, reduction in complexity-induced tax risk.

Importantly, these specifications also control for overall tax department size. While the coefficient on overall tax department size is small and statistically insignificant across specifications, the coefficient on tax employees in highly complex countries is negative and economically meaningful. This pattern suggests that tax risk is less strongly associated with overall tax department expansion than with where firms maintain tax employees across the affiliate network, especially in countries where tax complexity is highest.

These findings are robust to alternative definitions of tax employee exposure to complex environments. In Table 9, we weight the number of tax employees by the tax complexity of their country of employment (*TCI_Empl*) and alternatively scale the measure by (i) the worldwide average tax complexity (*EmplComplexWorldScale*) and (ii) the multinational's average tax complexity exposure (*EmplComplexFirmScale*). We also use the number of tax employees located in the top decile of the most complex countries worldwide in year t (*EmplComplexWWTopDec*) and the number of tax employees in the ten most tax-complex countries worldwide in year t (*EmplComplexWWTopTen*). Across all specifications, we obtain similar inferences for *AvgTaxComplexity* and *EmplComplex* (Table 9).

Our interpretation is that multinationals increase tax employees in high-complexity countries primarily to manage compliance with complex tax systems. This interpretation is supported by descriptive evidence indicating that foreign tax employees more frequently reference compliance-

related tasks in their LinkedIn job descriptions than tax employees located at headquarters[18], and that most foreign tax employees have formal training in local tax law.

Nevertheless, we cannot fully rule out that tax employees are also used for tax planning purposes. To address this concern, we re-estimate Equation (3) using standard proxies for tax avoidance (three-year cash and GAAP ETR) as dependent variables. In untabulated results, we find that neither tax complexity nor the presence of tax employees in high-complexity countries are significantly associated with standard tax avoidance proxies.[19] This evidence is inconsistent with a tax planning interpretation and supports the view that local tax employees primarily reflect compliance-oriented activities. We further estimate a structural equation model (SEM)[20] to account for potential interdependencies among the variables (Figure 1). The model includes determinants of local tax employees—such as average tax complexity, APTS, tax department size, firm size, and business complexity—which are also included as controls in Equation (3). The results indicate that tax department size and average tax complexity are the primary drivers of local tax employees, while other factors are not statistically significant. Importantly, the estimated effects of tax complexity and tax employees in tax-complex countries on tax risk are consistent in magnitude and statistical significance with our baseline results.

[18] We analyze the share of tax employees engaged in tax planning and tax compliance. The share of tax compliance employees is almost twice as high in foreign entities than in the home country, and this difference is statistically significant at the 5 percent level. In contrast, we find no significant difference for the location of tax avoidance employees (untabulated).

[19] The current level of complexity in a country could also reflect prior-year profit shifting by firms, which requires local employees. In that case, these employees would indicate (past) tax avoidance rather than greater need for expertise due to high tax complexity. To mitigate this reverse-causality concern, we also test the relevance of one-, two-, and three-year lagged tax avoidance. Again, we find no evidence of an association between the number of tax employees in highly tax-complex countries and earlier-period tax avoidance (untabulated).

[20] SEMs have been used in different fields of accounting before, including financial accounting (Gillet and Uddin, 2005), managerial accounting (Cadez and Guilding, 2008), and auditing (Deumes et al., 2012). In tax research, Henderson and Kaplan (2005) and Blanthorne and Kaplan (2008) also use SEM.

Costs of a Complex Tax System

The preceding analyses document that tax complexity affects multinationals along two key dimensions. First, higher tax complexity is associated with increased tax risk. Prior research shows that elevated tax risk is linked to higher overall firm risk (Guenther et al. 2017; Hutchens and Rego 2015), a higher cost of equity (Hutchens and Rego 2015), and lower firm value (Drake et al. 2017; Jacob and Schütt 2020). Second, firms have more tax employees in more complex countries. While they are associated with lower tax risk, they entail additional labor costs.

We next assess the economic magnitude of these costs. The reduced-form estimates in Table 4, Column (1), indicate that a one-standard-deviation increase in average tax complexity is associated with a 1.1 percentage point increase in our primary tax risk measure. Based on our estimates, this increase can be offset by approximately 15.5 additional tax employees located in countries in the top decile of tax complexity. Using the average salary of tax employees in these countries (USD 66,661)[21], the associated annual wage costs amount to approximately USD 1.03 million. Although this amount is economically meaningful, it is small relative to the scale of firms in our sample, as it accounts for only 0.01% of the average firm's total assets.

At the same time, firms mitigate complexity-related tax risk only incompletely, which should be reflected in lower firm values. To illustrate the potential valuation implications, Drake et al. (2017) document that a one-standard-deviation increase in tax risk is associated with a 2% reduction in firm value. Using this effect, the estimated complexity-induced increase in tax risk (Table 4, Column (1)) corresponds to an approximate 0.17% reduction in firm value. While this

[21] Chen et al. (2021) report an average annual salary of U.S. tax employees of $114,933 in 2016. To obtain a benchmark for tax employees in highly complex countries, we identify the ten countries that most frequently appear in the multinational–specific top decile of tax complexity over our sample period and compute their average 2016 wage level relative to the United States (International Labor Organization 2018). Using nominal monthly wages converted into U.S. dollars, this yields an adjustment factor of 0.5835, which we apply to the Chen et al. (2021) benchmark. The resulting salary estimate should be interpreted as a rough lower-bound approximation, as it reflects wages only and excludes employer-side labor costs and other employee-related expenses.

calculation is illustrative, it suggests that the economic consequences of tax complexity may be substantial relative to the costs of additional tax employees. Using the year-end closing market capitalization of the STOXX600 as of 2016 (USD 7.37 trillion), this effect translates into a reduction in market capitalization of USD 12.53 billion (on average USD 20.9 million per firm).

Why, then, do firms not fully offset complexity-related tax risk? One explanation is that not all sources of tax complexity can be mitigated equally through tax employees. Another is that the marginal cost of additional tax employees may exceed the marginal benefit of further risk reduction, so that fully offsetting complexity-related tax risk is not optimal. Consistent with this view, Table 10 shows that tax employees in tax-complex countries significantly reduce the risk associated with tax framework complexity, but not with tax code complexity. This pattern aligns with our earlier finding that firms primarily increase tax employees in response to procedural and administrative complexity (Table 6). One interpretation is that tax framework complexity generates recurring compliance tasks—such as interpreting regulations, preparing filings, and interacting with tax authorities—that can be effectively managed through additional tax employees. In contrast, tax code complexity may increase tax risk through channels that are less controllable at the firm level. For example, transfer pricing rules can expose firms to double taxation if dispute resolution mechanisms fail, and interest limitation rules may restrict deductions based on firm-level financial constraints. Such risks cannot be fully mitigated through additional tax employees.

