Ecole Doctorale des Sciences Economiques, Juridiques, Politiques et de Gestion
Centre d'Etudes et de Recherches sur le Développement International (CERDI)

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ESSAIS SUR LE CIVISME FISCAL DANS LES PAYS EN DEVELOPPEMENT

Thèse présentée et soutenue publiquement le 18 décembre 2025
pour l'obtention du titre de Docteur *ès* Sciences Economiques

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Dédicace

Toute la gloire revient à Dieu.
À mon défunt père Soglo Kwasi Ganyo.
À ma mère Apaloo Ama Dzigbodi.
À mes sœurs Aménuvévé, Efa et Abra.

Remerciements

Je voudrais tout particulièrement exprimer mes plus sincères remerciements et ma profonde gratitude à l'endroit de mes directeurs de thèse Mary-Françoise RENARD et Mawussé Komlan Nézan OKEY. À tous les deux, je leur suis reconnaissant de m'avoir permis de réaliser cette thèse dans les meilleures conditions malgré vos multiples occupations dans vos différentes fonctions. Je les remercie d'avoir cru en ce projet devenu aujourd'hui une thèse défendable et de m'avoir accordé leur confiance dont j'espère, avec toute modestie, avoir été à la hauteur de la tâche. L'accompagnement dont j'ai bénéficié a fortement favorisé la progression de mes travaux et le développement de compétences variées, notamment la rigueur, le dépassement de soi et le perfectionnisme scientifique. Je souhaite également adresser mes sincères remerciements au Professeur Jean-François Brun pour ses enseignements et son accompagnement bienveillant tout au long de mon Master 2. À l'issue de ce master, son soutien indéfectible et sa confiance ont été décisifs pour que cette thèse, qui n'était qu'un rêve, devienne une réalité.

Mes remerciements vont également à M. Y. Isaac Amedanou pour sa disponibilité, sa patience et sa générosité intellectuelle. Il a toujours répondu présent, avec professionnalisme et ouverture, à mes sollicitations pour la rédaction des articles que nous avons coécrits. Son implication, ses suggestions constructives et la qualité de nos échanges ont grandement enrichi mes travaux et mes réflexions scientifiques. J'exprime aussi ma profonde reconnaissance à notre aîné, M. Kwami Obossou, affectueusement surnommé « Doyen », pour son soutien indéfectible et ses conseils avisés. Par son expérience et son esprit d'entraide, il a su jouer un rôle de guide et de mentor dans les moments clés de mon parcours. Ses encouragements, ses orientations et son regard critique ont été pour moi une ressource précieuse tout au long de cette aventure académique. À tous deux, je dis merci pour vos conseils, votre accompagnement attentif et la confiance que vous m'avez témoignée, piliers essentiels dans l'aboutissement de ce travail doctoral.

Mes remerciements les plus chaleureux s'adressent à Elom Avity, Emmanuel TETE, Y. L. Eli Apedo, Dorothé Apedo et Essénam Agbenu. Chacun d'entre vous a joué un rôle déterminant dans la concrétisation de mon projet d'études à l'étranger et dans la réussite de ce

parcours couronné aujourd'hui par cette thèse. Votre soutien moral, logistique et matériel a rendu possible mon départ du Togo vers la France et m'a offert l'opportunité d'entreprendre cette aventure scientifique. Au-delà des aspects pratiques, votre confiance, votre bienveillance et votre solidarité ont été pour moi de véritables piliers, m'encourageant et m'inspirant à chaque étape. Si cette thèse voit le jour aujourd'hui, c'est aussi grâce à vous. Je vous garderai à jamais une profonde reconnaissance pour tout ce que vous avez fait pour moi et pour l'empreinte durable que vous avez laissée dans mon parcours académique et personnel.

À la fin de ce travail doctoral, je souhaite adresser une pensée particulière à Edem Tokpo, Junior Dopegno, Edem Abotchi et Edem Jibidaret Fomè Sodja, mes amis et frères de cœur, avec qui j'ai grandi et partagé d'innombrables moments à Lomé. Ensemble, nous avons traversé les années d'adolescence, construit nos rêves et soutenu nos ambitions. Aujourd'hui réunis en France, je mesure avec fierté le chemin accompli par chacun. Votre amitié fidèle, votre solidarité et vos encouragements m'ont accompagné tout au long de mon parcours académique, me donnant souvent la force de persévérer. Cet hommage est le témoignage de ma gratitude et de mon affection profonde : sans vous, ce parcours n'aurait pas eu la même saveur ni la même signification.

À mes anciens camarades de Master, Bénoit, Luther, Clément, Rose-Marie, Aristide, Kinda, Aimé, Achille et Zerbo, je souhaite adresser mes remerciements les plus sincères. Ensemble, nous avons traversé défis, efforts et réussites, et au fil des années, vous êtes devenus bien plus que des camarades de promotion : une véritable famille. Votre amitié, votre soutien et vos conseils ont été pour moi des sources précieuses d'encouragement et d'énergie. Ces moments de partage et de solidarité resteront gravés dans ma mémoire, et je suis fier(ère) de pouvoir, en partie, dédier cette thèse à la force de notre groupe et à l'esprit de famille qui nous unit.

À tout le personnel du CERDI, je souhaite adresser mes remerciements les plus sincères et chaleureux. Merci pour l'accueil bienveillant, l'ambiance conviviale et stimulante, ainsi que pour votre disponibilité et votre accompagnement tout au long de mon parcours. Vous jouez un rôle essentiel dans la réussite des étudiants et doctorants, depuis les démarches d'admission jusqu'à l'obtention des diplômes et l'intégration aux réseaux professionnels. Votre soutien et votre efficacité ont rendu ce chemin plus fluide et enrichissant, tant sur le plan humain que scientifique. Je resterai toujours attaché(e) à cette grande maison de savoir et d'ouverture qu'est le CERDI, où l'on se forme, s'inspire et tisse des liens durables. Enfin, je tiens à remercier particulièrement Martine, Hassen, Johan, Grégory, Thibaut, Chantal, Sandra, Flora, Patricia, Anaëlle et Aurélie pour leurs conseils avisés, leur disponibilité et tous les services rendus. Votre implication et votre bienveillance ont profondément marqué mon expérience au CERDI.

Mes remerciements sincères vont également à l'endroit de Kodjo Adandohoin, Moulaye Bamba, André Gbato, Ali Compaoré, Lémou Falapalaki, mes devanciers en thèse, qui ont su, à plusieurs étapes de mon parcours doctoral, me tendre la main et m'accompagner dans la résolution de situations complexes. Chacun d'entre eux, par son expérience, sa patience et son esprit d'entraide, a joué un rôle déterminant dans l'avancement de mes travaux.

À tous ceux et celles qui, de près ou de loin, ont contribué à la réussite de ce projet de thèse, je vous dis merci.

Executive Summary

Domestic tax revenue mobilization is currently the most reliable source of financing for development in developing countries. In addition to financing development, domestic tax revenue plays a crucial role in meeting international commitments, such as the Sustainable Development Goals of Agenda 2030 and the African Union's Agenda 2063. Despite efforts to improve tax revenue mobilization, revenue levels remain low. The big question, therefore, is what fiscal instruments governments can still mobilize to raise more revenue and finance the development of their economies. In this regard, several OECD reports, as well as researchers and practitioners, point out that tax compliance, the cornerstone of any tax system, has been little explored in developing countries, in favour of penalty policies. This thesis has two objectives. On the one hand, it aims to revisit the main institutional, sociodemographic, economic, and political determinants of tax compliance identified in the literature. However, we shed some new light on the subject by conducting a comparative analysis of the degree of tax compliance according to the culture of the countries in our sample: Anglo-Saxon and French-speaking cultures. We also make this comparison between integration zones (ECOWAS and UEMOA) and countries outside them. Secondly, it analyses the effect of tax reforms on tax compliance. Overall, the thesis examines how governments can enhance taxpayers' compliance with their tax obligations to increase tax revenue mobilization. This thesis is structured in two parts, consisting of six (06) chapters, including the introductory chapter. The first part comprises chapters 2 and 3, which revisit the literature on the main determinants of tax compliance. The second part of the thesis comprises chapters 4, 5, and 6, which study tax reforms and compliance.

Chapter 2 examines the determinants of tax compliance among individuals in sub-Saharan African countries, using data from the sixth series of Afrobarometer surveys conducted in 2014/2015, covering 30 countries. Additionally, we conducted a comparative analysis of tax compliance across cultures (English-speaking countries versus French-speaking countries). Finally, we tested the heterogeneity of the results according to culture and country subgroups in our sample (UEMOA, ECOWAS, francophone countries, and anglophone

countries). Finally, we test the robustness of the results by changing the dependent variable. Using a Probit model, the results reveal that institutional factors, including trust in the administration, democracy, the quality of public services, the fight against corruption, Internet accessibility, and the legitimacy of the tax authorities, all improve citizens' tax compliance. Conversely, the complexity of the tax system undermines the citizens' tax compliance. Regarding socio-economic factors, our results indicate that women are less likely to comply with their tax obligations than men. These results are robust across the sub-samples in our study and when using an alternative measure of tax compliance. However, there is some heterogeneity in the results across these subgroups. The comparative analysis shows that the degree of tax compliance is higher in French-speaking countries than in English-speaking countries. Finally, our results show that tax coordination between ECOWAS and/or UEMOA countries improves the tax compliance of citizens in these regions. In other words, tax compliance is higher in integration areas such as ECOWAS and UEMOA than in countries outside these areas.

Chapter 3: What factors determine companies' motivation to pay taxes? We address this question using data from a 2019 survey on tax compliance conducted by the Togolese Tax Revenue Office (OTR), which covered 413 formal companies. To do this, we construct two measures of tax compliance. Potential determinants of tax compliance include perceptions of tax fraud, changes in tax laws, knowledge of taxation, tax beneficiaries, bribes, severity of penalties, legitimacy of customs duties, perceptions of tax amounts, tax burden, the legitimacy of VAT, and the geographical location of businesses. The results show that all these factors are key determinants of voluntary tax compliance, except for changes in tax laws, the assessment of tax amounts, and the tax burden. When we isolate the maritime region, the result remains unchanged; however, the assessment of tax fraud has no significant impact on voluntary compliance in this region. Finally, the determinants vary when we distinguish companies by size, whether at the national or regional level.

Chapter 4 examines whether the adoption of a semi-autonomous revenue administration, commonly referred to as SARA, can combat tax evasion. Using propensity score matching (PSM) on a sample of 39 sub-Saharan African countries between 1980 and 2015, our study concludes that the adoption of an SARA reduces tax evasion in SARA countries compared to non-SARA countries. This result is robust to several alternative specifications, including the addition of other control variables, the use of various alternative dependent variables, and the use of competing estimation methods such as entropy balancing and ordinary least squares (OLS). Further estimates on various alternative dependent variables reveal

that the adoption of an SARA increases tax revenues (excluding natural resources), the tax effort, and its components —i.e., the persistent tax effort and the time-varying tax effort —in sub-Saharan African countries. These results further reveal that adopting an SARA would reduce tax inefficiency in sub-Saharan African countries. However, it is worth noting that the dynamic study reveals this effect to be unstable over time. Finally, we provide evidence that better institutional quality (measured by corruption control), simplification of the tax payment process, and tax compliance are transmission channels through which an SARA affects tax evasion.

Chapter 5 analyses the correlation between the adoption of mobile money and the tax compliance costs, estimated by the number of hours required to file and pay the main taxes per year in developing countries, using the entropy balance method. Using an unbalanced panel of 91 countries covering the period 2000-2021, the results show that mobile money is associated with a statistically significant reduction in tax compliance costs. More specifically, we find that, on average, the adoption of mobile money generally reduces tax compliance costs by 0.121. This result is robust to the use of alternative estimation methods: ordinary least squares (OLS) and the generalized method of moments (GMM), with several alternative specifications of our sample: firstly, we exclude certain groups of countries or periods that could bias the result (countries that have adopted semi-autonomous tax administration, the post-Addis Ababa conference period, countries with a colonial past, and countries considered tax havens); secondly, we include additional control variables in our baseline model. Additionally, there is some heterogeneity in the results, depending on the type of mobile money services and the geographical location of the countries in our sample (SSA versus other countries in the sample).

Chapter 6 aims to examine the dynamic impact of public sector management reforms on tax compliance costs in Sub-Saharan African countries between 2005 and 2022. Using ordinary least squares (OLS) regression and generating impulse responses with the LP-OLS method, our results consistently show that public sector management reform significantly contributes to reducing tax compliance costs, regardless of the estimation method used. To prevent potential endogeneity issues due to selection bias in the adoption of reform, we used the inverse probability weighted estimator augmented by Jordà and Taylor (2016), as well as the entropy balancing method for binary variables proposed by Hainmueller (2012) and continuous treatment variables by Tübbicke (2022). The results of these econometric specifications confirm the reliability of our baseline result. The estimates show immediate results from the first year of implementation. Our sensitivity analyses confirm the robustness of

these results, taking into account heterogeneity across different components of public sector management reform, as well as additional control variables such as corruption control, democracy, autocracy, the informal economy, efficiency, and urban population.

Keywords: Tax morale; Tax consent; Tax compliance; Determinants; Tax reforms; Tax administration; Institutions; Tax compliance costs Digitalization; Mobile money; Tax evasion; Tax effort; Tax gaps; Tax avoidance; Tax fraud; Developing countries; Sub-Saharan Africa

Resumé Exécutif

La mobilisation des recettes fiscales internes est aujourd'hui la source de financement la plus sûre pour financer le développement des pays en développement. En plus du financement du développement, les recettes fiscales domestiques jouent un rôle important dans la réalisation des engagements internationaux comme les Objectifs de développement durable de l'Agenda 2030 et l'Agenda 2063 de l'union africaine. Malgré les efforts consentis pour améliorer la mobilisation des recettes fiscales, le niveau des recettes demeure faible. La grande interrogation est donc de savoir quels sont les instruments fiscaux qui peuvent être encore mobilisés par les gouvernements pour mobiliser plus de recettes, afin de financer le développement de leurs économies. Dans cette optique, plusieurs rapports de l'OCDE ainsi que les chercheurs et les praticiens soulignent que le civisme fiscal, pilier de tout système fiscal, est peu exploré dans les pays en développement, au profit des politiques de sanctions. Cette thèse a deux objectifs. D'une part, elle a pour objectif de revisiter les principaux déterminants institutionnels, socio-démographiques, économiques et politiques du civisme fiscal identifiés dans la littérature. Toutefois, nous apportons quelques éclairages nouveaux, en faisant une analyse comparative du degré de civisme fiscal selon la culture des pays de notre échantillon : cultures anglo-saxonne et francophone. Nous faisons également cette comparaison entre les zones d'intégration (CEDEAO et UEMOA) et les pays en dehors. D'autre part, elle analyse l'effet des réformes fiscales sur la conformité fiscale. Dans l'ensemble, la thèse analyse comment les gouvernements peuvent améliorer le respect des obligations fiscales par les contribuables, pour accroître la mobilisation des recettes fiscales. Cette thèse est structurée en deux parties, composées de six (06) chapitres, dont le chapitre introductif. La première partie comprend les chapitres 2, 3, qui revisitent la littérature des principaux déterminants du civisme fiscal. La seconde partie de la thèse comprend les chapitres 4, 5 et 6 qui étudient les réformes fiscales et la conformité fiscale.

Le **Chapitre** 2 examine, pour les pays d'Afrique subsaharienne, les déterminants du civisme fiscal des particuliers, en utilisant les données de la sixième série d'enquêtes Afrobaromètre menée en 2014/2015, couvrant 30 pays. De plus, nous faisons une analyse com-

parative du civisme fiscal selon la culture (pays anglophone vs pays francophone), puis enfin nous testons l'hétérogénéité des résultats selon la culture et les sous-groupes de pays de notre échantillon (UEMOA, CEDEAO, pays francophones et pays anglophones). Enfin, nous testons la robustesse des résultats en changeant de variable dépendante. En utilisant un modèle Probit, les résultats révèlent que des facteurs institutionnels tels que la confiance dans l'administration, la démocratie, la qualité des services publics, la lutte contre la corruption, l'accessibilité à Internet et la légitimité des autorités fiscales améliorent le civisme fiscal des citoyens. À l'inverse, la complexité du système fiscal nuit à la discipline fiscale des citoyens. Concernant les facteurs socio-économiques, nos résultats indiquent que les femmes sont moins susceptibles de se conformer à leurs obligations fiscales que les hommes. Ces résultats sont robustes aux sous-échantillons de notre étude et à une mesure alternative du civisme fiscal. Mais on note une hétérogénéité des résultats selon ces sous-groupes. L'analyse comparative montre que le degré de civisme fiscal est plus élevé dans les pays francophones que dans les pays anglophones. Enfin, nos résultats montrent que la coordination fiscale entre les États de la CEDEAO et/ou de l'UEMOA améliore le civisme fiscal des citoyens de ces régions. En d'autres termes, le civisme fiscal est plus élevé dans les zones d'intégration comme la CEDEAO et l'UEMOA que dans les pays situés hors de ces zones.

Le **Chapitre** 3 : Quels sont les facteurs qui déterminent la motivation des entreprises à payer des impôts ? Nous abordons cette question à l'aide des données d'une enquête sur le civisme fiscal menée par l'Office togolais des recettes fiscales (OTR) en 2019, portant sur 413 entreprises formelles. Pour ce faire, nous construisons deux mesures de civisme fiscal. Les déterminants potentiels du civisme fiscal comprennent l'appréciation de la fraude fiscale, la modification des lois fiscales, la connaissance de la fiscalité, les bénéficiaires de l'impôt, les pots-de-vin, la sévérité des sanctions, la légitimité des droits de douane, l'appréciation du montant de l'impôt, la charge fiscale, la légitimité de la TVA et la localisation géographique des entreprises. Les résultats montrent que tous ces facteurs sont des déterminants clés de la conformité fiscale volontaire, à l'exception de la modification des lois fiscales, de l'appréciation du montant de l'impôt et de la charge fiscale. Lorsque nous isolons la région maritime, le résultat reste inchangé, mais l'appréciation de la fraude fiscale n'a pas d'impact significatif sur la conformité volontaire dans cette région. Enfin, les déterminants varient lorsque nous distinguons les entreprises par taille, que ce soit au niveau national ou régional.

Le **Chapitre** 4 examine si l'adoption d'une administration fiscale semi-autonome, communément appelée SARA, permet de lutter contre l'évasion fiscale. En utilisant l'appariement

par score de propension (PSM) sur un échantillon de 39 pays d'Afrique subsaharienne entre 1980 et 2015, notre étude conclut que l'adoption d'une SARA réduit l'évasion fiscale dans les pays SARA par rapport aux pays non-SARA. Ce résultat est robuste à plusieurs spécifications alternatives, notamment l'ajout d'autres variables de contrôle, l'utilisation de diverses variables dépendantes alternatives et l'utilisation de méthodes d'estimation concurrentes comme : l'équilibrage entropique et les moindres carrés ordinaires (OLS). Des estimations supplémentaires sur diverses variables dépendantes alternatives révèlent que l'adoption d'une SARA augmente les recettes fiscales (hors ressources naturelles), l'effort fiscal et ses composantes, c'est-à-dire l'effort fiscal persistant et l'effort fiscal variable dans le temps, dans les pays d'Afrique subsaharienne. Ces résultats révèlent en outre que l'adoption d'une SARA réduirait l'inefficacité fiscale dans les pays d'Afrique subsaharienne. Cependant, il convient de souligner que l'étude dynamique révèle que cet effet est instable dans le temps. Enfin, nous apportons la preuve qu'une meilleure qualité institutionnelle (mesurée par le contrôle de la corruption), une simplification du processus de paiement des impôts et la conformité fiscale sont des canaux de transmission par lesquels une SARA affecte l'évasion fiscale.

Le **Chapitre** 5 analyse la corrélation entre l'adoption de l'argent mobile et les coûts de conformité fiscale, estimés par le nombre d'heures nécessaires pour déclarer et payer les principaux impôts par an dans les pays en développement, en utilisant la méthode d'équilibrage entropique. À l'aide d'un panel non équilibré de 91 pays couvrant la période 2000-2021, les résultats montrent que l'argent mobile est associé à une réduction statistiquement significative des coûts de conformité fiscale. Plus précisément, nous constatons qu'en moyenne, l'adoption de l'argent mobile réduit généralement les coûts de conformité fiscale de 0,121. Ce résultat est robuste à l'utilisation de méthodes d'estimation alternatives : moindres carrés ordinaires (OLS) et la méthode des moments généralisés (GMM), à plusieurs spécifications alternatives de notre échantillon: premièrement nous excluons certains groupes de pays ou de période susceptible de biaiser le résultat (les pays qui ont adoptés l'administration fiscale semi-autonome, la période post conférence d'Addis Abeba, les pays qui ont un passé colonial et les pays considérés comme paradis fiscaux) ; deuxièmement, nous incluons des variables de contrôle supplémentaires à notre modèle de base. De plus, il existe une certaine hétérogénéité dans les résultats selon le type de services d'argent mobile et la localisation géographique des pays de notre échantillon (ASS vs autres pays de l'échantillon).

Le **Chapitre** 6 a pour objectif d'examiner l'impact dynamique des réformes de la gestion du secteur public sur les coûts de la conformité fiscale dans les pays d'Afrique subsaharienne

entre 2005 et 2022. En utilisant la méthode des moindres carrés ordinaires (MCO), générant des réponses impulsionnelles à l'aide de la méthode LP-OLS, nos résultats montrent constamment que la réforme de la gestion du secteur public contribue de manière significative à réduire les coûts de la conformité fiscale, indépendamment des méthodes d'estimation utilisées. Pour prévenir d'éventuels problèmes d'endogénéité dus au biais de sélection dans l'adoption de la réforme, nous avons utilisé l'estimateur pondéré par probabilité inverse augmenté de Jordà and Taylor (2016), ainsi que la méthode d'équilibrage d'entropie des variables binaires proposée par Hainmueller (2012) et les variables de traitement continu par Tübbicke (2022). Les résultats de ces spécifications économétriques confirment la fiabilité de notre résultat de base. Les estimations montrent des résultats immédiats dès la première année de sa mise en œuvre. Nos analyses de sensibilité confirment la robustesse de ces résultats, en tenant compte de l'hétérogénéité selon les différentes composantes de la réforme de la gestion du secteur publique, d'autres variables dépendantes telles le contrôle de la corruption, la démocratie, l'autocratie, l'économie informelle, l'efficacité, population urbaine.

Mots clés : Mots clés : Civisme fiscal ; Consentement à l'impôt ; Conformité fiscale ; Coûts de la conformité ; Déterminants ; Réformes fiscales ; Administration fiscale ; Institutions ; Digitalisation ; Argent mobile ; Evasion fiscale ; Effort fiscal ; Ecarts fiscaux ; Evitement fiscal ; Fraude fiscale ; Pays en développement ; Afrique subsaharienne

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Chapter 1

Civisme Fiscal dans les Pays en Développement: Cadres Théorique et Analytique

1.1 Introduction

1.1.1 Définition du civisme fiscal

Le civisme fiscal se définit comme la motivation intrinsèque des citoyens à contribuer au financement des biens et services publics par paiement volontaire de l'impôt (OCDE, 2019)[1]. Selon les Nations Unies, le civisme fiscal correspond à l'ensemble des attitudes et perceptions des contribuables, se traduisant par leur consentement au paiement de l'impôt ou des pratiques d'évasion fiscale. D'après les indicateurs de performance du TADAT[2], on peut décomposer le civisme fiscal en trois dimensions. La première dimension est le civisme de ponctualité qui concerne les déclarations fiscales effectuées dans les délais impartis (DA 4). La seconde dimension est le civisme fiscal de paiement, qui renvoie au paiement des impôts dans les délais (DA 5). Enfin, la troisième dimension est le civisme d'exactitude, qui tient compte de la véracité et de la précision du contenu de chaque déclaration déposée par le contribuable (DA 6).

1.1.2 Définition du consentement à l'impôt

Le consentement à l'impôt définit l'adhésion, implicite ou explicite, des citoyens à l'obligation de participer aux charges financières de l'État. Il ne se résume pas uniquement à son caractère légal, c'est-à-dire son adoption au parlement. Il recouvre aussi des aspects politiques, psychologiques et sociaux. Par conséquent, les citoyens acceptent de payer les impôts lorsqu'ils le jugent équitable et légitime. Historiquement, la notion de consentement puise ses origines dans la philosophie politique européenne, précisément dans la "tradition du contrat social" de Rousseau (1762), et dans la maxime "no taxation without representation", qui traduit l'idée selon laquelle l'impôt n'est acceptable que s'il est le résultat d'un processus démocratique et politique représentatif. La littérature contemporaine souligne que le consentement à l'impôt repose sur trois piliers. **(i)** La légitimité politique : l'impôt est accepté si les citoyens estiment que les institutions qui prélèvent l'impôt sont redevables et représentatives (M. Moore, 2004; O.-H. Fjeldstad, 2002). **(ii)** La légitimité psychologique et sociale : sur le plan contemporain, plusieurs travaux soulignent que le consentement à l'impôt repose sur trois piliers principaux : la transformation des impôts en biens et services publics, les normes sociales sont aussi des déterminants (Alm & Torgler, 2006). **(iii)** La légitimité distributive et économique : lorsque le système fiscal est perçu comme équitable et que la charge fiscale est proportionnellement répartie, l'impôt est facilement accepté (Bird

[1] https://urls.fr/fxb5qV
[2] Tax Administration Diagnostic Assessment Tool: Guide d'évaluation de l'administration fiscale

& Zolt, 2005).

1.1.3 Définition de la conformité fiscale

La conformité fiscale fait référence au degré de respect effectif volontaire ou coercitif des obligations fiscales comme indiqué dans la législation fiscale. Contrairement au civisme fiscal qui relève de la morale et du civisme du contribuable, la conformité revêt un caractère légal, donc le contribuable doit se conformer volontairement ou par force. Habituellement, dans la littérature, ces trois notions sont interchangées pour plusieurs raisons : la non-disponibilité de données et l'incidence de ces trois notions sur la mobilisation des recettes qui est l'objectif central de tous les États. En réalité, les données de la conformité fiscale doivent être observables et mesurables. Par exemple, une base de données produite par l'administration fiscale, après vérification des déclarations et paiements, et non une base produite sur simple déclaration du contribuable. Ce type de base n'étant pas souvent disponible, les données du civisme fiscal sont souvent utilisées comme proxy pour estimer le degré de conformité fiscale des contribuables. En plus, un civisme fiscal élevé, un consentement fort ou une conformité fiscale élevée doit se traduire par une mobilisation conséquente des recettes fiscales, et inversement.

Le Tableau 1.1 montre la comparaison synthétique de ces trois notions: le civisme fiscal, le consentement à l'impôt et la conformité fiscale.

Table 1.1: Civisme fiscal, consentement et conformité

Notion	**Fondement**	**Natue**	**Comportement du contribuable**	**Caractère volontaire ou non**
Civisme fiscal	Responsabilité citoyenne	Morale / Civique	Contribution volontaire au financement des biens publics	Oui
Consentement à l'impôt	Démocratie représentative	Politique / Jurique	Acceptation collective au payement des impôts et taxes	Oui (via le vote)
Conformité fiscale	loi fiscale	Juridique / Administrative	Respect de la loi fiscale	Pas nécessairement

En résumé, le tableau met en évidence trois niveaux d'attitude du contribuable face à l'impôt. Le civisme fiscal repose sur le sens de responsabilité citoyenne et morale traduisant une contribution volontaire au financement des biens et services publics. Le consentement à l'impôt, fondé sur la démocratie représentative, exprime une acceptation collective du paiement des impôts à travers le vote, marquant une adhésion politique plus que personnelle. Enfin, la conformité fiscale découle de l'obligation légale: elle se manifeste par le respect des

lois fiscales, sans nécessairement impliquer une volonté ou une conviction morale. Ainsi, le tableau illustre le passage de l'adhésion volontaire et éthique à une obéissance contrainte par la loi.

1.2 Motivation et context

La troisième conférence internationale d'Addis-Abeba tenue en 2015 sur le financement du développement reconnaît par son programme d'Action que "des ressources publiques nationales supplémentaires importantes, complétées le cas échéant par une aide internationale, seront essentielles pour réaliser le développement durable et atteindre les objectifs de développement durable". Il est donc important d'améliorer la mobilisation des ressources internes, compte tenu des besoins croissants en financement (santé, éducation, défis environnementaux, infrastructure routière, faire reculer la pauvreté et autres) des pays en développement, en particulier ceux d'Afrique subsaharienne. Selon le récent rapport de l'équipe spéciale inter-institutions des Nations Unies sur le financement du développement, il reste un important potentiel inexploité, malgré les améliorations apportées à la mobilisation des recettes fiscales, d'où l'urgente nécessité de procéder à des réformes pour générer les ressources nécessaires. Des travaux comme celui d'Amedanou (2025a) confirment l'existence d'un espace fiscal inexploité au sein de l'Union économique et monétaire ouest-africaine (UEMOA) que les États membres pourraient utiliser pour financer des investissements productifs. L'auteur fournit des preuves empiriques claires qu'il existerait dans l'Union économique et monétaire Ouest-Africaine (UEMOA) un potentiel de recettes non collectées de 8,0 % du PIB, sur la période de 1980 à 2017. Pour améliorer le recouvrement des impôts et taxes dans ces pays, plusieurs d'entre eux se heurtent à divers obstacles. Au rang des obstacles majeurs, se trouvent la fraude et l'évasion fiscales auxquelles se livrent les contribuables (entreprises et ménages), notamment les multinationales. Ces ddernières disposent non seulement, des pouvoirs qui leurs permettent de bénéficier des avantages fiscaux, mais aussi des moyens de pression pour influer les lois fiscales à leurs avantages. Elles disposent également de techniques d'optimisation fiscale très agressives qui peuvent engendrer d'énormes manques à gagner en termes de recettes fiscales. Les capacités administratives insuffisantes, le déficit de gouvernance, l'ampleur du secteur informel et de l'économie souterraine, l'étroitesse de l'assiette fiscale et la faiblesse du revenu par habitant demeurent aussi des défis très importants à relever pour l'amélioration de l'effort fiscal dans ces pays. Il en résulte que deux tiers des pays les moins avancés éprouvent encore des difficultés à collecter des recettes fiscales représentant plus de 15% du PIB, seuil communément considéré comme le minimum indispensable au

fonctionnement efficace des États. Comparé à ces pays moins avancés, le recouvrement des recettes fiscales dans les pays membres de l'OCDE, représente en moyenne près de 35% de leur PIB (OCDE,2023).

Néanmoins, il faut souligner que ces dernières années, des progrès non négligeables ont été accomplis dans la mobilisation des recettes fiscales. Malgré ses résultats mitigés (Gbato, Lemou, & Brun, 2019a), la mise en place des administrations fiscales semi-autonomes (SARAs) est l'une des réformes les plus profondes des administrations fiscales africaines. Cette réforme est de plus en plus fréquente ces dernières décennies en Afrique subsaharienne, notamment dans les pays francophones. Cette réforme consiste à fusionner le service des impôts et celui de la douane, qui de façon classique sont deux services distincts. Ils sont sous la direction du ministère de l'économie et fonctionnent naturellement comme les autres services publics. Les administrations fiscales semi-autonomes, quant à elles, sont indépendantes et fonctionnent comme une "entreprise privée", c'est-à-dire bénéficient d'une autonomie de gestion. L'idée est qu'elles échapperaient ainsi à la pression des pouvoirs publics et aux écueils des administrations publiques comme les lenteurs administratives, la corruption, la non-performance des fonctionnaires de l'administration publique. Plus concrètement, les agents des administrations fiscales semi-autonomes sont généralement rémunérés à la commission. Une partie du salaire est fixe et l'autre partie est variable selon les performances. Les agents peuvent également être licenciés en cas de non-performance, ce qui est quasi impossible dans les administrations publiques traditionnelles. Une autre réforme très importante en Afrique subsaharienne ces dernières années est la dématérialisation des processus de déclaration et de paiement des impôts. Aujourd'hui, plusieurs pays de la région ont introduit les Nouvelles Technologies d'Information et de Communication (NTIC) dans la gestion des administrations fiscales. Ce qui se traduit par la digitalisation (télédéclaration, payement bancaire, payement par mobile money et autres) des processus de déclarations et de payements des impôts et taxes dans plusieurs pays(Togo, Côte d'ivoire, Kenya, Ghana, Gambie, etc.…).

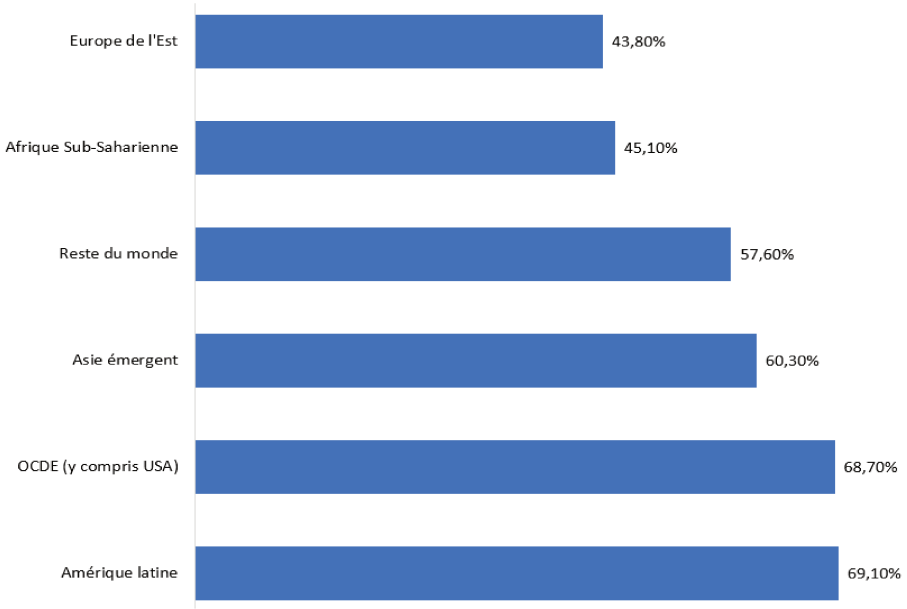
Malgré la progression des NTIC ces dernières années dans cette zone géographique, le niveau de pénétration de ces outils reste largement en deçà des pays développés. Par ailleurs, au niveau international, de nouvelles approches et outils adoptés offrent des possibilités additionnelles à tous les pays. Dans le cadre du projet BEPS, les quinze mesures mises en œuvre visent à améliorer la cohérence de la réglementation fiscale internationale et à lutter contre l'évasion fiscale. Ces mesures visent également à réaliser des progrès en matière d'échange de renseignements offrant aussi divers effets bénéfiques, notamment

en termes d'imposition des particuliers riches. Enfin, avec les partenaires comme le Fonds Monétaire International (FMI) et la Banque mondiale, les pays en développement reçoivent régulièrement des missions de consultation et de renforcement des capacités des administrations fiscales dans le but d'améliorer les recettes fiscales. En dépit des efforts consentis, il reste un long chemin à parcourir avant qu'une culture durable du civisme fiscal ne s'impose dans les pays en développement. Autrement, les systèmes fiscaux de la plupart de ces pays demeurent peu performants. Dans ce contexte, le civisme fiscal apparaît comme un levier fondamental qui peut contribuer à l'amélioration de la mobilisation des ressources fiscales dans ces pays. En effet, dans les pays en développement, l'essentiel du recouvrement des recettes par les administrations fiscales provient de la volonté des contribuables de s'acquitter volontairement de leurs obligations fiscales (OCDE, 2023). Par conséquent, une meilleure compréhension des motivations qui poussent les contribuables à mieux collaborer avec les autorités fiscales, en respectant leurs obligations fiscales, est de l'intérêt de tous les pays en développement, mais aussi des contribuables (entreprises et particuliers). D'une part, les administrations fiscales bénéficieraient d'une amélioration de la discipline fiscale, donc d'une augmentation des recettes fiscales. Les contribuables de leur côté bénéfieraient d'une meilleure prise en charge des administrations fiscales puisqu'elles comprennent mieux les besoins, mais aussi sont conscientes des retombées sur la conformité fiscale. Les travaux de Cummings et al. (2019); Ali et al. (2014) montrent une forte corrélation significative entre le civisme fiscal et la discipline fiscale, dans le monde en développement comme dans les pays développés.

La Figure 1.1 montre le niveau moyen du civisme fiscal dans les différentes régions du monde. Il est mesuré par le pourcentage de la population qui estime ***"qu'il ne peut jamais être justifié de tricher concernant les impôts"***. On constate une très grande disparité entre les différentes régions. En dehors de l'Europe de l'Est où le niveau du civisme fiscal est de 43,80%, l'Afrique Sub-Saharienne est la seconde zone géographique où le civisme fiscal est le plus bas (45,10%). Dans ces deux zones, le niveau du civisme fiscal est inférieur à 50%. Ce qui implique que plus de la moitié des citoyens ont un civisme fiscal faible, c'est-à-dire qu'ils ne trouvent pas qu'il n'est pas justifié de tricher les impôts. Ce qui n'est pas sans conséquence sur la discipline fiscale, donc sur la mobilisation des ressources internes. L'OCDE (y compris les USA) et l'Amérique latine sont les régions où le civisme fiscal est le plus élevé. Il est respectivement de 68,7% et 69,1%. Dans le reste du monde le civisme fiscal est de 57,6% et de 60,3% en Asie émergente. Plusieurs raisons peuvent expliquer cette différence de niveau entre les régions. Entre autres, les facteurs comme la confiance dans l'État, la qualité des institutions, le niveau de corruption, l'héritage historique, la

capacité technique et humaine des administrations fiscales et le niveau du secteur informel. Généralement, dans les pays développés, les administrations fiscales disposent souvent de moyens techniques et humains conséquents pour assurer un contrôle efficient des contribuables afin de dénicher les fraudes fiscales, les évasions fiscales, les optimisations fiscales trop agressives et procéder à des sanctions pécuniaires par des redressements fiscaux, voire des sanctions pénales si besoin. Mais dans les pays en développement, les administrations fiscales souffrent souvent de moyens technologiques limités, du manque de personnels qualifiés et des problèmes d'identification des contribuables. Ce qui incite une bonne partie des citoyens à se soustraire au système fiscal en toute impunité. En outre, ces problèmes limitent également un recouvrement efficace et efficient des recettes fiscales.