A second explanation is that the marginal risk-reducing effect of additional tax employees declines as the number of tax employees in highly complex countries increases. Figure 2 plots the average marginal effect of tax employees in highly complex countries on tax risk from a nonlinear specification of Equation (3). The estimates suggest that very small local tax teams may

be insufficient to generate clearly measurable reductions in tax risk, consistent with the idea that some critical mass of local tax expertise is needed before the presence of tax employees becomes effective. At the same time, once such local capacity is established, the marginal effect of additional tax employees becomes less negative as the number of tax employees rises, indicating diminishing marginal returns to further expansion. Taken together, the evidence suggests that firms may rationally stop short of fully mitigating complexity-induced tax risk because doing so requires both an initial investment in local tax capacity and additional tax employees whose incremental benefits become progressively smaller.

VI. CONCLUSION

This study examines whether tax complexity is associated with tax risk in multinational firms and whether firms' internal tax function is associated to this risk. Using panel data on more than 15,780 tax employees from 345 publicly listed European multinationals, combined with cross-country measures of tax complexity, we provide evidence on both the risk implications of tax complexity and the organizational features of the internal tax function related to it.

Our analysis yields three main findings. First, greater exposure to tax complexity is associated with higher consolidated tax risk. Economically, a one-standard-deviation increase in average tax complexity is associated with a 9.3% increase in tax risk relative to the sample mean. Second, firms exhibit more tax employees in more complex countries. This association is strongest for tax framework complexity, consistent with firms using local tax expertise to manage recurring procedural and administrative burdens. Third, tax employees in highly complex countries are associated with lower tax risk, although only partially. A one-standard-deviation increase in tax employees located in highly complex countries is associated with an 8.4% reduction in tax risk. Taken together, these findings suggest that tax complexity affects firms through two channels: it increases tax risk and is associated with firms investing in internal tax

resources. However, a substantial portion of complexity-induced tax risk remains beyond firms' control.

These findings contribute to the literature in three ways. First, we identify tax complexity as an economically meaningful determinant of firm-level tax risk. Second, we extend research on the real effects of tax complexity by showing that complexity affects not only investment and location decisions, but also tax-specific labor investments. Third, we find that tax employees in complex countries are associated with lower tax risk, consistent with the internal tax function playing an important organizational role in managing complexity.

Our results have implications. For managers, they suggest that investments in local tax expertise can help manage complexity-induced tax risk, especially when that risk arises from procedural and compliance-related complexity. For policymakers, they indicate that more complex tax systems impose costs beyond compliance expenditure alone: they also increase uncertainty in tax outcomes and induce firms to devote additional skilled labor to managing that uncertainty. More broadly, our evidence suggests that the costs of tax complexity include both higher tax risk and the internal organizational resources firms must commit to cope with it.

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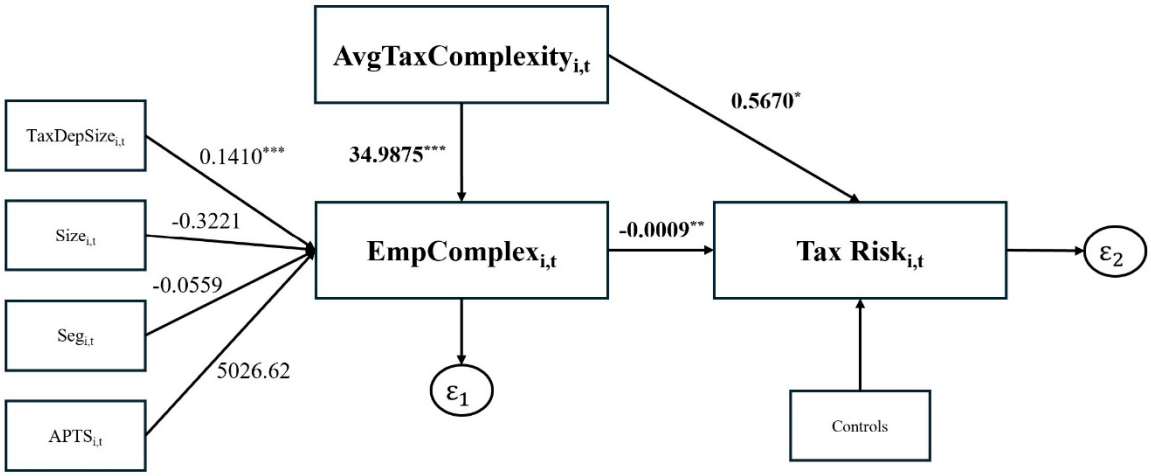
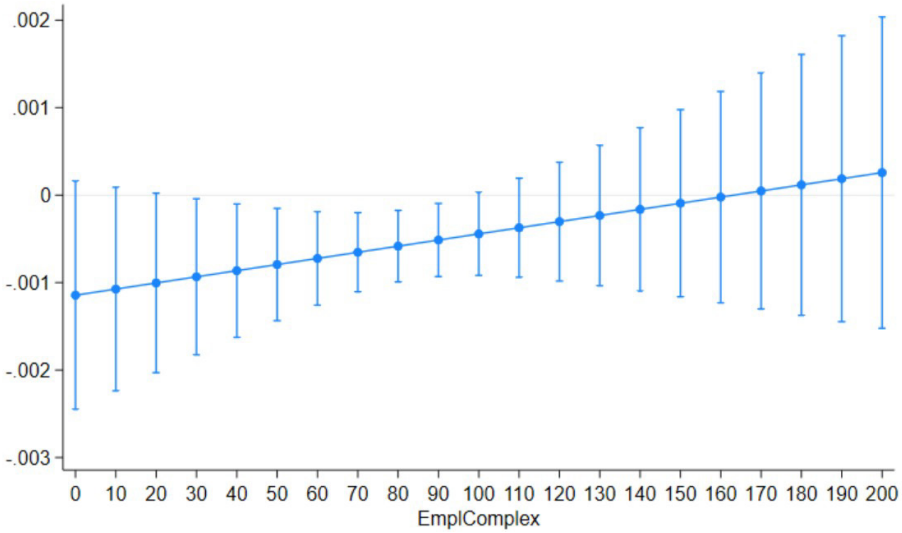
Figure 1
Structural Equation Model Related to Equation (3)



This figure illustrates the estimated structural relations among average tax complexity (*AvgTaxComplexity*), tax employees in highly tax-complex countries (*EmpComplex*), and tax risk. Reported coefficients are path estimates from Equation (3). *EmpComplex* is measured as the number of tax employees located in the top decile of tax-complex countries in which the multinational operates. Tax Risk is measured as the three-year standard deviation of Cash ETR (SD_*CashETR*). All specifications include the control variables used in the main regressions, as well as MNE and year fixed effects. ***, ** and * label statistical significance at 1%, 5%, and 10% level, respectively.

Figure 2
Marginal Effect of Tax Employees in Tax-Complex Countries on Tax Risk



This figure plots the estimated marginal effect of tax employees in highly complex countries ($EmplComplex_{it}$) on tax risk, measured as the three-year standard deviation of the cash effective tax rate ($SD\_CashETR_{it}$), based on a nonlinear specification. The x-axis shows the number of tax employees located in highly complex countries. The y-axis shows the estimated change in $SD\_CashETR_{it}$ associated with one additional tax employee at each level of $EmplComplex_{it}$ shown on the x-axis. Vertical bars indicate 90% confidence intervals.