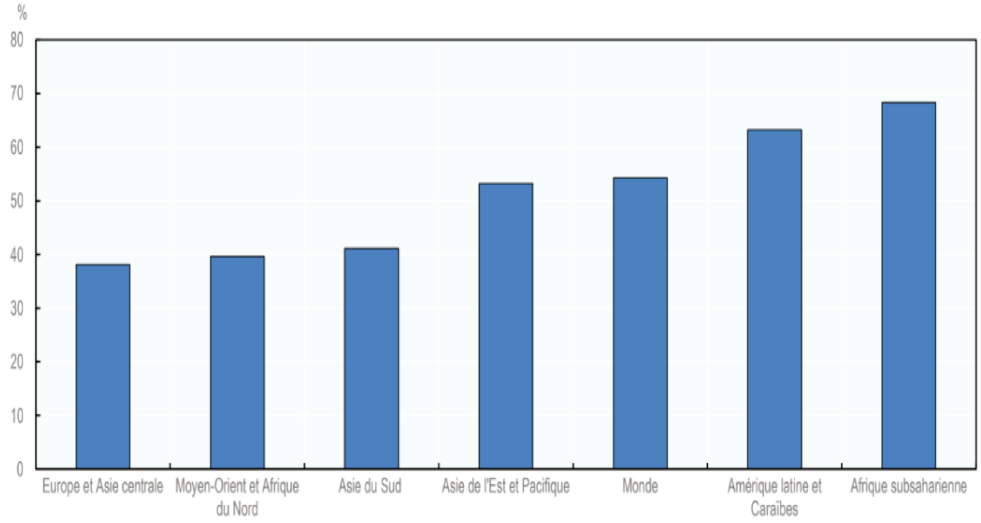
Figure 1.1: Civisme fiscal dans le monde par région



Source: Auteur sur la base des calculs de l'OCDE à partir des données WVS
WVS = World Values Survey, 2010-2014.

La Figure 1.2 montre ***le pourcentage d'entreprises déclarant subir la concurrence des entreprises informelles***. On remarque une différence de cette proportion selon les régions du monde. Dans les régions d"Afrique Sub-Saharienne, Caraibe et en Amérique latine, le pourcentage des entreprises en concurrence avec le secteur informel est supérieur à 60%. En revanche, il est inférieur à 40% en Asie centrale et en Europe. En dehors de la non-déclaration des revenus et de ces effets sur le recouvrement des impôts , les activités informelles sont aussi moins productives, donc créent moins d'emplois de qualité et n'offrent pas les avantages sociaux liés au salariat.

Figure 1.2: Pourcentage d'entreprises en concurrence avec des entreprises informelles



Source: OCDE, 2023.

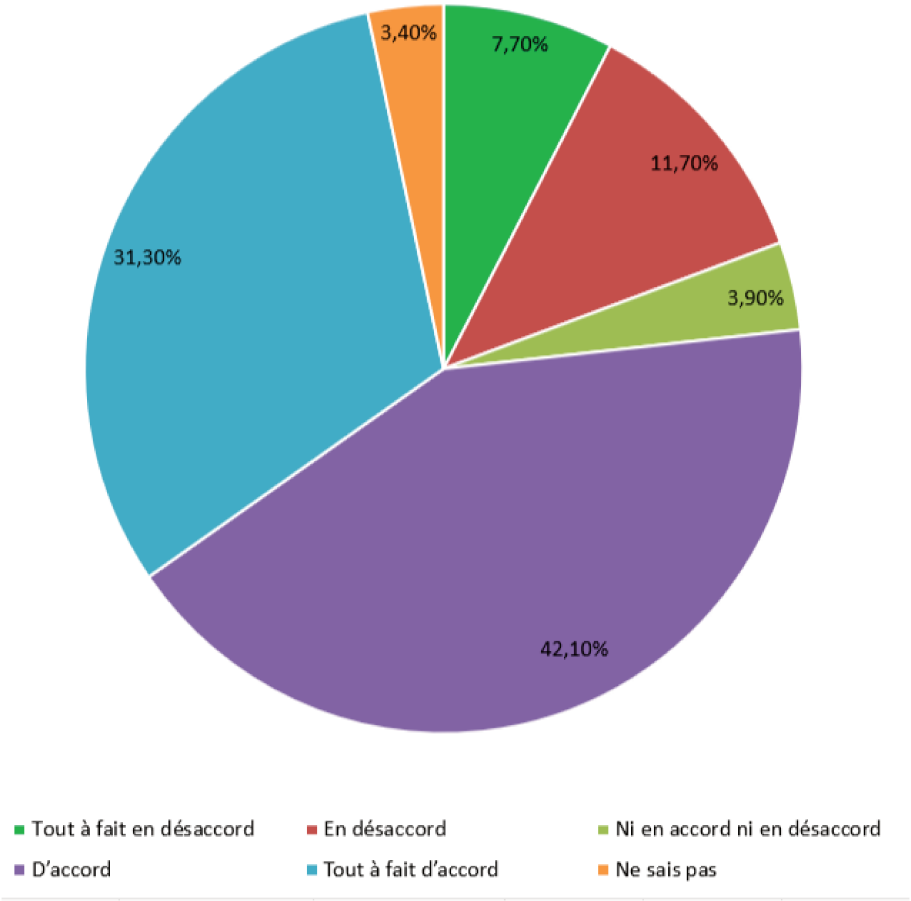
Le secteur informel et souterrain représente une part importante des activités dans les économies en développement et n'est pas sans incidence sur le civisme fiscal. Ces activités échappent aux systèmes fiscaux car les revenus provenant de ces secteurs ne sont pas déclarés. En plus, certaines grandes entreprises peuvent s'y cacher pour ne pas payer les impôts. À l'inverse, dans les pays développés, le système économique est majoritairement formel et digitalisé, ce qui facilite le suivi et le contrôle des contribuables par l'administration, incitant ainsi les contribuables à respecter davantage leurs obligations fiscales. Dans les pays développés, les citoyens ont une plus grande confiance dans l'utilisation des ressources internes et dans la qualité des institutions. Cette confiance s'explique par une gouvernance relativement plus transparente, une meilleure gestion des fonds publics et une faible corruption. Ainsi, les contribuables ont le sentiment que les impôts sont effectivement utilisés pour financer les services publics de qualité (éducation, sécurité, santé, etc.). En revanche, la méfiance des citoyens envers l'État est beaucoup plus élevée dans les pays en développement. Cette méfiance est alimentée par les cas de corruption régulière, de gestion des finances publiques opaques et d'injustice fiscale. Les citoyens jugent insatisfaisantes les retombées des impôts collectés, affaiblissant ainsi leurs sentiments d'obligation civique à l'égard de l'impôt. Le civisme fiscal ne dépend pas seulement des facteurs institutionnels, économiques et sociaux comme mentionnés plus haut. L'héritage historique est aussi une raison de cette différence de la participation volontaire des contribuables au système fiscal. La colonisation a laissé en Afrique des

traces durables dans la relation entre l'État et les citoyens, notamment en ce qui concerne leur rapport à l'impôt. Elle a contribué à mettre en place une culture de méfiance profonde et durable, entraînant un rejet de l'impôt considéré comme un outil d'oppression, et non un devoir civique des citoyens. En effet, pendant la colonisation du vingtième siècle jusqu'aux indépendances dans les années 1960, les colonisateurs (en particulier portugais, français, britanniques et belges) ont mis en place des impôts dont l'objectif prioritaire était l'exploitation économique au profit de la métropole et non le développement local des pays colonisés. Ces impôts collectés de façon autoritaire, avec sanctions violant en cas de refus et, sans contrepartie ont alimenté le sentiment d'injustice fiscale de la population.

La Figure 1.3 regroupe les réponses de l'enquête Afrobaromètre dans 34 pays africains de 2016 à 2018, regroupant 45762 enquêtés. A la question suivante: ***"veuillez me dire si vous êtes d'accord ou non : Les autorités fiscales ont toujours le droit de contraindre les populations à payer les impôts".*** Les enquêtés ont la possibilité de choisir entre les modalités suivantes: *"Tout à fait en désaccord"*, *"En désaccord", "Ni en accord ni en désaccord", "D'accord", "Tout à fait d'accord", "Ne sais pas"*. Les répondants qui ont choisi les modalités *"D'accord"* ou *"Tout à fait en désaccord"* représentent la majorité des réponses. Ces proportions sont respectivement de 42,10% et 31,30%. Ensuite viennent les répondants qui sont en *"En désaccord"* et représentent une proportion (11,70%), puis ceux qui sont *"Tout à fait en désaccord"* (7,70%). Enfin, les répondants qui ont choisi la modalité *"Ni en accord ni en désaccord"* représentent 3,90% et ceux qui ont opté pour la modalité *"Ne sais pas"* représentent 3,40% des réponses. L'analyse des résultats montre qu'une partie des répondants a manifesté leurs volontés claires en faveur de la collecte des impôts par l'État, c'est-à-dire ceux qui ont choisi les modalités *"D'accord"* et *"Tout à fait d'accord"*. D'autres ont manifesté leur opposition aux paiements des impôts (ceux qui sont: *"Tout à fait en désaccord"* et *"En désaccord"*) et le reste est indifférent sur la question (*"Ni en accord ni en désaccord",* ou *"Ne sais pas"*. Sur la base des discussions précédentes, cette thèse se focalise sur la compréhension et l'amélioration du civisme fiscal et, dans un cadre plus large de la conformité fiscale, donc de la mobilisation des recettes fiscales dans les pays en développement. Selon (OCDE, 2019; 2023), les questions relatives au civisme fiscal sont négligées ou peu explorées en Afrique subsaharienne, alors qu'elles constituent le levier le plus important pour améliorer la mobilisation des ressources internes. Rappelons que le contexte de l'Afrique subsaharienne est marqué par diverses difficultés : un fort taux d'activité informelle et souterraine, un déficit de confiance des citoyens envers les institutions, des administrations fiscales en manque de personnels qualifiés et de moyens technologiques limités. Dans un tel environnement, la contrainte fiscale atteint vite ses lim-

ites car l'identification des contribuables devient complexe. Les travaux de Torgler (2005) révèlent en ce sens que la morale fiscale est plus importante pour la mobilisation des recettes domestiques que la sanction dans les pays en développement. Plus l'impôt est perçu comme légitime aux yeux des contribuables, plus ils s'y conforment.

Figure 1.3: Pourcentage de réponses par modalité



Source: Auteur sur la base des données d'Afrobaromètre 2016/2018.

Par conséquent, l'acquittement volontaire des obligations fiscales des contribuables reste l'ultime alternative pour augmenter l'assiette fiscale de façon durable. Dans cette logique, M. Moore (2007) et Prichard (2015) soulignent que la participation volontaire des citoyens au financement des biens et services publics est essentielle pour instaurer un "contrat-fiscal" basé sur la transparence, la redevabilité et la confiance. Ainsi, toute tentative d'élargissement de l'assiette fiscale reste vaine en l'absence de la volonté des citoyens de participer au système fiscal, en l'occurrence dans les secteurs informels et en milieux ruraux.

1.3 Cadre théorique

Pour mieux comprendre le comportement complexe des contribuables envers la loi fiscale, les réflexions développées dans la rédaction de cette thèse mobilisent un certain nombre de fondements théoriques. Cette section présente plusieurs théories , notamment la théorie de conformité fiscale d'Allingham and Sandmo et la théorie de l'économie duale de E. Lewis. Ces deux théories sont complémentaires car la première fait une analyse comportementale et la seconde une analyse structurelle. Ainsi, l'association de ces deux théories aide à expliquer les défis fiscaux persistants dans les pays en développement, en particulier en Afrique subsaharienne. Alors que la théorie de l'économie duale explique les décisions de se conformer (ou non) aux lois fiscales dans le cadre de contraintes macroéconomiques et institutionnelles, le modèle d'Allingham and Sandmo contextualise ces décisions sur le plan microéconomique. Nous présentons également d'autres théories comme celle de la fiscalité optimale de Laffer, la théorie de pente glissante, la théorie d'effet d'éviction, etc...

1.3.1 La théorie de la conformité fiscale d'Allinghan and Sandmo, 1972

À l'origine, cette théorie est formulée par Allingham and Sandmo (1972) et donne une explication du comportement microéconomique des contribuables. Elle présente la fraude comme un choix rationnel effectué en situation de risque. Dans ce modèle, les individus sont considérés comme rationnels, donc ils cherchent à maximiser leurs utilités en comparant les coûts et avantages liés à la fraude fiscale. En effet, ils comparent le bénéfice attendu du non-paiement des impôts à la sévérité de la sanction et à la probabilité de détection en cas de fraude (Hokamp, 2022). Par conséquent, une fréquence plus rapprochée des contrôles ou une sanction très élevée en cas de fraude amène les contribuables à une plus grande conformité fiscale, alors qu'une application complaisante de la loi fiscale incite à la fraude fiscale. Dans les pays en développement, l'application de cette théorie est compliquée compte tenu des capacités administratives limitées et des défaillances générales des administrations publiques dans cette région. La faible probabilité d'audits dans ces pays permet aux acteurs du secteur informel d'opérer leurs activités sans être détectés. Dans ce contexte, la théorie d'Allingham and Sandmo prédirait une faible conformité fiscale. Ces prédictions sont confirmées par les scores de conformité systématiquement faibles dans ces pays selon les données de la Banque mondiale. Cette théorie explique uniquement la décision de se conformer (ou non) par des facteurs monétaires. Elle ne tient donc pas

compte des facteurs tels que la confiance dans le gouvernement et les institutions, la qualité des services publics, l'équité du système fiscal, qui influencent également les décisions de conformité. Ces dernières années, la théorie a été élargie pour inclure les dimensions comportementales, reconnaissant que la conformité n'est pas exclusivement une question de risque financier (Hokamp, 2022). Par exemple, lorsque les contribuables jugent que les services publics ne sont pas à la hauteur de leurs contributions, perçoivent les systèmes fiscaux inéquitables et corrompus, leur volonté de respecter les obligations fiscales diminue.

Cette relation entre la conformité et la perception des contribuables du système fiscal est particulièrement perceptible dans les pays où la faible confiance dans les institutions et les préoccupations en matière de gouvernance sont des faits courants comme au Cameroun ou au Nigéria. De plus, les acteurs informels sont confrontés à des coûts d'entrée élevés pour se formaliser ou manquent souvent d'informations adéquates sur leurs obligations fiscales. Cela concorde avec l'hypothèse de la théorie d'Allingham and Sandmo selon laquelle les perçus de la conformité fiscale peuvent dépasser les avantages escomptés, en l'occurrence lorsque les processus fiscaux sont coûteux et complexes. Par conséquent, l'amélioration de la conformité ne se résume pas à l'application stricte de la loi fiscale. Mais , il faut également sensibiliser les contribuables, simplifier les systèmes fiscaux et investir dans la digitalisation des processus fiscaux. Ainsi, le modèle d'Allingham and Sandmo nous permet de mieux comprendre les choix rationnels de non-respect des obligations fiscales adoptés par une grande partie des acteurs du secteur informel en Afrique subsaharienne. Face à la faible effectivité de la loi, à la complexité des normes fiscales et au rendement limité de leurs contributions, ils concluent que l'évasion fiscale représente la stratégie économiquement la plus optimale. Cette théorie se formalise comme suit:

Les hypothèses principales du modèle sont:

- Agent rationnel et avers au risque : il maximise son espérance d'utilité.
- Revenu exogène (R) connu avec certitude;
- Taux d'imposition proportionnel :$t \in [0, 1]$;
- L'agent choisit combien déclarer $D \in [0, R]$;
- Probabilité de contrôle : $p \in [0, 1]$;
- Si un contrôle a lieu, l'agent paie les impôts sur tout le revenu + une amende proportionnelle à l'impôt éludé;

- Fonction d'utilité : U(.), croissante et concave.

Les paramètres de la formulation mathématique sont ci-dessous:

- R: revenu réel;
- $D \in [0, R]$: revenu déclaré;
- $E = R - D$: revenu dissimulé;
- t : taux d'imposition;
- p : probabilité de contrôle;
- $\theta > 0$: taux d'amende (proportionnel à l'impôt éludé).

S'il n'y a pas de contrôle, le contribuable paie uniquement sur le revenu déclaré. Son revenu net:

$$Y_{nc} = R - tD \tag{1.1}$$

S'il y a un contrôle et une détection de fraude, l'agent paie les impôts sur tout le revenu plus une amende sur l'impôt éludé. Son revenu net dans cette situation est:

$$Y_c = R - tR - \theta t(R - D) = R(1 - t) - \theta t(R - D) \tag{1.2}$$

Espérance d'utilité à maximise:

$$EU(D) = (1 - p).U(R - tD) + p.U(R(1 - t) - \theta t(R - D) \tag{1.3}$$

Le contribuable choisit le revenu à déclarer (D), afin de maximiser l'espérance de son utilité. Ainsi, selon la condition de première ordre, il revient à délivrer l'équation 3 par rapport à D. la dérivée première par rapport à D se présente ci-après:

$$\frac{dEU}{dD} = -t(1 - p)U'(R - tD) + p.\theta t.U'(R(1 - t) - \theta t(R - D)) = 0 \tag{1.4}$$

L'équation 1.4 peut être réecrit comme suit:

$$\frac{U'(R - tD)}{U'(R(1 - t) - \theta t(R - d))} = \frac{p.\theta}{1 - p} \tag{1.5}$$

L'équation 1.5 caractérise l'optimalité du montant déclaré D^*, c'est-à-dire le montant du revenu déclaré permettant au contribuable de faire plus de bénéfice. On conclut donc que:

- Plus la probabilité de contrôle pp est élevée, plus l'agent sera incité à déclarer davantage;
- Plus le taux d'amende Θ est élevé, plus l'évasion est coûteuse, donc une dissuasion à la fraude;
- Si $\theta \to 0$ ou $p \to 0$, le contribuable déclare très peu voire rien;
- Si $\theta \to \infty$ ou $p \to 1$, alors $D \to R$ le contribuable déclare tout;
- Si U est linéaire (agent neutre au risque), alors il ne déclare rien sauf si $p\theta \geq 1$.

1.3.2 La théorie de l'économie duale de Lewis, 1954

Contrairement à la théorie d'Allingham and Sandmo (1972) qui propose un comportement individuel des décisions de se conformer ou non à la règle fiscale, la théorie de double économie de E. Lewis (1954) propose une explication macro-structurelle de l'informalité et de ses implications fiscales. Ce modèle divise l'économie en deux secteurs coexistant. D'une part, un secteur informel caractérisé par une faible productivité, de petites entreprises et une exclusion du secteur réglementaire (Oster, 1979). D'autre part, le secteur formel est marqué par la présence de grandes firmes, une production intensive en capital et réglementée. Cette segmentation de l'économie est non seulement très prononcée, mais aussi bien perceptible dans les pays d'Afrique subsaharienne. Le secteur informel regroupe les micro-entrepreneurs, les petits exploitants agricoles, les petits vendeurs ambulants, les petits artisans sans licence qui opèrent en dehors de la réglementation ou des marchés du travail formels. Le chômage structurel et l'exode rural engendrent un surplus de main-d'œuvre, qui se tourne généralement par contrainte et non par volonté vers l'économie informelle.

Cette théorie a des implications très importantes du point de vue de la mobilisation des recettes fiscales. Le secteur informel représente une grande partie de l'activité économique mais échappe aux systèmes fiscaux, ce qui rend difficile l'élargissement de l'assiette fiscale par les gouvernements. Par exemple, selon les travaux de Muchiri (2014), le secteur informel représente 30% du PIB, mais contribue à moins de 4% des recettes fiscales au Kenya, illustrant ainsi le déphasage entre les recettes fiscales et l'activité économique. La théorie de E. Lewis donne également les raisons de l'enracinement du secteur informel. Selon lui, aussi longtemps que le marché du travail réglementaire ne parvient pas à absorber la main-d'œuvre excédentaire en raison d'un processus industriel peu dynamique, d'un accès au crédit limité ou de la législation du travail très complexe, les activités informelles

perdureront et même s'étendront. Cela compromet les efforts visant à améliorer les ressources internes, en raison de la nature irrégulière et de la difficulté de contrôle des revenus issus de l'économie informelle.

Par ailleurs, le modèle de l'économie duale postule que les différences de productivité entre les secteurs formel et informel jouent un rôle déterminant dans la transformation structurelle. Lorsque l'activité informelle persiste, elle ralentit cette transformation, entravant ainsi la progression des recettes fiscales et du revenu par habitant. On observe cette stagnation dans les pays comme la Tanzanie et la Zambie, où la prédominance du secteur informel s'accompagne d'une croissance limitée des ratios impôts/PIB en dépit d'une augmentation de la production économique globale. L'un des enseignements les plus importants du cadre de E. Lewis est que la politique fiscale ne peut pas être la solution exclusive pour la formalisation de l'économie. Les mesures fiscales répressives ou incitatives doivent être accompagnées de réformes structurelles comme l'éducation, la création d'emplois, le développement institutionnel et l'accès au numérique. Sans ces réformes profondes, le secteur informel reste le choix par défaut pour l'excédent de main-d'œuvre, consolidant ainsi la segmentation de l'économie et réduisant la capacité de l'État à élargir sa base fiscale. Il convient de souligner les raisons pour lesquelles l'application des mesures fiscales échoue fréquemment en Afrique subsaharienne. Les acteurs informels ne cherchent pas forcément à éviter l'impôt ; ils sont souvent exclus du système formel ou poussés vers l'informalité en raison des conditions économiques restrictives. En ce sens, les réformes fiscales inclusives ne doivent pas se limiter à la mobilisation des recettes fiscales. Elles doivent s'attacher aussi à réduire les écarts entre les secteurs formel et informel, en introduisant progressivement les acteurs informels dans un système fiscal plus simplifié et équitable.

1.3.3 Synthèse de la relation entre les deux théories

La combinaison des théories de l'économie duale de E. Lewis et d'Allingham and Sandmo, aide à une compréhension approfondie et multidimensionnelle des difficultés que les pays d'Afrique subsaharienne rencontrent pour faire respecter les règles fiscales et la collecte efficace des ressources internes. La première met en évidence les contraintes structurelles qui influencent les décisions d'évasion fiscale (ou non), alors que la seconde souligne la rationalité comportementale de ces décisions. Cela signifie concrètement que si l'exclusion économique perdure (selon E. Lewis) ou qu'il y a un contrôle laxiste de l'application de la loi fiscale (selon Allingham and Sandmo), même les systèmes fiscaux les plus aboutis finiront par échouer. Ces théories s'accordent également sur la nécessité de la mise en place de poli-

tiques publiques bien coordonnées. Ainsi, l'amélioration de la conformité fiscale en Afrique subsaharienne passe non seulement par une simplification des processus fiscaux et une application rigoureuse de la loi fiscale, mais aussi par une prise en compte des problématiques structurelles plus larges telles que les infrastructures, l'emploi et l'éducation. Dans cette perspective, les études récentes préconisent des réformes coordonnées, combinant la modernisation des systèmes fiscaux et des stratégies de réformes structurelles plus larges (Kamasa et al., 2025; Mpofu, 2022). En résumé, le double prisme des réalités macro-économiques et des incitations individuelles permet de mieux appréhender la relation entre le respect des règles fiscales, l'informalité et la mobilisation des recettes en Afrique subsaharienne. Le cadre de l'économie duale élucide les décisions des contribuables de se conformer (ou non) dans un contexte de déficiences institutionnelles et d'inégalités économiques générales, alors que la théorie d'Allingham and Sandmo explique le calcul microéconomique des contribuables en situation de risque, notamment dans le contexte d'une application non rigoureuse de la loi fiscale.

1.3.4 Théorie de l'effet d'éviction de Frey, 1997

Introduit en économie par Frey (1997) dans les 1978 sous le nom de théorie de "l'effet d'éviction", elle repose sur l'idée selon laquelle les interventions externes sous forme de récompenses ou de sanctions peuvent nuire à la motivation intrinsèque. Elle s'inscrit dans une approche comportementale et est inspirée de deux courants de pensée très différents dans les sciences sociales. Dans son ouvrage intitulé "***The Gift Relationship"***, Titmuss (1970) affirmait que le fait d'être rémunéré pour donner son sang portait atteinte à des valeurs sociales chères à la société et réduisait, voire détruisait complètement, la volonté des gens de donner leur sang. Même en l'absence de preuve empirique solide, cette thèse a suscité beaucoup d'intérêt. Un second ensemble de littérature provient de la psychologie. Un groupe de psychologues en psychologie cognitive a révélé que, dans certaines conditions spécifiques, les récompenses monétaires (externes) peuvent nuire à la motivation intrinsèque. Le fait d'offrir des récompenses pour entreprendre une activité a donc des conséquences négatives indirectes. C'est la raison pour laquelle cet effet a été appelé "le coût caché de la récompense" ou "hypothèse de la sur-justification" (Lepper, Greene, & Nisbett, 1973). Plus récemment, cette idée a été baptisée "théorie de l'évaluation cognitive" (Deci et al., 1999).

En s'inspirant de cette thèse de l'effet négatif des interventions extrinsèques, Frey montre que les récompenses financières et la supervision nuisent à la motivation intrinsèque au

travail (moral au travail) dans des conditions identifiables et pertinentes. Les performances professionnelles diminuent si cet effet d'éviction l'emporte sur l'effet disciplinaire normalement attribué aux interventions externes. Cette thèse a été généralisée de trois façons.La première approche examine l'effet négatif des intrusions externes sur la motivation intrinsèque, la seconde se concentre sur l'amélioration de la motivation intrinsèque et la dernière explique l'impact positif que l'intervention extérieure peut avoir sur la motivation intrinsèque. Ces différentes approches sont présentées comme suit:

(i) Tous les types d'interventions externes peuvent avoir un effet négatif sur la motivation intrinsèque, c'est-à-dire non seulement l'octroi de récompenses, mais aussi l'émission d'ordres, l'imposition de règles et de réglementations ainsi que l'application de sanctions. Ainsi, les mesures dissuasives imposées par l'administration fiscale peuvent nuire à la volonté intrinsèque des individus de se conformer à la législation fiscale.

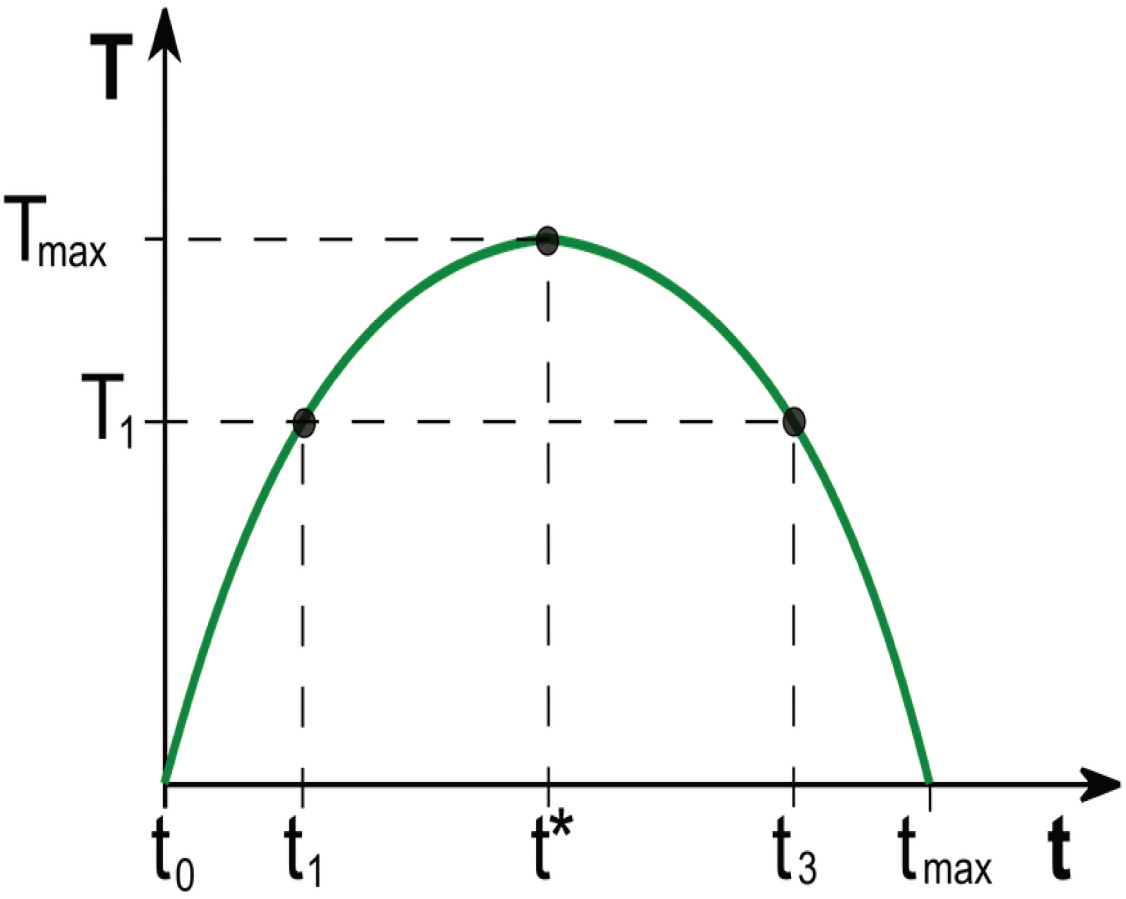
(ii) La motivation intrinsèque influencée par une intervention externe est un concept large. Elle comprend également les actions entreprises sans attente de récompenses externes (Deci, 1976), ainsi que les comportements guidés par des normes intériorisées. L'auteur examine également diverses approches de la conceptualisation de la motivation intrinsèque. Il se concentre sur l'approche développée à partir des travaux de White (1959), à savoir que les comportements intrinsèquement motivés sont ceux qu'une personne adopte afin de se sentir compétente et autonome par rapport à son environnement. Il examine ensuite le développement de la motivation intrinsèque, comment les comportements sont motivés intrinsèquement. Ces aspects sont très pertinents en matière de paiement des impôts. En matière de fiscalité, la motivation intrinsèque des contribuables à payer les impôts est le socle de tout système fiscal, notamment en Afrique subsaharienne. Cette motivation intrinsèque permet non seulement de réduire les coûts de fonctionnement, mais aussi d'élargir l'assiette fiscale.

(iii) Les interventions externes renforcent ou maintiennent la motivation intrinsèque lorsqu'elles sont considérées comme un soutien, mais lorsqu'elles sont perçues comme intrusives ou autoritaires, elles sapent la motivation intrinsèque. Les processus psychologiques sous-jacents dépendent de la manière dont l'autodétermination et l'estime de soi sont affectées (Deci & Flaste, 1996). On peut donc émettre l'hypothèse que les contrôles fiscaux intrusifs des autorités fiscales sapent le civisme fiscal lorsque le sentiment d'autodétermination des contribuables est élevé. Autrement, l'intervention autoritaire de l'administration fiscale, des prises de décisions unilatérales nuisent à la motivation des contribuables qui ont un sens de responsabilité élevé. Mais lorsque les interventions sont perçues comme un soutien, les contribuables se sentent concernés et respectés, donc plus disposés à collaborer. Par conséquent, leur motivation intrinsèque s'améliore.

1.3.5 La courbe de Laffer: fiscalité optimale

Selon la courbe de Laffer, il existe un niveau d'imposition qui maximise les recettes fiscales sans nuire à l'activité économique.

Figure 1.4: Courbe de Laffer



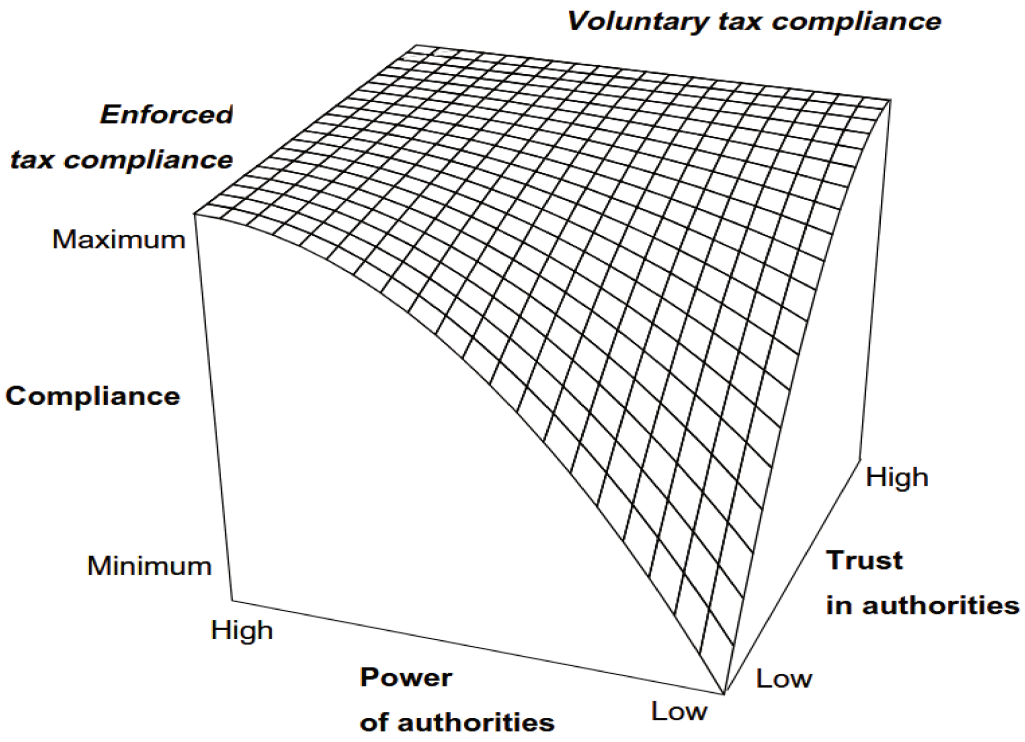
Ce qui suppose qu'au-delà de ce niveau d'imposition optimal, les contribuables réagissent en modifiant leur comportement économique pour payer moins d'impôt, entraînant une baisse des recettes fiscales (voir Figure 1.4). Cette figure illustre la relation en forme de cloche entre les taux d'imposition et les recettes fiscales. T_{max} représente les recettes fiscales maximales pouvant être collectées, au taux d'imposition optimal t^*. Entre t_0 et t^*, il existe une relation positive entre le taux d'imposition et les recettes fiscales. Ce qui implique que toute augmentation du taux d'imposition entraîne une augmentation des recettes fiscales. En revanche, une imposition supplémentaire à partir de t^* entraînerait une baisse des recettes fiscales. Ainsi, entre t^* et T_{max} (le taux maximal auquel il n'y aurait pratiquement pas de recettes fiscales), il existe une relation négative entre le taux d'imposition et les recettes fiscales. Les travaux de Mankiw et al. (2009) soutiennent que la fiscalité doit être optimale

pour maximiser le bien-être social. Cependant, elle doit être collectée sans nuire à la capacité productive de l'économie. Mais dans la réalité, plusieurs pays n'exploitent pas le plein potentiel de leurs recettes fiscales. Cette défaillance est principalement due à un manque de civisme fiscal des contribuables.

1.3.6 La théorie de l'interaction de Kirchler, Hoelzl, and Wahl, 2008

Cette théorie décrit la conformité en fonction de la confiance des contribuables envers les autorités et le pouvoir de ces dernières (voir la figure 1.5). Précisément, elle combine l'approche économique et comportementale de la conformité fiscale. En effet, dans situations de faible confiance des contribuables envers les autorités et de faible pouvoir de cette dernière, il est très probable que les contribuables cherchent à payer moins d'impôt en s'adonnant à l'évitement fiscal. Dans ces conditions, le respect des obligations fiscales se trouve à son minimum.

Figure 1.5: Théorie de la pente glissante: conformités fiscales imposée et volontaire



Source: Kirchler et al. (2008)

(i) En parcourant le long du bord gauche, le long de la dimension du pouvoir, dans des conditions de faible confiance, le respect des obligations fiscales augmente avec le pouvoir des autorités d'accroître les probabilités de contrôle et de détection et d'infliger de lourdes

amendes. Les contribuables sont de moins en moins incités à des pratiques frauduleuses, comme l'évasion fiscale, car le gain financier attendu de la fraude est inférieur à celui du redressement en cas de détection. Le renforcement du pouvoir des autorités fiscales entraîne un respect forcé des obligations fiscales. La courbure provient d'une hypothèse de rendements décroissants : des augmentations similaires de la conformité ne peuvent être obtenues que par des investissements de plus en plus élevés dans le pouvoir.

(ii) En parcourant l'axe de la dimension de confiance envers les autorités, en partant du coin avant, dans des conditions de faible pouvoir des autorités, la conformité fiscale augmente avec le degré de confiance envers les autorités. Une confiance croissante des contribuables envers les autorités entraîne un respect volontaire des obligations fiscales. À ce niveau, l'hypothèse de rendements décroissants est encore valable. Pour des augmentations similaires de conformité attendues, il faut une confiance envers les autorités fiscales de plus en plus élevée.

(iii) Une conformité fiscale élevée peut découler d'une forte confiance des contribuables envers les autorités ou d'un fort pouvoir des autorités. Cependant, les raisons de la conformité diffèrent. Dans des conditions de fort pouvoir, la conformité est forcée et volontaire dans le cas de forte confiance envers les autorités.

(iv) Les dimensions de la confiance et du pouvoir s'influencent mutuellement. Lorsque le pouvoir est faible, les variations du pouvoir sont très importantes ; cependant, ces variations (de confiance) sont sans importance en situation où le pouvoir est à son maximum, car les autorités peuvent imposer une conformité fiscale maximale. De même, lorsque la confiance est faible, les variations de pouvoirs sont très importantes ; cependant, ces variations (de pouvoirs) n'ont pas d'importance lorsque la confiance est à son maximum, car les contribuables respectent volontairement leurs obligations fiscales.

La description précédente de la Figure 1.5 est statique, supposant que le pouvoir des autorités et la confiance des contribuables sont indépendants. Cependant, des considérations d'interdépendance du pouvoir et de la confiance peuvent être envisagées dans une perspective dynamique. L'évolution de la confiance peut impacter le pouvoir. Selon (Turner, 2005), le pouvoir des autorités peut émerger sous deux formes : le pouvoir coercitif et le pouvoir légitime. Le pouvoir coercitif du pouvoir fait référence à une administration des citoyens contre leur volonté et peut être considéré comme une imposition d'un certain comportement. Le pouvoir légitime désigne un pouvoir auquel les citoyens se soumettent volontairement, c'est-à-dire que ce pouvoir est accepté. D'une part, une augmentation de la confiance des contribuables peut augmenter le pouvoir des autorités, car les citoyens soutiennent les agents de l'administration fiscale et facilitent leur travail. Inversement, une baisse de la

confiance des contribuables peut réduire le pouvoir des autorités. Les changements de pouvoir des autorités peuvent aussi diminuer la confiance des contribuables. Premièrement, l'intensification du pouvoir des autorités à travers des audits fréquents pourrait être considérée comme une méfiance envers les contribuables, réduisant ainsi la confiance des contribuables (Frey, 2003; Cialdini, 1996). Deuxièmement, lorsque les autorités fiscales montrent une probabilité élevée de détection de fraude et une efficacité juridique d'application, la confiance des contribuables honnêtes envers les autorités s'accroît (Wenzel, 2002). Par exemple, la comparaison des systèmes fiscaux argentin et chilien a révélé que, sous un pouvoir légitime, les sanctions crédibles sont des instruments efficaces pour renforcer la confiance et, par conséquent, le respect des obligations fiscales (Bergman, 2003). Bref, une augmentation du pouvoir des autorités renforcerait la confiance des contribuables. Ces analyses mettent en évidence comment la perception et l'attitude des contribuables vis-à-vis du pouvoir des autorités peuvent impacter la conformité fiscale (Bergman, 2003). Ces considérations suggèrent donc un aspect dynamique, qui traduit l'appellation de "pente glissante" [3] de cette théorie. Comme le montre la Figure 1.5, les zones stables de conformité élevée se trouvent uniquement aux extrêmes de pouvoir maximal ou de confiance maximale, qui sont en réalité inaccessibles. Le cadre théorique présenté à la figure 1.5 peut être utilisé comme outil opérationnel et conceptuel. Premièrement, en tant qu'outil opérationnel, il peut servir à développer des stratégies d'interaction efficaces entre les contribuables et les autorités fiscales ; par exemple, les autorités devraient viser à renforcer la confiance en communiquant une attitude axée sur le service et les clients (par exemple, en identifiant la cause de la non-conformité en téléphonant aux contribuables (Feld & Frey, 2018)). Deuxièmement, en tant qu'outil conceptuel, il peut servir à comprendre l'importance des déterminants du comportement fiscal et les effets ambigus rapportés par la recherche empirique.

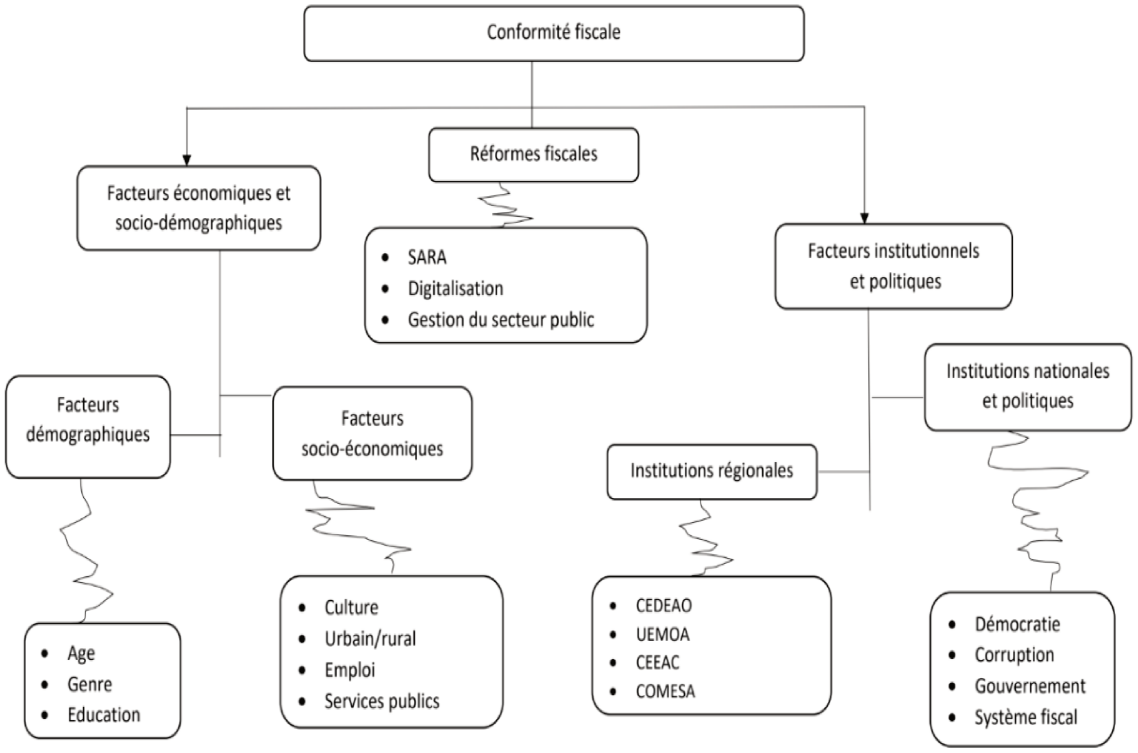
En conclusion, le cadre théorique de la "pente glissante" promet une meilleure compréhension du comportement fiscal et des pratiques réglementaires en soulignant la nécessité de prendre en compte le pouvoir des autorités, la confiance qu'elles inspirent et leur interaction dynamique. La prise en compte des distinctions entre conformité forcée et volontaire appelle à repenser le rôle des autorités fiscales et suggère que le paiement de l'impôt peut être perçu non seulement comme une obligation onéreuse, mais aussi comme un devoir bien accepté.

[3] Le terme « pente glissante » a été introduit par Henk Elffers lors d'une conférence à Leyde, aux Pays-Bas, sur « la gestion et le maintien de la conformité » (10-11 avril 2006), où certains aspects du cadre ont été présentés.

1.4 Cadre analytique

La Figure 1.6 présente le cadre analytique général de notre étude. Au rang des facteurs institutionnels

Figure 1.6: Cadre conceptuel



Source:Auteur

et politiques, nous avons : les institutions régionales (CEDEAO, UEMOA, CEEAC et COMESA) et les déterminants politiques comme : démocratie, corruption, le système fiscal. Dans la seconde partie de la thèse, nous étudions les réformes fiscales et la conformité fiscale. Le chapitre 1 analyse les effets de l'adoption de l'administration fiscale semi-autonome (SARA) sur l'évasion fiscale ; le chapitre 2 étudie le lien entre la digitalisation de l'impôt et la conformité fiscale, et le chapitre 3 analyse les réformes de la gestion du secteur public et la conformité fiscale.

1.4.1 Déterminants socio-économiques et démographiques

Nous postulons que l'effet de l'âge sur le civisme fiscal est ambivalent. D'une part, l'âge peut avoir un effet positif sur le civisme fiscal, qui tend à augmenter à mesure que les individus vieillissent. En prenant de l'âge, les citoyens deviennent de plus en plus sociale-

ment conscients, beaucoup plus imprégnés des normes sociales et sont moins disposés à les transgresser et moins disposés à prendre des risques. A contrario, les jeunes sont moins conscients et sont moins adverses au risque. Donc à un certain âge on peut avoir une relation négative entre le civisme fiscal et l'âge. En outre, la relation peut être en forme de « U » inversé. C'est-à-dire, le civisme fiscal augmente avec l'âge jusqu'à un certain seuil puis diminue. La relation entre les populations urbaines est la même, c'est-à-dire ambivalente. Dans les zones urbaines, les populations bénéficient de plus de services publics ; elles pourront avoir un civisme fiscal plus élevé que celui des citoyens qui vivent dans les zones rurales, d'où la possibilité d'un effet positif. Ils sont aussi très regardants sur la gestion du pays. S'ils constatent des dérives dans la gestion du pays, ils sont hostiles au paiement des impôts. L'analyse est pareille pour le niveau d'éducation. Plus le niveau d'éducation d'éducation du contribuable est élevé, plus il est censé comprendre l'importance des recettes fiscales pour le pays, par conséquent plus susceptible d'adhéré au syspème fiscal, d'où une relation positive entre civisme fiscal et niveau d'éducation. Connaissant l'importance et le rôle des impôts, si l'état détourne les recettes, les citoyens sont moins disposés à payer. Chaque peuple, au vu de son histoire, peut avoir un rapport avec les impôts. Dans notre étude, nous utilisons la culture anglophone et la culture francophone pour tester l'hypothèse de la variabilité du civisme fiscal selon les différences de culture. Le système fiscal peut aussi influencer le civisme. S'il est complexe (taux multiple et élevé, plusieurs impôts), les individus sont tentés d'éviter l'impôt, donc ils influencent négativement le civisme fiscal, et inversement. Enfin, nous faisons aussi l'hypothèse que l'appartenance à des institutions régionales comme l'UEMOA et la CEDEAO, par exemple, peut influencer le civisme fiscal. En effet l'appartenance à ces zones d'union monétaire, vous soumet au respect de certains critères. Par exemple, dans l'UEMOA tous les pays doivent avoir une inflation inférieure à 3% par an ; un déficit budgétaire global inférieur à 3% du PIB ; la dette publique inférieure à 70% du PIB et la mobilisation des recettes fiscales supérieure à 17%. Pour la CEDEAO , les critères sont : inflation inférieure à 10% par an ; un déficit budgétaire global inférieur à 4% du PIB ; la dette publique inférieure à 70% du PIB et la mobilisation des recettes fiscales supérieure à 20%. Le respect de ces objectifs contribue à l'instauration d'un environnement économique sain, qui pourrait impacter le civisme fiscal des citoyens de ces zones.

1.4.2 Les réformes fiscales et la conformité fiscale

Nous estimons que l'adoption des administrations fiscales semi-autonomes (SARAs) peut aider à combattre l'evasion fiscale. Elles diffèrent des administrations fiscales traditionnelles par leurs différentes caractéristiques. Les SARAs ont une autonomie dans le recrutement de

leur personnel, ce qui devrait permettre un recrutement de personnels qualifiés ; les SARAs ont un mécanisme de financement à la commission ; les SARAs ont un modèle de gestion basé sur les résultats et ont des organisations internes permettant de traiter les problèmes les plus urgents. Ces caractéristiques sont censées amener ce type d'administration fiscale à améliorer la mobilisation des recettes fiscales. Cependant, dans la littérature, les résultats sont mitigés. La première catégorie de littérature révèle des effets positifs sur la mobilisation des recettes fiscales. La seconde catégorie de littérature trouve des effets mitigés. À court terme, les SARAs ont un effet positif sur la mobilisation des recettes fiscales. Mais l'effet se dissipe à long terme. La troisième catégorie estime que l'efficacité des SARAs dépend de l'environnement institutionnel. L'adoption des SARAs ne garantit donc pas l'amélioration des recettes fiscales. Pour améliorer la mobilisation des recettes fiscales, il faut lutter contre l'évasion fiscale et/ou élargir l'assiette fiscale. Étant donné la non-stabilité des résultats, nous nous concentrons sur l'un des canaux par lesquels l'adoption des SARAs pourrait influencer la mobilisation des recettes fiscales afin d'apporter de nouveaux éclairages sur la relation entre SARAs et la mobilisation des recettes fiscales. Ainsi nous nous concentrons sur la relation entre les SARAs et l'évasion fiscale. La seconde réforme que nous avons étudiée est la digitalisation des impôts. Nous analysons l'incidence de la digitalisation des impôts, notamment l'utilisation de l'argent mobile sur les coûts de la conformité fiscale. Enfin, la dernière réforme abordée est celle de la gestion du secteur public. En effet, d'après la théorie de E. Lewis (1954), une politique fiscale à elle seule ne saurait avoir d'effets durables dans le temps. Il prône donc une réforme économique inclusive, c'est-à-dire une réforme fiscale coordonnée avec des politiques institutionnelles, politiques de l'emploi, etc. C'est dans cette logique que nous analysons l'effet des réformes de la gestion du secteur public sur les charges liées à la conformité fiscale.

1.5 Objectis, questions de recherche et contributions de la thèse

Au cours de ces dernières décennies, les pays en développement (PED) sont confrontés aux défis de mobiliser des ressources intérieures additionnelles, notamment fiscales, pour financer de façon durable leur projet de développement. Aux exigences nationales s'ajoutent les exigences internationales telles que les Objectifs de Développement Durable de l'Agenda 2030. Malgré les efforts consentis, la mobilisation des recettes fiscales dans les pays en développement peine à décoller. À titre de comparaison, les recettes fiscales recouvrées par les pays membres de l'OCDE représentent en moyenne 35% de leur PIB

contre une moyenne de 15% du PIB pour les deux tiers des pays en développement (OCDE, 2019). En effet, selon l'OCDE (2019), la problématique de l'amélioration du civisme fiscal a été une question relativement négligée dans les pays en développement, alors qu'il constitue le pilier central d'un système fiscal pour la mobilisation substantielle de recettes. En effet, si les citoyens ont un civisme fiscal élevé, l'État collecte beaucoup plus de recettes pour financer ses besoins nationaux et respecter ses engagements internationaux, notamment ceux liés à la protection de l'environnement. D'une part, lorsque les contribuables respectent volontairement et spontanément leurs obligations fiscales, l'assiette fiscale s'élargit, ce qui entraîne une amélioration du recouvrement fiscal. D'autre part, le respect des obligations fiscales de façon volontaire réduit les frais de fonctionnement de l'administration fiscale tels que : les frais d'audit, de commissions accordées aux agents du fisc et autres avantages sont économisés. C'est dans cette perspective que les présents travaux de recherche se proposent de creuser la question suivante: **comment améliorer le respect des obligations fiscales des entreprises et des particuliers dans les pays en développement ?**

Cette question principale sera déclinée en des questions spécifiques suivantes : pourquoi les contribuables des pays en développement sont-ils réfractaires au paiement des impôts ? À quelles conditions seront-ils disposés à participer volontairement au financement des biens et services publics, en payant leurs impôts ? Les systèmes fiscaux sont-ils favorables au respect des obligations fiscales ? Sinon, quelles réformes les autorités fiscales doivent-elles mettre en place pour amener les contribables à respecter la législation fiscale en vigueur ?

L'objectif général de cette thèse est d'identifier et d'analyser les déterminants du civisme fiscal des particuliers et des entreprises; évaluer l'impact des politiques publiques, des réformes administratives, des innovations technologiques sur la conformité fiscale dans les pays en développement, en mettant l'accent sur les pays d'Afrique subsaharienne, puis de proposer les réformes susceptibles d'améliorer le respect des obligations fiscales dans cette zone géographique. De cet objectif général, découlent les objectifs spécifiques suivantes :

- Identifier les déterminants du civisme fiscal des particuliers;
- Identifier les déterminants du civisme fiscal des entreprises;
- Analyser l'impact des administrations fiscales semi-autonomes sur l'évasion fiscale;
- Etudier l'effet de l'adoption de l'argent mobile sur les coûts de la conformité fiscale;

- Investiguer sur les conséquences d'une réforme de la gestion du secteur public sur la conformité fiscale.

Les travaux de cette thèse se positionnent dans la littérature du civisme fiscal, du consentement à l'impôts, de la conformité fiscale, voire de la mobilisation des recettes, en analysant simultanément les questions relatives au civisme fiscal, aux réformes fiscales comme instruments de la conformité fiscales dans les pays en développement, à l'aide de processus théoriques et empiriques, mobilisant les techniques d'analyses statistiques et de nouvelles méthodes d'estimations économétriques. Dans cette thèse, nous affirmons, d'une part, que la bonne gouvernance est la condition indispensable pour l'amélioration du civisme fiscal dans les pays d'Afrique subsaharienne. Ensuite, nous démontrons que l'adoption de réformes fiscales dans des conditions institutionnelles adéquates est susceptible d'améliorer la conformité fiscale des citoyens. Les travaux de recherche dans cette thèse ont donné lieu à six (06) chapitres en comptatnt le chapitre introductif répartis en deux (02) parties complémentaires.

La première partie se compose de deux (02) chapitres, dont l'objectif est de revisiter la littérature sur les principaux déterminants du civisme fiscal, afin de les actualiser pour identifier ceux qui sont toujours d'actualité, et peuvent servir de leviers que les autorités pourront utiliser pour accroite le niveau du civisme fiscal des contribuables, dans le contexte des pays d'Afrique subsaharienne. En effet, les questions de civisme fiscal font une part belle à l'économie comportementale. Autrement dit, les citoyens réagissent selon leurs besoins. Par exemple, lorsque l'État construit les infrastructures routières ou d'éducation dont les populations ont besoin, celles-ci deviennent plus enclines à coopérer et à payer leurs impôts. Mais à un moment donné, des investissements dans ce domaine se révéleront peu productifs en termes d'amélioration du civisme fiscal, d'où la nécessité d'actualisation des déterminants du civisme fiscal.

Le chapitre 2 actualise, pour les pays d'Afrique subsaharienne, les déterminants de la volonté intrinsèque des individus de payer des impôts–civisme fiscal– en utilisant les données de la sixième série d'enquêtes Afrobaromètre menées en 2014-2015, couvrant 30 pays. De plus, nous faisons une analyse comparative du civisme fiscal selon la culture et l'histoire (pays anglophone vs pays francophone), puis nous testons l'hétérogénéité des résultats selon les sous-groupes de pays de notre échantillon (UEMOA, CEDEAO, pays francophones et pays anglophones). Enfin, nous testons la robustesse des résultats en changeant notre variable dépendante. À l'aide du modèle Probit, les résultats révèlent que des facteurs institutionnels tels que la confiance dans l'administration, la démocratie,

la qualité des services publics, la lutte contre la corruption, l'accessibilité à Internet et la légitimité des autorités fiscales améliorent le civisme fiscal des particuliers. À l'inverse, la complexité du système fiscal (le sentiment de difficulté à savoir comment payer ses impôts) nuit à la discipline fiscale des contribuables. Concernant les facteurs socio-économiques, nos résultats indiquent que les femmes sont moins susceptibles de se conformer à leurs obligations fiscales que les hommes. Ces résultats sont robustes aux sous-échantillons de notre étude et à une mesure alternative du civisme fiscal. Mais on note une hétérogénéité des résultats selon ces sous-groupes. L'analyse comparative montre que le niveau du civisme fiscal est plus élevé dans les pays francophones que dans les pays anglophones. Enfin, nos résultats révèlent en outre que la coordination fiscale entre les États de la CEDEAO et/ou de l'UEMOA améliore le civisme fiscal des citoyens de ces régions. En d'autres termes, le civisme fiscal est plus élevé dans les zones d'intégration de la CEDEAO et de l'UEMOA que dans les pays situés hors de ces zones. Il apparaît dès lors que la promotion de la bonne gouvernance et le renforcement des critères de convergences constituent des leviers essentiels susceptibles de favoriser un meilleur civisme fiscal au sein de ces États.

Dans le chapitre 3, on se pose la question suivante: quels sont les facteurs qui déterminent la motivation des entreprises à payer des impôts ? Nous abordons cette question à l'aide des données d'une enquête sur le civisme fiscal menée par l'Office togolais des recettes fiscales (OTR) en 2019, portant sur 413 entreprises formelles. Pour ce faire, nous construisons deux mesures de civisme fiscal. Les déterminants potentiels du civisme fiscal comprennent l'appréciation de la fraude fiscale, la modification des lois fiscales, la connaissance de la fiscalité, les bénéficiaires de l'impôt, les pots-de-vin, la sévérité des sanctions, la légitimité des droits de douane, l'appréciation du montant de l'impôt, la charge fiscale, la légitimité de la TVA et la localisation géographique des entreprises. Les résultats montrent que tous ces facteurs sont des déterminants clés de la conformité fiscale volontaire, à l'exception de la modification des lois fiscales, de l'appréciation du montant de l'impôt et de la charge fiscale. Lorsque nous isolons la région *Maritime*, le résultat reste inchangé, mais l'appréciation de la fraude fiscale n'a pas d'impact significatif sur la conformité volontaire dans cette région. Enfin, les déterminants varient lorsque nous distinguons les entreprises par taille, que ce soit au niveau national ou régional. Au regard de ces résultats, l'OTR doit travailler à minimiser les exonérations et réduire les délais de remboursement de crédits de TVA. Deuxièmement, l'OTR doit également se doter de davantage de ressources techniques, humaines et financières afin de réaliser des contrôles fiscaux appropriés et d'identifier les entreprises qui font parfois de fausses déclarations ou tentent de contourner les lois fiscales afin d'éviter de payer des impôts.

La deuxième partie de la thèse se concentre sur les réformes telles que l'adoption des administrations fiscales semi-autonomes, la digitalisation des administrations fiscales, puis les réformes de la gestion du secteur public sur la conformité fiscale. En effet, selon plusieurs rapports de l'OCDE, le FMI, les chercheurs et les praticiens, le système fiscal des pays en développement mobilise moins de recettes fiscales à cause de la complexité des système fiscaux, la non-transparence dans l'utilisation des recettes fiscales collectées, les biens et services publics de mauvaises qualités, voire inexistant et les tensions politiques, la corruption ambiante, bref une mauvaise gouvernance. Précisément, cette partie répond à la question de savoir : dans quelles conditions les réformes implémentées, et qui peinent à prospérer, peuvent donner les résultats escomptés, c'est-à-dire garantir le respect de la législation fiscale en vigueur ? Mais elle explore également s'il y a de nouvelles réformes que les décideurs publics peuvent implémenter afin d'améliorer le respect des obligations fiscales. Nous examinons donc ces questions dans les chapitres 4, 5 et 6.

Le chapitre 4 analyse si l'adoption d'une Administration Fiscale Semi-Autonome, communément appelée SARA, permet de lutter contre l'évasion fiscale. En utilisant l'appariement par score de propension (PSM) sur un échantillon de 39 pays d'Afrique subsaharienne entre 1980 et 2015, notre étude conclut que l'adoption d'une SARA réduit l'évasion fiscale dans les pays SARA par rapport aux pays non-SARA. Ce résultat demeure robuste à plusieurs spécifications alternatives, notamment l'ajout d'autres variables de contrôle, l'utilisation de diverses variables dépendantes alternatives et l'utilisation de méthodes d'estimation concurrentes comme : l'équilibrage entropique et les moindres carrés ordinaires (OLS). Des estimations supplémentaires sur diverses variables dépendantes alternatives révèlent que l'adoption d'une SARA augmente les recettes fiscales (hors ressources naturelles), l'effort fiscal et ses composantes, c'est-à-dire l'effort fiscal persistant et l'effort fiscal variable dans le temps, dans les pays d'Afrique subsaharienne. Ces résultats révèlent en outre que l'adoption d'une SARA réduirait l'inefficacité fiscale dans les pays d'Afrique subsaharienne. Cependant, il convient de souligner que l'étude dynamique révèle que cet effet est instable dans le temps. Enfin, nous apportons la preuve qu'une meilleure qualité institutionnelle (mesurée par le contrôle de la corruption), une simplification du processus de paiement des impôts et la conformité fiscale sont des canaux de transmission par lesquels une SARA affecte l'évasion fiscale. Les conclusions du chapitre appellent les gouvernements à introduire des réformes fiscales, en l'occurrence, la mise en place d'administrations semi-autonomes qui échappent à l'influence politique et aux incohérences de l'administration publique en général. Par conséquent, afin d'accroître les recettes fiscales

et de combler le déficit de financement résultant d'un accès plus restreint aux marchés financiers internationaux, les gouvernements peuvent mettre en place des administrations semi-autonomes tout en respectant les conditions d'efficacité d'une telle institution, afin de bénéficier pleinement de ses effets positifs. Par ailleurs, le gouvernement doit poursuivre ses efforts pour améliorer la qualité des autres institutions qui véhiculent les effets des administrations semi-autonomes sur l'évasion fiscale. Pour les autorités fiscales, l'analyse des canaux de transmission délivre un message fondamental : simplifier le processus de paiement des impôts améliore la conformité fiscale en réduisant les coûts de conformité. Par exemple, la mise en œuvre des paiements numériques (argent mobile) simplifie le système fiscal et permet aux contribuables de mieux s'acquitter de leurs obligations fiscales.

Le chapitre 5 analyse la corrélation entre l'adoption de l'argent mobile et les coûts de conformité fiscale, estimés par le nombre d'heures nécessaires pour déclarer et payer les principaux impôts par an dans les pays en développement, en utilisant la méthode d'équilibrage entropique. À l'aide d'un panel non équilibré de 91 pays couvrant la période 2000-2021, les résultats montrent que l'argent mobile est associé à une réduction statistiquement significative des coûts de conformité fiscale. Plus précisément, nous constatons qu'en moyenne, l'adoption de l'argent mobile réduit généralement les coûts de conformité fiscale. Ce résultat demeure robuste à l'utilisation de méthodes d'estimation alternatives : moindres carrés ordinaires (OLS) et la méthode des moments généralisés (GMM), à plusieurs spécifications alternatives de notre échantillon: premièrement nous excluons certains groupes de pays ou de périodes susceptibles de biaiser le résultat (les pays ayant adopté l'administration fiscale semi-autonome, la période postérieure à la conférence d'Addis Abeba, les pays qui ont un passé colonial et les pays considérés comme paradis fiscaux) ; deuxièmement, nous incluons des variables de contrôle supplémentaires dans modèle de base. De plus, il existe une certaine hétérogénéité dans les résultats selon le type de services d'argent mobile et la localisation géographique des pays de notre échantillon (ASS vs autres pays de l'échantillon). Les résultats apportent un éclairage supplémentaire sur la contribution des paiements numériques à la conformité fiscale. Alors que les administrations fiscales de ces pays adoptent de plus en plus de solutions de paiement numérique, cette étude présente un intérêt particulier en termes d'implications en matière de politique fiscale pour les autorités fiscales et leurs gouvernements. Premièrement, les paiements numériques facilitent l'accès et l'utilisation des données des contribuables dans les pays en développement, notamment celles des tiers et des transactions. Cela se traduit par une réduction des coûts administratifs et une efficacité accrue des systèmes et processus de gestion des données. Deuxièmement, en permettant le paiement numérique des impôts, l'argent mobile simplifie le processus et

allège la charge pour les contribuables. De plus, il peut contribuer à réduire la corruption en favorisant une plus grande transparence des informations fiscales.

Le chapitre 6 a pour objectif d'examiner l'impact dynamique des réformes de la gestion du secteur public sur les coûts de la conformité fiscale dans les pays d'Afrique subsaharienne entre 2005 et 2022. En utilisant la méthode des moindres carrés ordinaires (MCO), générant des réponses impulsionnelles à l'aide de la méthode LP-OLS, nos résultats montrent constamment que la réforme de la gestion du secteur public contribue de manière significative à réduire les coûts de la conformité fiscale, indépendamment des méthodes d'estimation utilisées. Pour prévenir d'éventuels problèmes d'endogénéité dus au biais de sélection dans l'adoption de la réforme, nous avons utilisé l'estimateur pondéré par probabilité inverse augmenté de Jordà and Taylor (2016), ainsi que la méthode d'équilibrage d'entropie des variables binaires proposée par Hainmueller (2012) et les variables de traitement continu par Tübbicke (2022). Les résultats de ces spécifications économétriques confirment la fiabilité de notre résultat de base. Les estimations révèlent des résultats immédiats dès la première année de mise en œuvre de la réforme. Les résultats demeurent également robustes à l'ajout de variables de contrôle supplémentaires telles que: la corruption, la démocratie, l'autocratie, l'économie informelle, l'efficacité du gouvernement et la population urbaine. Par ailleurs, l'analyse de l'hétérogénéité selon les différentes composantes de la réforme de la gestion du secteur public confirme les résultats de base, tout en mettant en évidence une certaine hétérogénéité des effets observés.

Part I

Revisiting Tax Morale Determinants

Chapter 2

Economic, Institutional, and Sociocultural Determinants of Individuals Tax Morale in Sub-Saharan Africa

2.1 Introduction

For African countries, mobilizing tax revenues is urgent given the financing requirements needed to implement development programs. In a context marked by declining official development assistance (ODA) and increasing debt, the need is even more pressing for Sub-Saharan African countries, whose tax revenues represent barely 15% of their gross domestic product (GDP), a level half that of the Organization for Economic Cooperation and Development (OECD) countries. Thus, with the help of development partners, notably the International Monetary Fund (IMF) and the World Bank, significant efforts have been made in the field of international taxation [1] and the modernization of tax administrations [2]. Despite these efforts, there is still a long way to go before a sustainable culture of tax morale [3] takes hold, to recover more tax revenue with relatively limited resources (operating costs). Comparatively, the average level of tax morale, measured by the proportion of the population who believe that cheating on taxes is never justified, represents 68.70% of the population in OECD countries, compared with an average of 45.10% of the population in Sub-Saharan African countries. This average is 69.10% and 60.30%, respectively, for Latin American and emerging Asian countries (Afrobarometer, 2015). We can observe that civic awareness regarding taxation remains low in sub-Saharan Africa. Specifically, more than half of the population is hostile to complying with tax obligations. Furthermore, several studies have shown that in most countries south of the Sahara, tax revenue mobilization remains suboptimal. For example, the countries of the West African Economic and Monetary Union (WAEMU) would have a margin of additional uncollected tax revenue of 7.5% of GDP (Amedanou, 2025a). These revenue losses are mainly due to taxpayers' non-compliance. Moreover, the Author underlines the imperative of improving tax morale to increase tax revenue collection. In fact, in developing countries, particularly in sub-Saharan Africa, many citizens are reluctant to pay taxes for various reasons. For some, paying taxes means enriching the tax authorities or supporting the governments, which are often considered illegitimate in most of these countries. For others, their precarious economic situation means they are simply unable to pay their taxes. Other taxpayers are pointing to the poor quality of public services that are supposed to be financed by the tax revenues collected.

[1] International taxation refers to the actions implemented as part of the project to remedy tax base erosion and profit shifting (BEPS). For example, this project offers countries more ways of taxing multinationals, even if it still favors developed countries.

[2] As part of the modernization of tax administrations, development partners (IMF and World Bank) regularly organize training sessions for tax administration staff in developing countries. The latter can also consult with partners. They also benefit from funding to reinforce their equipment. In 2014, for example, the World Bank financed Togo's establishment of the Togolese Revenue Authority, a semi-autonomous revenue authority

[3] Tax morale is defined as the acceptance of tax payments by taxpayers voluntarily. It means declaring and paying the tax due on time voluntarily.

In contrast to efforts in the field of international taxation and tax administration capacity reinforcement, the question of tax compliance or tax morale is relatively neglected. However, good tax citizenship is an essential aspect of tax systems, as most of these countries derive a significant portion of their revenue from taxpayers' voluntary compliance with their tax obligations. As such, a better understanding of the motivations that lead taxpayers to comply with their tax obligations spontaneously is in everyone's interest. Despite this potential, it is paradoxical that it has attracted relatively little interest, especially in Sub-Saharan African countries. In these countries, taxpayers are generally reticent or even reluctant to pay taxes. Consequently, one of the options offered to the government is to "constrain" them by implementing dissuasive policies (audits, sanctions). Following the economics of crime approach based on the calculation of expected utility maximization, Allingham and Sandmo (1972) presented a model in which the level of tax evasion is negatively correlated with the probability of fraud detection and the degree of penalty incurred. Otherwise, the more regular the frequency of tax audits and the higher the penalties incurred, the less tax evasion will occur. Although revolutionary, this model has been strongly criticized by many authors. The fundamental criticism of this model, based on the experimental results, is that it predicts too little tax evasion, contrary to reality (Graetz & Wilde, 1985; Alm et al., 1992; Feld & Tyran, 2002; Torgler, 2002). Given the utility model's failure to provide effective deterrents that can dissuade potential tax evaders, the government must find an alternative to encourage citizens to pay their taxes more willingly. Thus, identifying the real motivations of citizens, or the reasons why they are willing to participate voluntarily in financing public goods, seems a plausible approach. If the factors affecting taxpayer behavior are identified, legal dispositions can be fashioned accordingly to increase taxpayer compliance (İpek & Kaynar, 2009). Thus, tax citizenship can help explain taxpayers' level of tax compliance (Feld & Frey, 2002; Erard & Feinstein, 1994; Andreoni et al., 1998). However, it is important to underline that these analyses, like most empirical research in the literature, have treated tax morale as an exogenous residual. Indeed, there is very little empirical evidence, particularly for Sub-Saharan African countries, that goes beyond treating tax compliance as a "black box", a residual, and analyzes the determinants of tax compliance. Nevertheless, several studies are increasingly examining this subject. For example, some studies show a positive correlation between the accessibility of the tax system and tax compliance (Orviska & Hudson, 2003). Others find a non-linear relationship between age and fiscal citizenship (Ibrahim et al., 2015); a positive impact of trust in government and parliament on fiscal citizenship (OECD, 2019).

Our study aims to identify, within the context of Sub-Saharan African countries, the

levers that decision-makers can use to encourage taxpayers to pay their taxes voluntarily. Therefore, we address the following question: What are the determinants of fiscal tax morale in Sub-Saharan African countries? Do cultural differences (Anglophone/Francophone) explain differences in levels of tax compliance? Does tax coordination by regional institutions (ECOWAS and WAEMU) have an impact on tax compliance? This study complements the existing literature on the subject, particularly that relating to Sub-Saharan Africa. Moreover, it is one of the first to address the question, taking into account the cultural differences (Anglophone versus Francophone) of the geographical area, as well as the potential impact of regional institutions such as ECOWAS and WAEMU. Thus, this paper should be helpful to decision-makers in the region, providing them with a few pointers on how to improve citizens' fiscal citizenship to increase tax revenues.

The following sections of the paper are organized as follows: Section 2 reviews the theoretical and empirical literature on the determinants of tax compliance. Section 3 describes the methodological approach and data. Sections 4 and 5 examine the basic results and the robustness of the results, respectively. Section 6 concludes and gives some tax policy implications.

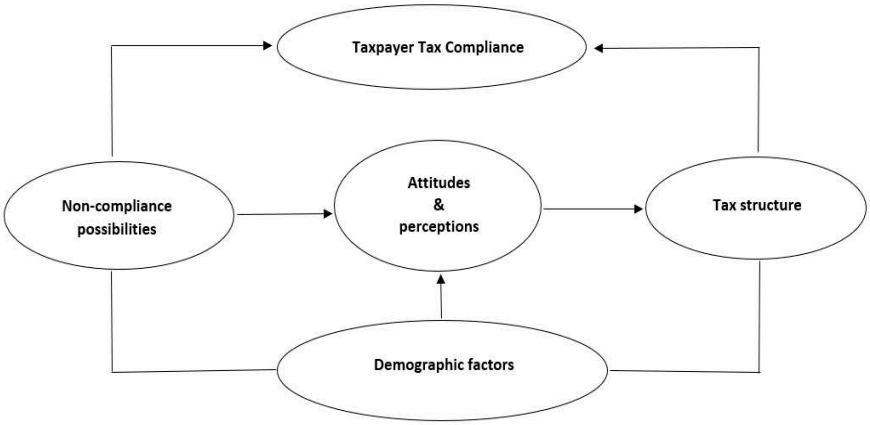
2.2 Literature review

2.2.1 Theoretical literature review

Following the studies by Schmölders (1960), other researchers have investigated the question of taxpayer compliance. They identified several reasons for taxpayers' reluctance to pay taxes. These are essentially demographic reasons, such as age and gender; economic reasons, including tax burden, level, and source of income; and psychological reasons (Brooks, 2001). These different determinants of tax compliance can be grouped into four main categories (see Figure 2.1). The first group includes demographic factors such as the taxpayer's gender, age, and education. The second group comprises non-compliance factors, including the source and level of income, as well as the taxpayer's profession. The third group is concerned with perceptions and attitudes, such as the fairness of the tax system. Finally, the last group is formed by elements of the tax structure, including the tax burden, the likelihood of detecting tax fraud, the severity of penalties, and the complexity of the tax system. Figure 1 also shows that some compliance factors have direct effects (tax structure, potential for non-compliance) and others have indirect effects (demographic factors) on tax compliance (Fischer et al., 1992). Theoretically, the effects of income on compliance are difficult to estimate. However, depending on the level of risk aversion and the progression of tax scales, income can improve

or reduce the intrinsic motivation to comply with taxes. Low-income taxpayers, due to the high loss of marginal utility associated with a penalty, are less inclined to take risks (Jackson & Milliron, 2002). In the theoretical literature, it is also argued that financial dissatisfaction can have a negative influence on taxpayers' compliance. Thus, taxes can be perceived as a substantial restriction, reinforcing incentives to reduce tax honesty. This argument aligns with perspective theory, according to which contributors evaluate utility gains and losses not in terms of absolute change but in terms of a "reference" point (Tversky & Kahneman, 1992).