Table 1
Definition of Variables

Variables	Definition
Hypotheses 1 & 3	
$SD\_CashETR_{it}$	Forward-looking three-year standard deviation of annual Cash ETR.
$SD\_CashETR5_{it}$	Forward-looking five-year standard deviation of annual Cash ETR.
$SD\_GAAPETR_{it}$	Forward-looking three-year standard deviation of annual GAAP ETR.
SD_HSETR_{it}	Forward-looking three-year standard deviation of the Henry–Sansing ETR measure.
$PriorYearTaxes_{it}$	Forward-looking three-year average of taxes paid for previous years, scaled by total assets.
$TaxKam_{it}$	Indicator variable taking the value of one if the auditor reports at least one tax-related key audit matter in year t, and zero otherwise.
$EmplComplex_{it}$	Number of tax employees located in the MNE-specific top decile of tax-complex countries in year t.
$EmplComplexFramework_{it}$	Number of tax employees located in the MNE-specific top decile of tax framework-complex countries in year t.
$EmplComplexCode_{it}$	Number of tax employees located in the MNE-specific top decile of tax code-complex countries in year t.
$EmplComplexWorldScale_{it}$	Sum of worldwide tax employees in year t, weighted by the tax complexity score of the country of employment and scaled by the worldwide average tax complexity in year t.
$EmplComplexFirmScale_{it}$	Sum of worldwide tax employees in year t, weighted by the tax complexity score of the country of employment and scaled by the multinational's average tax complexity exposure in year t.
$EmplComplexTCI_{it}$	Sum of worldwide tax employees in year t weighted by the country's tax complexity index value.
$EmplComplexWWTopDec_{it}$	Number of tax employees located in countries in the top decile of worldwide tax complexity in year t.
$EmplComplexWWTopTen_{it}$	Number of tax employees in the ten most tax-complex countries worldwide in year t.
$AvgTaxComplexity_{it}$	Subsidiary-weighted average tax complexity across all countries in which the multinational operates over the forward-looking three-year window beginning in year t.
$AvgTaxFrameComplexity_{it}$	Subsidiary-weighted average tax framework complexity across all countries in which the multinational operates over the forward-looking three-year window beginning in year t.
$AvgTaxCodeComplexity_{it}$	Subsidiary-weighted average tax code complexity across all countries in which the multinational operates over the forward-looking three-year window beginning in year t.
$TaxEmpl_{it}$	Total number of tax employees of multinational i in year t.
$SIZE_{it}$	Natural logarithm of average total assets over the forward-looking three-year window beginning in year t.

ROA_{it}	Average pre-tax income divided by average lagged total assets over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
MTB_{it}	Average market value of equity divided by the average book value of common equity over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
RD_{it}	Average research and development expenditures divided by average assets over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
LEV_{it}	Average long-term debt divided by average total assets over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
PPE_{it}	Capital intensity, calculated as average net property, plant, and equipment divided by average assets over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
INT_{it}	Average intangible assets divided by average assets over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
INV_{it}	Average inventory divided by average assets over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
$APTS_{it}$	Average auditor-provided tax service fees scaled by total assets over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
SEG_{it}	Natural logarithm of the average number of reported business segments over the forward-looking three-year window beginning in year t.
IIQ_{it}	Average number of days between the fiscal year-end and the firm's earnings announcement, divided by 365 and multiplied by -1 (Gallemore and Labro 2015), over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
$TaxHavens_{it}$	Average number of tax haven subsidiaries (Bennedsen and Zeume 2018) scaled by the total number of subsidiaries over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
$International_{it}$	Average ratio of operating countries to number of subsidiaries over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
$CashETR_{it}$	Three-year average cash effective tax rate, calculated as the sum of a firm's cash taxes paid divided by the sum of its total pre-tax income over the forward-looking three-year window beginning in year t, winsorized at 0 and 1.
SD_ROA_{it}	Standard deviation of pre-tax return on assets over the forward-looking three-year window beginning in year t, winsorized at the 1 percent level.
Hypothesis 2	
$TaxEmpl\_d_{ict}$	Indicator variable taking the value of one if at least one tax employee of multinational i is present in the foreign country c in year t, and zero otherwise.

$TaxEmpl\_c_{ict}$	Total number of tax employees of multinational firm i in foreign country c in year t.
$TaxComplexity_{ct}$	Overall tax complexity score of country c in year t as defined by Hoppe et al. (2023). Values for missing years are linearly interpolated.
$TaxComplexityFramework_{ct}$	Tax framework complexity score of country c in year t as defined by Hoppe et al. (2023). Values for missing years are linearly interpolated.
$TaxComplexityCode_{ct}$	Tax code complexity score of country c in year t as defined by Hoppe et al. (2023). Values for missing years are linearly interpolated.
$PrefilingFiling_{ct}$	Country-level prefiling and filing tax framework complexity in country c in year t, combining the enactment, guidance, and payment-and-filing dimensions of tax framework complexity as defined by Hoppe et al. (2023). Values for missing years are linearly interpolated.
$Postfiling_{ct}$	Country-level postfiling tax framework complexity in country c in year t, combining the audit and appeal dimensions of tax framework complexity as defined by Hoppe et al. (2023). Values for missing years are linearly interpolated.
$AntiBepsRegulations_{ct}$	Country-level tax code complexity in country c in year t related to anti-BEPS and cross-border profit-shifting rules, including, for example, CFC rules, transfer pricing rules, and withholding taxes. Values for missing years are linearly interpolated.
$DomesticGroupRegulation_{ct}$	Country-level tax code complexity in country c in year t related to domestic group taxation and corporate group structures, including, for example, loss offset rules, group taxation, and reorganizations. Values for missing years are linearly interpolated.
$OtherRegulations_{ct}$	Country-level tax code complexity in country c in year t capturing remaining tax code provisions not included in the anti-BEPS or domestic-group categories, such as depreciation rules and investment incentives. Values for missing years are linearly interpolated.
$\Delta TaxComplexity_{ct}$	Difference between the tax complexity score of subsidiary country c and the tax complexity score of the multinational's home country in year t.
$TimetoComply_{ct}$	Number of hours needed to comply with country c's profit, labor, and consumption taxes in year t, as defined by PwC et al. (2018).
GDP_{ct}	Gross domestic product of the respective country in year t.
$GDPgrowth_{ct}$	Percentage change between GDP_{t-1} and GDP_t of country c.
$Education_{ct}$	Country's level of education in year t as assessed by the World Bank.
$Corruption_{ct}$	Transparency International Corruption Index for year t.
$GovernmentEffectiveness_{ct}$	The Worldwide Governance Indicator Government Effectiveness captures the perceived quality of public services, the civil service, and the degree of its independence from political pressures. It also captures the quality of policy formulation and implementation, and the credibility of the

	government's commitment, for year t. Data for 2024 use the 2023 value.
$RegulatoryQuality_{ct}$	The Worldwide Governance Indicator Regulatory Quality captures the perceived ability of the government to formulate and implement policies as well as regulations that promote private sector development for year t. Data for 2024 use the 2023 value.
$VoiceAccountability_{ct}$	The Worldwide Governance Indicator Voice and Accountability captures the perceived ability to participate in elections and free media for year t. Data for 2024 use the 2023 value.
$PoliticalStability_{ct}$	The Worldwide Governance Indicator Political Stability and Absence of Violence/Terrorism captures perceived political instability and political violence, including terrorism, for year t. Data for 2024 use the 2023 value.
$Ruleoflaw_{ct}$	The Worldwide Governance Indicator Rule of Law captures perceived confidence in the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence for year t. Data for 2024 use the 2023 value.
$LaborLaw_{ct}$	Labor law strictness of the respective country for year t. Data from the OECD. Data for 2020–2024 use the last available value (2019).
STR_{ct}	Corporate statutory tax rate of country c in year t, taken from Tax Foundation.
$Big4TaxAdvisory_{ct}$	Aggregate Big Four tax advisory fees in country c in year t, scaled by country GDP.
$ShareSubs_{ict}$	Share of subsidiaries owned by multinational i in country c in year t.
$TotalAssets_{ict}$	Total assets (in billions) owned by multinational i in country c in year t.
$Distance_{ict}$	The distance between the head office country's capital and the subsidiary country's capital.
$Language_{ict}$	Indicator variable taking one if the head office and subsidiary country share a common language, and zero otherwise.

Table 2
Descriptive Statistics: Equation (1) and Equation (3)

Variables	(1) N	(2) mean	(3) median	(4) sd	(5) p5	(6) p95
SD_CashETR$_{it}$	1,926	0.117	0.064	0.129	0.009	0.439
SD_CashETR5$_{it}$	1,322	0.140	0.093	0.123	0.018	0.396
SD_GAAPETR$_{it}$	1,926	0.084	0.042	0.109	0.004	0.354
SD_HSETR	1,293	0.002	0.001	0.003	0.00021	0.00693
PriorYearTaxes$_{it}$	1,926	-2.063	0	45.23	-9.393	1.467
TaxKam$_{it}$	1,926	0.302	0	0.459	0	1
AvgTaxComplexity$_{it}$	1,926	0.389	0.389	0.022	0.356	0.423
AvgTaxFrameComplexity$_{it}$	1,926	0.276	0.274	0.027	0.241	0.317
AvgTaxCodeComplexity$_{it}$	1,926	0.501	0.503	0.029	0.451	0.543
EmplComplex$_{it}$	1,926	6.323	1	14.09	0	31
EmplComplexFramework$_{it}$	1,926	7.475	1	15.76	0	35
EmplComplexCode$_{it}$	1,926	8.142	1	17.60	0	40
EmplComplexWorldScale$_{it}$	1,926	37.72	11.05	69.23	0	167.9
EmplComplexFirmScale$_{it}$	1,926	37.04	11.01	68.15	0	165.2
EmplComplexTCI$_{it}$	1,926	14.83	12.03	27.87	0	64.21
EmplComplexWWTopDec$_{it}$	1,926	13.84	4.072	25.38	0	61.77
EmplComplexWWTopTen$_{it}$	1,926	6.124	0	14.04	0	31
TaxEmpl$_{it}$	1,926	45.74	19	73.10	1	183
SIZE$_{it}$	1,926	9.618	9.510	1.404	7.466	11.95
ROA$_{it}$	1,926	0.066	0.054	0.055	0.006	0.178
MTB$_{it}$	1,926	3.664	2.687	3.215	0.807	9.880
RD$_{it}$	1,926	0.020	0.005	0.032	0	0.094
LEV$_{it}$	1,926	0.217	0.205	0.121	0.015	0.427
PPE$_{it}$	1,926	0.233	0.193	0.172	0.037	0.580
INT$_{it}$	1,926	0.291	0.277	0.201	0.016	0.635
INV$_{it}$	1,926	0.094	0.084	0.091	0	0.251
APTS$_{it}$	1,926	0.00001	0	0.00003	0	0.0002
SEG$_{it}$	1,926	1.495	1.609	0.477	0.693	2.159
IIQ$_{it}$	1,926	-0.139	-0.141	0.044	-0.208	-0.071
TaxHavens$_{it}$	1,926	0.044	0.023	0.088	0	0.157
International$_{it}$	1,926	0.044	0.038	0.069	0	0.157
CashETR$_{it}$	1,926	0.305	0.254	0.212	0.098	1
SD_ROA$_{it}$	1,926	0.025	0.016	0.029	0.003	0.075

Table 3
Descriptive Statistics: Equation (2)

Variables	(1) N	(2) mean	(3) median	(4) sd	(5) p5	(6) p95
$TaxEmpl\_d_{ict}$	73,434	0.194	0	0.395	0	1
$TaxEmpl\_c_{ict}$	73,434	0.921	0	4.972	0	4
$TaxComplexity_{ct}$	73,434	0.380	0.386	0.056	0.273	0.473
$TaxComplexityCode_{ct}$	73,434	0.476	0.485	0.078	0.333	0.583
$TaxComplexityFramework_{ct}$	73,434	0.284	0.278	0.064	0.188	0.396
$PrefilingFiling_{ct}$	73,434	0.264	0.262	0.065	0.163	0.377
$Postfiling_{ct}$	73,434	0.314	0.301	0.076	0.213	0.449
$AntiBepsRegulations_{ct}$	73,434	0.512	0.541	0.092	0.323	0.645
$DomesticGroupRegulation_{ct}$	73,434	0.443	0.470	0.102	0.249	0.583
$OtherRegulations_{ct}$	73,434	0.359	0.362	0.108	0.189	0.526
$\Delta TaxComplexity_{ct}$	73,434	0.013	0.016	0.082	-0.126	0.153
$TimetoComply_{ct}$	40,540	236.2	175	318.9	63	334
GDP_{ct}	73,434	1,937	546.4	4,238	55.38	14,579
$GDPgrowth_{ct}$	73,434	2.316	2.424	3.565	-4.793	7.502
$Education_{ct}$	73,434	0.875	0.902	0.078	0.726	0.959
$Corruption_{ct}$	73,434	59.68	61	18.56	31	86
$GovernmentEffectiveness_{ct}$	73,434	0.984	1.047	0.749	-0.163	2.031
$RegulatoryQuality_{ct}$	73,434	0.876	0.935	0.769	-0.354	1.877
$VoiceAccountability_{ct}$	73,434	0.798	1.056	0.878	-0.951	1.834
$PoliticalStability_{ct}$	73,434	0.327	0.506	0.682	-0.838	1.181
$Ruleoflaw_{ct}$	73,434	0.754	0.971	0.918	-0.806	1.986
$LaborLaw_{ct}$	73,434	2.206	2.159	0.814	0.587	3.321
STR_{ct}	73,434	27.04	25	8.018	19	45.81
$ShareSubs_{ict}$	73,434	0.023	0.005	0.069	0.001	0.088
$TotalAssets_{ict}$	72,681	0.928	0.003	28.282	0	1.707
$Distance_{ict}$	73,434	4.806	1.892	4.751	0.360	12.49
$Language_{ict}$	73,434	0.122	0	0.327	0	1
$Big4TaxAdvisory_{ct}$	44,824	0.005	0	0.023	0	0.129