Figure 2.1: Fischer conformity model



Source: Oti et al. (2017)

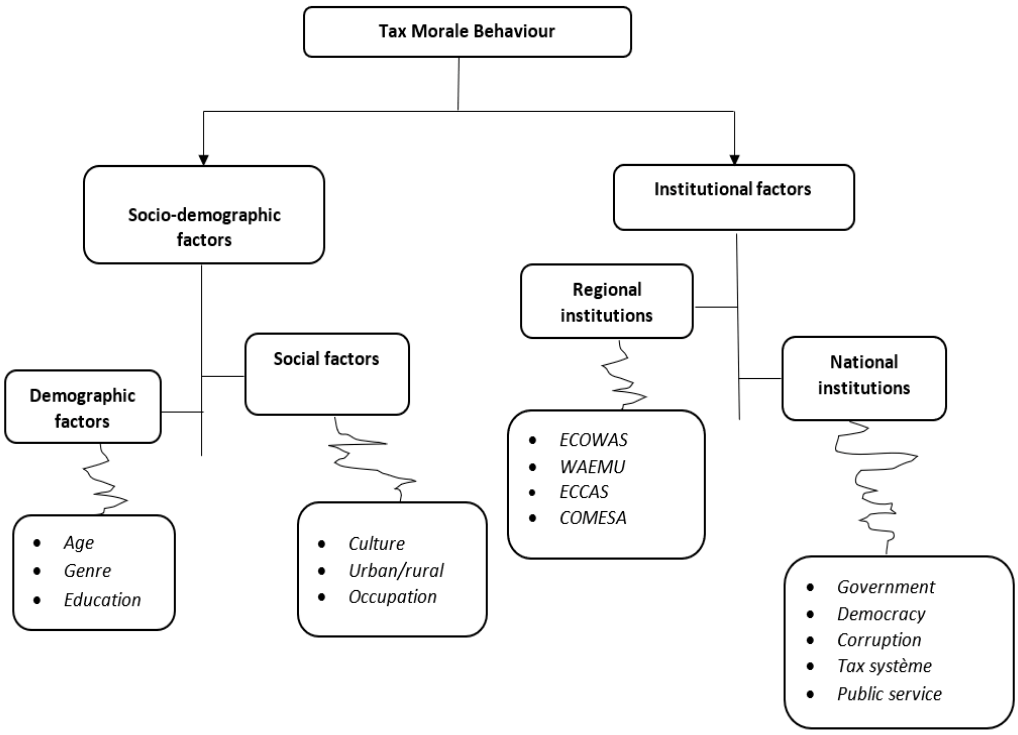
Tittle (1980) explains that seniors have acquired significant social stakes over the years, show greater conformity to social norms, and are more risk-averse than younger people. Consequently, they comply more with their tax obligations, i.e., they have a higher level of tax morale. The Author also believes that marital status can positively influence tax compliance. He assumes that couples have more social stakes in their environment. Consequently, they feel more engaged in the social and political community than bachelors, and therefore more willing to contribute to the financing of public goods and services. Tittle also maintains that women are more compliant than men. However, the Author notes that this is less and less true today, as today's female generation is less and less compliant than previous generations. In contrast, Torgler (2006) argues that gender differences in tax compliance do not disappear over time. Education influences tax compliance through knowledge of tax law and can have a mixed effect. Well-educated taxpayers are likely to have a better understanding of why they pay taxes and are aware of the benefits, i.e., the services that the government can provide to citizens with collected taxes (A. Lewis, 1982). However, they are more aware of possible government waste and highly critical of the use

of tax revenues. They may become less compliant if public services are inefficient. Another way to create fiscal discipline is to respect democratic rules. Citizens are more likely to cooperate in paying taxes if they feel that the government is working in their best interests. A government that adopts a participatory approach and places self-imposed limits on its power within a constitutional framework sends the signal that taxpayers are considered responsible and not merely subjects who have no rights in public decision-making. He shows that their preferences are taken into account in the political process (Levi, 1988). Thus, voting on tax issues has a positive impact on tax compliance. The more opportunities taxpayers have to participate in political decision-making through popular consultation, the more they support the financing of public goods and services. Cooperation between taxpayers and authorities (governmental and fiscal) is stronger in decentralized structures. In fact, local elected officials are better informed about the preferences of the local population and, in the interest of renewing their mandate, are encouraged to take into account local preferences, thus reinforcing the fiscal discipline of taxpayers (Alm et al., 1999; Feld & Frey, 2002; Torgler et al., 2003; Frey & Eichenberger, 1999; Bahl, 1999). The populations have similar attitudes toward the tax authorities. According to Feld and Tyran (2002), taxpayers' compliance with their tax obligations is supported, even improved, if they are treated with respect by tax administration officials.

However, taxpayers may resort to tax evasion as a means of seeking justice when they perceive unfair treatment or feel that the support they receive from tax and government authorities is insufficient. Under these conditions, taxpayers find themselves in a social dilemma, and the collective action of citizens' cooperation with the authorities depends on how just, legitimate, and respectful they consider the authorities' exercise of power to be. Otherwise, the perception of injustice increases the incentive to act against the tax law, to reduce psychological costs. The relationship between taxpayers and the government is both a physical interaction and a psychological contract, and one of the main reasons for maintaining cooperation is reciprocity (Schnellenbach et al., 2010; Tyler & Blader, 2000; Smith & Stalans, 1991). In addition to government and tax authorities, taxpayers also interact with and learn from other segments of society. Thus, an individual's behavior is influenced to some extent by the behavior of others in their society. In this social interaction, perceptions and social norms, as rules or traditions, shape the social attitudes of citizens, which are supported or sanctioned by the community (Schwartz & Howard, 1982; Elster, 1989). The concept of social influence suggests that individuals tend to conform to the social norms and behaviors of their peers. Consequently, tax compliance by one taxpayer can have an impact on others, and vice versa. We can observe this in everyday activities such as fashion, con-

sumerism, and participation in crimes such as mob violence and lynching (Kahan, 1997). This is a positive or negative spillover effect that also applies to tax compliance. Otherwise, the civic behavior of certain citizens in matters of taxation can influence others. Based on the preceding review of theoretical literature and other sources, we present the conceptual framework of our research as shown in Figure 2.2.

Figure 2.2: Conceptual framework



Source:Author

2.2.2 Empirical literature reviews

In the literature, the influence of religion on taxpayer behavior has been widely discussed (Prasetia, 2025; Mehmood et al., 2024; Rahmalia et al., 2024; Hidayat et al., 2023; McGee, 2006; Torgler, 2003). The payment of taxes is perceived differently according to religious convictions. Although some religions are in favor of paying taxes to finance public spending, others may reject the obligation to pay taxes in certain circumstances, such as when the government engages in activities considered illegal. The studies of Prasetia (2025); Torgler and Valev (2006) showed that there is a high level of tax compliance in countries with a high level of religious attendance. However, a high level of religiosity can also reduce the level of tax compliance, as it can cause spiritual obligations to take precedence over

civic obligations (Rahmalia et al., 2024). Employment is the main source of income for taxpayers. This taxable income may come from self-employment or salaried employment. Income from self-employment is more susceptible to partial or total evasion of the tax system, while income from salaried employment is less so. This is because income from salaried employment in the tax system is subject to the declaration of information by third parties. O.-H. Fjeldstad and Semboja (2001) show that employees who pay their taxes via a source deduction system are less likely to be non-compliant. Laffont, Birch-Bécaas, and Crosnier (2003), contrary to the findings of O.-H. Fjeldstad and Semboja, were unable to establish a statistically significant relationship between professional status and compliance. Aside from the source of income, the tax rate also influences taxpayers' tax discipline. For example, studies of Mas'ud, Aliyu, Gambo, Al-Qudah, and Al Sharari (2014) reveal a negative and significant correlation between the tax rate and tax compliance in Africa.

Assfaw and Sebhat (2019) analyzes tax compliance and its determinants in Ethiopia's Kaa, Bench Maji, and Sheka regions. The results show that tax compliance is positively influenced by taxpayers' level of education and knowledge of tax law, the simplicity of the tax system, the perceived role of public spending, and the reward system for loyal taxpayers. Bruce-Twum (2014) studies for the Accra-Tema metropolis the degree of gift tax awareness and, hence, taxpayer compliance with gift tax in Ghana. To do so, the researcher uses data on individual tax declarations for tax years 2009 to 2012. The results indicate low awareness of gift taxes, resulting in low taxpayer compliance. Gbadago and Awunyo-Vitor (2015) do similar studies. They examine employee awareness of and compliance with the gift tax in the Ghanaian metropolis of Koumassi. The researchers reach the same conclusion as Bruce-Twum, namely, low employee compliance. Using a binary probit regression model, applied to data collected in 2014 from a survey of individual taxpayers, Cyan, Koumpias, and Martinez-Vazquez (2016) investigates the factors shaping taxpayer compliance in Pakistan. They also found that people living in metropolitan regions, where public administrations are concentrated, had very high levels of tax compliance. Additionally, women have a significantly higher tax compliance rate than men. However, their tax compliance attitude deteriorates over the years, to the point where older men have better tax compliance than older women. By hypothesizing that tax compliance can be explained by political (government, tax administrations) and societal interactions in Texas, Çevik (2016) confirms that the relationships between the variables are statistically significant. Mustapha (2010) finds similar results for Nigeria. The Author studies the impact of tax fairness and demographic factors on tax compliance. Estimates reveal that gender (demographic factors) and reciprocity or exchange with the government (tax equity

factors) are determinants of tax compliance. HAZMAN (2009) examines the factors that can influence taxpayers' compliance with their tax obligations. He finds both internal and external factors. The internal factors considered are taxpayers' perceptions and mindsets about taxation, which shape their behavior and attitudes. The tax system and techniques, the tax authorities' approach to taxpayers, the general feeling of political confidence in public opinion, knowledge of taxation, and legal provisions are considered external factors.

Helhel and Ahmed (2014) investigates the impact of individual taxpayer behavior on compliance in Yemen, taking into account both internal and external factors. The survey results indicate that the unfair tax system and high tax rates are the two important factors explaining the low compliance rate. Furthermore, the lack of deterrent effect of tax penalties, tax amnesties, and the inadequacy of tax audits often influence taxpayers' compliance decisions. When comparing responses by age and gender, we find that age is not a significant factor in general. However, women are more compliant than men, particularly when it comes to external factors. Alabede et al. (2011) includes taxpayers' ethnicity in a compliance model to test whether differences in tax compliance originate from differences in ethnicity, in an ethnically fractionated society such as Nigeria. The results provide empirical evidence that race is an important determinant of taxpayers' compliance behavior. Alm and Torgler (2006) performs a similar analysis. They estimate the determinants of individuals' intrinsic willingness to pay taxes in Spain and the USA, focusing on differences in the level of tax culture. The findings suggest that the USA has a more advanced tax culture than Spain. In a similar empirical analysis, Torgler and Schneider (2004) assesses the impact of cultural differences on tax compliance within a country. The empirical results focus on Switzerland, Belgium, and Spain, countries with distinct cultural characteristics. The results suggest that the cultural context does not appear to have a significant impact on tax citizenship in a country. However, they do prove that there is an interaction between culture and institutions, which has a significant impact on tax compliance. Otherwise, the impact of culture on tax compliance is indirect, via the institutions. Torgler (2003) provides empirical evidence of this interaction between institutions and fiscal citizenship. The Author studied the effects of formal and informal institutions on tax compliance in Switzerland, a country where participation rights and the degree of federalism vary from canton to canton. The results suggest that direct democracy, local autonomy, and trust in government, the court, and the legal system have a significant positive effect on taxpayers' tax morale.

2.3 Methodology and data

2.3.1 Methodology

Our study aims to identify the determinants of tax morale and to make a comparative analysis between the Anglophone and Francophone cultures of Sub-Saharan Africa. To do this, we use the data from the sixth wave of Afrobarometer surveys conducted in 2015 in 30 countries in this region. Tax morale is measured based on responses to questions asked in the survey, which we use to construct our two dependent variables. These variables are labelled "TaxMorale" and "TaxConsent".

Tax Morale is measured by the answers to the following question:"I'm now going to ask you about a series of different actions that some people take. For each of them, please tell me whether you think the action is not wrong at all, wrong but understandable, or wrong and punishable: Not paying the taxes they have to pay on their income". Initially, answers are coded as follows: 1 = not bad at all; 2 = bad but understandable; 3 = bad and punishable. However, to identify the drivers of tax compliance, we argue that the choice of whether or not to cheat on taxes depends on a latent (unobservable) variable, tax compliance, which is affected by a set of independent variables. Thus, for the microeconometric analysis, we cluster the three ordinal responses into a binary variable named Y_i. It takes the value 1, if the individual finds it wrong and punishable not to pay taxes, and 0 if they find it wrong but understandable or not wrong at all not to pay taxes. The framework for estimating models with binary dependent variables has its origins in the threshold theory of Hill and Kau (1973). This theory assumes that an individual's reaction occurs only after the force of a stimulus has exceeded their reaction threshold. Consequently, when faced with the choice of complying with tax law, the taxpayer has a reaction threshold that is influenced by several factors. Based on this reaction threshold, the taxpayer can either comply with the tax law ($Y_i = 1$) or not comply ($Y_i = 0$), resulting in a binary dependent variable. The probability of $Y_i = 1$ can be written as follows:

$$Pr = (Y_i = 1) = F(X_i\beta_i) \tag{2.1}$$

$$Pr = (Y_i = 0) = 1 - F(X_i\beta_i) \tag{2.2}$$

With F a distribution function of the distribution followed by the error term. Given such a specification, we determine the estimation parameters of this model using the maximum

likelihood estimation approach. The dependent variable is an unobserved latent variable to which the following linear equation relates:

$$Y_i = \beta_i X_i + \xi_i \tag{2.3}$$

With ξ_i the error term and X_i an independent variable influencing respondents' compliance decision. The observed dependent variable is determined by whether or not $TaxMorale_i$ exceeds the reaction threshold value:

$$Y_i = \begin{cases} 1 & \text{if } Y_i^* > 0, \\ 0 & \text{if } Y_i^* \leq 0. \end{cases} \tag{2.4}$$

With Y_i^*, the threshold value of Y_i is assumed to be normally distributed. Standard models for estimating these parameters include Probit, if the error distribution function is assumed to follow a centered reduced normal distribution; Logit is recommended if the error distribution function follows a logistic distribution. However, several authors have shown that these two models are very similar (W. Greene, 2002). Consequently, there is little interest in choosing between the two models. This study employs the Probit model due to its ability to constrain the utility value of the decision to join a variable to lie between 0 and 1, as well as its capacity to address the issue of heteroscedasticity. According to Madala (2005), the Probit model adopted for the study is specified as follows:

$$\begin{gathered} P_i = P(Y_i^* < Y_i) \\ P_i = P(Y_i^* < \beta_0 + \beta_i X_i) = F(Y_i) \\ P_i = F(Y_i) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{Z_i} e^{\frac{S^2}{2}} dS \end{gathered} \tag{2.5}$$

Where P_i is the probability that a respondent does or does not comply with the tax law, i.e. that the respondent has a high level of tax civic-mindedness; S is a random variable that is assumed to follow a centered-reduced normal distribution (mean zero and unit variance); Y_i is the dependent variable that is the decision to comply with the tax law; Y_i^* is as defined above. To obtain an estimate of the index Z_i, the inverse of the cumulative normal function is used:

$$Y_i = F^{-1}(P_i) = \beta_0 + \beta_i X_i + \xi_i \tag{2.6}$$

$$Y_i = \beta_0 + \beta_i X_i + \xi_i \tag{2.7}$$

The β_i are the parameters of the probit model. However, these parameters do not provide direct information on the effect of changes in the independent variables on the probability that respondents will comply with the tax law. The relative impact of each explanatory variable on the probability of a respondent complying with the tax law is given by:

$$\frac{partialP_i}{partialX_i} = \beta_i * \int (Z_i) \tag{2.8}$$

With P_i, the mean dependent variable whose value is given in the probit results as:

$$\int (Z_i) = F^{-1}(Pi) \tag{2.9}$$

Following previous empirical studies, such as Hasseldine et al. (2007) and Jackson and Milliron (2002), several factors have been identified as influencing tax compliance or as determinants of respondents' tax citizenship. Thus, replacing Y_i by $TaxMorale_i$, our empirical model is specified as follows:

$$TaxMorale_i = \beta_0 + \beta_1 G_i + \beta_2 I_i + \xi_i \tag{2.10}$$

Index i refers to observations 1,...;49,137. **TaxMorale** is the dependent variable, and indicates respondents' attitude towards taxation (It takes the value 1, if the individual finds it wrong and punishable not to pay taxes, and 0 if they find it wrong but understandable or not wrong at all not to pay taxes). The vector **G** incorporates socio-economic factors such as employment status, level of education, religion, gender, and age. In the vector **I**, we introduce institutional factors (public and tax administrations); and ξ_i is the error term. As with the dependent variable, some independent variables are recoded. The variable level of education is recorded from 0 to 5 (with 0 = no formal education, 1 = informal education (including Koranic education), 2 = primary education, 3 = secondary education, 4 = other post-secondary qualifications than university and 5 = university education and above); the variable attachment to democracy is recoded into a binary variable which takes the value 1 = attachment to democracy and 0 otherwise. Similarly, the variables part-time worker, unemployed, and unemployed take the value 1 = part-time worker, unemployed, or unemployed, respectively, and 0 otherwise.

2.3.2 Data and descriptive statistics

We have used data from the 2014/2015 Afrobarometer survey. Since 1999, Afrobarometer has organized regular surveys of citizens' opinions across the African continent. The first wave of surveys was conducted in 12 African countries between 1999/2001. Today, the

group is conducting its seventh survey series, which was carried out in 34 countries between 2016/2018.

Table 2.1: Variance inflation factor (VIF)

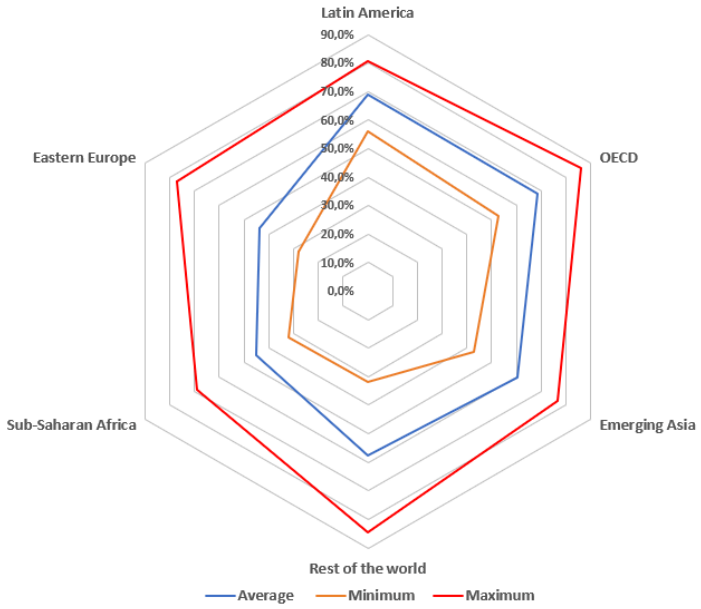
Variables	**VIF**	**1/VIF**
Unemployed	1.59	0.628
Education level	1.55	0.643
Internet	1.51	0.662
Out of work	1.44	0.695
Part-time worker	1.27	0.788
Trust in administration	1.22	0.820
Urban environment	1.21	0.828
Age	1,17	0.857
What taxes pay (difficult to know)	1.16	0.864
Corruption (decrease)	1.15	0.870
Evading taxes (difficult)	1.14	0.881
Satisfaction toward health system	1.13	0.887
Genre	1.05	0.954
Religion	1.03	0.972
Tax authorities Legitimacy	1.03	0.973
Positive attitudes towards taxation	1.03	0.974
Democracy attachment	1.02	0.981

For our study, which focuses on the Sub-Saharan Africa region, the data used in this study is restricted to 30 countries. This base includes a series of questions that reflect taxpayers' perceptions and attitudes toward the tax system, the quality of institutions, and governance, which will enable us to confirm or refute the theoretical foundations and empirical evidence outlined above in the context of Sub-Saharan African countries. Table 2.1 shows the results of the multicollinearity test between the independent variables. Multicollinearity describes the extent to which one variable can predict the effect of another variable. The existence of multicollinearity, i.e., strong correlation between explanatory variables, is a serious problem in multiple regressions, as the impact of the explanatory variables on the dependent variable becomes difficult to identify. A widely used method for detecting and measuring multicollinearity is the variance inflation factor (VIF) for each independent variable (Naser et al., 2002). If the VIF is greater than 10, we conclude that the explanatory variables are highly correlated, which poses a multicollinearity problem. We

can therefore conclude, based on the diagnosis of our model presented in Table 2, that there is no multicollinearity problem, as the variance inflation factor (VIF) for each independent variable is less than 10.

Figure 2.3 shows the level of tax morale in sub-Saharan Africa compared to other regions of the world. In each region, tax morale is measured by the percentage of the population indicating that cheating on taxes can never be justified. We can observe that the level of tax morale is higher in OECD countries (including the USA) and Latin American countries. In the OECD zone, an average of almost 70% of the population says that cheating on taxes can never be justified. In Latin America, an average of 69.1% of respondents believe that nothing can justify tax evasion. Eastern Europe and Sub-Saharan Africa have the lowest levels of tax compliance. The average is 45.1% for sub-Saharan Africa and 43.8% for Eastern Europe. The rest of the world has an average tax compliance rate of 57.6%.

Figure 2.3: Tax morale level in the world



Source: Author based on OECD calculations of WVS data
WVS = World Values Survey, 2010-2014

However, there is a wide disparity within each region, particularly Sub-Saharan Africa, where the proportion of respondents believing that cheating on taxes can never be justified ranges from 32% in the country with the lowest tax compliance to 69.1% in the country with the highest. This disparity is even more pronounced in Eastern European countries. The proportion of respondents who believe that cheating on taxes is never justified ranges from 27.9% in the country with the lowest tax morale to 77.3% in the country with the highest.

2.4 Baseline results

Table 2.3 presents the results of probit estimation explaining the factors influencing tax morale in Sub-Saharan African countries. However, before interpreting the results, it is essential to assess the model's validity. To do so, we estimate the quality of fit using the probability ratio statistic, which is nothing more than the analog of the F-statistic in classical linear models. It is 1413.12 with a critical probability of 0.000. This means that our model is globally significant. Next, we calculate the prediction rate from the confusion matrix below (Table 2.2)

Table 2.2: Confusion matrix, prediction table, and area under the ROC curve

Confusion matrix			
Tax Morale	Predictive value = 0	Predictive values = 1	Total
TaxMorale = 0	15.185	8.762	23.947
TaxMorale = 1	2.318	3.100	5.418
Total	17.503	11.862	29.365
Prediction table			
Tax Morale	Good predictions	False predictions	
TaxMorale = 0	63.41%	36.59%	
TaxMorale = 1	57.22%	42.78%	
Total	62.27%	37.73%	
Area under the ROC curve = 63.21%			

The second part of Table 2.2 from the confusion matrix indicates that our model achieves a good prediction rate of 62.27% and a false prediction rate of 37.73%. Finally, we measure goodness of fit by the area below the ROC curve, which is 63.21%. First, we interpret socio-demographic factors, followed by institutional factors.

2.4.1 Effects of socio-demographic variables

The results suggest that religion is positively correlated with respondents' tax morale. This implies that people who identify with a religious denomination and practice it regularly are relatively more fiscally responsible than others. This relationship could be attributed to the fact that religious people are endowed with good morals. Consequently, they would be respectful of the laws of the republic, particularly tax laws. This good morality of the religious stems from a set of several elements. Religion falls within the realm of faith, thereby developing the principle of conformity to religious teachings.

Table 2.3: Determinants of tax morale in Sub-Saharan African Countries

	TaxMorale = 1 if the citizen believes that cheating on taxes is never justified, 0 Otherwise								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religion	0.013***	0.014***	0.013***	0.013***	0.014***	0.013***	0.014***	0.015***	0.012***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.026***	-0.025***	-0.025***	-0.024***	-0.024***	-0.022***	-0.022***	-0.022***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Age	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education level	0.009***	0.008***	0.010***	0.009***	0.012***	0.011***	0.011***	0.011***	0.009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Part-time worker	-0.047***	-0.046***	-0.046***	-0.044***	-0.043***	-0.042***	-0.041***	-0.038***	-0.031***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Unemployed	-0.053***	-0.050***	-0.047***	-0.039***	-0.041***	-0.040***	-0.045***	-0.044***	-0.036***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Out of work	-0.038***	-0.037***	-0.034***	-0.027***	-0.025***	-0.025***	-0.024***	-0.024***	-0.018**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.018)
Urban	0.003	-0.001	0.005	-0.001	-0.003	-0.002	-0.002	0.003	0.001
	(0.582)	(0.785)	(0.314)	(0.849)	(0.590)	(0.736)	(0.772)	(0.678)	(0.892)
Internet		0.003*	0.004*	0.004*	0.005	0.005***	0.004*	0.005**	0.005**
		(0.086)	(0.056)	(0.065)	(0.016)	(0.010)	(0.065)	(0.033)	(0.048)
Trust in administration			0.027***	0.026***	0.020***	0.018***	0.0019***	0.019***	0.013***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Democracy attachment				0.049***	0.044***	0.044***	0.046***	0.048***	0.035***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Satisfaction toward health system					0.021***	0.019***	0.018***	0.017***	0.012***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Corruption (decrease)						0.010***	0.011***	0.011***	0.011***
						(0.000)	(0.000)	(0.000)	(0.000)
What taxes pay (difficult to know)							-0.015***	-0.025***	-0.018***
							(0.000)	(0.000)	(0.000)
Evading taxes (difficult)								0.035***	0.026***
								(0.000)	(0.000)
Positive attitudes towards taxation									0.061***
									(0.000)
Tax authorities Legitimacy									0.087***
									(0.000)
Wald chi2(.)	308.00	310.18	469.83	485.33	533.49	539.14	548.40	629.73	1474.03
Prob >chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	0.005	0.005	0.008	0.009	0.010	0.011	0.012	0.014	0.039
Observations	45,495	44,873	44,067	40,064	38,81	37,404	33,585	31,838	29,365

Note: Marginal effects; P_values in parentheses; *, ** and *** respectively indicate levels of significance of 10%, 5% and 1%. Out of work refers to individuals who are unemployed and not actively seeking employment.

All religions are against theft and command respect for the laws of the republic. Some religions go even further, clearly recommending the payment of taxes. For example, the Christian religion through the book of Luke, chapter 20, verses 22 to 25 [4] orders the payment of taxes. The marginal effect reveals that respondents with a regular religious practice are 1.2% more likely to be more compliant, i.e., to have higher tax compliance. This result aligns with most previous studies, such as Torgler (2006). The estimates reveal that women have lower tax compliance than men, i.e., they are less likely to comply with their tax obligations than men. The marginal effect shows that women are 2% less likely to comply with tax obligations than men. This result is contrary to the OECD's global analysis, 2019 (developing countries worldwide), which affirms that women have a higher level of tax civic-mindedness

[4] Luke 20, verse 22: Are we allowed, or not, to pay tribute to Cesar... verse 25: Then he said to them, "Render therefore to Cesar the things that are Cesar's, and to God the things that are God's".

than men. This paradox may be due to the concentration of women in the informal sector in Sub-Saharan Africa or to the relatively lower level of schooling compared with men in OECD countries. This can lead to a lack of knowledge of tax laws or low economic power.

This suggests that as taxpayers age, the likelihood of them becoming compliant increases. This result can be attributed to the fact that older individuals, over time, become more risk-averse and demonstrate a higher commitment to social norms than younger individuals. Moreover, older people are more reliant on public goods and services, which are a quid pro quo for taxes, making them more willing to pay taxes than younger individuals. These results confirm earlier findings such as those of Tittle (1980). This implies that more educated people have higher tax citizenship. This observation can be attributed to the fact that educated individuals can read and understand tax laws, including the taxes to be paid according to the taxpayer's profile, the declaration and payment processes, payment deadlines, and penalties for tax evasion. They are also aware of the importance of taxes in public policy and the provision of public goods and services. The marginal effect shows that educated people have a 0.9% higher probability of having a higher level of tax morale. These results confirm the findings of Cyan et al. (2016) and Gbadago and Awunyo-Vitor (2015). The results also show that part-time work, unemployment, and joblessness are negatively correlated with tax civic-mindedness. In other words, part-time workers, the unemployed, and the jobless (unemployed who are not looking for work) are less likely to comply with tax laws.

2.5 Effects of institutional variables

Analysis of the institutional variables shows that trust in public administration and attachment to democracy are positively correlated with tax morale. This implies that respondents who trust the administration and those who find democracy the best form of governance find no justification for cheating on taxes. Indeed, trust in public administration strengthens the fiscal contract between taxpayers and public authorities. Democracy requires compliance with constitutional requirements and allows taxpayers to participate in political decisions (directly or indirectly) through popular votes, which can reinforce acceptance of government decisions and, in turn, increase the willingness to contribute to the cost of public goods and services. Based on the marginal effect, individuals who trust the administration are 1.3% more likely to be fiscally compliant, while those who are attached to democracy are 3.5% more likely to meet their tax obligations. These results confirm Prinz (2002) theory [5] and

[5] Institutions that respect citizens' preferences will have more support from the population than a state that acts like a Leviathan.

the empirical findings of Pommerehne, Hart, Frey, et al. (1994), among others. The results also show that satisfaction with the health care system, which measures the impact of public goods and services, is positively correlated with tax morale. As a result, respondents who are satisfied with the government's improvement of basic health services believe that there is no justification for evading taxes. Otherwise, the quality of public goods and services has a positive impact on respondents' tax compliance. This relationship is explained by the fact that good use of public revenues encourages taxpayers to participate in financing goods and services. The marginal effect shows that respondents who are satisfied with public goods and services are 1.5% more likely to have high tax morale.

In contrast to the reduction in corruption, the difficulty of knowing what taxes to pay (complexity of the tax system) is negatively correlated with tax compliance. This suggests that individuals who find it challenging to understand their tax obligations, or who struggle with tax law, are less likely to comply with their tax responsibilities. This effect can be attributed to a lack of communication about tax law and a general lack of awareness among taxpayers regarding the benefits of paying taxes. The marginal effect reveals that people who find the tax system inaccessible are 1% less likely to pay taxes. Finally, the legitimacy of tax authorities has a positive impact on taxpayers' civic-mindedness. Suppose taxpayers find the tax authorities legitimate, i.e., honest, fair, informative, and treat taxpayers as partners rather than inferiors in a hierarchical relationship. In that case, taxpayers are more inclined to pay taxes honestly. The marginal effect indicates that individuals who perceive tax authorities as cooperative are 8.8% more likely to comply with the tax law. For example, Murphy (2004) studied the effect on taxpayer behavior of the use of authoritarian strategies by tax officials and found that punitive enforcement measures can induce widespread resistance to decisions and rules.

2.6 Robustness checks

2.6.1 Anglo-Saxon culture versus Francophone culture

In this section, we estimate the effect of cultural differences on taxpayer tax morale. Our sample comprises Anglophone, Francophone, and Luxophone countries. These groups of countries have different cultures in terms of social norms, laws, tax cultures, and institutions. Francophone countries, which are essentially France's former colonies, have inherited from France a centralized and hierarchical administrative structure and a codified legal system inspired by Napoleon, in which the State plays a significant role in the economy. Under these conditions, taxes are often perceived as a constraint imposed from above, which can

lead to mistrust, feelings of injustice, and increased recourse to the informal economy.

Table 2.4: Cultural differences and tax morale: Anglo-Saxon culture versus Francophone culture

	TaxMorale = 1 if the citizen believes that cheating on taxes is never justified, 0 Otherwise								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cultural	0.069***	0.070***	0.068***	0.068***	0.066***	0.065***	0.069***	0.066***	0.067***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Religion	0.009***	0.010***	0.009***	0.009***	0.010***	0.010***	0.011***	0.011***	0.009***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.023***	-0.022***	-0.022***	-0.021***	-0.021***	-0.020***	-0.020***	-0.019***	-0.018***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.003)
Age	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education level	0.012***	0.011***	0.014***	0.013***	0.015***	0.015***	0.014***	0.014***	0.012***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Part-time worker	-0.050***	-0.048***	-0.048***	-0.046***	-0.045***	-0.045***	-0.044***	-0.040***	-0.033***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Unemployed	-0.057***	-0.054***	-0.051***	-0.044***	-0.045***	-0.044***	-0.050***	-0.048***	-0.042***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Out of work	-0.050***	-0.048***	-0.046***	-0.039***	-0.037***	-0.036***	-0.036***	-0.035***	-0.030***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urban	-0.002	-0.007	-0.0003	-0.007	-0.008	-0.007	-0.007	-0.002	-0.004
	(0.675)	(0.175)	(0.956)	(0.219)	(0.136)	(0.220)	(0.252)	(0.705)	(0.489)
Internet		0.004**	0.005**	0.005**	0.006***	0.006***	0.005**	0.006***	0.006**
		(0.018)	(0.012)	(0.012)	(0.003)	(0.002)	(0.014)	(0.008)	(0.012)
Trust in administration			0.027***	0.026	0.019***	0.018***	0.019***	0.019***	0.013***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Democracy attachment				0.048***	0.044***	0.044***	0.047***	0.048***	0.036***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Satisfaction toward health system					0.024***	0.023***	0.021***	0.020***	0.016***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Corruption (decrease)						0.005**	0.005**	0.005**	0.005**
						(0.024)	(0.044)	(0.026)	(0.037)
What taxes pay (difficult to know)							-0.014***	-0.024***	-0.017***
							(0.000)	(0.000)	(0.000)
Evading taxes (difficult)								0.034***	0.025***
								(0.000)	(0.000)
Positive attitudes towards taxation									0.059***
									(0.000)
Tax authorities Legitimacy									0.090***
									(0.000)
Wald chi2(.)	466.96	469.88	618.89	624.05	660.55	652.01	664.26	730.45	1564.35
Prob >chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	0.008	0.008	0.010	0.011	0.012	0.013	0.014	0.017	0.041
Observations	45,495	44,873	44,067	40,064	38,81	37,404	33,585	31,838	29,365

Note: Marginal effects; P_values in parentheses; *, ** and *** respectively indicate levels of significance of 10%, 5% and 1%. Out of work refers to individuals who are unemployed and not actively seeking employment.

Everything will depend on the level of trust taxpayers have in the State (in anglophone countries) and the State's ability to compel citizens to meet their tax obligations (in francophone countries). This difference is not without effect on taxpayers' tax culture. Measuring this effect involves estimating which groups of countries exhibit higher tax compliance. After excluding the two Luxophone countries, we formed two groups: one comprising Anglophone countries and the other comprising Francophone countries. We then create a dummy variable, noted "Cultural" that takes the value 1 if the respondent comes from a francophone country and 0 otherwise. The results are presented in Table 2.4.

Conversely, Anglophone countries, former British colonies, have inherited a more de-

centralised political and economic culture: a less centralized administration, a legal system inspired by common law, and greater encouragement of entrepreneurship. As a result, citizens are more aware of the local impact of their taxes, which strengthens their trust in the State and encourages voluntary payment. Thus, a priori, the English-speaking model tends to foster a culture of individual responsibility and accountability. In contrast, the French-speaking model, by reinforcing the distance between the State and taxpayers, can discourage spontaneous compliance with taxation, even if other factors (good governance, transparency, education) can mitigate these effects. Thus, a priori, the English-speaking model tends to foster a culture of individual responsibility and accountability. In contrast, the French-speaking model, by reinforcing the distance between the State and taxpayers, can discourage spontaneous compliance with taxation, even if other factors (good governance, transparency, education) can mitigate these effects.

The estimated effect for our "Cultural" variable is positive and highly significant. This suggests that citizens of francophone countries have higher tax morale than those of anglophone countries. This result may seem counterintuitive, but several reasons could explain it. Francophone countries have often inherited more centralised legal and administrative systems from their former colonial powers, which may have led to more robust tax structures and better enforcement of tax laws (Cogneau et al., 2021). In addition, francophone countries in sub-Saharan Africa also benefit from significant technical assistance from former colonial powers and francophone international organisations, which may contribute to strengthening administrative and fiscal performance. Francophone countries often have administrative and legal systems modelled on the French system. As a result, they are highly bureaucratic, more centralised, and have stronger government control, which may facilitate taxpayers' compliance with their tax obligations. This higher level of tax compliance, therefore, reflects both institutional and administrative constraints, as well as a historical socialization to the idea of a strong, redistributive state.

2.6.2 ECOWAS/WAEMU versus others

One of the primary objectives of the Economic Community of West African States (ECOWAS[6]) and West African Economic and Monetary Union (WAEMU[7]) is the effective harmonization of the tax legislation of member countries. The ECOWAS and WAEMU Commissions, under the supervision of the Council of Ministers of the Zones, have issued

[6]ECOWAS member countries are: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo

[7]UEMOA member countries are: Benin, Burkina Faso, Ivory Coast, Gambia, Mali, Niger, Senegal, and Togo

important directives aimed at harmonizing the tax legislation of member countries.

Table 2.5: Determinants of tax morale: ECOWAS countries versus others

	TaxMorale = 1 if the citizen believes that cheating on taxes is never justified, 0 otherwise.								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
ECOWAS	0.029***	0.028***	0.034***	0.023***	0.019***	0.017***	0.019***	0.020***	0.032***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.003)	(0.002)	(0.001)	(0.000)
Religion	0.011***	0.012***	0.011***	0.011***	0.012***	0.012***	0.013***	0.013***	0.010***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.025***	-0.024***	-0.024***	-0.023***	-0.023***	-0.022***	-0.022***	-0.021***	-0.019***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Age	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education level	0.011***	0.010***	0.013blue	0.011***	0.013***	0.013***	0.012***	0.012***	0.012***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Part-time worker	-0.046***	-0.045***	-0.045***	-0.043***	-0.043***	-0.042***	-0.041***	-0.038***	-0.030***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)
Unemployed	-0.053***	-0.050***	-0.047***	-0.039***	-0.041***	-0.040***	-0.045***	-0.044***	-0.037***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Out of work	-0.039***	-0.037***	-0.035***	-0.028***	-0.026***	-0.025***	-0.025***	-0.025***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.010)
Urban	-0.0001	-0.004	0.002	-0.003	-0.005	-0.003	-0.003	0.001	-0.002
	(0.987)	(0.427)	(0.675)	(0.588)	(0.421)	(0.572)	(0.604)	(0.865)	(0.794)
Internet		0.003*	0.004**	0.004*	0.005**	0.005***	0.004*	0.005**	0.005**
		(0.080)	(0.049)	(0.055)	(0.014)	(0.009)	(0.058)	(0.030)	(0.040)
Trust in administration			0.029***	0.027***	0.021***	0.018***	0.019***	0.020***	0.014***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Democracy attachment				0.047***	0.043***	0.043***	0.045***	0.046***	0.033***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Satisfaction toward health system					0.022***	0.020***	0.018***	0.018***	0.013***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Corruption (decrease)						0.010***	0.010***	0.010***	0.010***
						(0.000)	(0.000)	(0.000)	(0.000)
What taxes pay (difficult to know)							-0.014***	-0.024***	-0.017***
							(0.000)	(0.000)	(0.000)
Evading taxes (difficult)								0.036***	0.027***
								(0.000)	(0.000)
Positive attitudes towards taxation									0.062***
									(0.000)
Tax authorities Legitimacy									0.087***
									(0.000)
Wald chi2(.)	341.70	341.05	513.32	504.43	547.15	549.24	559.19	641.50	1500.76
Prob >chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	0.006	0.006	0.009	0.009	0.010	0.011	0.012	0.015	0.039
Observations	45,482	44,86	44,054	40,052	38,799	37,395	33,578	31,832	29,359

Note: Marginal effects; P_values in parentheses; *, ** and *** respectively indicate levels of significance of 10%, 5% and 1%. Out of work refers to individuals who are unemployed and not actively seeking employment.