Table 4: Tax Complexity and Tax Risk

	(1) $SD\_CashETR_{it}$	(2) $SD\_CashETR5_{it}$	(3) $SD\_GAAPETR_{it}$	(4) SD_HSETR_{it}	(5) $PriorYearTaxes_{it}$	(6) $TaxKam_{it}$
AvgTaxComplexity $_{it}$	**0.4978***	**1.0498****	**0.1472**	**0.0250****	**140.1077***	**2.1026***
	(1.73)	**(2.54)**	**(0.68)**	**(2.29)**	**(1.88)**	**(1.92)**
$SIZE_{it}$	-0.0259	-0.0593**	-0.0295*	-0.0255	0.0003	3.1490
	(-1.30)	(-2.29)	(-1.80)	(-1.38)	(0.47)	(0.58)
ROA_{it}	-0.6631***	-1.1816***	-0.8277***	-0.7385***	-0.0016	-83.6106
	(-3.88)	(-4.72)	(-5.61)	(-6.33)	(-0.27)	(-1.26)
MTB_{it}	-0.0026	-0.0008	-0.0009	-0.0023	-0.0001	1.3765
	(-0.87)	(-0.23)	(-0.42)	(-0.97)	(-0.95)	(1.50)
RD_{it}	-0.0222	-0.6474*	0.4059	0.3726	-0.0058	206.0236
	(-0.05)	(-1.69)	(1.08)	(0.78)	(-0.50)	(1.16)
LEV_{it}	0.2271***	0.0767	0.1037	0.0864	0.0011	-12.4612
	(3.19)	(0.71)	(1.54)	(1.34)	(0.46)	(-0.79)
PPE_{it}	-0.1837	-0.1504	-0.0538	-0.1283	-0.0001	-55.3633
	(-1.65)	(-0.93)	(-0.54)	(-1.34)	(-0.02)	(-1.15)
INT_{it}	-0.1117	-0.0309	-0.0646	-0.0649	0.0003	-46.9312
	(-1.57)	(-0.29)	(-1.04)	(-1.02)	(0.17)	(-0.86)
INV_{it}	0.5157**	0.8661**	0.4396**	0.3526*	0.0018	-0.3979
	(2.15)	(2.45)	(2.07)	(1.83)	(0.22)	(-1.47)
SEG_{it}	0.0114	-0.0061	0.0114	-0.0033	0.0000	-3.0537
	(1.04)	(-0.35)	(0.82)	(-0.28)	(0.09)	(-0.87)
$APTS_{it}$	15.1728	-1.5e+02	-24.8668	12.9060	-1.0280	-1.4e+04
	(0.13)	(-1.11)	(-0.26)	(0.13)	(-0.39)	(-0.45)
$TaxEmpl_{it}$	-0.0002	0.0003	-0.0001	0.0001	-0.0000	0.1076
	(-1.04)	(0.33)	(-0.60)	(0.68)	(-0.59)	(1.47)
IIQ_{it}	-0.1576*	-0.2330*	-0.0331	-1.8743	-0.0003	0.6204
	(-1.81)	(-1.86)	(-0.46)	(-1.26)	(-0.57)	(1.55)
$TaxHavens_{it}$	0.1766	0.0000	0.1616	0.2678	-0.0004	9.9835
	(1.01)	(0.000)	(1.38)	(1.07)	(-0.11)	(0.52)
$International_{it}$	0.0004	-0.1507	-0.0005	-0.0004	0.0000**	0.2838
	(0.73)	(-0.40)	(-0.83)	(-0.75)	(2.19)	(1.27)
SD_ROA_{it}	0.4749**	0.6700***	0.6907***	0.8518***		
	(2.43)	(4.24)	(4.54)	(4.95)		
ETR_{it}	0.2346***	0.2021***	0.1652***	-0.2303***		
	(9.20)	(8.35)	(5.42)	(-13.22)		
MNE FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,926	1,322	1,926	1,280	1,926	1,926
Adj. R-sq	0.5580	0.8022	0.5715	0.6417	0.1098	0.6255

This table presents the estimates of Equation (1) for the dependent variables $SD\_CashETR_{it}$, $SD\_CashETR5_{it}$, $SD\_GAAPETR_{it}$, SD_HSETR_{it}, $PriorYearTaxes_{it}$, and $TaxKam_{it}$. $SD\_CashETR_{it}$ is the forward-looking three-year standard deviation of the cash effective tax rate. $AvgTaxComplexity_{it}$ measures the multinational's average exposure to tax complexity, calculated as the subsidiary-weighted average tax complexity across the countries in which the multinational operates. See Table 1 for the definitions of other variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. A constant is included but not reported. t-statistics are reported in parentheses, and standard errors are heteroskedasticity-robust and clustered at the MNE level.