The marginal effect shows that an individual from the WAEMU zone is 1.5% more likely to believe that there is no justification for cheating on taxes (see Table 2.6). We can therefore conclude that ECOWAS and WAEMU tax coordination have a positive impact on taxpayers' intrinsic motivation to pay tax. The adoption of community acts by countries can affect their tax performance. For example, the 1998 WAEMU directive **(02/998/CM/WAEMU)**, which aimed to harmonize the application of VAT in member states, introduced several reforms. These reforms concern, among other things, the VAT rate, which has been reduced from a multiple rate to a single rate of between 15% and 20%; standard rules for calculating the tax base (taxable transactions); and the reimbursement of VAT credits. These various

reforms, among others, lead to better tax management, encouraging taxpayers to meet their tax obligations.

Table 2.6: Determinants of tax morale: WAEMU countries versus others

	TaxMorale = 1 if the citizen believes that cheating on taxes is never justified, 0 otherwise.								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
WAEMU	0.034***	0.032***	0.028***	0.025***	0.022***	0.018**	0.023***	0.018**	0.015*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.012)	(0.002)	(0.000)	(0.054)
Religion	0.011***	0.012***	0.012***	0.012***	0.012***	0.012***	0.013***	0.014***	0.011***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.025***	-0.024***	-0.024***	-0.023***	-0.023***	-0.022***	-0.021***	-0.021***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Age	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education level	0.011***	0.010***	0.012***	0.011***	0.013***	0.013***	0.012***	0.012***	0.010***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Part-time worker	-0.047***	-0.046***	-0.046***	-0.044***	-0.043***	-0.042***	-0.041***	-0.038***	-0.030***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Unemployed	-0.054***	-0.051***	-0.048***	-0.040***	-0.042***	-0.041***	-0.045***	-0.044***	-0.037***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Out of work	-0.042***	-0.040***	-0.038***	-0.030***	-0.028***	-0.027***	-0.026***	-0.026***	-0.020**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.010)
Urban	0.001	-0.003	0.004	-0.002	-0.004	-0.003	-0.003	0.002	0.001
	(0.816)	(0.555)	(0.476)	(0.664)	(0.449)	(0.615)	(0.633)	(0.782)	(0.986)
Internet		0.004*	0.004**	0.004**	0.005**	0.005***	0.004**	0.005**	0.005**
		(0.061)	(0.041)	(0.048)	(0.012)	(0.008)	(0.049)	(0.027)	(0.040)
Trust in administration			0.027***	0.026***	0.020***	0.018***	0.019***	0.019***	0.013***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Democracy attachment				0.1201***	0.043***	0.043***	0.045***	0.047***	0.035***
				(0.015)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Satisfaction toward health system					0.021***	0.020***	0.018***	0.017***	0.012***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Corruption (decrease)						0.009***	0.009***	0.010***	0.010***
						(0.000)	(0.000)	(0.000)	(0.000)
What taxes pay (difficult to know)							-0.014***	-0.024***	-0.018***
							(0.000)	(0.000)	(0.000)
Evading taxes (difficult)								0.035***	0.026***
								(0.000)	(0.000)
Positive attitudes towards taxation									0.061***
									(0.000)
Tax authorities Legitimacy									0.087***
									(0.000)
Wald chi2(.)	336.39	335.10	488.83	499.05	544.97	546.16	558.55	636.24	1477.43
Prob >chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	0.005	0.005	0.008	0.009	0.010	0.011	0.012	0.015	0.039
Observations	45,495	44,873	44,067	40,064	38,81	37,404	33,585	31,838	29,365

Note: Marginal effects; P_values in parentheses; *, ** and *** respectively indicate levels of significance of 10%, 5% and 1%. Out of work refers to individuals who are unemployed and not actively seeking employment.

The adoption of these community acts by countries, based on reforms, can affect their fiscal performance. In this section, we estimate the effect of this fiscal harmonization or coordination within the ECOWAS zone and the WAEMU zone on citizens' tax morale. In other words, are ECOWAS/UEMOA countries more fiscally compliant than countries outside these integration zones? We have chosen these two integration zones because they are the most integrated in Sub-Saharan Africa. To check whether ECOWAS tax coordination affects citizens' fiscal civic-mindedness, we have created a dummy variable labeled "ECOWAS", which takes the value 1 if the country belongs to the ECOWAS integration zone

and 0 otherwise, i.e., countries outside the zone. By introducing this variable into the basic model, we note that the estimated marginal effect for the"ECOWAS" variable is positive and significant. This implies that ECOWAS community tax coordination has a positive impact on the civic-mindedness of taxpayers. The marginal effect indicates that an individual in the ECOWAS zone is 3.2% more likely to believe that there is no justification for tax evasion (see Table 2.5). Additionally, to verify whether this effect is also applicable to WAEMU tax coordination, we create another dummy variable, "WAEMU", which takes the value 1 if the country is part of the WAEMU zone and 0 otherwise. We introduce this variable into our basic model, and the results show that the effect associated with the "WAEMU" variable is positive and significant. Apart from tax reforms, other reforms can also improve taxpayer morale. Under the ECOWAS convergence criteria, the budget deficit must be below 3% of GDP, inflation must be below 10%, debt must be below 70% of GDP, and tax revenue mobilization must be at least 20% of GDP. These reforms can improve the performance of the signatory states and strengthen the social contract between the population and the government. Indeed, all community reforms that promote good political, economic, and institutional governance —key determinants of tax morale —can only motivate citizens to finance public goods by paying taxes.

2.6.3 Sensitivity analysis

In this section, we answer the question of whether our results are robust to the diversity of the sub-samples in our study. We thus conduct a sensitivity analysis to determine whether our primary results are also applicable to the sub-samples in our study. In other words, we aim to determine whether the main factors identified in our basic model as the primary determinants of fiscal civic-mindedness remain valid within the framework of the sub-samples. Consequently, we first distinguish between two sub-samples: anglophone and francophone countries. We then examine the cases of ECOWAS and WAEMU integration zones.

Table 2.10 in the appendix shows the results for the anglophone sub-group. The results obtained from this table confirm the positive correlation between religion, age, and taxpayer tax morale. Those with regular religious practices, as well as older individuals, tend to be more compliant with their tax obligations. The negative impact of part-time work and unemployment is also confirmed. Part-time workers, the unemployed, and those out of work are more likely to evade taxes. On the other hand, although the directions of the relationships between education level, female gender, and taxpayer tax morale have not changed, their coefficients are statistically insignificant in the context of Anglophone countries. Institutional variables remain statistically significant. The negative impact on tax compliance of

the perception that it is difficult to know how to pay taxes remains valid. Trust in the administration, the decline in corruption, satisfaction with public services, and the legitimacy of tax authorities remain determining factors in taxpayers' tax morale. Finally, we note that the use of the Internet, which is not significant in the context of all sub-Saharan African countries, is significant for sub-groups in anglophone countries. We can therefore postulate that taxpayers who frequently use the Internet believe that there is no justification for tax evasion. Table 2.11 in the appendix shows the results for the subgroup of francophone countries. The variables remain significant overall, as in the results for all Sub-Saharan African countries. Employment status (including part-time work, unemployment, and being out of work) can impact tax morale. The same applies to women. They are less willing to pay taxes than men. Older people are more compliant than younger ones. Difficulty in knowing what taxes to pay hurts taxpayers' tax morale. Those who find it difficult to know how and what taxes to pay are more likely to cheat the taxman. The other institutional variables remain positively correlated with tax compliance. Finally, dividing our sample into two sub-groups does not fundamentally change the results from those obtained for all Sub-Saharan African countries. The most important determinants also remain institutional ones. Finally, the overall results for the ECOWAS and WAEMU countries (see Tables 2.12 and 2.9 in the appendix) are consistent with those obtained for Sub-Saharan Africa. The main determinants are trust in the administration, attachment to democracy, satisfaction with public services, legitimacy of tax authorities, and accessibility of the tax system, which remain valid for both ECOWAS and WAEMU. The same applies to the professional status of taxpayers.

2.6.4 Alternative dependent variable

As mentioned above, we investigate the robustness of our analysis using an alternative measure of tax compliance, which we have named "TaxConsent".

We measure taxpayers' tax morale by their willingness to pay taxes, by their answers to the question: "Which of the following statements is closer to your opinion? Choose **affirmation 1**: citizens must pay their taxes to the State for the country to develop, or **affirmation 2**: the government can find sufficient resources for development without having to tax citizens. Do you agree or strongly agree? We cluster the responses into a binary variable labeled "TaxConsent", which takes the value 1 if the respondent agrees or strongly agrees with the statement 1, and 0 otherwise. Next, we modify some variables in the basic model using alternative proxies. We replace "satisfaction toward health system" with "inequality reduction", which measures the government's ability to reduce the gap between rich and poor. Next, we introduce a new variable, "Migrant remittances", which measures the frequency with which

the taxpayer or someone in his or her household receives a transfer from a relative living outside the country. The results presented in Table 2.7 generally confirm the results of the basic model. Migrant remittances are positively correlated with tax consent.

Table 2.7: Determinants of Tax Consent in Sub-Saharan African Countries

	TaxConsent = 1 if citizens must pay their taxes to the state for the country to develop								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religion	0.013***	0.012***	0.012***	0.012***	0.011***	0.010***	0.010***	0.009***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.026***	-0.024***	-0.024***	-0.018***	-0.019***	-0.018***	-0.018***	-0.019***	-0.015***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.006)
Age	0.0002	0.0004**	0.0004*	0.0003	0.0004**	0.0004**	0.0001	0.0001	-0.0001
	(0.170)	(0.020)	(0.057)	(0.149)	(0.036)	(0.047)	(0.313)	(0.514)	(0.948)
Education level	0.021***	0.017***	0.018***	0.020***	0.024***	0.024***	0.025***	0.024***	0.023***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Part-time worker	-0.012*	-0.011	-0.011	-0.008	-0.003	-0.001	0.003	0.006	0.002
	(0.089)	(0.102)	(0.109)	(0.294)	(0.690)	(0.868)	(0.675)	(0.418)	(0.822)
Unemployed	-0.025***	-0.021***	-0.019***	-0.015***	-0.016***	-0.016***	-0.015**	-0.012*	-0.014**
	(0.000)	(0.000)	(0.001)	(0.008)	(0.007)	(0.009)	(0.015)	(0.052)	(0.030)
Urban	-0.0002	-0.0002	0.0004	0.0003	-0.0003	0.0003	-0.0003	0.0003	-0.0003
	(0.803)	(0.972)	(0.715)	(0.0795)	(0.946)	(0.991)	(0.980)	(0.758)	(0.992)
Migrant remistance	0.007***	0.006***	0.007*****	0.007***	0.009***	0.009***	0.009***	0.011***	0.012***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Internet		0.007***	0.008***	0.006***	0.008***	0.007***	0.005**	0.005**	0.003
		(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.018)	(0.012)	(0.152)
Trust in administration			0.016***	0.018***	0.014***	0.012***	0.012***	0.010***	0.008***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Democracy attachment				0.076***	0.072***	0.073***	0.079***	0.075***	0.067***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inequality reduction					0.015***	0.013***	0.008***	0.009***	0.007**
					(0.000)	(0.000)	(0.000)	(0.006)	(0.024)
Corruption (decrease)						0.006***	0.006***	0.006***	0.006***
						(0.000)	(0.000)	(0.000)	(0.006)
(0.024) Evading taxes (difficult)							-0.034***	-0.034***	-0.032***
							(0.000)	(0.000)	(0.000)
Positive attitudes towards taxation								0.043***	0.032***
								(0.000)	(0.000)
Tax authorities Legitimacy									0.099***
									(0.000)
Wald chi2(.)	338.30	336.55	402.89	574.55	646.75	632.91	738.92	891.36	1808.30
Prob >chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	0.006	0.006	0.007	0.011	0.013	0.013	0.018	0.022	0.041
Observations	46,467	45,804	44,955	40,751	39,03	37,63	33,512	33,118	30,878

Note: Marginal effects; P_values in parentheses; *, ** and *** respectively indicate levels of significance of 10%, 5% and 1%. Out of work refers to individuals who are unemployed and not actively seeking employment.

Otherwise, people who regularly receive transfers feel that there is no justification for tax evasion. The marginal effect indicates that a taxpayer who regularly receives transfers is 1.2% more likely to declare that tax evasion is not justified. This relationship can be attributed to a relatively good economic situation, enabling them to pay the taxes due. Reducing inequality has a positive impact on taxpayers' willingness to pay tax. People who think the gap between rich and poor has decreased sufficiently declare that there is no justification for cheating on taxes. According to the marginal effect, there is a 0.7% higher chance that taxpayers who feel the gap between the rich and the poor has declined significantly will be willing to pay tax.

2.7 Conclusion and policy implications

This paper examines the relationships between taxpayers' attitudes and perceptions of tax citizenship and various socio-economic and institutional factors in Sub-Saharan Africa. To do so, we perform a microeconometric analysis using data from the sixth Afrobarometer survey conducted in 2014/2015. Binary Probit regressions provide empirical evidence that in Sub-Saharan Africa, socio-economic and institutional factors are determinants of tax morale. For socio-economic variables, the results show that people who claim a religious identity or faith, who are relatively older, are more willing to pay taxes.

Similarly, individuals with higher levels of education tend to have a better understanding of the importance of taxes. They are therefore more likely to contribute to the financing of public goods and services by paying taxes. On the other hand, women are less fiscally compliant than men. Part-time workers, the unemployed, and individuals out of work are more likely to engage in tax evasion. Institutional factors, including public policies and the way the State operates, have a significant impact on citizens' tax compliance. People who have regular access to the Internet, those who trust public administration, and those who believe that democracy is the best form of governance are more willing to pay taxes.

Improved public service delivery (satisfaction with the health and education systems, etc.) also appears to be an important factor in increasing tax compliance. Otherwise, citizens who are satisfied with the delivery of public services are more willing to finance public spending by paying taxes. Additionally, taxpayers who believe that the State is effectively combating corruption and has achieved a sufficient reduction in corruption tend to have a higher level of tax morale. The legitimacy of tax authorities is also a determining factor in tax compliance. The more legitimate taxpayers feel they are, the more they are willing to cooperate and pay taxes voluntarily. Similarly, taxpayers who find it very difficult to cheat the tax administration are less tempted to cheat on their taxes. Finally, the feeling that it is difficult to know how to pay taxes decreases tax morale. It also shows that tax coordination in ECOWAS and WAEMU has a positive impact on taxpayers' compliance in these zones. As a result, tax compliance is higher in the ECOWAS and WAEMU integration zones than in countries outside them. A comparative analysis of tax compliance levels between Anglophone and Francophone countries reveals that it is higher in Francophone countries. Given these results, some policies can be implemented to improve fiscal discipline.

Confirming the existence of links between socio-economic factors and tax compliance is of practical interest, as it validates the idea that the factors considered can be used to establish taxpayer profiles and better target efforts to improve tax compliance. For example,

taxpaying groups that are more likely to evade taxes will be given priority in audits, as well as in awareness-raising programs on the merits of paying taxes. As regards the negative effect on tax compliance of the perception that it is difficult to know how to pay taxes, simplifying the tax payment process can increase willingness to pay. Educational programs that explain which taxes to pay based on the taxpayer's profile, how to pay them, and the benefits of paying taxes are one way to make the tax system more accessible. Secondly, the use of ICTs (e.g., mobile money tax payment) can not only simplify the tax payment process but also strengthen the integrity of the tax system by reducing opportunities for corruption. Finally, "small taxes", which are not the primary means of raising tax revenues, but which are paid by a large proportion of the population, in this case, women, could play an educational role, and therefore a means of improving taxpayers' tax morale. Given that satisfaction with public goods and services appears to be an important factor in improving tax compliance, the effectiveness of public authorities in transforming taxes into beneficial spending can improve taxpayer discipline. The institutional factors of fiscal morale share the commonality of functioning governance and its ability to provide for the needs of its citizens. Thus, the fight against corruption, the entrenchment of democracy, and, in brief, good governance would strengthen trust between taxpayers and the government, and can only be beneficial for fiscal discipline. For ECOWAS and/or WAEMU countries, implementing community reforms can only improve tax compliance. In other words, good governance (the quality of institutions, the entrenchment of democracy, the fight against corruption, the quality of public services, etc.) determines taxpayers' willingness to pay taxes.

As indicated above, this chapter 2 analyses the socio-economic and demographic determinants of tax morale of individuals in sub-Saharan African countries. What about the determinants of corporate tax morale ? Chapter 3 below answers this question.

2.8 Appendix

Table 2.8: Description and source of variables

Variable	Decription	Source
Tax morale	Refers to respondents who consider it wrong and punishable not to pay taxes	Afrobarometer data 2014/2015
Tax consent	Refers to respondents who agree that citizens should pay taxes to the state for our country to develop	
Unemployed	Refers to persons who are unemployed and actively seeking employment	
Education level	Refers to the level of education of respondents	
Internet	Refers to respondents who report having access to the internet every day	
Out of work	Refers to persons who are unemployed and not actively seeking employment	
Part-time worker	Refers to part-time workers	
Trust in administration		
Urban environment	Refers to respondents who live in urban zones	
Age	Age of respondent	
What taxes pay (difficult to know)	Refers to respondents who find it difficult to know what taxes to pay according to the taxpayer's profile. In brief, those who find the tax system complex	
Corruption (decrease)	Refers to respondents who estimate that corruption has decreased	
Evading taxes (difficult)	Refers to respondents who find it difficult to know how to evade tax. In other words, the tax system has fewer loopholes	
Satisfaction toward health system	Refers to respondents who consider themselves satisfied with the healthcare system	
Genre	Sex of respondent (male/female)	
Religion	Refers to respondents who claim to belong to a religious denomination and regularly engage in religious practices.	
Democracy attachment	Refers to respondents who believe that democracy is preferable to any other form of government	

Table 2.9: Determinants of tax morale in WAEMU countries

	TaxMorale = 1 if the citizen believes that cheating on taxes is never justified, 0 otherwise								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religion	0.018***	0.017***	0.016***	0.014***	0.014***	0.015***	0.013***	0.012***	0.003
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.342)
Female	-0.067***	-0.062***	-0.059***	-0.050***	-0.049***	-0.044***	-0.038***	-0.043***	-0.045***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.001)	(0.001)
Age	0.001	0.001*	0.001*	0.001	0.001*	0.001*	0.001*	0.001*	0.001
	(0.157)	(0.055)	(0.080)	(0.101)	(0.058)	(0.064)	(0.050)	(0.062)	(0.225)
Education level	0.020***	0.011**	0.016***	0.015***	0.014***	0.013***	0.012**	0.012**	0.013**
	(0.000)	(0.018)	(0.000)	(0.001)	(0.003)	(0.008)	(0.022)	(0.025)	(0.017)
Part-time worker	-0.024	-0.025	-0.028	-0.019	-0.019	-0.023	-0.026	-0.027	-0.035
	(0.296)	(0.290)	(0.239)	(0.429)	(0.439)	(0.360)	(0.318)	(0.318)	(0.221)
Unemployed	-0.052***	-0.051***	-0.054***	-0.051***	-0.064***	-0.067***	-0.077***	-0.076***	-0.062***
	(0.005)	(0.007)	(0.004)	(0.007)	(0.001)	(0.001)	(0.000)	(0.000)	(0.005)
Out of work	-0.032**	-0.033**	-0.036**	-0.030*	-0.036**	-0.041**	-0.051***	-0.055***	-0.043**
	(0.042)	(0.039)	(0.025)	(0.063)	(0.028)	(0.015)	(0.003)	(0.002)	(0.023)
Urban	-0.037***	-0.050***	-0.036***	-0.038***	-0.040***	-0.040***	-0.038***	-0.031**	-0.036**
	(0.003)	(0.000)	(0.005)	(0.003)	(0.002)	(0.003)	(0.007)	(0.034)	(0.018)
Internet		0.029***	0.028***	0.028***	0.028***	0.027***	0.027***	0.030***	0.023***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Trust in administration			0.048***	0.050***	0.039***	0.034***	0.031***	0.031***	0.023***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Democracy attachment				0.081***	0.088***	0.086***	0.082***	0.078***	0.081***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Satisfaction toward health system					0.061***	0.056***	0.048***	0.050***	0.042***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Corruption (decrease)						0.016***	0.015***	0.017***	0.010**
						(0.001)	(0.002)	(0.001)	(0.044)
What taxes pay (difficult to know)							-0.026***	-0.048***	-0.034***
							(0.000)	(0.000)	(0.000)
Evading taxes (difficult)								0.079***	0.072***
								(0.000)	(0.000)
Positive attitudes towards taxation									0.084***
									(0.000)
Tax authorities Legitimacy									0.102***
									(0.000)
Wald chi2(.)	127.23	152.82	248.07	269.18	345.30	344.33	304.34	373.47	613.18
Prob >chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	0.012	0.014	0.023	0.026	0.034	0.036	0.035	0.048	0.084
Observations	8,258	8,189	8,084	7,746	7,716	7,373	6,715	6,297	5,86

Note: Marginal effects; P_values in parentheses; *, ** and *** respectively indicate levels of significance of 10%, 5% and 1%. Out of work refers to the unemployed who are not looking for work.

Table 2.10: Determinants of tax morale in anglophone countries

	TaxMorale = 1 if the citizen believes that cheating on taxes is never justified, 0 otherwise								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religion	0.002	0.002	0.003	0.003	0.004*	0.004*	0.006***	0.008***	0.006***
	(0.321)	(0.197)	(0.122)	(0.107)	(0.063)	(0.076)	(0.003)	(0.001)	(0.004)
Female	-0.010*	-0.010	-0.011*	-0.009	-0.010	-0.010	-0.011	-0.009	-0.007
	(0.084)	(0.112)	(0.065)	(0.151)	(0.117)	(0.127)	(0.129)	(0.210)	(0.335)
Age	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Education level	0.003	0.002	0.003	0.001	0.004	0.005	0.004	0.003	0.002
	(0.334)	(0.543)	(0.245)	(0.751)	(0.181)	(0.162)	(0.223)	(0.414)	(0.527)
Part-time worker	-0.060***	-0.060***	-0.058***	-0.057***	-0.057***	-0.054***	-0.053***	-0.050***	-0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)
Unemployed	-0.046***	-0.044***	-0.040***	-0.032***	-0.033***	-0.034***	-0.036***	-0.034***	-0.032***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Out of work	-0.063***	-0.061***	-0.057***	-0.047***	-0.045***	-0.043***	-0.040***	-0.036***	-0.031***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Urban	0.011*	0.007	0.012*	0.004	0.002	0.003	0.001	0.004	0.004
	(0.077)	(0.261)	(0.064)	(0.547)	(0.744)	(0.663)	(0.883)	(0.622)	(0.593)
Internet		0.003	0.003	0.005*	0.006**	0.006**	0.005*	0.006**	0.006**
		(0.262)	(0.177)	(0.052)	(0.011)	(0.011)	(0.068)	(0.030)	(0.034)
Trust in administration			0.020***	0.018***	0.011***	0.009***	0.011***	0.011***	0.006*
			(0.000)	(0.000)	(0.000)	(0.005)	(0.001)	(0.001)	(0.072)
Democracy attachment				0.052***	0.044***	0.044***	0.047***	0.052***	0.031***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Satisfaction toward health system					0.020***	0.019***	0.019***	0.018***	0.015***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Corruption (decrease)						0.010***	0.009***	0.009***	0.010***
						(0.008)	(0.004)	(0.005)	(0.004)
What taxes pay (difficult to know)							-0.009**	-0.014***	-0.010**
							(0.017)	(0.001)	(0.039)
Evading taxes (difficult)								0.020***	0.011**
								(0.000)	(0.023)
Positive attitudes towards taxation									0.060***
									(0.000)
Tax authorities Legitimacy									0.088***
									(0.000)
Wald chi2(.)	138.90	134.69	182.78	195.61	212.80	213.30	213.09	228.61	743.28
Prob >chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	0.004	0.004	0.005	0.006	0.007	0.007	0.008	0.009	0.033
Observations	28,49	28,047	27,585	24,593	23,499	22,856	20,168	19,121	17,589

Note: Marginal effects; P_values in parentheses; *, ** and *** respectively indicate levels of significance of 10%, 5% and 1%. Out of work refers to the unemployed who are not looking for work.

Table 2.11: Determinants of tax morale in francophone countries

	TaxMorale = 1 if the citizen believes that cheating on taxes is never justified, 0 otherwise.								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religion	0.012***	0.011***	0.009***	0.008***	0.007***	0.008***	0.007***	0.007***	0.003
	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)	(0.001)	(0.002)	(0.006)	(0.265)
Female	-0.051***	-0.045***	-0.042***	-0.034***	-0.033***	-0.029***	-0.024**	-0.027***	-0.027**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.014)	(0.008)	(0.012)
Age	0.001**	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001**
	(0.037)	(0.004)	(0.006)	(0.010)	(0.003)	(0.002)	(0.001)	(0.001)	(0.012)
Education level	0.025***	0.020***	0.025***	0.024***	0.024***	0.023***	0.022***	0.023***	0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Part-time worker	-0.029*	-0.027	-0.030*	-0.022	-0.022	-0.030*	-0.032*	-0.032	-0.041**
	(0.092)	(0.126)	(0.094)	(0.223)	(0.219)	(0.098)	(0.092)	(0.108)	(0.045)
Unemployed	-0.042***	-0.041***	-0.044***	-0.044***	-0.048***	-0.054***	-0.060***	-0.054***	-0.046***
	(0.003)	(0.004)	(0.002)	(0.002)	(0.001)	(0.000)	(0.000)	(0.001)	(0.005)
Out of work	-0.024*	-0.0629*	-0.026**	-0.025**	-0.025**	-0.031**	-0.036***	-0.037***	-0.030**
	(0.051)	(0.033)	(0.035)	(0.049)	(0.046)	(0.016)	(0.008)	(0.008)	(0.035)
Urban	-0.013	-0.024***	-0.016	-0.019*	-0.019*	-0.017*	-0.014	-0.004	-0.012
	(0.161)	(0.053)	(0.106)	(0.051)	(0.059)	(0.098)	(0.208)	(0.727)	(0.285)
Internet		0.025***	0.018***	0.019***	0.019***	0.019***	0.020***	0.022***	0.018***
		(0.010)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trust in administration			0.041***	0.042***	0.033***	0.033***	0.032***	0.033***	0.026***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Democracy attachment				0.064***	0.066***	0.066***	0.066***	0.063***	0.061***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Satisfaction toward health system					0.044***	0.043***	0.037***	0.037***	0.029***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Corruption (decrease)						0.002	0.002	0.003	-0.0004
						(0.494)	(0.598)	(0.421)	(0.916)
What taxes pay (difficult to know)							-0.024***	-0.043***	-0.033***
							(0.000)	(0.000)	(0.000)
Evading taxes (difficult)								0.066***	0.058***
								(0.000)	(0.000)
Positive attitudes towards taxation									0.070***
									(0.000)
Tax authorities Legitimacy									0.091***
									(0.000)
Wald chi2(.)	154.67	176.02	292.35	317.36	384.10	374.87	350.94	437.47	766.38
Prob >chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	0.0089	0.010	0.017	0.020	0.024	0.025	0.025	0.034	0.063
Observations	12,937	12,818	12,67	12,168	12,124	11,613	10,724	10,09	9,482

Note: Marginal effects; P_values in parentheses; *, ** and *** respectively indicate levels of significance of 10%, 5% and 1%. Out of work refers to the unemployed who are not looking for work.

Table 2.12: Determinants of tax morale in ECOWAS states

	TaxMorale = 1 if the citizen believes that cheating on taxes is never justified, 0 otherwise.								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religion	0.017***	0.017***	0.015***	0.016***	0.016***	0.016***	0.015***	0.015***	0.026***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.034***	-0.033***	-0.031***	-0.029***	-0.027***	-0.025***	-0.020**	-0.020**	-0.017*
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.003)	(0.024)	(0.030)	(0.072)
Age	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education level	0.007**	0.007**	0.011***	0.011***	0.011***	0.010***	0.009***	0.011***	0.010***
	(0.016)	(0.035)	(0.001)	(0.001)	(0.001)	(0.003)	(0.009)	(0.004)	(0.009)
Part-time worker	-0.091***	-0.089***	-0.092***	-0.088***	-0.089***	-0.089***	-0.094***	-0.095***	-0.091***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Unemployed	-0.064***	-0.065***	-0.068***	-0.059***	-0.060***	-0.059***	-0.066***	-0.069***	-0.053***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Out of work	-0.085***	-0.085***	-0.088***	-0.076***	-0.077***	-0.077***	-0.085***	-0.091***	-0.079***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Urban	-0.005	-0.006	0.001	-0.004	-0.003	-0.001	0.0002	0.0002	-0.005
	(0.518)	(0.478)	(0.869)	(0.667)	(0.740)	(0.949)	(0.977)	(0.843)	(0.606)
Internet		0.001	0.0005	0.001	0.001	0.002	0.0001	0.0004	0.001
		(0.723)	(0.882)	(0.678)	(0.782)	(0.619)	(0.985)	(0.905)	(0.761)
Trust in administration			0.035***	0.035***	0.029***	0.028***	0.029***	0.028***	0.020***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Democracy attachment				0.080***	0.082***	0.084***	0.087***	0.082***	0.062***
				(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Satisfaction toward health system					0.025***	0.023***	0.022***	0.025***	0.019***
					(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Corruption (decrease)						0.004	0.005	0.005	0.004
						(0.197)	(0.113)	(0.161)	(0.307)
What taxes pay (difficult to know)							-0.012**	-0.024***	-0.011**
							(0.015)	(0.000)	(0.035)
Evading taxes (difficult)								0.048***	0.038***
								(0.000)	(0.000)
Positive attitudes towards taxation									0.057***
									(0.000)
Tax authorities Legitimacy									0.105***
									(0.000)
Wald chi2(.)	219.39	219.21	325.32	372.87	397.70	388.89	366.94	440.35	891.84
Prob >chi2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pseudo R^2	0.010	0.010	0.015	0.018	0.019	0.020	0.021	0.0259	0.060
Observations	17,145	16,974	16,697	15,56	15,439	14,787	13,314	12,639	11,637

Note: Marginal effects; P_values in parentheses; *, ** and *** respectively indicate levels of significance of 10%, 5% and 1%. Out of work refers to the unemployed who are not looking for work.

Table 2.13: Descriptive statistics

Variable	Obs	Mean	Std.Dev.	Min	Max
Tax morale	46,663	0.568	0.495	0	1
Religion	48,833	3.557	1.884	0	6
Sex	49,137	0.503	0.5	0	1
Age	48,85	37.097	14.517	18	105
Education level	49,04	2.417	1.346	0	5
Part-time worker	48,943	0.121	0.326	0	1
Unemployed	48,943	0.243	0.429	0	1
Out of work	48,943	0.372	0.483	0	1
Urban	48,537	0.396	0.489	0	1
Internet	48,345	0.907	1.508	0	4
Trust in administration	47,987	1.721	1.158	0	3
Democracy attachment	43,788	0.752	0.432	0	1
Satisfaction toward health system	46,933	2.462	0.925	1	4
Corruption (decrease)	46,141	2.192	1.283	1	5
What taxes pay (difficult to know)	41,843	2.915	0.907	1	4
Evading taxes (difficult)	40,383	3.19	0.83	1	4
Positive attitudes towards taxation	47,568	4.609	0.748	1	5
Tax authorities Legitimacy	43,871	3.053	0.862	1	4

Table 2.14: Country list

South Africa	Mauritius	Nigeria
Benin	Kenya	Senegal
Botswana	Lesotho	Sierra Leone
Burkina Faso	Liberia	Sudan
Cameroon	Madagascar	Swaziland
Cabo Verde	Malawi	Tanzania
Côte d'Ivoire	Mali	Togo
Gabon	Mozambique	Uganda
Ghana	Namibia	Zambia
Guinea	Niger	Zimbabwe

Chapter 3

Determinants of Business Tax Morale: A Case Study of Togo

3.1 Introduction

Why do we have to pay taxes? This is a question that many people frequently ask themselves, both in firms and households. Others are asking in a completely different way, i.e., what is the utility of paying taxes? In reality, the answer to these questions can be found in our daily life. Paying taxes is a way to contribute to the budget necessary for a country to function. It is a well-known fact that to educate, care for, and defend the population, build roads, support businesses, and assist those experiencing poverty, governments require funding. To obtain this money, a regulated framework is required. In this respect, the government levies or collects the money from people and businesses according to well-established rules in the form of taxes. Although it is universally accepted that it is an obligation for people and businesses to pay taxes to support the State's operations, unfortunately, this is not convincing enough for all individuals to comply. In this regard, the data show that this is not the case. Some taxpayers try to avoid paying taxes. Their perceptions and attitudes reflect a lack of consent to pay taxes or illustrate fraudulent practices, which is known as tax evasion or tax non-compliance.

Tax morale is defined as the set of perceptions and attitudes of taxpayers— individuals or corporate taxpayers —that result in tax compliance or in tax evasion or avoidance. In other words, tax compliance is defined as the willingness of individuals and taxable entities to act in accordance with the tax laws and administration in letter and spirit without the requirement to use coercive actions (James & Alley, 2002). It is considered the commitment of citizens or the attitude of taxpayers in respecting their declarative and payment obligations by filing their declarations on time and paying their due taxes. However, in the event of non-compliance, there are negative consequences for tax collection, resulting in a significant loss of tax resources intended to fund the country's basic needs.

In Togo, mobilizing tax revenue is at the forefront of the State's agenda in pursuit of sustainable development. To achieve this, they have embarked on wide-ranging tax reforms with a standard structure called the Office of Togolese Revenue (OTR) by combining customs and tax administration.[1] The reforms are intended to increase tax revenues significantly, to give the public authorities the necessary funds to operate and the capacity to assume their regalian functions fully. However, we observe a fiscal paradox in Togo, char-

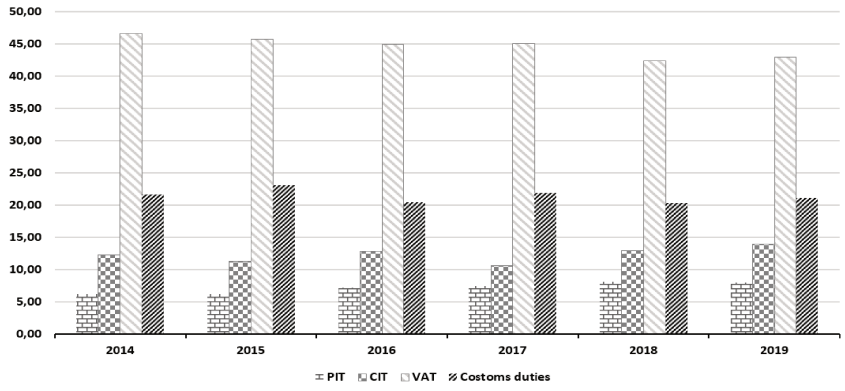
[1] OTR was created by law $n°2012-016$ of 10 December 2012, adopted unanimously by people's representatives. It combines the general directorates of Customs and Taxes within a unique structure. It is responsible for collecting taxes and customs duties on behalf of the state and local authorities. The OTR is also in charge of (i) advising or representing the government in tax and customs matters, (ii) promoting voluntary tax compliance, (iii) combating fraud, tax evasion, and corruption, and (iv) producing statistics on the revenue collected.

acterized by relatively high tax rates but very low tax revenues. Hence, the challenges remain significant, requiring considerable efforts from both tax authorities and citizens.

In this respect, tax authorities have been continuously introducing a set of measures to support the national economy and to encourage investment. For example, in 2021, entrepreneurs and businesses benefited from tax relief measures.[2] Moreover, the tax authorities have embarked on a process of bringing the tax administration closer to the taxpayers through holding tax citizens' days. This approach involves educating taxpayers on the necessity and importance of respecting their tax obligations by complying with their tax reporting and payment requirements. However, despite these initiatives, some serious questions remain: whether awareness campaigns or tax relief initiatives are sufficient to prevent non-compliance with tax obligations.

In our view, to better tackle tax avoidance, it is necessary to identify the underlying factors mentioned above. This study aims to identify the important determinants that influence Togolese corporate taxpayers in meeting their tax obligations. The originality of this chapter lies in its reliance on reliable data obtained directly from the Togolese Tax Office. In addition, the survey includes 413 companies of different sizes (small, medium, and large) spread throughout the country, covering various geographical locations, including the five administrative regions (*Maritime, Plateaux, Centrale, Kara, and Savane*).

Figure 3.1: Composition of Tax Revenues in Togo (2014-2019)



In Togo, tax revenues have increased significantly over the last decade (Figure 3.12 in

[2]Various tax relief measures have been announced: 1- For start-ups and micro-businesses, the single professional tax has been reduced by 93%. 2- Individuals with a turnover of 60 million CFA francs or less and who are subject to the single professional tax (TPU) will only have to pay 20, 000 CFA francs, against 300, 000 CFA francs the preceding year. 3- Registration and licensing fees from 5 to 1.5% are maintained; this measure also applies to the registration of buildings. Additionally, the registration fee for a real estate exchange has been reduced to 0.6% from 6% in 2020, and the fee for parcelling land has been reduced from 1 to 0.3%. 4- Businesses can temporarily declare their annual results and regularise the statements within the following three months. Patente, the filing of corporate tax statements, the minimum lump sum, and rent withholding have also been adjusted. This year, the rate of rent withholding is 8.75% compared to 12.5% in 2020.

the appendix), primarily due to increases in various types of taxes, particularly VAT and customs duties, as illustrated in Figure 3.1. It shows that VAT, customs duties, corporate income tax (CIT), and personal income tax (PIT) represent, on average, 40%, 20%, 12%, and 7% of total tax revenues, respectively.