Table 5: Tax Complexity and the Location of Tax Employees

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	TaxEmpl_d$_{ict}$	*TaxEmpl_d$_{ict}$*	*TaxEmpl_c$_{ict}$*	*TaxEmpl_c$_{ict}$*	*TaxEmpl_d$_{ict}$*	*TaxEmpl_d$_{ict}$*	*TaxEmpl_c$_{ict}$*	*TaxEmpl_c$_{ict}$*
	Probit	*OLS*	*PPML*	*OLS*	*Probit*	*OLS*	*PPML*	*OLS*
TaxComplexity$_{ct}$	**2.9426*****	**0.6287*****	**7.5605*****	**4.3272*****	**3.0666*****	**0.6326*****	**7.6302*****	**4.2566*****
	(8.56)	**(6.86)**	**(8.81)**	**(3.37)**	**(8.61)**	**(6.87)**	**(8.67)**	**(3.14)**
GDP$_{ct}$	0.0001***	0.0000***	0.0001***	0.0002***	0.0001***	0.0000***	0.0001***	0.0002***
	(19.60)	(17.92)	(10.51)	(5.58)	(18.01)	(20.37)	(13.74)	(6.36)
GDPgrowth$_{ct}$	0.0104***	0.0032***	0.0382***	0.0672***	0.0099	0.0031	0.0370*	0.0675**
	(3.77)	(4.51)	(3.41)	(4.42)	(1.34)	(1.62)	(1.77)	(2.43)
Education$_{ct}$	-0.1432	-0.1705**	-4.8286***	-5.9162***	-0.1233	-0.1462	-5.0910***	-5.2062***
	(-0.46)	(-2.01)	(-3.66)	(-2.92)	(-0.31)	(-1.21)	(-5.31)	(-2.70)
Corruption$_{ct}$	-0.0059*	-0.0015**	-0.0370***	-0.0267***	-0.0065	-0.0018*	-0.0389***	-0.0382***
	(-1.94)	(-2.32)	(-2.73)	(-2.78)	(-1.57)	(-1.79)	(-2.90)	(-2.96)
STR$_{ct}$	0.0073***	0.0013***	0.0033	-0.0068	0.0074***	0.0012**	0.0037	-0.0099
	(5.20)	(3.76)	(0.52)	(-1.64)	(3.08)	(2.33)	(0.45)	(-1.48)
Distance$_{ict}$	0.0097***	0.0019**	-0.0065	-0.0097	0.0085*	0.0015	-0.0172	-0.0146
	(3.03)	(2.52)	(-0.35)	(-1.02)	(1.96)	(1.51)	(-1.10)	(-1.58)
Language$_{ict}$	0.1810***	0.0340***	0.1941	0.1068	0.1822***	0.0339***	0.2024***	0.0935
	(3.95)	(2.92)	(1.37)	(0.71)	(6.02)	(4.58)	(3.09)	(1.13)
LaborLaw$_{ct}$	0.0074	-0.0057	-0.2591***	-0.3080***	0.0042	-0.0073	-0.2806***	-0.3664***
	(0.42)	(-1.30)	(-3.15)	(-5.13)	(0.15)	(-1.01)	(-3.49)	(-4.18)
GovernmentEffectiveness$_{ct}$	0.3049***	0.0802***	0.5595***	0.0728	0.3487***	0.0841***	0.5767**	-0.1014
	(5.19)	(5.07)	(3.41)	(0.42)	(3.55)	(3.41)	(2.17)	(-0.31)
PoliticalStability$_{ct}$	-0.2409***	-0.0674***	-0.1219	-0.3645***	-0.2443***	-0.0687***	-0.1414	-0.5572***
	(-7.23)	(-8.28)	(-1.59)	(-3.92)	(-4.66)	(-5.27)	(-1.08)	(-3.39)
Ruleoflaw$_{ct}$	-0.5395***	-0.1593***	0.1631	0.0488	-0.5563***	-0.1571***	0.1536	0.2090
	(-7.35)	(-7.56)	(0.71)	(0.26)	(-4.80)	(-4.96)	(0.47)	(0.57)
VoiceAccountability$_{ct}$	0.5251***	0.1545***	0.8167***	0.9516***	0.5385***	0.1559***	0.8676***	1.1636***
	(13.27)	(13.27)	(6.35)	(6.69)	(9.11)	(10.13)	(5.06)	(5.79)
RegulatoryQuality$_{ct}$	-0.0136	0.0126	-0.6865***	-0.0728	-0.0199	0.0137	-0.6981***	0.0863
	(-0.25)	(0.86)	(-5.59)	(-0.44)	(-0.26)	(0.63)	(-3.51)	(0.29)
FDI$_{ict}$	0.0002	0.0001**	0.0002***	0.0042***	0.0011*	0.0004	0.0006***	0.0021
	(1.64)	(2.37)	(4.20)	(2.80)	(1.73)	(1.30)	(3.18)	(1.40)
MNE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FDI	*ShareSub*	*ShareSub*	*ShareSub*	*ShareSub*	*TotalAssets*	*TotalAssets*	*TotalAssets*	*TotalAssets*
Observations	73,434	73,434	73,434	73,434	72,323	72,681	72,323	72,681
Adj. R-sq	0.4080	0.2577	0.4742	0.1480	0.6610	0.2513	0.4801	0.1182

This table presents the estimates of Equation (2) for the dependent variables *TaxEmpl_d$_{ict}$* and *TaxEmpl_c$_{ict}$*. *TaxEmpl_d$_{ict}$* is an indicator variable equal to one if multinational i employs at least one tax employee in country c in year t, and zero otherwise. *TaxEmpl_c$_{ict}$* is the total number of tax employees of multinational i in country c in year t. *TaxComplexity$_{ct}$* represents the tax complexity score of country c as defined by Hoppe et al. (2023). In Columns (1) to (4), local business activity is measured by *ShareSubs$_{ict}$*; in Columns (5) to (8), it is measured by *TotalAssets$_{ict}$*. See Table 1 for the definitions of the other control variables. ***, ** and * label statistical significance at 1%, 5%, and 10% level, respectively. A constant is included but not reported. *t*-statistics are given in parentheses and standard errors are heteroskedasticity-robust and clustered at the country-year level. For the Probit and PPML specifications, the reported goodness-of-fit measures correspond to Efron's R-squared and McFadden's pseudo R-squared, respectively.

Table 6: Components of Tax Complexity

	(1)	(2)	(3)	(4)
	TaxEmpl_d$_{ict}$	*TaxEmpl_d*$_{ict}$	*TaxEmpl_c*$_{ict}$	*TaxEmpl_c*$_{ict}$
Panel A	Probit	OLS	PPML	OLS
TaxComplexityFramework$_{ct}$	1.4288***	0.4029***	6.6442***	5.9458***
	(3.25)	(3.24)	(5.76)	(3.52)
TaxComplexityCode$_{ct}$	1.4950***	0.2677***	2.3198***	0.1665
	(5.48)	(3.85)	(3.06)	(0.18)
TFC minus *TCC*	-0.0662	0.1352	4.3244**	5.7793**
MNE FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	73,434	73,434	73,434	73,434
Adj. R-sq	0.7000	0.2069	0.4764	0.0865

	TaxEmpl_d$_{ict}$	*TaxEmpl_d*$_{ict}$	*TaxEmpl_c*$_{ict}$	*TaxEmpl_c*$_{ict}$
Panel B	Probit	OLS	PPML	OLS
PrefilingFiling$_{ct}$	3.2439***	0.7579***	8.2989***	5.6848***
	(7.98)	(7.08)	(7.12)	(4.52)
Postfiling$_{ct}$	-0.4862	-0.0853	0.4335	1.1759
	(-1.64)	(-1.14)	(0.54)	(1.15)
PrefilingFiling minus *Postfiling*	3.7301***	0.8432***	7.8654***	4.5089**
MNE FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	73,434	73,434	73,434	73,434
Adj. R-sq	0.7020	0.2836	0.4798	0.3090

	TaxEmpl_d$_{ict}$	*TaxEmpl_d*$_{ict}$	*TaxEmpl_c*$_{ict}$	*TaxEmpl_c*$_{ict}$
Panel C	Probit	OLS	PPML	OLS
AntiBepsRegulations$_{ct}$	0.5283	0.0925	0.7794	-0.3259
	(1.47)	(1.09)	(0.65)	(-0.38)
DomesticGroupRegulation$_{ct}$	1.0362***	0.2415***	3.0038***	1.9470***
	(3.61)	(3.42)	(3.61)	(2.47)
OtherRegulations$_{ct}$	0.1471	-0.0074	-0.5450	-0.6748
	(0.67)	(-0.13)	(-0.89)	(-0.88)
AntiBepsReg minus *DomGroupReg*	-0.5082	-0.1490	-2.2244	-2.2729
AntiBepsReg minus *OtherReg*	0.3822	0.0999	1.3244	0.3489
DomGroupReg minus *OtherReg*	0.8891*	0.2489**	3.5488**	2.6218**
MNE FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	73,434	73,434	73,434	73,434
Adj. R-sq	0.6988	0.2725	0.4796	0.1511