Our results are consistent with those in the literature. The results can be summarized as follows: first, factors such as geographical location, tax evasion assessment, bribes, tax knowledge, tax beneficiaries, the severity of penalties, and the cost of legitimate customs duties have a significant positive relationship with voluntary tax compliance. On the other hand, factors such as the size of the company and the legitimacy of VAT have a disincentive effect on voluntary tax compliance. Furthermore, no significant relationship was found between factors such as the tax burden, amendments to tax laws, and the amount of tax paid. Another important finding is that the determinants vary depending on whether the enterprises under consideration are small, medium, or large. Finally, we separated the *Maritime* region because it comprises a significant portion of the sample. The results reveal that factors such as bribes, severity of penalties, legitimacy of customs duties, tax knowledge, and the tax beneficiaries (the whole nation) encourage businesses to comply voluntarily with tax payments. While the size of the business and the legitimacy of VAT lead to tax evasion. Similarly, we find that the determinants vary depending on the size of the business at the regional level.

The paper is organized as follows. Section 2 relates our work to the existing literature. In section 3, we present a brief description of data, the conceptual framework, and empirical methodology. Section 4 presents and discusses the various findings of both the baseline models and robustness checks. Finally, the last section concludes, derives policy implications, and presents some possible directions for future research.

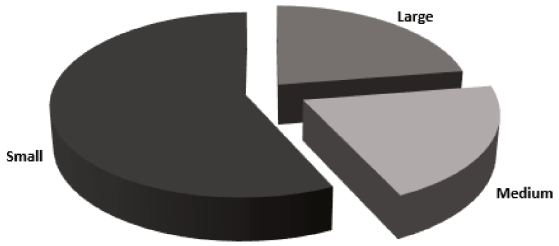
3.2 Data and empirical methodology

This paper conducts an empirical investigation into the determinants of business tax morale in Togo. For this purpose, we utilize data from a 2019 survey on voluntary tax consent conducted by the Office of Togolese Revenue (OTR), which covered 413 formal firms. The survey includes only formal firms because they are obliged to declare and pay their taxes.

Before presenting the results of the econometric specifications, we will describe the survey data. Hence, the Figure 6.1 shows some graphical representations of the preliminary analyses of the data, and shows that the sample is composed of 56.9%, 20.58%, and 22.52% of small, medium, and large businesses, respectively (Figure 6.1a). Figure 6.1b shows that 60% of businesses of all sizes are complying with tax liabilities, while 40% are trying to avoid paying their taxes. This compliance is distributed according to business size and geo-

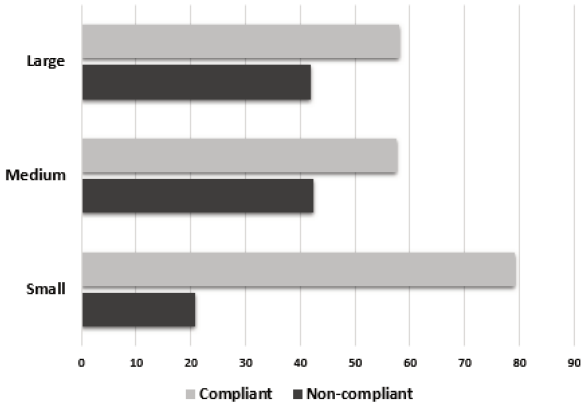
graphic location..

Figure 3.2: Descriptive statistics

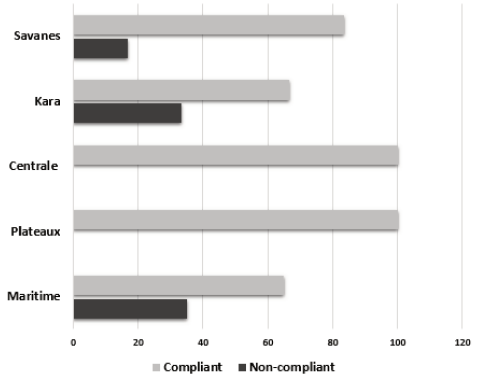


(a) Distribution by size of business

(b) Tax compliance of business



(c) Tax compliance by size of business



(d) Tax compliance by location regions

As can be seen from the Figure 6.1e, small businesses have the highest proportion of tax compliance, i.e. 79.2%. The direct implication of this statement is that in Togo, it is not small businesses that are the biggest tax evaders. At the same time, data show that 42% of non-compliance is for medium and large businesses. According to the geographical location (see Figure 6.1d), the *Centrale* and *Plateaux* regions have the highest level of tax compliance among the five economic regions. The businesses surveyed in these regions are all compliant. In the *Savanes* region, 83.33% of businesses are compliant, compared 16.67% that are not. The *Kara* region shows 66.67% of compliant firms, while in the *Maritime* region, 64.88% of businesses are compliant with the fiscal law, and 35.12 are not compliant. In the *Savanes* region, the proportion of firms complying with tax obligations is 83%. For the *Kara* region, it is 67% and 65% in the *Maritime*.

However, this should be taken with caution as the number of businesses surveyed in the other regions is very low compared to the *Maritime* region. We do not pretend that there are no non-compliant firms in regions such as *Centrale* and *Plateaux*. Instead, the point is that all surveyed firms in these two regions, regardless of their numbers, are classified as compliant based on the responses in the questionnaire.

The objective of this study is to identify the factors that influence business tax morale. We consider two aspects: business characteristics and tax attitudinal aspects. Table 3.1 describes the main variables that are potential determinants of tax compliance. The tax attitudinal aspect includes factors such as business ethics and morality, tax management, knowledge of tax laws, forced consent, tax legitimacy, and tax burden.

Table 3.1: Description of the main variables

Main variables	**Description**	**Number of Questions**
Tax compliance	This variable measures the level of compliance with the tax laws by firms	501, 502, and 503
Business characteristics	In the context of our study, the characteristics of the firms refer to the size and Geographical location of the business.	According to OTR
Taxpayer ethics and morality	This variable refers to the sub-variables, taxpayers' views on tax evasion and paying bribes to pay less tax.	509 and 512
Governance and good management of tax revenues	This variable refers to good governance in general and, in particular to the transparent management of tax revenues.	524
Forced consent	Probability of detention and severity of punishment in case of detention. This forces companies to comply with tax laws.	544
Knowledge of tax laws	This variable measures knowledge of tax laws through the sub-variables, knowledge of subject taxes , and amendments in 2019.	518 and 519
Legitimacy of taxes	This variable refers to the appropriateness of taxes, particularly customs duties and VAT.	551
Tax burden	These are the share of taxes in income and the amount paid.	547 and 548

The factors above are divided into subcategories and coded as presented in Table 3.2. The characteristics of the business refer to the firm's size and its geographical location. The tax knowledge of law encompasses due taxes and the changes that have been made, including those for 2019. The ethics and morality of taxpayers are also essential for corporate compliance. We measure this correlation using firms' opinions on tax evasion and bribery of tax collectors to avoid paying more tax. To measure the impact of the tax structure, we use VAT and customs duties. The choice of these taxes is motivated by their share in the revenue of the state budget[3]. Finally, we also measure the effect of forced consent (severity of penalties) and good governance (tax beneficiaries). These variables constitute the matrix of explanatory variables of our estimation model.

[3]In 2019, VAT and customs duties accounted for 41.85% and 16.57% respectively in total tax revenues.

Table 3.2: The variables description and categorization

Sub variables	Description	Classification
Tax compliance	The three questions reflect the level of compliance with tax regulations by companies. The company is proud to pay taxes and is against paying bribes to pay less tax.	1 = if businesses is compliant 0 = Otherwise.
Size (of business)	This is the classification of businesses by the Office Togolais des Recettes (OTR) according to turnover: large businesses, medium businesses and small businesses.	Classification according to OTR
Customs duties legitimacy	The opinion of businesses on the appropriateness of taxes, particulary customs duties.	0 = No 1 = Yes
Taxes owed knowledge	The question refers to the knowledge of the provisions of the tax laws, in this case the taxes to which companies are subject.	0 = No 1 = Yes
Geographical location	This is the region where the company is located according to the administrative divisions of the country.	Location in the administrative regions of the country.
VAT legitimacy	The opinion of businesses on the appropriateness of taxes, particulary Value Added Tax (VAT).	0 = No 1 = Yes
Severity of penalties	The opinion of tax audit, probability of detection, and tax penalties are included in the questions.	0 = No 1 = Yes
Bribes	The question refers to the possibility of paying bribes to the tax authorities to pay less tax.	0 = Good 1 = Indifferent 2 = Bad 3 = Very bad
Tax beneficiaries	The question refers to the proper management of collected taxes: the actual destination of the taxes. Do the taxes benefit the whole nation or the public authorities.	0 = To public authorities 1 = To the Togolese nation
Taxes amount appreciation	The opinion of businesses on the amount of tax. Is the amount of tax bearable or too high.	1 = Largely bearable 2 = Acceptable 3 = Too high
Tax fraud appreciation	The question refers to the moral value of companies.	0 = Good thing 1 = Indifferent; 2 = Bad 3 = Very bad
Tax burden	The share of taxes in income.	1 = Less than 5%. 2 = Between 5% and 10% 3 = Between 10 and 25% 4 = Between 25 and 50% 5 = More than 50%.
tax laws amendment (2019)	The question refers to knowledge of the provisions of the tax law, in this case the latest 2019 amendments.	0 = No 1 = Yes

3.2.1 Construction of the tax compliance measure

To compute our tax compliance measure, we rely on the three questions asked to businesses, such as “Are you currently proud to pay your taxes? (Q501)”; “If you had the opportunity to pay less by negotiating with an OTR agent for a gift, would you do so ?(Q502)” and “If you had the opportunity to use loopholes in the law to pay less, would you exploit them ?(Q503)”. To answer these questions, the firms have the possibility either to choose 1 = “Yes” and 2 =

"No". However, to have a more consistent dependent variable, we compute it as a composite variable based on the answers to these questions. First, we rely on the answers to the last two questions (Q502 and Q503) to compute a dependent variable called Tax Compliance 1. Therefore, Tax Compliance 1 includes businesses that declare themselves not willing to use loopholes in the tax laws or to negotiate with tax collectors to pay less in taxes. So, Tax Compliance 1 can be expressed as follows:

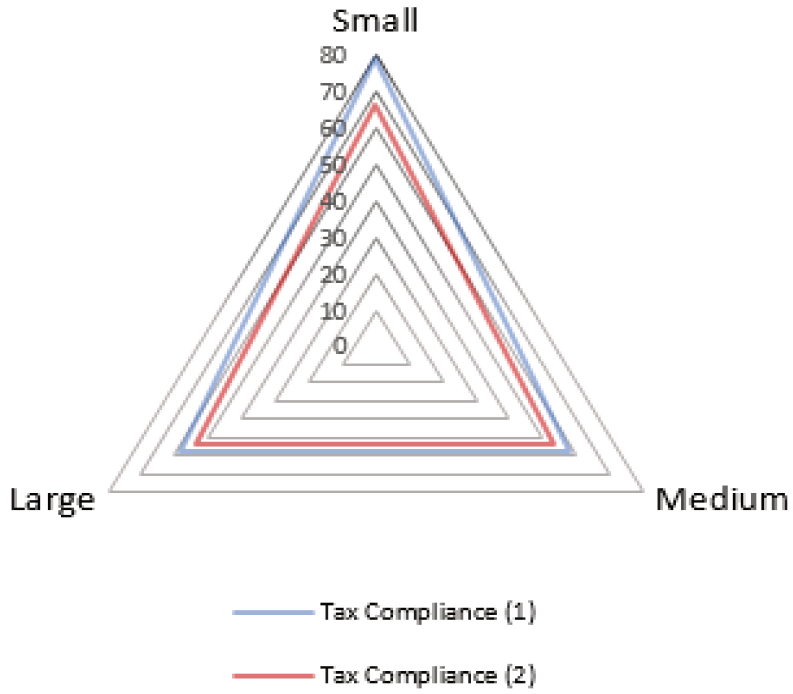
$$TaxCompliance1 = \begin{cases} 1 & (No, No) \\ \\ 0 & otherwise \end{cases} \tag{3.1}$$

However, since our dependent variable refers to voluntary tax consent, we consider it equally important that our tax compliance measurement takes into account how the taxpayer, in this case, the businesses, feel about the taxes they are paying, for example, whether they are proud to pay taxes or not. Thus, we compute another dependent variable, Tax Compliance 2, so that this measurement includes firms that are not only unwilling to use tax loopholes but also not to negotiate with tax collectors to pay less taxes, and are also proud to pay their taxes. Hence, Tax Compliance 2 is defined as follows:

$$TaxCompliance2 = \begin{cases} 1 & (Yes, No, No) \\ \\ 0 & otherwise \end{cases} \tag{3.2}$$

Subsequently, the compliance levels are compared between firms according to their size using the two measures that have been constructed to accurately assess the tax compliance level, which are shown in Figure 3.3. The idea here is to determine whether there is a significant disparity in tax morale levels among firms, depending on the indicators used. As we can see, the levels of compliance do not diverge significantly, regardless of whether Tax Compliance 1 or Tax Compliance 2 is used. The difference in tax compliance according to the two indicators is about 12% for small firms and 4% for large and medium firms.

Figure 3.3: Tax compliance measures by business size



3.2.2 Model estimation

In the econometric specification of our estimation model, we assume that there is a set of factors (X) that influence firms' tax morale ($TaxCompliance_i$). Therefore, the model is specified as follows:

$$TaxCompliance_i = F(X_i) \tag{3.3}$$

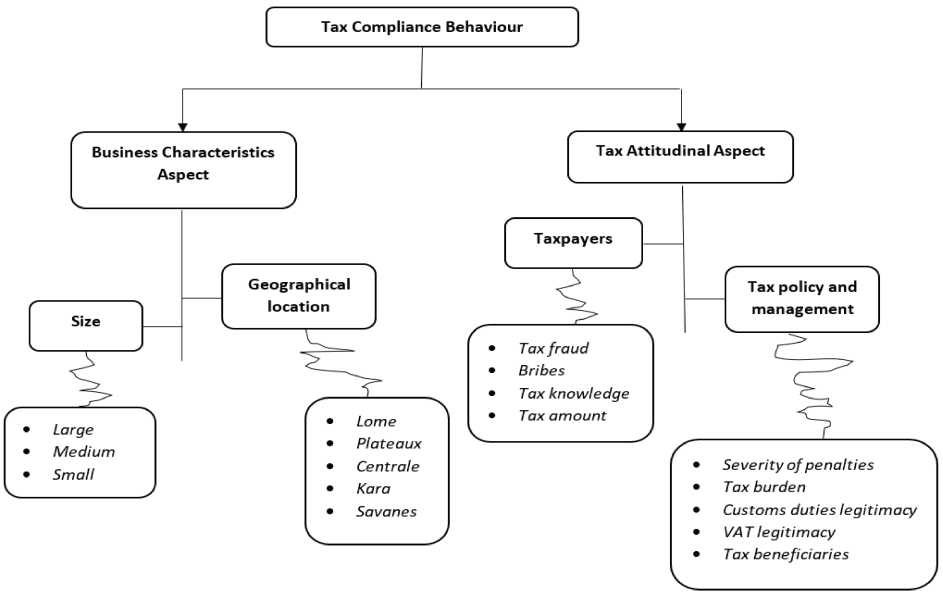
In case of probability models, the use of OLS is inappropriate for several reasons, including that the estimated value of $TaxCompliance_i$ is outside the interval $[0, 1]$. In addition, it is also possible that the idiosyncratic error does not follow a normal distribution but rather a discrete distribution, as it can only take two values (0 and 1). In such a case, it is appropriate to identify the impact of X on the probability of the firm being compliant. For this purpose, equation 3 can be rewritten as follows:

$$\begin{cases} Pr(TaxCompliance_i = 1|X_i) = F(X_i) \\ \\ Pr(TaxCompliance_i = 0|X_i) = 1 - F(X_i) \end{cases} \tag{3.4}$$

In the related empirical literature, Logit and Probit estimators are often used to estimate these probability models. But the choice between the two depends on the idiosyncratic error distribution function. The probit estimator is recommended when the error distribution function follows a normal distribution. In contrast, when the error distribution function is assumed to follow a logistic distribution, then the logit estimator is recommended. However, according to W. Greene (2002), the logit and probit models are very similar. Moreover, the matter of choice is therefore irrelevant. However, this study focuses on the probit model mainly because of its ability to limit the value of the variable within 0 and 1, and its ability to correct for heteroscedasticity in the model (Gbadago & Awunyo-Vitor, 2015).

Several studies on tax morale have focused more on the morale of individual taxpayers than on that of firms. They have provided a theoretical framework to explain the factors that affect individual compliance (Fischer et al., 1992; Cuccia, 1994; Devos, 2014). At the same time, some previous studies of business compliance have recognized that individual taxpayers' compliance theory can be applied to explain business compliance (Tedds, 2010; Sapiei et al., 2014). Similarly, Joulfaian (2000) also mentioned that these theories are appropriate due to the preferences of firms' managers. He argues that business managers manage the firm's finances in a way that maximizes the highest possible profit after paying taxes, much like a person. Based on this premise, we develop the theoretical framework of our study, which relates to two categories of variables, business characteristics and tax attitudinal aspects, to the tax compliance of businesses. These categories are divided into variables as shown in Figure 3.4.

Figure 3.4: Tax compliance framework



3.3 Results and discussion

3.3.1 Baseline model estimates

In studies based on probit regressions, statistics on the predictive quality of the model are of particular importance, which are estimated in the Table 3.3 for each model. For example, the prediction quality of the model using Tax Compliance 1 is 74.5% (column 1) and is equal to 69.6% (column 3) with the model including Tax Compliance 2. Similarly, it is also possible to obtain the quality of adjustment by the *ROC Curve* presented in Figures 3.11a and 3.11b in the appendix. For the two dependent variables Tax Compliance 1 and Tax Compliance 2, the "Area under ROC Curve" statistics confirm a high quality of adjustment, of 78% and 77%, respectively.

Table 3.3: Baseline model estimates quality adjustment

	Tax Compliance (1)		Tax Compliance (2)	
	Good Prediction	False Prediction	Good Prediction	False Prediction
Tax Compliance = 0	78.33%	21.67%	72.61%	27.39%
Tax Compliance = 1	62.79%	37.21%	63.87%	36.13%
Total	74.50%	25.50%	69.63%	30.37%

3.3.2 Factors that explain tax morale of businesses in Togo

It is therefore the objective of our study to identify precisely the factors that explain the voluntary tax morale of companies, especially in the case of Togo. Therefore, to achieve this objective, we rely on the results of the baseline model, which uses two different dependent variables. The results are presented in Tables 3.4 and 3.5 using the dependent variables Tax Compliance 1 and Tax Compliance 2, respectively.

In Table 3.4, the dependent variable Tax Compliance 1 includes businesses that declare not to be willing to use loopholes in the tax laws or not to negotiate with tax collectors to pay less tax. Columns 1 and 2 include two proxies for tax burden used in an alternative manner, while column 3 includes both. The findings suggest that specific variables have a significant impact on the tax compliance of businesses. Considering Tax Compliance 1 as the dependent variable, the findings reveal several patterns. First, we found a negative and significant relationship between the business size and tax compliance. The associated marginal effect indicates that large businesses are 23.7% less likely to be compliant than small businesses. This result aligns with that of Abdul-Jabbar (2009), but contrasts with Mohamad (2018) and

Nor, Ahmad, and Saleh (2010), who found that business size positively influences tax compliance due to effective internal control within firms. It implies that large businesses have strict procedures in place for monitoring financial reporting, and as a result, they accurately report their taxes. Moreover, large businesses must also maintain a good reputation towards their business partners so that they will be more compliant than smaller firms (Yusof, 2014). In addition, Nur-Tegin (2008) also argues that large businesses are more likely to be compliant than small businesses. He explains that they are the main targets of tax officers to boost tax revenue. It means that larger businesses have a greater potential to increase revenue than smaller businesses, making it easier for small firms to be overlooked. Therefore, based on previous research, it can be easily concluded that internal monitoring within firms in Togo is very low, both in small, medium, and large businesses. In addition, the level of tax audits conducted by OTR is not up to standard, so larger firms still have a tendency to evade taxes. Large businesses, which benefit significantly from foreign capital, have the opportunity to reduce their taxes through tax havens. Similarly, they can also overcharge salaries and other expenses to increase costs and minimize their taxes (Kemme, Parikh, & Steigner, 2020). Finally, large businesses also have enormous power to negotiate for exceptional concessions. However, some different findings on the influence of firm size on compliance refer to different proxies used by researchers. Such as Nor et al. (2010), this study divides the firms size according to it turnover, [4] while some use the number of employees (Nur-Tegin, 2008)

Secondly, the variables tax fraud appreciation and bribes have positive and significant effects on business tax morale. These two variables measure the ethics and morals of firms in the field of their compliance with tax laws. They are ordered from good to very bad accordingly. These results suggest that businesses that believe tax evasion and bribery of tax collectors to pay less taxes are wrong are more likely to be compliant. The respective marginal effects are 9.7% and 14.9%, meaning that such firms are more likely to comply with their tax obligations. Thus, a reduction in corruption by tax collectors of the OTR can lead to increased business compliance in Togo. This result is consistent with Alm and McClellan (2012) who argue that a corrupt tax administration system (bribes) reduces reporting and so increases tax evasion. The author's point is that reducing corruption in tax administration improves business compliance.

As expected, tax beneficiaries (the whole nation) are positively and significantly correlated with business compliance. Thus, firms that believe taxes benefit the whole nation are more willing to pay than those that believe taxes benefit only public authorities. The

[4] According to OTR, small firms are those with a turnover of less than FCFA 60 million; medium firms have a turnover of between FCFA 60 million and FCFA 1 billion; and large firms have a turnover of FCFA 1 billion or more. This is the turnover excluding tax.

associated marginal effect indicates that firms that believe taxes benefit the nation as a whole are 9.1% more likely to be compliant than firms that believe taxes benefit public authorities. This means that effective management of tax revenues encourages firms to participate in financing public goods by paying their taxes. Also, a better explanation of the utilization of the resources collected would enable the taxpayer to better understand the need for the institution of a tax and thus to consent to pay taxes freely (J. Fjeldstad Odd-Helge et Semboja, 2001).

Third, the results also point to a positive and significant association between the severity of penalties and tax compliance. This implies that high penalties will likely lead to increased business tax compliance in Togo. According to the associated marginal effect, there is 25.2% greater chance that high penalties will induce firms to comply with tax legislation. This result is in contradiction with Andreoni et al. (1998), who claimed that the compliance rate will remain high in the modern tax system even though tax sanctions are low, because other factors, such as non-economic factors (human behavior), also affect compliance. This reason is also supported by Falanni (2015), who summarize that important factors for increasing voluntary compliance are the improvement of moral and ethical values among taxpayers, rather than imposing high penalties. The positive effect of the severity of sanctions on companies' tax morale is also associated with more regular tax audits, thereby increasing the probability of being caught. The audit process in Togo for businesses is based on specific selection criteria, which do not include all firms. However, some firms selected are mostly based on their suspicious history or reporting transactions below the amount aggregated in the OTR's books. The audit selection is also correlated with the size of the businesses; then, it will influence compliance (Falanni, 2015). Large businesses are more likely to be eligible for the audit, as they are the major taxpayers to the OTR. However, the OTR is making an effort to audit as many firms as possible over a period of 3 years, the statute of limitations beyond which tax fraud is no longer reprehensible.

Furthermore, we also find that the legitimacy of customs duties is positively and significantly related to business tax morale. This means that taxpayers who find customs duties legitimate are more willing to pay than those who do not. Firms that find tariffs legitimate are 18.3% more likely to be compliant. Contrary to customs duties, VAT legitimacy has been negative in connection with business tax compliance. In terms of marginal effect, there is a 15% lower chance that businesses that find VAT legitimate are not compliant. This negative relationship can be attributed to various imperfections in VAT implementation [5] in

[5] VAT is a real tax applied to all commercial transactions, at each stage of the sale of goods or services. It is

the country, particularly to non-fluid refunds of VAT credits. This result is not consistent with our expectations. One would think that firms that believe in the legitimacy of VAT are more willing to pay. So, how can we explain this contradictory result? For example, let's consider small businesses that bear the VAT burden because of the non-fluid repayment of VAT credits in developing countries. It should be recalled that by definition, small businesses are not registered for VAT; therefore, they are not entitled to charge VAT on sales, and consequently cannot deduct the amount of VAT paid on the purchase of inputs, imports, etc. However, these small businesses often bear the cost of VAT, which increases their production costs and makes them less competitive. It is possible, therefore, that these difficulties experienced by small businesses may lead to deviant behaviour *vis-a-vis* tax compliance. Moreover, due to the given reasons, avoiding tax obligations, this is an acceptable argument to explain the negative relationship between the legitimacy of VAT and tax compliance, as these represent a significant share of our sample, 56.9%.

However, our study has not found any significant relationship between tax morale and the variables of geographical location, tax law amendment (2019), tax burden, tax owed knowledge, and tax amount appreciation, while using the dependent variable Tax Compliance 1. However, some of these become significant when Tax Compliance 2 is used as the dependent variable. This is another measure of tax compliance that includes firms that are not only willing to use tax loopholes and not negotiate with collectors to pay less tax, but are also proud to pay their taxes.

It can be seen that all the factors that significantly explain Tax Compliance 1 in Table 3.4 also explain the alternative measure, i.e., Tax Compliance 2, as well as other factors such as geographical location, knowledge of the law, and tax beneficiary, which all have a positive association with tax compliance. The findings indicate the following.

Concerning the variable geographical location[6], we have found a positive association with tax compliance.

an indirect tax paid by the consumer and collected by registered firms. They can collect VAT and thus deduct the VAT paid on their purchases of goods or services. Then, the registered firms pay the amount of VAT on their margin to the treasury, hence the name Value Added Tax. However, if the VAT paid by the firm on the purchase of its inputs exceeds the VAT collected, the treasury must reimburse the difference, known as VAT credits, to the firm. Therefore, VAT is economically neutral for businesses, i.e., it does not constitute a cost for businesses.

[6]The variable refers to the administrative region where the business is located. It is coded from 1 to 5, ranging from the *Maritime* region in the southern part of the country, where the Capital (Lomé) is based. The majority of businesses are located (approximately 84.50%), in the region of *Savanes* in the northern part of the country.

Table 3.4: Baseline estimates using Tax Compliance 1

Variables	Column (1)	Column (2)	Column (3)
Geographical location	0.015	0.015	0.013
	(0.573)	(0.602)	(0.637)
Size (of business)	-0.237***	-0.243***	-0.246***
	(0.000)	(0.000)	(0.000)
Tax fraud appreciation (poor)	0.084**	0.097**	0.097**
	(0.024)	(0.010)	(0.010)
Bribes (disapproval)	0.145***	0.150***	0.149***
	(0.000)	(0.000)	(0.000)
tax laws amendment (2019)	-0.010	-0.036	-0.034
	(0.892)	(0.624)	(0.630)
Taxes owed knowledge	0.065	0.080	0.078
	(0.380)	(0.284)	(0.296)
Tax beneficiaries (whole nation)	0.091*	0.083	0.081
	(0.088)	(0.126)	(0.137)
Severity of penalties	0.243***	0.249***	0.252***
	(0.001)	(0.001)	(0.001)
Customs duties legitimacy	0.155**	0.188**	0.183**
	(0.039)	(0.014)	(0.017)
VAT legitimacy	-0.173**	-0.153**	-0.150**
	(0.003)	(0.013)	(0.016)
Tax amount appreciation (too high)	-0.028		-0.024
	(0.055)		(0.621)
Tax burden		0.001	0.001
		(0.978)	(0.955)
Observations	355	349	349
Wald chi2(11)	77.46	79.60	80.15
Prob >chi2	0.000	0.000	0.000
Pseudo R2	0.174	0.181	0.182

Note: Marginal effects are reported. Probability value in parenthesis, *,**,*** denote significance at 10%, 5% and 1%, respectively. Columns 1 and 2 are controlled by tax. amount appreciation and tax burden, respectively. Column 3 is controlled by both proxies

Table 3.5: Baseline estimates using Tax Compliance 2

Variables	Column (1)	Column (2)	Column (3)
Geographical location	0.059*	0.055*	0.051*
	(0.054)	(0.078)	(0.098)
Size (of business)	-0.206***	-0.202***	-0.213***
	(0.000)	(0.000)	(0.000)
Tax fraud appreciation (poor)	0.111**	0.122***	0.122***
	(0.010)	(0.005)	(0.005)
Bribes (disapproval)	0.109***	0.109***	0.106***
	(0.008)	(0.007)	(0.009)
tax laws amendment (2019)	-0.015	-0.025	-0.023
	(0.848)	(0.754)	(0.780)
Taxes owed knowledge	0.161**	0.172**	0.170**
	(0.051)	(0.039)	(0.042)
Tax beneficiares (whole nation)	0.221***	0.220***	0.214***
	(0.000)	(0.000)	(0.000)
Severity of penalties	0.214***	0.208***	0.218***
	(0.004)	(0.005)	(0.004)
Customs duties legitimacy	0.137*	0.157**	0.142*
	(0.084)	(0.050)	(0.074)
VAT legitimacy	-0.192**	-0.185**	-0.180**
	(0.006)	(0.011)	(0.014)
Tax amount appreciation (too high)	-0.079		-0.071
	(0.139)		(0.186)
Tax burden		-0.010	-0.007
		(0.684)	(0.750)
Observations	355	349	349
Wald chi2(11)	83.00	80.14	81.94
Prob >chi2	0.000	0.000	0.000
Pseudo R2	0.179	0.174	0.178

Note: Marginal effects are reported. Probability value in parenthesis, *,**,*** denote significance at 10%, 5% and 1%, respectively. Columns 1 and 2 are controlled by tax. amount appreciation and tax burden, respectively. Column 3 is controlled by both proxies

The results suggest that firms unclosest to the capital are the most compliant. The estimated marginal effect is 5.1%, meaning that firms located in other regions are 5.1% more likely to be compliant than those in the *Maritime* region. There are several reasons for such a correlation. In this respect, it could be assumed that it is easier to control firms located outside the *Maritime* region due to their extremely low numbers. Since there is a high concentration of firms in the *Maritime* region, this could make tax controls more complex, and therefore tax avoidance behavior on the part of firms.

Moreover, tax law knowledge is positively linked to an increase in business tax morale. According to the associated marginal effect, firms familiar with tax laws are 17% more likely to be compliant than those that are not. Previous studies have shown that tax knowledge has a close relationship with taxpayers' ability to understand taxation laws and regulations, as well as their ability to comply (see Singh & Bhupalan, 2001).

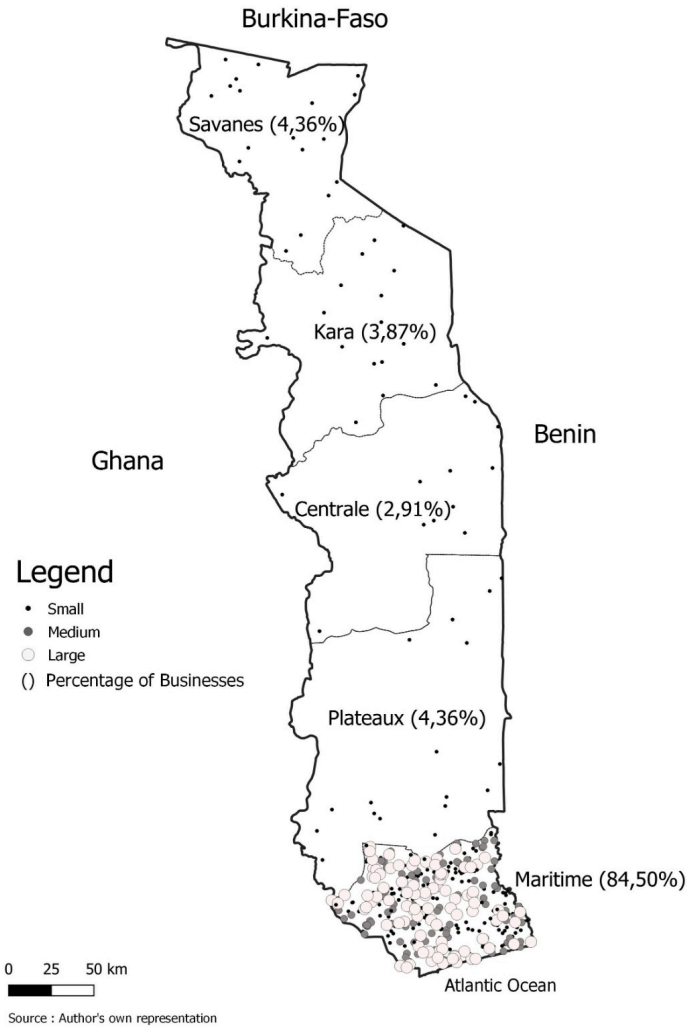
Finally, we find a positive correlation between tax compliance and tax beneficiaries. This variable includes companies that consider the taxes they pay to benefit the entire nation. In other words, they believe that taxes paid are really used for what they are paid for. According to the associated marginal effect, these firms are 21.4% more likely to be tax compliant.

3.3.3 Further robustness checks

We also do two other types of robustness tests. First, we experience a difference in tax compliance depending on business size. Secondly, we consider another point that tax compliance may vary from one administrative region to another. But regarding the results, we do not consider it useful to present them in the paper. The nature of these results, in our opinion, is linked to the distribution of the sampled businesses across the country, according to which the *Maritime* region alone accounts for more than 84%. Therefore, the non-representatives of businesses in the other regions (See Figure 4.2) do not allow us to predict a statistically valid relationship between tax compliance and belonging to a given administrative region in the country[7].

[7] These results are available under request.

Figure 3.5: Administrative map and sample distribution



Moreover, this unequal distribution[8] of the sample in the different administrative regions makes it necessary to reconsider the *Maritime* region as an isolated entity and to re-examine the tax compliance of businesses in this region. In total, 349 of the businesses surveyed are located in this region. Thus, we first investigate the factors that determine tax compliance

[8]It should be noted that the unequal weight of the regions in the sample in terms of the number of enterprises surveyed is not due to a mistake in the data collection technique. We would like to clarify this point, as some may complain that the survey did not employ a stratified approach to account for regional differences within the country. However, we agree that this may mitigate the possible limitation of the fact that the majority of businesses are concentrated in one region of the country. So this is not a coincidence. It should be noted that the *Maritime* region is the most developed region in the country in economic, administrative, demographic, and infrastructural terms, unlike the other regions, and that there is a significant gap in living standards between the inhabitants. However, by definition, this simply explains the concentration of Togo's businesses in the most developed region. It is this reality that is reflected in the composition of the sample in terms of geographical location.

of businesses in the *Maritime* region and then test whether there are differences in tax compliance according to the size of the businesses in the region.

Do firms size matter to tax compliance in Togo?

The results of the estimation of the factors explaining tax compliance by business size are presented in the Tables 4.12 and 4.13. Accordingly, the determinants vary depending on whether the business is small, medium, or large.

For small businesses, regardless of the dependent variable used, variables such as tax fraud appreciation, bribes, tax knowledge, and customs duties legitimacy all positively influence tax compliance among small businesses. At the same time, VAT legitimacy is associated with an incentive to tax avoidance on the part of small businesses. Furthermore, the severity of penalties also encourages small businesses to be compliant, but only in the model using Tax Compliance 1. Finally, for small businesses, geographical location has a positive influence on compliance, while the appreciation of the tax amount has a negative effect; however, only the model including Tax Compliance 2 predicts these relationships. The results in column 2 of each table provide evidence on the factors that determine tax compliance among medium-sized businesses. They indicate that the bribes to avoid taxes and the severity of penalties are the determining factors, with an incentive effect. The results are the same for both dependent variables. For large businesses, compliance is enforced in the presence of severe penalties, whether the dependent variable considered is Tax Compliance 1 or 2. In addition, knowledge of the taxes to which one is subject (with Tax Compliance 1) leads to evasion of tax compliance, while considering that the tax will benefit the whole nation (with Tax Compliance 2) encourages large businesses to respect tax compliance.

Additionally, to control for the low proportions of medium and large businesses compared to small businesses, we perform a new estimation that includes medium and large businesses, resulting in 175 observations. The results are in column 4 of both tables, similar to those for large businesses. The only notable difference is that the legitimacy of VAT becomes significant and negative, indicating that medium and large businesses that find VAT legitimate are not willing to pay it. The idea of non-fluid refunds of VAT credits remains admissible to explain VAT evasion by these businesses, although they would be taxable, unlike small businesses.

Table 3.6: Robustness checking using Tax Compliance 1

Variables	Column (1) Small	Column (2) Medium	Column (3) Large	Column (4) Exclu. Small	Column (5) Baseline
Geographical location	0.015				0.013
	(0.377)				(0.637)
Tax fraud appreciation (poor)	0.108***	0.023	0.041	0.065	0.097**
	(0.003)	(0.781)	(0.629)	(0.262)	(0.010)
Bribes (disapproval)	0.124***	0.208**	-0.044	0.093	0.149***
	(0.000)	(0.013)	(0.630)	(0.129)	(0.000)
Tax laws amendment (2019)	-0.003	-0.176	0.207	-0.051	-0.034
	(0.969)	(0.286)	(0.301)	(0.699)	(0.630)
Tax knowledge	0.146**	-0.228	-0.319**	-0.232*	0.078
	(0.016)	(0.175)	(0.044)	(0.084)	(0.296)
Tax beneficiaries (whole nation)	-0.060	0.086	0.185	0.118	0.081
	(0.295)	(0.485)	(0.142)	(0.146)	(0.137)
Severity of penalties	0.124**	0.506***	0.466***	0.504***	0.252***
	(0.097)	(0.000)	(0.000)	(0.000)	(0.001)
Customs duties legitimacy	0.205***		0.027	0.224	0.183**
	(0.000)		(0.939)	(0.386)	(0.017)
VAT legitimacy	-0.010**		0.135	-0.362**	-0.150**
	(0.021)		(0.673)	(0.050)	(0.016)
Tax amount appreciation (too high)	-0.061	-0.083	0.027	-0.052	-0.024
	(0.215)	(0.401)	(0.812)	(0.482)	(0.621)
Tax burden	0.022	0.027	-0.045	-0.008	0.001
	(0.337)	(0.631)	(0.359)	(0.829)	(0.955)
Observations	174	84	91	175	349
Wald chi2(..)	56.59	15.06	15.95	23.88	80.15
Prob >chi2	0.000	0.058	0.110	0.008	0.000
Pseudo R2	0.399	0.183	0.128	0.133	0.182

Note: Marginal effects are reported. Probability value in parenthesis, *,**,*** denote significance at 10%, 5% and 1%, respectively. Variables are introduced into the equations according to the availability of data. In addition, we do not have an estimator for the "Location region" variable in columns 2 and 3 because all medium and large businesses are located in the Maritime region.