This table reports estimates of Equation (2) using dimensions of tax complexity. The dependent variables are *TaxEmpl_d*$_{ict}$, an indicator equal to one if multinational i employs at least one tax employee in country c in year t, and *TaxEmpl_c*$_{ict}$, the number of tax employees of multinational i in country c in year t. Panel A decomposes overall tax complexity into *TaxComplexityFramework*$_{ct}$ and *TaxComplexityCode*$_{ct}$. Panel B decomposes tax framework complexity into *PrefilingFiling*$_{ct}$ and *Postfiling*$_{ct}$. Panel C decomposes tax code complexity into *AntiBepsRegulations*$_{ct}$, *DomesticGroupRegulation*$_{ct}$, and *OtherRegulations*$_{ct}$. Rows reporting differences between coefficients present F-tests of equality across the respective estimates. All specifications include the full set of control variables from Equation (2). See Table 1 for variable definitions. ***, ** and * label statistical significance at 1%, 5%, and 10% level, respectively. A constant is included but not reported. t-statistics are given in parentheses and standard errors are heteroskedasticity-robust and clustered at the country-year level. For Probit and PPML, the reported fit statistics are Efron's R-squared and McFadden's pseudo R-squared, respectively.

Table 7: Robustness

	(1) $TaxEmpl\_d_{ict}$	(2) $TaxEmpl\_d_{ict}$	(3) $TaxEmpl\_c_{ict}$	(4) $TaxEmpl\_c_{ict}$	(5) $TaxEmpl\_d_{ict}$	(6) $TaxEmpl\_d_{ict}$	(7) $TaxEmpl\_c_{ict}$	(8) $TaxEmpl\_c_{ict}$	(9) $TaxEmpl\_d_{ict}$	(10) $TaxEmpl\_d_{ict}$	(11) $TaxEmpl\_c_{ict}$	(12) $TaxEmpl\_c_{ict}$
	Probit	OLS	PPML	OLS	Probit	OLS	PPML	OLS	Probit	OLS	PPML	OLS
$TimetoComply_{ct}$	0.0005***	0.0001***	0.0010***	0.0014***								
	(12.33)	(9.32)	(11.77)	(3.83)								
$TaxComplexity_{ct}$					3.3190***	0.6345***	7.5126***	3.1511***				
					(6.83)	(5.30)	(6.09)	(2.81)				
$Big4TaxAdvisory_{ct}$					-1.9957***	-0.5979***	-3.0662***	15.5689***				
					(-2.17)	(-2.67)	(-2.36)	(3.63)				
$\Delta TaxComplexity_{ct}$									2.5078***	0.5379***	6.5881***	3.6334***
									(8.61)	(6.90)	(8.88)	(3.19)
MNE FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	38,029	40,540	38,034	40,540	43,127	44,824	43,127	44,824	73,434	73,434	73,434	73,434
Pseudo R-sq	0.6058	0.2685	0.4790	0.2054	0.6451	0.2775	0.5210	0.2184	0.6623	0.2572	0.4741	0.1477

This table reports robustness tests of Equation (2). The dependent variables are $TaxEmpl\_d_{ict}$, an indicator equal to one if multinational i employs at least one tax employee in country c in year t, and $TaxEmpl\_c_{ict}$, the number of tax employees of multinational i in country c in year t. Columns (1) to (4) replace the baseline tax complexity measure with $TimetoComply_{ct}$, the number of hours required to comply with the tax system. Columns (5) to (8) add $Big4TaxAdvisory_{ct}$, a country-level measure of Big Four tax advisory intensity. Columns (9) to (12) use $\Delta TaxComplexity_{ct}$, the change in the tax complexity score, as the main explanatory variable. All specifications include the full set of control variables from Equation (2). See Table 1 for variable definitions. ***, ** and * label statistical significance at 1%, 5%, and 10% level, respectively. A constant is included but not reported. *t*-statistics are given in parentheses and standard errors are heteroskedasticity-robust and clustered at the country-year level. For Probit and PPML, the reported fit statistics are Efron's R-squared and McFadden's pseudo R-squared, respectively.

Table 8: Tax Risk and Tax Employees in Highly Complex Countries

	(1) $SD\_CashETR_{it}$	(2) $SD\_CashETR5_{it}$	(3) $SD\_GAAPETR_{it}$	(4) SD_HSETR_{it}	(5) $PriorYearTaxes_{it}$	(6) $TaxKam_{it}$
	OLS	OLS	OLS	OLS	OLS	OLS
AvgTaxComplexity$_{it}$	**0.5401***	**1.0579***	**0.1814**	**0.0256***	**140.1077***	**2.3464***
	(1.87)	**(2.56)**	**(0.85)**	**(2.34)**	**(2.33)**	**(2.16)**
EmplComplex$_{it}$	**-0.0007****	**-0.0005**	**-0.0006***	**-0.0000**	**-0.0653***	**-0.0040*****
	(-2.06)	**(-1.36)**	**(-1.91)**	**(-1.45)**	**(-1.93)**	**(-3.40)**
$SIZE_{it}$	-0.0229	-0.0572**	-0.0271*	0.0003	3.5649	0.0410
	(-1.14)	(-2.22)	(-1.66)	(0.54)	(0.66)	(0.67)
ROA_{it}	-0.6480***	-1.1825***	-0.8163***	-0.0015	-79.6780	0.0182
	(-3.81)	(-4.74)	(-5.69)	(-0.25)	(-1.20)	(0.03)
MTB_{it}	-0.0026	-0.0007	-0.0009	-0.0001	1.3852	-0.0036
	(-0.89)	(-0.21)	(-0.44)	(-0.93)	(1.51)	(-0.40)
RD_{it}	-0.0439	-0.6608*	0.3904	-0.0065	196.8044	0.6079
	(-0.09)	(-1.73)	(1.05)	(-0.56)	(1.12)	(0.41)
LEV_{it}	0.2156***	0.0643	0.0944	0.0009	-12.6413	0.0010
	(3.03)	(0.59)	(1.42)	(0.37)	(-0.81)	(0.00)
PPE_{it}	-0.1689	-0.1450	-0.0412	0.0001	-56.0049	-0.2261
	(-1.50)	(-0.90)	(-0.41)	(0.02)	(-1.17)	(-0.54)
INT_{it}	-0.1166	-0.0337	-0.0685	0.0002	-47.8077	-0.5959**
	(-1.62)	(-0.31)	(-1.10)	(0.11)	(-0.87)	(-1.97)
INV_{it}	0.4960**	0.8396**	0.4246**	0.0011	-1.3e+02	-0.5093
	(2.09)	(2.39)	(2.03)	(0.14)	(-1.51)	(-0.66)
SEG_{it}	0.0122	-0.0057	0.0121	0.0001	-2.8160	0.0528
	(1.09)	(-0.33)	(0.87)	(0.14)	(-0.80)	(1.01)
$APTS_{it}$	7.0697	-0.000	-30.7352	-1.1478	-0.000	-0.000
	(0.06)	(-1.14)	(-0.33)	(-0.44)	(-0.44)	(-0.81)
$TaxEmpl_{it}$	-0.0001	0.0003	-0.0001	-0.0000	0.1079	0.0001
	(-0.81)	(0.35)	(-0.44)	(-0.44)	(1.45)	(0.20)
IIQ_{it}	-0.1097	-0.0446	0.0072	0.0014	3.5913	0.4734
	(-0.49)	(-0.13)	(0.04)	(0.31)	(0.13)	(0.68)
$TaxHavens_{it}$	0.1811	0.6697***	0.1656	-0.0004	9.9579	-0.0676
	(1.05)	(4.23)	(1.43)	(-0.10)	(0.52)	(-0.16)
$International_{it}$	0.0005	-0.1537	-0.0005	0.0000**	0.2780	-0.0007
	(0.76)	(-0.40)	(-0.80)	(2.25)	(1.25)	(-0.32)
SD_ROA_{it}	0.4756**	0.1465***	0.6914***	-0.0062		
	(2.43)	(3.73)	(4.55)	(-0.99)		
ETR_{it}	0.2413***	0.1465***	0.1392***	-0.0151		
	(7.91)	(3.73)	(3.72)	(-0.37)		
MNE FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,926	1,322	1,926	1,280	1,926	1,926
Adj. R-sq	0.5598	0.8026	0.5731	0.6423	0.1097	0.6302