Table 3.7: Robustness checking using Tax Compliance 2

Variables	Column (1) Small	Column] (2) Medium	Column (3) Large	Column (4) Exclu. Small	Column (5) Baseline
Geographical location	0.056*				0.051*
	(0.092)				(0.098)
Tax fraud appreciation (poor)	0.239***	0.025	-0.015	0.043	0.122***
	(0.000)	(0.765)	(0.865)	(0.473)	(0.005)
Bribes (disapproval)	0.089*	0.197**	0.010	0.095	0.106***
	(0.081)	(0.026)	(0.918)	(0.119)	(0.009)
Tax law amendment (2019)	0.034	-0.242	0.255	-0.052	-0.023
	(0.726)	(0.147)	(0.179)	(0.687)	(0.780)
Taxes owed knowledge	0.248v	-0.258	0.048	-0.047	0.170**
	(0.005)	(0.164)	(0.843)	(0.776)	(0.042)
Tax beneficiaries (whole nation)	0.116	0.177	0.296**	0.224***	0.214***
	(0.147)	(0.144)	(0.014)	(0.005)	(0.000)
Severity of penalties	0.105	0.436***	0.464***	0.461***	0.218***
	(0.277)	(0.002)	(0.000)	(0.000)	(0.004)
Customs duties legitimacy	0.240***		-0.087	0.108	0.142*
	(0.001)		(0.801)	(0.689)	(0.074)
VAT legitimacy	-0.199**				-0.180**
	(0.005)				(0.014)
Tax amount appreciation (too high)	-0.199**	0.084	0.025	-0.048	-0.071
	(0.011)	(0.406)	(0.830)	(0.519)	(0.186)
Tax burden	-0.020	0.004	-0.035	-0.013	-0.007
	(0.557)	(0.940)	(0.491)	(0.724)	(0.750)
Observations	174	84	91	175	349
Wald chi2(..)	59.28	14.77	14.53	21.02	81.94
Prob >chi2	0.000	0.064	0.105	0.009	0.000
Pseudo R2	0.328	0.178	0.170	0.142	0.178

Note: Marginal effects are reported. Probability value in parenthesis, *,**,*** denote significance at 10%, 5% and 1%, respectively. Variables are introduced into the equations according to the availability of data. In addition, we do not have an estimator for the "Location region" variable in column 2 and 3 because all medium and large businesses are located in the Maritime region.

Lastly, it can be observed that in column 5 of these tables, the baseline models are still reported. The idea is to compare the results according to the size of businesses to the baseline model in order to shed light on the idea that the determining factors identified in the latter are not influenced by the high number of small businesses in our sample. Clearly, the results of the reference model are similar to those of small businesses. However, some of the factors determining the tax compliance in the reference model are not in accordance with the small businesses or *vice versa*. For example, in the reference model, tax beneficiaries provide an incentive to comply, but do not directly determine compliance, according to the two dependent variables (Tax Compliance 1 and 2). Conversely, tax owed knowledge (Tax Compliance 1) and tax amount appreciation (Tax Compliance 2) significantly explain small business compliance but do not explain in the baseline model.

Robustness check focusing on the *Maritime* region

As mentioned in the previous section, we are interested in distinguishing the factors that explain voluntary tax compliance across regions. However, the small number of businesses surveyed in the other regions outside the *Maritime* region does not allow us to meet this objective. As an alternative, we choose to focus on the *Maritime* region only with almost 349 surveyed businesses, and thereby identify the factors explaining voluntary tax compliance, as well as the determinants by business size within this region. Tables 3.8 and 3.9 present the analysis of the determinants of tax compliance, and by business size.

Several factors significantly explain voluntary compliance, regardless of the tax compliance measure employed. For example, the size of the business is associated with non-compliance, i.e., in the *Maritime* region, large businesses are more likely to avoid paying taxes. While the more severe the penalties imposed by the tax authorities, the more compliant businesses tend to be. Other factors are only significant in a particular model. The case of bribes and the legitimacy of customs duties is found to push businesses towards voluntary compliance in the model using Tax Compliance 1. By contrast, in the model with Tax Compliance 2, knowledge of tax laws, and tax beneficiaries are positively influenced voluntary tax morale, while businesses find VAT legitimate are not willing to pay it.

We can say that the factors that are key determinants of tax compliance at the national level are not all significant at the regional level. This suggests that there would be a regional effect worth investigating further, but unfortunately, we were unable to conduct this analysis due to data constraints, as previously mentioned.

The first finding that emerges from the estimates by business size is that, among small

businesses, regardless of the dependent variable considered, factors such as knowledge of tax laws, legitimacy of customs duties, and VAT are found to be determinants of voluntary compliance. In contrast to the others, which promote compliance, VAT legitimacy often leads to tax avoidance. After that, it can be noted that factors such as bribes, tax beneficiaries, and the severity of penalties are also significant in the specification with Tax Compliance 1. If tax beneficiaries negatively influence compliance, it is enhanced by factors like bribes and the severity of penalties. Additionally, tax fraud and tax amount appreciation are also relevant in the specification with Tax Compliance 2. More specifically, the amount of the tax induces tax avoidance, whereas the tax fraud appreciation rather encourages compliance with tax obligations.

For medium-sized businesses, the results are identical in both specifications. Therefore, variables such as bribes and the severity of penalties are positively and significantly correlated, i.e., these factors accelerate voluntary compliance.

Finally, for large businesses, we identify three valid determinants. The severity of penalties is positive and significant in both specifications. It would be an accelerating factor for voluntary compliance. It is tax knowledge that is associated with tax avoidance in the specification using Tax Compliance 1, but unlike tax beneficiaries, which rather favour voluntary compliance according to the specification Tax Compliance 2.

Table 3.8: Robustness checking using Tax Compliance (1)

Variables	Column (1) Maritime	Column (2) Small	Column (3) Medium	Column (4) Large
Size (of business)	-0.240***			
	(0.000)			
Tax fraud appreciation (poor)	0.064	0.67	0.023	0.041
	(0.157)	(0.306)	(0.781)	(0.629)
Bribes (disapproval)	0.116**	0.089*	0.208**	-0.044
	(0.012)	(0.070)	(0.013)	(0.630)
tax laws amendment (2019)	0.014	0.097	-0.176	0.207
	(0.866)	(0.335)	(0.286)	(0.301)
tax knowledge	0.045	0.184*	-0.228	-0.319**
	(0.620)	(0.056)	(0.175)	(0.044)
Tax beneficiaries (whole nation)	0.067	-0.283**	0.086	0.185
	(0.300)	(0.029)	(0.485)	(0.142)
Severity of penalties	0.317***	0.204**	0.506***	0.466***
	(0.000)	(0.056)	(0.000)	(0.000)
Customs duties legitimacy	0.188**	0.366***		0.027
	(0.055)	(0.000)		(0.939)
VAT legitimacy	-0.138	-0.153***		0.135
	(0.110)	(0.007)		(0.673)
Tax amount appreciation (too high)	-0.023	-0.054	-0.083	0.027
	(0.685)	(0.612)	(0.401)	(0.812)
Tax burden	-0.010	0.044	0.027	-0.045
	(0.698)	(0.197)	(0.631)	(0.359)
Observations	289	114	84	91
Wald chi2(..)	55.02	46.52	15.06	15.95
Prob >chi2	0.000	0.000	0.058	0.101
Pseudo R2	0.139	0.370	0.183	0.128

Note: Marginal effects are reported. Probability value in parenthesis, *,**,*** denote significance at 10%, 5% and 1%, respectively. Variables are introduced into the equations according to the availability of data. No estimator for size for columns 2, 3, and 4 because these estimates are made by type of business

Table 3.9: Robustness checking using Tax Compliance (2)

Variables	Column (1) Maritime	Column (2) Small	Column (3) Medium	Column (4) Large
Size (of business)	-0.200***			
	(0.000)			
Tax fraud appreciation (poor)	0.072	0.209**	0.025	-0.015
	(0.146)	(0.037)	(0.765)	(0.865)
Bribes (disapproval)	0.071	-0.016	0.197**	0.010
	(0.133)	(0.841)	(0.026)	(0.918)
tax laws amendment (2019)	0.019	0.143	-0.242	0.255
	(0.839)	(0.286)	(0.147)	(0.179)
tax knowledge	0.160*	0.298**	-0.258	0.048
	(0.098)	(0.020)	(0.164)	(0.843)
Tax beneficiaries (whole nation)	0.236***	0.171	0.177	0.296**
	(0.000)	(0.142)	(0.147)	(0.014)
Severity of penalties	0.26***	0.146	0.436**	0.464***
	(0.001)	(0.256)	(0.002)	(0.000)
Customs duties legitimacy	0.136	0.272**		-0.087
	(0.167)	(0.018)		(0.801)
VAT legitimacy	-0.189*	-0.312***		
	(0.046)	(0.002)		
Taxes amount appreciation (too high)	-0.077	-0.319**	-0.084	0.025
	(0.207)	(0.016)	(0.406)	(0.830)
Tax burden	-0.017	-0.017	0.004	-0.035
	(0.551)	(0.731)	(0.940)	(0.491)
Observations	289	114	84	91
Wald chi2(..)	55.80	42.27	14.77	14.53
Prob >chi2	0.000	0.000	0.064	0.105
Pseudo R2	0.143	0.304	0.178	0.170

Note: Marginal effects are reported. Probability value in parenthesis, *,**,*** denote significance at 10%, 5% and 1%, respectively. Variables are introduced into the equations according to the availability of data. No estimator for size for columns 2, 3, and 4 because these estimates are made by type of business

3.4 Conclusion and policy implications

In this paper, we have highlighted factors that contribute to the compliance of businesses with their tax obligations in Togo. Our model defines voluntary tax morale behavior based on two aspects: the characteristics of the businesses (size and geographical location) and the tax attitudinal aspect (taxpayers' attitudes, tax policy, and management). We capture the tax compliance of businesses in two different ways, depending on their responses to the surveys administered to them. The first measure we define is Tax Compliance 1, which includes businesses that declare they do not intend to use loopholes in tax laws or negotiate with tax collectors to pay less tax. The second measure, Tax Compliance 2, includes businesses that not only declare themselves unwilling to use tax loopholes or negotiate with tax collectors to pay less tax, but are also proud to pay their taxes. Several factors have been identified as potential determinants of voluntary tax morale. These include factors such as bribes, severity of penalties, legitimacy of customs duties, geographical location, tax evasion appreciation, tax burden, amendment of the tax laws, tax paid, tax knowledge, tax beneficiaries, legitimacy of VAT, and size of businesses.

Most results align with our expectations. On the one hand, our study concluded that geographical location, tax evasion assessment, bribes, tax knowledge, tax beneficiaries, the severity of penalties, and the costs of legitimate customs duties are factors that incite businesses to pay taxes voluntarily. Second, the size of the business and the legitimacy of VAT are more likely to be linked to tax evasion by businesses. Furthermore, it did not seem logical to us that the legitimacy of VAT should be associated with any attempt at tax evasion on the part of businesses. Nevertheless, while VAT is intended to be neutral for businesses, its application through VAT policy and the operation of tax administrations in developing countries often leads some businesses to evade their tax obligations.

The analysis by business size shows that the determinants of tax compliance vary according to their size. In other words, the determinants of tax compliance of small businesses are not the same as those of medium and large businesses. Secondly, we also find that there would be a regional effect of the determinants of business tax compliance. At the level of the *Maritime* region, the determinants differ from those identified at the national level. Unfortunately, the analysis could not be carried out at the level of the other administrative regions of the country because the data available did not permit it. In light of these conclusions, several recommendations can be made to enhance the tax morale of businesses in Togo.

First of all, the OTR must work to improve the conditions for applying VAT. In terms of VAT policy, for social reasons, many goods and services are exempted from VAT, either completely or partially. For example, these exemptions are at the origin of the creation of

VAT credits. When these credits are not reimbursed (as is the case with small non-taxable businesses because their turnover is below the required threshold) or not reimbursed quickly or not totally (as is often the case for medium and large taxable businesses), this weighs on businesses in terms of the costs they have to bear on production. This undermines the efficiency of the tax system mechanically. It would therefore be beneficial for the tax administration to reduce, as far as possible, the multiple exemptions in favour of targeted assistance to the vulnerable households, as was the case with the Novissi program, initiated during the COVID-19 crisis by the Togolese government, a program hailed by the 2019 Nobel Economics Prize winners Abhijit Banerjee and Esther Duflo. In addition, it is essential to establish a fluid mechanism for reimbursing VAT credits, so that VAT is borne only by final consumers and is effectively neutral for businesses.

Secondly, the OTR must also acquire more technical, human, and financial resources to carry out proper tax audits and identify firms that sometimes make false declarations or attempt to circumvent tax laws to avoid paying taxes.

Given the idea of future research, we think it would be interesting to include more firms located in the national territory, i.e., in other regions than the *Maritime*, to better analyze the regional effect in identifying factors that underlie the voluntary tax compliance of firms. In this way, we could identify the determinants of tax compliance in each of the country's five administrative regions. It would also be helpful to compare the tax compliance of foreign companies with that of domestic firms; however, the database used in this paper does not differentiate between foreign and domestic-owned firms. Another important extension will be to distinguish between firms according to their activities (production of goods and/or services) as well as their sectors of activity (agriculture, agro-industry, construction, transport, telecommunications, etc.) to draw lessons in terms of tax policy, control, and tax collection for a better efficiency of the tax system. Finally, it will also be important to examine whether specific tax policies, such as tax credits for certain firms, serve as an effective instrument for tackling tax evasion.

This chapter 3 examines issues of corporate tax morale in Togo, and concludes the first part of the thesis, which addresses tax morale of taxpayers (businesses and individuals). However, another question is how to convert tax morale into tax compliance ? The answers to this question are in the second part of the thesis, which examines the effect of three reforms, such as the adoption of a semi-autonomous tax administration, digitalization and public sector management reform, on tax compliance costs.

3.5 Appendix

Figure 3.6: Determinants of Business Tax Compliance (Baseline Model)

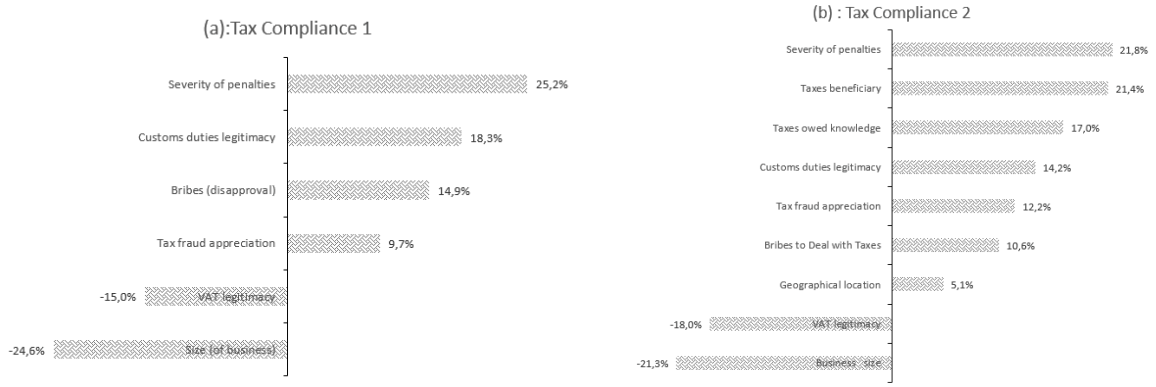


Figure 3.7: Determinants of Business Tax Compliance By Business Size (Small)

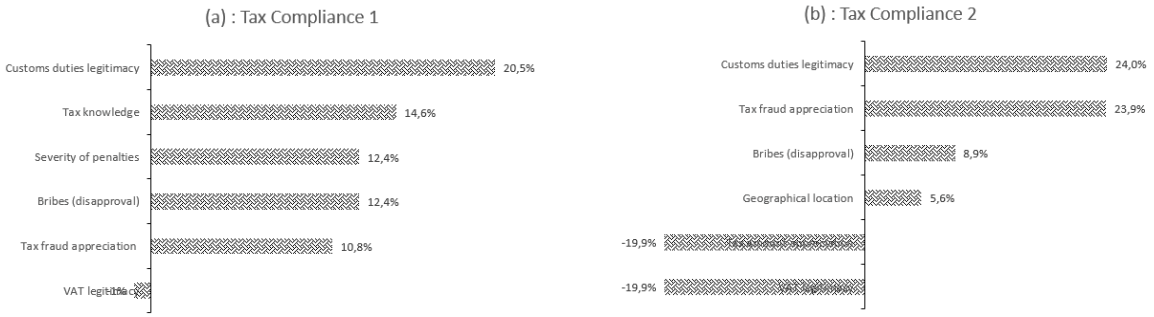


Figure 3.8: Determinants of Business Tax Compliance By Business Size (Medium)

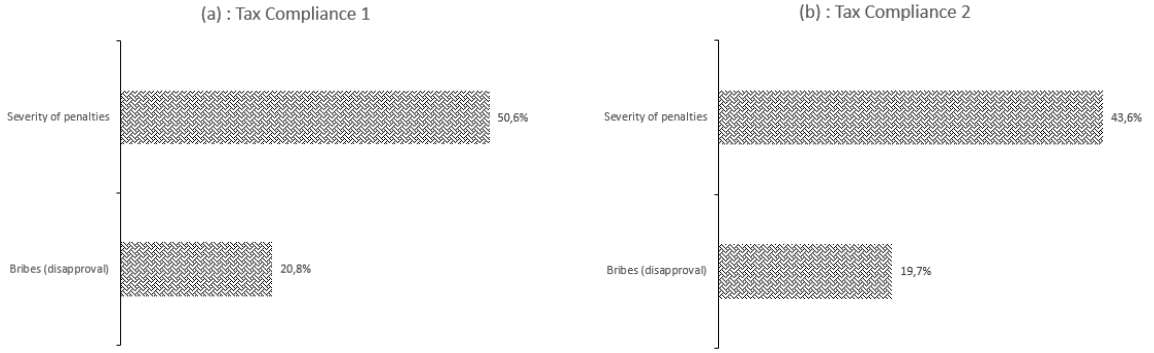


Figure 3.9: Determinants of Business Tax Compliance By Business Size (Large)

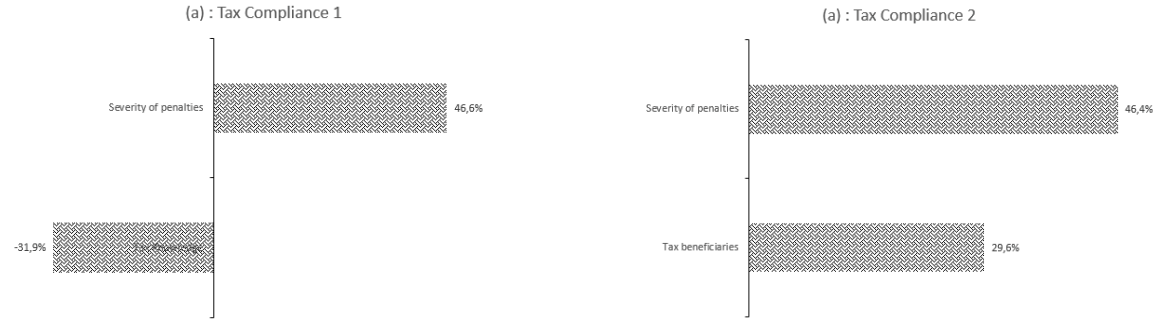


Figure 3.10: Determinants of Business Tax Compliance By Region (Maritime)

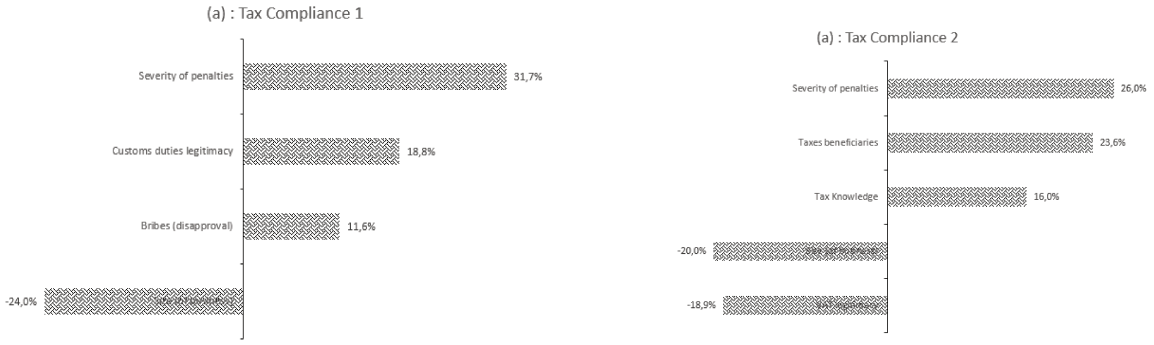
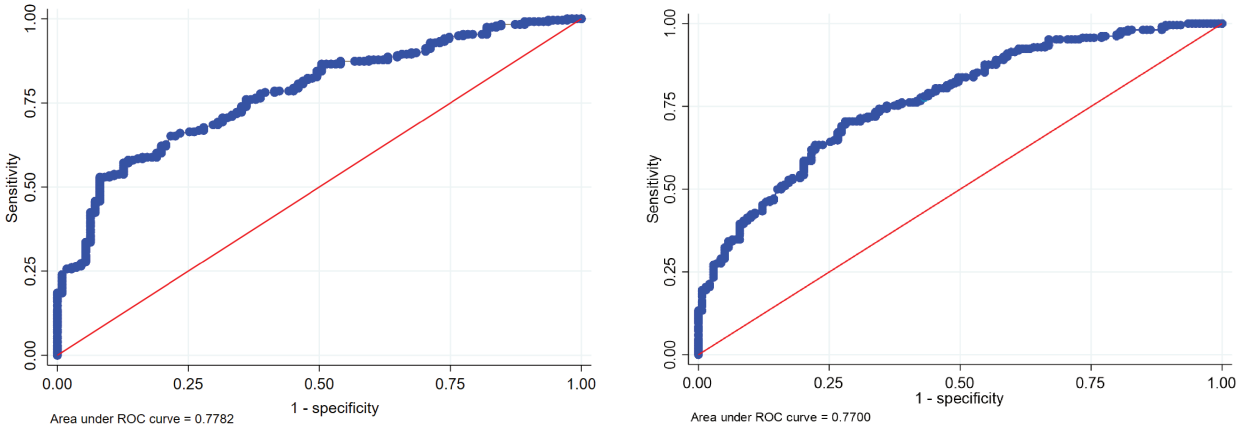


Figure 3.11: Area Under ROC Curve



(a) Tax Compliance 1

(b) Tax Compliance 2

Figure 3.12: Evolution of Tax Revenues in Togo (2008-2019)

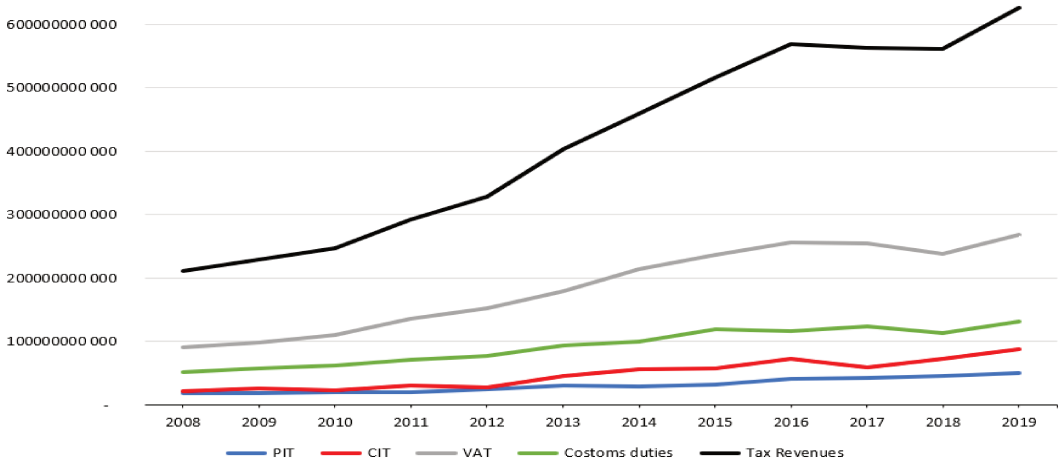


Table 3.10: Descriptive statistics

Variables	Obs	Mean	Std.Dev.	Min	Max
Tax Compliance	361	0.687	0.464	0	1
Geographical location	413	1.392	1.027	1	5
Business size	413	1.656	0.823	1	3
Tax fraud appreciation	360	2.356	0.685	0	3
Bribes to Deal with Taxes	397	2.327	0.717	0	3
tax laws amendment (2019)	367	0.548	0.498	0	1
tax knowledge	401	0.658	0.475	0	1
Tax beneficiaries	361	0.468	0.500	0	1
Severity of penalties	400	0.777	0.416	0	1
Customs duties legitimacy	400	0.725	0.447	0	1
VAT legitimacy	400	0.848	0.360	0	1
Taxes amount appreciation	402	2.410	0.691	1	3
Tax burden	396	2.720	1.260	1	5

Table 3.11: Variance inflation factor (VIF)

Variables	VIF	1/VIF
tax laws amendment (2019)	2.00	0.500
Business size	1.96	0.509
Customs duties legitimacy	1.62	0.617
Taxes owed knowledge	1.60	0.626
Geographical location	1.37	0.732
VAT legitimacy	1.29	0.775
Severity of penalties	1.22	0.820
Bribes to Deal with Taxes	1.20	0.835
Tax beneficiaries	1.19	0.840
Taxes amount appreciation	1.11	0.898
Tax fraud appreciation	1.11	0.901
Tax burden	1.07	0.933

Table 3.12: Surveys administered to businesses

Variables	Questions	Modalities
Tax compliance (503)	Are you currently proud to pay your taxes ?	1 = Yes 2 = No
Tax compliance (501)	If you had the opportunity to pay less by negotiating with an OTR collectors for a gift, would you do it ?	1 = Yes 2 = No
Tax compliance (502)	If you had the opportunity to use gaps in the law to pay less, would you exploit them ?	1 = Yes 2 = No
Size	Classification according to reported turnover.	1 = Large 2 = Medium 3 = Small
Taxes owed knowledge	Do you know all the taxes you are subject to ?	1 = Yes 2 = No
Geographical location	According to the administrative division of the country.	1 = Maritime 2 = Plateaux 3 = Centrale 4 = Kara 5 = Savanes
Severity of penalties	In your opinion, with the advent of the OTR, is the tax administration more intransigent when fraudulent behavior is discovered ?	1 = Yes 2 = No
Bribes	How do you judge negotiation with OTR collectors to pay less tax ?	1 = Very poor 2 = Poor 3 = Indifferent 4 = Good
Tax beneficiaries	Do you think that the taxes paid serve more :	1 = Whole Togolese nation 2 = Public authorities
Tax amount appreciation	What is your impression of the amount of taxes you pay in Togo ?	1 = Largely supportable 2 = Acceptable 3 = Too high
Tax fraud appreciation	Do you think a citizen should use gaps in the law to pay less tax ?	1 = Very poor 2 = Poor 3 = Indifferent 4 = Good
Tax burden	How much of your income is from the taxes you personally paid for 2018 ?	1 = Less de 5% 2 = Enter 5 and 10% 3 = Enter 10 and 25% 4 = Ente 25 and 50% 5 = More 50%
tax laws amendment (2019)	Are you informed of the tax changes introduced by the 2019 management finance law ?	1 = Yes 2 = No
VAT legitimacy	Do you think it is legitimate to impose the following taxes on taxpayers in Togo ?	1 = Yes 2 = No
Costoms duties legitimacy	Do you think it is legitimate to impose the following taxes on taxpayers in Togo ?	1 = Yes 2 = No

Part II

Reducing Fiscal Compliance Burdens

Chapter 4

Combating Tax Evasion: Does Semi-Autonomous Revenue Authorities Adopting Matter ?

4.1 Introduction

Usually, tax collection and administration are carried out traditionally by the relevant departments of the Ministry of Finance. However, over the past decade, the trend of establishing semi-autonomous revenue authorities (SARA) has accelerated in Sub-Saharan African countries. To facilitate their integration into international trade, African countries are engaged in a process of trade liberalization. This tariff disarmament caused a substantial loss of tax revenue, especially international trade taxes, which accounted for most of the tax revenues of these countries before liberalization (Tanzi & Zee, 2000). To compensate for these losses in tax revenue, these countries are obligated to implement tax policies and reforms that substantially increase tax revenues. In this context, the governments of these countries have embarked on tax reforms, such as tax transition[1], digitization, and the creation of SARAs. In the SARAs model, the tax administration function has been removed from the Ministry of Finance and assigned to a semi-autonomous entity referred to in public finance literature as SARA. Although the countries that have adopted SARAs have done so under different conditions, similar economic and political circumstances led to their creation. On the one hand, governments have been very dissatisfied with the efficiency and level of tax revenue collection, particularly in the face of growing public spending needs and fiscal deficits resulting from tariff disarmament. Furthermore, tax evasion, generalized corruption within the public sector, and taxpayers' non-compliance have led to calls for global reform of traditional tax administrations (Jenkins et al., 1993; Baer & Silvani, 1997). In fact, conventional tax administrations often lack the necessary human resources and modern infrastructure to perform the basic functions of tax collection, let alone undertake more advanced tasks, such as tax audits, training, and raising taxpayer awareness (Von Haldenwang et al., 2014). Hence, as part of the tax transition process, SARAs are expected to play a decisive role, as efficient management of internal taxes is essential to increase national tax revenues.

Thus, high expectations were placed on this reform because, contrary to traditional tax administrations, SARAs have a certain degree of autonomous operational and financial authority from the Ministry of Finance regarding staff recruitment, salaries, budget allocation, and internal organization. They sometimes work on a commission basis, keeping a percentage of the funds collected to self-finance operating costs, pay salaries, and other expenses (Von Haldenwang et al., 2014). Some authors suggest that making tax

[1]Tax transition involves a shift from public revenues, which have long been dominated by international trade taxes, to public revenues levied on domestic activities.

administration such as "an enterprise", without the rules governing the public sector and personnel financing by focusing on performance-based budgets and remuneration systems, would reduce corruption and improve the productivity of the new tax administrations (Jenkins et al., 1993; Baer & Silvani, 1997). These authors also believe that traditional tax administrations are inefficient because existing budget and personnel regulations inhibit governments from implementing appropriate incentive policies for tax collectors and limit decision-making on how the administration's budget is executed, as well as how it structures and organizes staff. Taliercio Jr (2004) argues also that entrusting tax administration to an independent entity depoliticizes tax collection and minimizes the risk of political influence. The author believes that the primary motivation for politicians to initiate this reform is the need to demonstrate credible engagement with taxpayers and to enhance the competence, efficiency, and fairness of tax collection agencies. However, in an environment of poor governance, as is often the case in most developing countries, Von Haldenwang et al., 2014 admit that tax authorities lack access to information, are exposed to corruption, and face political interference. They presume that, in this context, even the most well-intentioned reform is likely to be short-term or fail. According to Manasan (2003), many countries that have achieved some success with the semi-autonomous administration model have seen their gains in terms of tax revenue tend to erode over time. This observation prompts us to question the effectiveness of SARAs in Sub-Saharan Africa in combating tax evasion, reducing tax revenue losses, and encouraging taxpayers to comply. Hence, our research question is: Does the semi-autonomous revenue authority model provide a means of addressing tax evasion?

The purpose is to assess the ability of SARAs to tackle tax evasion in sub-Saharan Africa. Admittedly, studies have already analyzed the issue, but a large proportion of these have used descriptive analyses, sometimes with a lack of comparable data (Von Haldenwang et al., 2014). In addition, few of these existing empirical studies focus on Sub-Saharan Africa, with mixed results. Some studies show the positive effect of SARAs on tax revenues (Ebeke et al., 2016). In contrast, Dom (2018) and Sarr (2016) found no strong evidence that SARAs increased tax revenues in Africa. Finally, a third group of studies found a mixed effect of SARAs on tax revenues. In the short term, SARAs increase tax revenues, but in the long term, this effect is eroded (Gbato et al., 2019b). These differences in results could be due as much to the samples used as to the inference methods and variables used in the estimation. For example, Dom (2018) and Sarr (2016) did not distinguish between non-natural resource tax revenues and natural resource revenues. However, tax revenues from natural resources are linked to international prices and are therefore highly

volatile. This may partially explain the heterogeneous results on the effectiveness of SARAs.

Contrary to the majority of studies in the literature, which have examined the effect of SARAs on tax revenues, our study focuses on the impact of SARAs adoption on tax evasion. To do so, we use the tax gap as a proxy for tax evasion. Using the stochastic frontier method, we estimate the tax effort[2] index for each country. We then calculate the fiscal potential[3] as the ratio between the taxes collected and the tax effort. Lastly, we calculate the tax gap as the difference between tax potential and taxes collected, expressed as a percentage of tax potential. These tax gaps[4] represent the uncollected share of tax potential. The results of our estimates indicate that SARA adoption reduces tax evasion in SARA countries compared to non-SARA countries. This finding is robust to several alternative specifications, including extending the vector of control variables, using various alternative dependent variables, and using concurrent estimation methods (entropy balancing and ordinary least squares).

The paper is organized as follows. Section 2 presents the literature review. Sections 3 and 4 present the methodology and data, respectively. Section 5 presents the results of our estimations. Section 6 presents the robustness tests, and section 7 concludes and indicates some tax policy implications.

4.2 Literature review

4.2.1 Theoretical arguments

Several studies have shown that it is more advantageous for a country to have SARAs than conventional tax administrations. They assume that SARAs could mobilize more revenue than conventional tax administrations (Taliercio Jr, 2004; Mann, 2004; Von Haldenwang et al., 2014) for several arguments.

On the one hand, they suggest that the characteristics of SARAs should compensate for the inefficiencies of conventional tax administrations. For example, Taliercio Jr (2004) shows that tax collection performance has been much better in SARAs with greater autonomy. In other words, the more tax authorities are independent of the public authorities, the more tax revenue they mobilize. He argues that the autonomy enjoyed by SARAs should solve problems of governance and administration, and enable tax administration to be fair and efficient by keeping it safe from political influence. For Mann (2004),

[2]Tax effort is the ratio between taxes collected and tax potential. It is the product of persistent tax effort and time-varying tax effort.

[3]Fiscal potential is the maximum tax that can be collected in a country, depending on its characteristics.

[4]Tax gaps are composed of the compliance gap and policy gap.

one of the essential elements that SARAs have at their disposal to perform better than conventional administrations is the autonomy of personnel management, which they can recruit and sanction if assigned results are not achieved. This flexibility in recruitment and internal deployment enables SARAs to select better-quality and more motivated staff. This places competent persons in the right position and avoids the clientelism that is prevalent in public administration. Von Haldenwang et al. (2014) suggests, along the same logic, that three SARAs characteristics could promote better tax revenue mobilization. First, in terms of financing, SARAs have their budget. The autonomy they enjoy enables them to retain a percentage of the funds collected to finance themselves (commission model). This financing mechanism serves as an incentive for them to generate additional revenue. Second, unlike traditional tax administrations, SARAs have their own staff, whose recruitment is not subject to ordinary public service rules, allowing them the freedom to pay competitive salaries and define skill profiles according to their needs. This is a considerable advantage, given the fairly tight restrictions on human resources management. Third, SARAs are authorized to apply tax legislation, enforce the payment of taxes, and impose penalties or other sanctions. However, in some cases, they must submit their files to other public entities (such as the judiciary or police) if they wish to engage in coercive activities or impose sanctions. In addition, the authors also point out that this reorganization of tax administrations indirectly implies a long-term improvement in revenue mobilization, resulting from a more incentive-based structure, not only for tax collectors but also for taxpayers, who may become more willing to pay taxes.

On the other hand, apart from the advantages of autonomous financing and the freedom of staff recruitment, the creation of a semi-autonomous administration entails a break with inefficient or illegal practices such as manual declaration of taxes and cash payment. This is a significant advantage, as it enhances the assessment of objectives and makes it more compelling for taxpayers to comply with their tax obligations. In this context, an increase in tax revenue would result from changes in practices, reinforced evaluation of objectives, and/or voluntary or coercive compliance among taxpayers (Von Haldenwang et al., 2014). It is also possible that the increase in revenues was due to a surprise effect. The creation of a new semi-autonomous administration reveals the public authorities' desire for transparency in the mobilization of tax revenues. This may lead to improved collaboration between tax agents and taxpayers. Additionally, when a new semi-autonomous administration is established, taxpayers often ignore the operating mechanisms and are more easily caught by the new structure in the event of fraud. Furthermore, it is worth noting that this reform is generally associated with the introduction of better-quality infrastructure, particularly the

digitization of tax declaration and payment processes. Technology or digitalization can both simplify the tax payment process and enhance the integrity of the tax system, reducing the opportunities for corruption by distancing taxpayers from tax collectors (Bird & Zolt, 2008). Despite the numerous arguments in favor of creating semi-autonomous administrations, as listed above, some doubts have been raised regarding their effectiveness. This reform may have limits that could reduce or even cancel the expected long-term positive effect. Firstly, the transition from a traditional administration to an SARA requires significant investments and a relatively long timeframe for the system to function effectively. This could result in a significant share of revenue being drained, and may also lead to a decrease in collection efficiency, with consequences for the State's budgetary balance. Moreover, the poor quality of institutions in developing countries, particularly in sub-Saharan Africa, gives SARA reform little chance of achieving the expected results.