This table presents the estimates of Equation (3) for the dependent variables $SD\_CashETR_{it}$, $SD\_CashETR5_{it}$, $SD\_GAAPETR_{it}$, SD_HSETR_{it}, $PriorYearTaxes_{it}$, and $TaxKam_{it}$. $SD\_CashETR_{it}$ ($SD\_CashETR5_{it}$) is the forward-looking three-year (five-year) standard deviation of the cash effective tax rate. $SD\_GAAPETR_{it}$ is the forward-looking three-year standard deviation of the GAAP effective tax rate. SD_HSETR_{it} is the forward-looking three-year standard deviation of the Henry–Sansing tax risk measure. $PriorYearTaxes_{it}$ captures taxes paid for prior-year periods, and $TaxKam_{it}$ is an indicator variable equal to one if the auditor reports at least one tax-related key audit matter and zero otherwise. $AvgTaxComplexity_{it}$ measures the multinational's average exposure to tax complexity, calculated as the subsidiary-weighted average tax complexity across the countries in which the multinational operates. $EmplComplex_{it}$ measures the number of tax employees located in the MNE-specific top decile of tax-complex countries in year t. See Table 1 for the definitions of the control variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. A constant is included but not reported. t-statistics are reported in parentheses, and standard errors are heteroskedasticity-robust and clustered at the MNE level.

Table 9: Robustness Tax Risk Measures and Tax Employees in Tax Complex Countries

	(1)	(2)	(3)	(4)	(5)
	$SD\_CashETR_{it}$	$SD\_CashETR_{it}$	$SD\_CashETR_{it}$	$SD\_CashETR_{it}$	$SD\_CashETR_{it}$
	OLS	OLS	OLS	OLS	OLS
$AvgTaxComplexity_{it}$	0.4988*	0.4956*	0.5043*	0.5471*	0.5095*
	(1.73)	(1.72)	(1.75)	(1.89)	(1.77)
$EmplComplex_{it}$	-0.0010*	-0.0011**	-0.0027*	-0.0008*	-0.0005*
	(-1.95)	(-2.14)	(-1.87)	(-1.99)	(-1.74)
$EmplComplex_{it}$	$EmplComplexWorldScale_{it}$	$EmplComplexFirmScale_{it}$	$EmplComplexTCI_{it}$	$EmplComplexWWTopDec_{it}$	$EmplComplexWWTopTen_{it}$
MNE FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	1,926	1,926	1,926	1,926	1,926
Adj. R-sq	0.5589	0.5592	0.5556	0.5558	0.5534

This table presents robustness tests of Equation (3) using alternative measures of tax employees in complex countries. The dependent variable in all columns is $SD\_CashETR_{it}$, the forward-looking three-year standard deviation of the cash effective tax rate. $AvgTaxComplexity_{it}$ measures the multinational's average exposure to tax complexity, calculated as the subsidiary-weighted average tax complexity across the countries in which the multinational operates. In each column, the baseline measure $EmplComplex_{it}$ is replaced by an alternative measure of tax employees in complex countries. Specifically, Columns (1) to (5) use $EmplComplexWorldScale_{it}$, $EmplComplexFirmScale_{it}$, $EmplComplexTCI_{it}$, $EmplComplexWWTopDec_{it}$, and $EmplComplexWWTopTen_{it}$, respectively. See Table 1 for the definitions of these variables and the control variables. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. A constant is included but not reported. t-statistics are reported in parentheses, and standard errors are heteroskedasticity-robust and clustered at the MNE level.

Table 10: Components of Tax Complexity

	(1) $SD\_CashETR_{it}$	(2) $SD\_CashETR_{it}$	(3) $SD\_CashETR_{it}$
$AvgTaxComplexity_{it}$	0.5401*		
	(1.73)		
$EmplComplex_{it}$	-0.0007**		
	(-2.06)		
$AvgTaxFrameComplexity_{it}$		0.5548*	
		(1.69)	
$EmplComplexFramework_{it}$		-0.0010*	
		(-1.77)	
$AvgTaxCodeComplexity_{it}$			0.2177
			(1.18)
$EmplComplexCode_{it}$			-0.0002
			(-0.82)
MNE FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	1,926	1,926	1,926
Adj. R-sq	0.5598	0.5587	0.5574

This table presents the estimates of Equation (3) for the dependent variable $SD\_CashETR_{it}$, the forward-looking three-year standard deviation of the cash effective tax rate. Column (1) uses overall tax complexity and the corresponding measure of tax employees in highly complex countries. Column (2) replaces these variables with $AvgTaxFrameComplexity_{it}$ and $EmplComplexFramework_{it}$, where $EmplComplexFramework_{it}$ measures the number of tax employees located in the MNE-specific top decile of tax framework-complex countries in year t. Column (3) replaces these variables with $AvgTaxCodeComplexity_{it}$ and $EmplComplexCode_{it}$, *where* $EmplComplexCode_{it}$ measures the number of tax employees located in the MNE-specific top decile of tax code-complex countries in year t. See Table 1 for the definitions of the control variables. ***, ** and * label statistical significance at 1%, 5%, and 10% level, respectively. A constant is included but not reported. t-statistics are reported in parentheses, and standard errors are heteroskedasticity-robust and clustered at the MNE level.