Institutional quality is therefore crucial to reform, and SARA creation is not a panacea for increasing tax revenues (Mann, 2004). Without this improvement in institutional quality, SARAs' success may be temporary, as old lacunae can hinder them. The case of Uganda is tangible proof of this situation (Taliercio Jr, 2004). Established between 1991 and 1992, Uganda's SARA was unable to consolidate its taxpayer register. The introduction of the "TIN" program, which involved assigning a unique identification number to each taxpayer and purging it of inactive records, was not as successful as expected due to corruption-related problems. Even if the specific characteristics of SARA are assets for mobilizing additional resources, it must be recognized that their autonomy is no guarantee of success (Mann, 2004). It must be acknowledged that without a comprehensive overhaul of procedures, internal organizations, and enhanced relations between SARA, other institutions, and taxpayers, inefficiencies may persist. Without this, conflicts between the SARAs manager and/or the Board of Directors and the Ministry of Finance could emerge, compromising the durability of the SARAs models. The effect of organizational change can also prove ineffective, at least in the medium term, if taxpayers do not comply with their tax obligations, i.e., lack fiscal citizenship. This situation can become even more problematic if we consider taxpayers' ability to adapt. At the beginning of the reform, taxpayers who had not yet mastered the new structure's functioning complied. Over the years, they have come to understand the new tax law better, and if they lack good fiscal citizenship, they may be more likely to evade taxes. The same applies to tax authorities, who will also be able to adapt and bring back corruption in other forms (Mann, 2004). In this context, the argument founded on the effect of organizational change is likely to be short-term.

4.2.2 Some empirical evidence

The existing empirical literature on SARA yields divergent results. Some studies show that the adoption of SARA is beneficial for mobilizing tax revenue (Von Haldenwang et al., 2014). Other studies find no robust evidence that a SARA is more advantageous than a conditional tax administration (Dom, 2019). Finally, some studies yield mitigated results, indicating that the adoption of SARAs may not be a panacea for increasing tax revenue. Otherwise, a positive effect is found in the short term, but this effect dissipates in the long term (Ahlerup et al., 2015; Sarr, 2016; Gbato et al., 2019b; Ebeke et al., 2016).

Most studies have produced mixed results. (Ahlerup et al., 2015) Study the effect of SARA and VAT on tax revenues in Sub-Saharan Africa from a sample of 47 countries during the period 1980-2010. They find that SARAs lead to improved tax revenues in the short and medium term, but the effect dissipates over time. In contrast, VAT does not affect total tax revenues, either in the short term or the long term. Other studies show that the results of SARA adoption vary from country to country. It is positive in some countries and negative in others. Argentina, Bolivia, Guyana, Malawi, and South Africa appear to have performed better than traditional administrations of the Ministry of Finance in terms of collection (Sarr, 2016). However, the author finds that in Colombia, Guatemala, Rwanda, Uganda, and Zimbabwe, the effects of SARAs are ambiguous. At the same time, in six countries (Kenya, Mexico, Peru, Tanzania, Venezuela, and Zambia), SARA seems to have performed worse in terms of mobilization, suggesting that results would be better with traditional tax administrations. Gbato et al., 2019b also points to the variability of results from one country to another and adds that institutional quality is indispensable for the sustainable success of SARAs. Ebeke et al., 2016 also provides empirical evidence of the mixed effects of the introduction of SARAs, VAT, and the Large Business Unit on non-resource tax revenues in Sub-Saharan Africa. Their analysis encompasses 41 countries and spans the period from 1980 to 2010. Using synthetic control (SCM) and propensity score matching (PSM) methods, they conclude that the reform of the large business Unit is insignificant. At the same time, SARAs and VAT have positive effects on tax revenue mobilization. They also conclude that the combined effect of adopting SARAs and VAT is even better for tax revenue mobilization.

Among the studies that find positive outcomes of the SARA effect, Von Haldenwang et al., 2014 analyzes a panel of local tax collections in Peru between 1998 and 2011. The findings of their investigations show that municipalities with SARAs collect more tax revenue than those with traditional tax administrations. They also find that tax revenues are more stable in municipalities with SARA, which is beneficial for budget spending planning. Based on the stationary time series macro annual data for the period from 1950-51 to 2004-

05 Upender et al., 2008, this study provides empirical results on the performance of SARAs in India. The authors compare the pre- and post-SARA periods. They conclude that tax revenue mobilization is better in the post-SARA period. Finally, in an analysis based on 46 countries over the period 1980-2015, Dom (2019) finds no solid evidence that induces an improvement in revenue performance with SARAs.

4.3 Methodology

This paper aims to address the following question: Does the semi-autonomous tax authority model effectively combat tax evasion? To do so, we begin by estimating countries' tax effort, using the stochastic frontier method, in particular Kumbhakar et al. (2014). We then calculate fiscal potential as the ratio of collected tax revenues to tax effort. Finally, we calculate the uncollected tax potential as the difference between the tax potential and the taxes collected, expressed as a percentage of the tax potential. It is this uncollected potential that we use as a proxy for tax evasion. In other words, the dependent variable in our baseline model is tax evasion, namely "TaxEvasion". However, we will use alternative dependent variables, such as tax revenues excluding natural resources, inefficiency, overall tax effort, and its components, including persistent tax effort and time-varying tax effort. Then, for our empirical analysis, we use the propensity score matching method (PSM) in the baseline model estimates, the entropy balancing method, and Ordinary Least Squared (OLS) in robustness checks.

4.3.1 Stochastic frontier model

We use the Kumbhakar et al. (2014) method for several reasons. Unlike the Battese and Coelli (1992), W. H. Greene and Schlacther (2005), Wang and Ho (2010) models, Kumbhakar et al. model distinguishes between persistent and time-varying efficiency. This distinction enables more detailed analyses, allowing for the identification of efficiency due to tax law and efficiency due to the performance of tax officials. Indeed, the Kumbhakar et al. (2014) model divides the error term into four components. (1): random country effects, which capture unobserved, time-invariant variables (structural factors omitted); (2): country heterogeneity (differences in tax culture and civic-mindedness); (3): persistent technical efficiency linked to tax laws, the form of organization of domestic tax departments [5] and which remains constant unless there is tax reform or changes in the organization that affect

[5] e.g., large business division, small and medium-sized business department, and municipal tax administrations

management style; (4): time-varying efficiency, such as the experience of tax officials, their performance. Thus, we can simultaneously measure the tax effort resulting from the performance of the tax administration, political decisions, and the overall tax effort, which is the product of the first two. The model is as follows:

$$TaxRevenues_{it} = \alpha + f(X_{it};\beta) + \theta_i + \upsilon_{it} + \eta_{it} + \lambda_{it} \tag{4.1}$$

θ_i is the random country effects; υ_{it} is the country's latent heterogeneity; η_{it} is the persistent inefficiency; λ_{it} corresponds to the short run varying inefficiency.

The model is estimated in three steps. It can be rewritten as :

$$TaxRevenues_{it} = \alpha^* f(X_{it};\beta) + \omega_i + \varepsilon_{it} \tag{4.2}$$

Where:

$$\alpha^* = \alpha - E(\eta_i) - E(\lambda_{it}) \tag{4.3}$$

$$\omega_i = \theta_i - \eta_i + E(\eta_i) \tag{4.4}$$

$$\varepsilon_{it} = \upsilon_{it} - \lambda_{it} + E(\lambda_{it}) \tag{4.5}$$

ω_i and ε_{it} have constant variance and zero mean.

Step 1: (β) is estimated by the standard random effects estimator as Brun and Diakite (2016). Thereby we obtained the predicted values of ε_{it} $(\widehat{\varepsilon}_{it})$ and ω_i $(\widehat{\omega}_i)$.

Step 2: We make the following assumptions: there is no difference between ε_{it} and $(\widehat{\varepsilon}_{it})$. $\lambda_{it} \sim N^+(0,\sigma^2)$ and $\upsilon_{it} \sim N^+(0,\sigma_\upsilon^2)$ so $E(\lambda_{it}) = \sqrt{\frac{2}{\pi\sigma}}$. We estimate equality (5) by the stochastic frontier technique. Thus we obtain $\widehat{\lambda}_{it}$. Time-varying Tax effort $= -\lambda_{it}$.

Step 3: η_i is estimated following a similar procedure as in Step 2, by assuming $\eta_i \sim N^+(0,\sigma_\eta^2)$. $E(\eta_i) = \sqrt{\frac{2}{\pi\sigma_\eta}}$ and $\theta_i \sim N(0,\sigma_\theta^2)$ so here we estimate the equality (4) and obtain $(\widehat{\eta}_i)$.
Persistent Tax Effort = $exp(-\eta_i)$.
$\widehat{\eta}_i$ and $\widehat{\lambda}_{it}$ are the Jondrow et al. (1982) estimators of η_i and λ_{it}.

Overall Tax effort = Persistent Tax Effort $\times$ Time-varying Tax effort.

We now calculate tax potential as follows:

$$FiscalPotential = \frac{TaxRevenuesCollected}{OverallTaxEffort} \tag{4.6}$$

Finally, we calculate the tax gap as follows:

$$TaxGap = \frac{FiscalPotential - TaxRevenuesCollected}{FiscalPotential} \tag{4.7}$$

4.3.2 Propensity score matching method

We aim to assess the treatment effect of setting up SARA on tax evasion, while also taking into account selection bias. The treatment refers to the adoption of SARAs in a given country at a specific time. We refer to SARA as the treated group and non-SARA as the control group. The equation of the estimated Average Treatment effect on the Treated (ATT) is expressed as follows:

$$ATT = E[(Y_{it}^1 - Y_{it}^0)|SARA_{it} = 1] = E[Y_{it}^1|SARA_{it} = 1] - E[Y_{it}^0|SARA_{it} = 1] \tag{4.8}$$

Where SARA is the dummy (independent variable) corresponding to the SARA implementation, and **Y** is tax evasion. $Y_{it}^0|SARA_{it} = 1$ is the value of tax evasion at time **t** that would have been observed if a SARA country **i** had not adopted the SARA and $Y_{it}^1|SARA_{it} = 1$ the outcome value actually observed in the same country. Equation 8 tells us that a simple comparison between the value of tax evasion observed in the treatment group and the value of tax evasion observed for the same countries, had they not adopted SARAs, would give an unbiased estimate of ATT. However, the main difficulty in estimating ATT is that the second term on the right-hand side ($E[Y_{it}^0|SARA_{it} = 1$) is unobservable. We cannot observe the value of the tax evasion of a SARA country if it had not adopted the SARA model. We are faced with an identification constraint, as is often the case in experimental studies. A frequently used approach to resolve this difficulty is to compare the sample mean of the treatment group (SARA countries) with that of the control group (non-SARA countries), provided the choice of country implementation is random. However, as the choice of adopting SARAs is not random, this estimate would be biased. The adoption of SARAs is correlated with a set of observable elements (previous year tax evasion, participation or not in the IMF program, trade openness, and agricultural value added), which also affect the mobilization of tax rev-

enues. We are thus faced with the problem of "selection on observables"[6], which makes traditional linear regression an unreliable method. To resolve the selection problem on observables, we use, as Lin and Ye (2007) do, various propensity score matching methods recently developed in the literature.

4.3.3 Matching on propensity scores (PSM)

The PSM method involves comparing SARA and non-SARA countries with similar observed characteristics, allowing the difference in the value of tax evasion between the two groups of countries to be attributed to the treatment effect. Otherwise, to determine the effect of the treatment, the two groups must be as comparable as possible before the treatment is implemented. The fundamental hypothesis required to apply the matching method is "conditional independence" $(Y^0, Y^1 \perp SARA \mid X)$. It requires that, conditionally to observables **X** unaffected by the treatment, the outcomes be independent of the SARA implementation dummy. This implies that all factors influencing treatment and outcome must be considered by the researcher (Caliendo & Kopeinig, 2008). Under this assumption, Equation 4.8 can be rewritten as follows:

$$ATT = E[Y^1_{it} \mid SARA_{it} = 1, X_{it}] - E[Y^0_{it} \mid SARA_{it} = 0, X_{it}] \tag{4.9}$$

where we have replaced $E[Y^0_{it} \mid SARA_{it} = 1, X_{it}]$ with $E[Y^0_{it} \mid 0, X_{it}]$, which is observable. The PSM method would involve matching treated units to control units with similar values of **X**. In practice, matching on **X** will be difficult to implement as the number of covariates in **X** increases. We follow Rosenbaum and Rubin (1983) in overcoming this problem. They propose matching treated and control units based on their propensity scores, which can be estimated using probit or logit models. The propensity score (PS) is the probability of adopting SARA, conditional on the observable covariates (**X**).

$$p(X_{it}) = E[SARA_{it|X_{it}}] = Pr(SARA_{it} = 1 \mid X_{it}) \tag{4.10}$$

Another necessary assumption for applying propensity score matching is "common support" $p(X_{it}) < 1$, i.e., the existence of a few comparable control units for each treated unit. Using propensity score matching, the ATT estimate can now be as follows:

$$ATT = E[Y^1_{it} \mid SARA_{it} = 1, p(X_{it})] - E[Y^0_{it} \mid SARA_{it} = 0, p(X_{it})] \tag{4.11}$$

We chose four types of matching identified in the literature to estimate ATT using propen-

[6] see Dehejia and Wahba (2002); Heckman et al. (1998) for more details.

sity score matching. We begin with nearest neighbor matching based on the nearest PS matching with the nearest SP, and then select the three closest match types (n=1, n=2, and n=3). Secondly, we use radius matching, based on PS matching of treated and untreated located at a defined distance. As in the literature, three radii are selected (r=0.005, r=0.01, r=0.05), corresponding to a small, medium, and large radius, respectively. Third, we use kernel matching, which matches each treated observation with the distribution of untreated observations in the common support, with weights that are inversely proportional to the distance from the PS of each treated observation. Finally, we use local linear regression, which is comparable to kernel matching. The difference is that it takes into account a linear term in the weighting function.

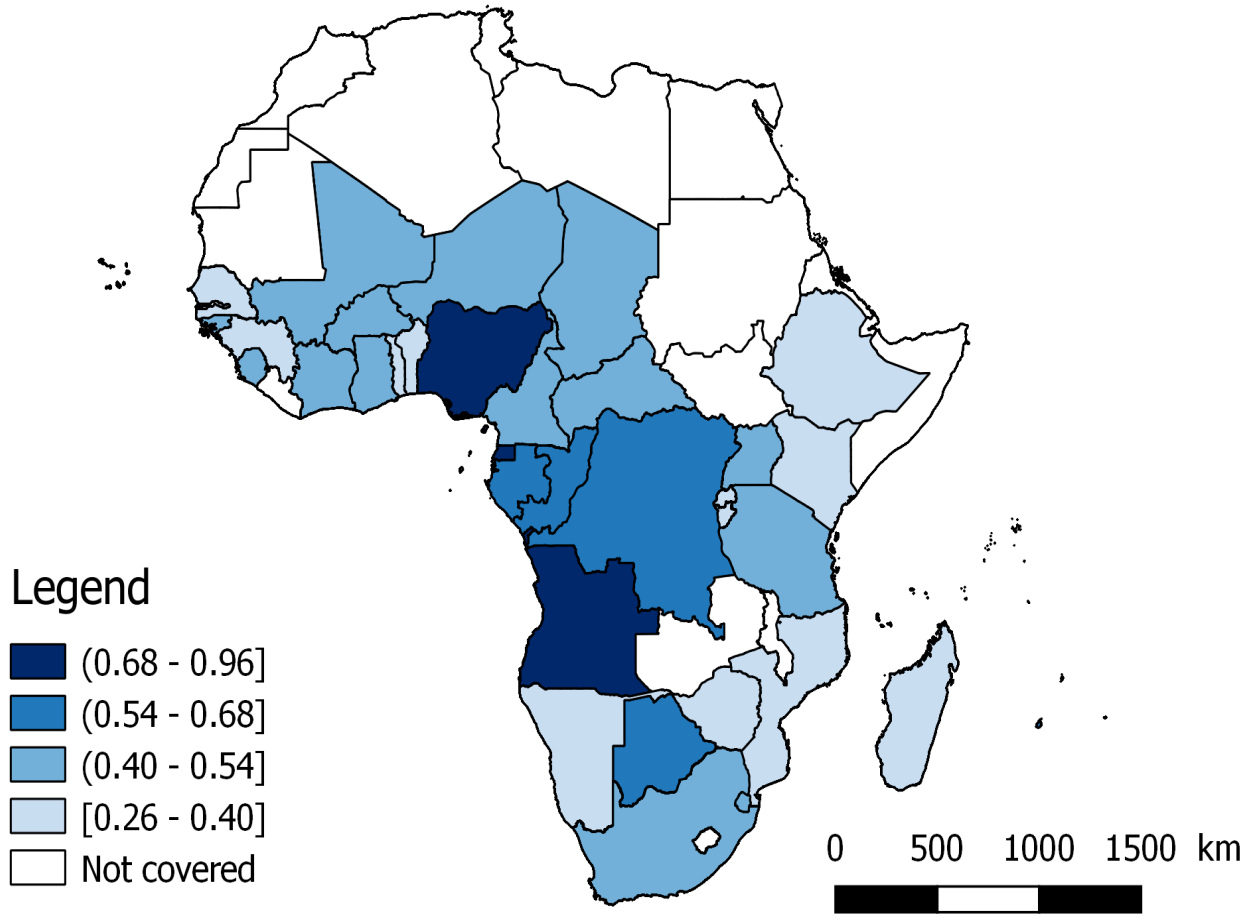
4.4 Data and descriptive statistics

This study aims to estimate the effect of SARAs on tax evasion. To achieve this, we draw on a large dataset covering 39 developing countries in sub-Saharan Africa over the period 1980-2015. We are focusing on Sub-Saharan African countries, as this tax administration reform (SARA adoption) has been adopted in the majority of countries in this zone. The availability of data determines the time horizon of our sample. Our main variables are SARAs (treatment) and tax evasion (outcome). Following previous studies (Gbato et al., 2019b; Ebeke et al., 2016; Sarr, 2016; Ahlerup et al., 2015; Von Haldenwang et al., 2014), we measure SARA as a dummy variable taking 1 when a country i adopts SARA at date t and 0 otherwise. These data are collected from previous studies and country tax laws. Our main dependent variable, tax evasion, is estimated by the Tax Gap as a proxy. We used data on tax revenue excluding resource taxes and social contributions drawn from Mansour (2014) database to calculate the tax gap. The main advantage of the Mansour database over other sources of public revenue data is that it contains no missing data, which is essential for calculating tax gaps using the Stochastic Frontier method. Regarding the control variables, we select the control group of units with non-SARAs, that is, on average, as similar as possible to the treatment group of SARA units regarding relevant pre-treatment characteristics. Following the literature on the determinants of SARA adoption and tax revenue, we select the following control variables: total natural resource rents, gross domestic product per capita, agricultural value added, trade openness, age dependency ratio, population, and public aid for development, which are drawn from World Bank data. We also use institutional variables, such as law and order, democratic accountability, government stability, bureaucracy quality, and corruption, which are sourced from the International Country Risk Guide (ICRG) database. The full definitions of

each variable used in this paper and their sources are compiled in Table 4.21 in the Appendix.

Figure 1 above shows the average tax evasion index for Sub-Saharan African countries. Values range from 0.26 for countries with the lowest levels of tax evasion to 0.96 for countries with the highest levels of tax evasion. These tax evasion levels are categorized into four groups. Interval [0.68-0.96] is made up of countries with the highest levels of tax evasion (Equatorial Guinea, Nigeria, and Angola). The range [0.26-0.40] includes the lowest levels of tax evasion in the Sub-Saharan Africa region (Gambia, Kenya, Namibia, Lesotho, etc.). Uncolored countries are those not included in the study.

Figure 4.1: Average Tax Evasion Index in Sub-Saharan African Countries, 1980-2015

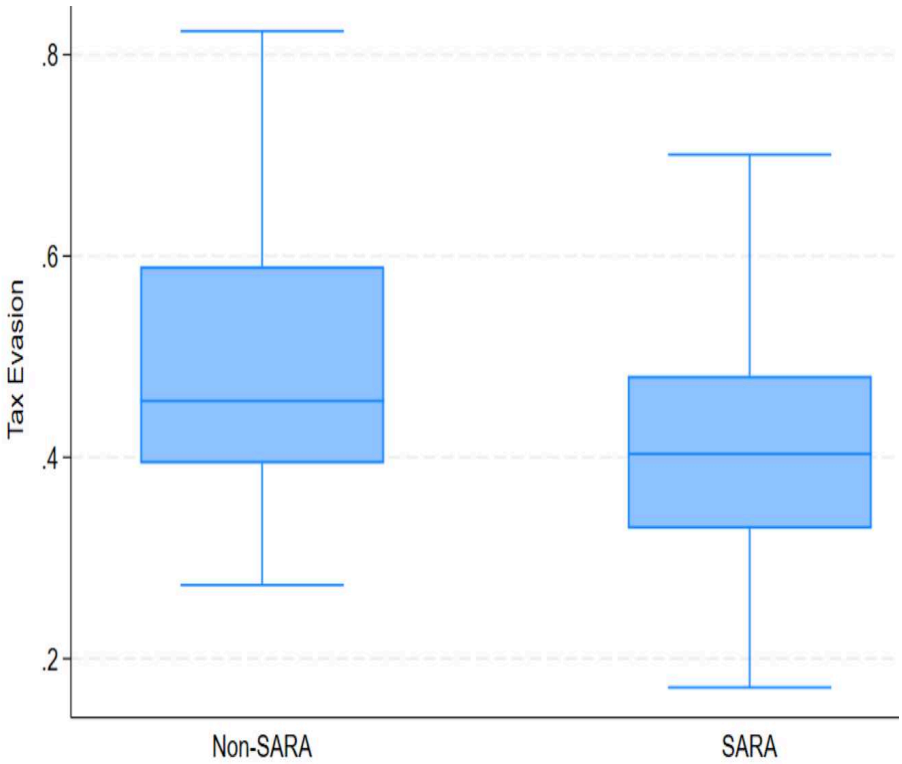


Source: Based on author's estimates

Figure 2 shows the level of tax evasion in countries that have adopted SARAs and those that have not. In the box plots, the lower and upper hinges of each box represent the 25th and 75th percentiles of the samples, respectively. The line within the box indicates the median,

and the endpoints of the whiskers mark the following adjacent values.

Figure 4.2: Tax Evasion by SARA adoption.



Source: Based on author's estimates

4.5 Results and discussion

4.5.1 Baseline results

4.5.1.1 Propensity scores results

Table 4.1 shows the first stage of the PSM method and reports probit estimates of the propensity scores of SARA adoption. However, before interpreting the results, it is essential to assess the model's quality of fit. Figure 4.3 shows that the area under the ROC curve is 82.81% (see Appendix). This shows that our estimates are of good quality. Furthermore, the overall significance of the regression is reasonable, with a pseudo R^2 of about 26%. SARA adoption is a binary variable that takes the value 1 during which a given country implements a SARA and 0 otherwise. Most of the coefficients of our explanatory variables are significant and have the signs expected for SARA adoption. The Age dependency ratio and resource rents have a negative influence on the probability of SARA adoption (Column 1). For example, rents have a negative impact because countries that are highly dependent on natural

resources are generally negligent in mobilizing non-resource tax revenues. Therefore, they are less motivated to carry out fiscal reforms, in this case, the adoption of SARAs. However, agriculture share, aid, and trade openness are positively associated with the probability of SARA implementation (Column 1). The increase in the agriculture share, which is an exempt sector in most Sub-Saharan African countries, entails a tax loss for these countries. This motivates governments to make profound tax reforms, such as the adoption of an SARA in our case, to compensate for these losses. A high level of public aid for development implies a high level of external dependence, which leads to high debt levels.

Table 4.1: Probit estimates of the propensity score

	Dependent variable: SARA					
	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)
Age dependency ratio	-0.046***	-0.042***	-0.045***	-0.036***	-0.045***	-0.040***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Agriculture share	0.016***	0.023***	0.028***	0.019***	0.025***	0.016***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Trade openness	0.005**	0.003	0.001	0.003	0.002	0.003
	(0.028)	(0.324)	(0.777)	(0.294)	(0.446)	(0.366)
Population, log	0.049	0.181**	-0.032	0.018	-0.021	-0.028
	(0.393)	(0.019)	(0.662)	(0.808)	(0.770)	(0.700)
Aid, log	0.603***	0.462***	0.675***	0.546***	0.628***	0.581***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Resource rents, lag	-0.022***	-0.022***	-0.019***	-0.030***	-0.021***	-0.033***
	(0.000)	(0.002)	(0.004)	(0.000)	(0.000)	(0.000)
Law and order		0.347***				
		(0.000)				
Democratic accountability			0.341***			
			(0.000)			
Government stability				0.115***		
				(0.000)		
Bureaucracy quality					0.291***	
					(0.000)	
Corruption						-0.159***
						(0.000)
Constant	-9.779***	-10.501***	-10.541***	-9.769***	-9.677***	-7.935***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo R^2	0.26	0.25	0.24	0.22	0.23	0.21
No. Obs	1.179	778	780	780	780	780

To pay these debts and the debt servicing, the government has recourse to tax revenues, which remain an autonomous and predictable source of financing. Reforms are therefore needed to mobilize additional tax revenues. Tariff dismantling following trade liberalization has resulted in a substantial loss of customs duties, which previously accounted for a significant proportion of tax revenues. Thus, countries have embarked on a fiscal transition to mobilize more domestic revenues to compensate for the loss of customs duties. Hence, there is a positive correlation between Trade Openness and the probability of initiating re-

forms, in this case, SARA adoption. Columns 2 to 6 present the estimates of column 1, but are controlled one after the other by different institutional variables. Significant variables in column 1 remain significant in columns 2 to 6. However, the Population variable becomes significant in column 2 with the expected sign. After estimating the propensity score for the sample, it is essential to ensure that for each SARA country, there is at least one non-SARA country with the same propensity score.

4.5.1.2 Matching results

Table 4.2 presents the Average Treatment effect on Treated (ATT) of SARA adoption on tax evasion. To match each SARA country with non-SARA countries based on proximity to their PS, we use four PSM algorithms.

Table 4.2: Average Treatment Effect (ATT) of SARA on Tax Evasion

	Nearest Neighbor Matching			**Raduis Matching**			**Kernel Matching**	**Local Linear Matching**
	n = 1	n = 2	n = 3	r = 0,005	r = 0,01	r = 0,05		
Panel A. Dependent variable: Tax Evasion								
ATT	-0.082***	-0.074***	-0.068***	-0.076***	-0.079***	-0.080***	-0.080***	-0.088***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No. of treated	219	219	219	219	219	219	219	219
No. of controls	692	692	692	692	692	692	692	692
No. Obs	911	911	911	911	911	911	911	911
Pseudo R^2	0.030	0.023	0.019	0.006	0.008	0.016	0.017	0.030
Stand. bias (p-val.)	0.012	0.050	0.099	0.823	0.641	0.175	0.166	0.012
R. bounds test	1.7	2.1	2.4	2.5	2.9	3.1	3.1	3.7
Law and order	-0.042	-0.042	-0.048**	-0.045**	-0.042**	-0.049***	-0.049***	-0.053t***
	(0.114)	(0.101)	(0.021)	(0.020)	(0.028)	(0.003)	(0.007)	(0.003)
Democ. Account.	-0.054**	-0.051**	-0.049**	-0.064***	-0.058***	-0.051***	-0.049***	-0.051***
	(0.017)	(0.014)	(0.013)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Gov. stability	-0.039	-0.042	-0.036	-0.035*	-0.035**	-0.048**	-0.048**	-0.061***
	(0.156)	(0.131)	(0.111)	(0.071)	(0.046)	(0.015)	(0.019)	(0.003)
Bureau. quality	-0.049**	-0.041**	-0.032*	-0.051***	-0.035**	-0.032**	-0.032**	-0.035**
	(0.019)	(0.035)	(0.075)	(0.005)	(0.044)	(0.026)	(0.024)	(0.015)
Corruption	-0.081***	-0.075**	-0.082***	-0.064***	-0.063***	-0.069***	-0.068***	-0.078***
	(0.010)	(0.012)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)
No. of treated	163	163	163	163	163	163	163	163
No. of controls	466	466	466	466	466	466	466	466
No. Obs	629	629	629	629	629	629	629	629

So, we use nearest neighbor matching, radius matching, local linear regression matching, and kernel matching. However, before interpreting the results (ATT), we discuss the results of the diagnostic tests used to assess the quality of the matching estimate. To test if our two groups are comparable, we use the pseudo R^2. Its value indicates the extent to which the covariate vector (X) explains the probability of SARA adoption and thus provides balanced scores (Sianesi, 2004). The good adjustment quality of the model is associated with a very low value and near-zero pseudo R^2 (Caliendo & Kopeinig, 2008). The pseudo R^2 values of our results in Table 4.2 are less than 0.03, which shows that our matching provides balanced

scores and confirms the comparability hypothesis. Next, we analyze the matching quality by testing the conditional independence hypothesis concerning both unobservable and observable variables. According to the author, latent bias can occur if there are unobserved covariates that simultaneously affect the treatment assignment and the outcome variable. Therefore, we use Rosenbaum's sensitivity test to check whether there are unobserved variables that simultaneously affect the treatment (SARA adoption) and the outcome variable, i.e., tax evasion (Rosenbaum, 2002). The results suggest no hidden bias because the values are greater than 1. Finally, we perform the standardized bias test, which evaluates the marginal distance distributions of our control variables. The p-value associated with the standardized bias must be greater than the critical value of 10% (Rosenbaum & Rubin, 1985). The results of the test reveal that, in most specifications, there is no statistical difference between SARA and non-SARA countries after matching, except in some cases. The results of the ATT estimation of SARA adoption on tax evasion (Table 4.2) reveal a negative and statistically significant effect at 1% for all matching methods. The magnitude of the effect of adopting SARA ranges from -6.8 percentage points (nearest neighbor matching, n = 3) to -8.8 percentage points (local linear matching). Controlling the effect of SARA adoption on tax evasion by institutional variables (law and order, democratic accountability, government stability, bureaucracy quality, and corruption), the results remain significant in almost all our specifications.

4.6 Robustness checks

Our baseline estimation findings indicate that SARA adoption decreases tax evasion. In this section, we test the robustness of these results. To do so, we use alternative-dependant variables and analyze composition effects. Then, we perform other estimation methods such as entropy balancing and Ordinary Least Squared. Finally, we examine this effect over time and the transmission channels.

4.6.1 Alternative dependent variables and composition effects

To deepen our analysis, we use the first alternative dependent variables, such as tax revenue excluding natural resources and tax inefficiency. Secondly, we decompose tax effort into its components, i.e., persistent tax effort and time-varying tax effort. The results are presented in Table 4.6 in Appendix A.

The results underscore that the ATT of SARA adoption on tax revenue, excluding natural resources, in panel B, is positive and significant at the 1% level. The ATT ranges from

approximately 19.8 percentage points with radius matching, r = 0,005, to around 28.4 percentage points with nearest neighbor matching, n = 3. For tax inefficiency in panel F, the ATT is negative and significant at the 1% level, ranging from -8.8 percentage points with local linear matching to -6.8 percentage points with nearest neighbor matching, n = 3. Regarding the tax effort in panel C, the ATT is positive and significant at 1% level, and ranges from 6.8 percentage points with nearest neighbor matching, n = 3, to about 8.8 percentage points with local linear matching. Similarly, for persistent tax effort in panel D and time-varying tax effort in panel E, the ATT is positive and significant at 1%. For persistent tax effort, the ATT ranges from 7.0 percentage points with nearest neighbor matching, n = 3, to 8.9 percentage points with local linear matching. For a time-varying tax effort, the ATT ranges from 2.2 percentage points with nearest neighbor matching, n = 3 to 3.5 percentage points with nearest neighbor matching, n = 1. Controlling the effects (ATT) by institutional variables, law and order, democratic accountability, government stability, bureaucracy quality, and corruption, the results remain significant. We have not presented them to keep the table short. In summary, adopting SARAs would reduce tax inefficiency and tax evasion. Conversely, it would improve tax revenues (excluding natural resources) and the tax effort and its components (persistent tax effort and time-varying tax effort).

4.6.2 Alternative estimation methods

With the synthetic controls in Table 5.1 (Panel B), we estimate the effect of SARA on tax evasion (ATT) in sub-Saharan African countries using the weighted least squares method. The results are presented in Table 4.3. Columns (1)-(4) show the regression result without the matching covariates used in the first step to construct the synthetic group. Column(1) excludes country and time-fixed effects. Column (1) excludes time and country fixed effects. Columns (2) and (3) include country and time-fixed effects, respectively, while column (4) includes these two effects jointly.

Table 4.3: SARA adoption and tax evasion: entropy balancing

	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)	Column (7)	Column (8)
Panel A. Dependant variable: Tax Evasion								
Sara	-0.032**	-0.328***	-0.035***	-0.337***	-0.034***	-0.460***	-0.036***	-0.445***
	(0.012)	(0.000)	(0.002)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Covariates	No	No	No	No	Yes	Yes	Yes	Yes
Year fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Country fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	841	841	841	841	841	841	841	841
R^2	0.017	0.793	0.090	0.813	0.354	0.814	0.426	0.821

Finally, columns (5) to (8) repeat the exercise of columns (1) to (4) except for adding in

each second-stage regression the covariates used in the first stage, namely, âge dependency ratio, agriculture share, trade openness, population, development aid, natural resource rents, IMF program, and GDP per capita. Including the matching covariates in the second stage of entropy balancing enhances the matching quality, while controlling for country- and year-fixed effects eliminates any country- or year-specific effects. Irrespective of the specifications, SARA adoption significantly decreases tax evasion in SARA countries compared to non-SARA countries by 1% (except in the column where the significance is 5%). The magnitude of the coefficients varies between -0.032 percentage points (column 1) and -0.460 percentage points (column 6). This result is robust given the relative stability of the coefficients across the eight specifications in the table, with an average effect of -0.213 percentage points. Thus, SARA adoption decreases tax evasion by -0.213 percentage points in SARA countries compared to non-SARA countries.

As in the PSM models, we extend our investigation by using other dependent variables, notably: tax revenue excluding natural resources, tax effort, persistent tax effort, time-varying tax effort, and tax inefficiency. Using the Balancing Entropy and Ordinary Least Squares methods confirms the results of the baseline model. The results are presented in Appendix B and C, respectively. Specifically, the adoption of SARA would reduce tax evasion and tax inefficiency. It increases non-resource tax revenues, tax effort, and its components. In summary, we can conclude that SARA adoption would be effective in combating tax evasion.

4.6.3 Effect of SARA adoption over time

Following Fang and Miller (2011), we highlight a time-varying treatment effect, i.e., SARA adoption. This dynamic effect would allow us to isolate the lagged effect of SARA adoption. The intuition behind this approach is the potential time lag separating SARA adoption and its effect on tax performance. To do so, we estimate the ATTs of the year of adoption (t = 0) and the twelve years following the adoption year (t = 1, 2,...,12). Results compiled in Table 4.14, columns (1) to (13), reveal the existence of an unstable dynamic effect of SARA adoption on tax evasion. The adoption of SARA did not affect tax evasion in the first two years (t = 0 and t = 1). This can be explained by the fact that taxpayers (companies and households) need time to assimilate the new tax policy processes. Likewise, the agents of the new tax administration also need time to better master the new tax system, as well as time to explain it to taxpayers. In brief, the new tax policy needs time to produce results. This effect appears from the third year (t+2) of SARA adoption through to the sixth year (t+5). This effect is inhibited from the seventh year (t+6) and reappears in the eleventh year (t+10) through

to the thirteenth year (t+12). From these results, we can conclude that the effect of SARA adoption on tax evasion is not constant over time. In fact, at the beginning of the reform, taxpayers unfamiliar with the new tax law complied with the rules. However, as the reform progressed, they became more familiar with the rules, finding ways to manipulate them or exploit their loopholes. In addition, old practices such as corruption and political interference can occasionally resurface in the tax system, compromising the efficiency of the new administration. These and other reasons may explain the SARAs' unstable effectiveness.

4.6.4 Transmission channels

Our results indicate that SARA adoption would reduce tax evasion in sub-Saharan African countries. This section aims to identify the mechanisms behind this result. Based on the literature, we suggest that SARA adoption may impact tax evasion through the channels of a larger tax base, tax compliance, digitalization, and better institutional quality. The economic activity channel is justified by SARA's ability to restructure and revitalize economic activity. For example, by explaining to informal sector businesses the benefits of formalizing their businesses, such as participation in public markets and the possibility of applying for bank credit, they can do so. In so doing, it broadens the tax base and reduces tax evasion possibilities. In other words, reducing the size of the informal sector can help to reduce tax evasion. Additionally, this broadening of the tax base can help alleviate fiscal fatigue among taxpayers. Hence, they will be less motivated to evade taxes, leading to a reduction in tax evasion. Unlike traditional tax administrations, SARAs are characterized by the integration of tax and customs administrations. This coordination facilitates the processing of tax declarations and payments and helps to combat corruption and reduce tax evasion. In addition, several studies have shown that taxpayers are more willing to pay in democratic political systems and therefore less motivated to evade taxes (Alm et al., 1999; Feld & Tyran, 2002; Frey & Eichenberger, 2001; Bahl, 1999). Briefly, better institutional quality can help to reduce tax avoidance. Generally, SARA implementation is accompanied by increased use of new Information and Communication Technologies (ICT) to simplify the process of declaring and paying taxes (e.g, tele-declaration, payment by mobile money). Additionally, ICT use facilitates audit processes and increases the likelihood of detecting tax irregularities. Thus, by simplifying payment times on the one hand, and increasing the probability of detecting tax irregularities on the other, taxpayers are less inclined to evade taxes. Finally, training and awareness sessions, as well as assistance for taxpayers in the event of difficulties, can enhance taxpayers' tax morale and encourage them to respect their tax obligations (Benkraiem et al., 2021). Before testing our channels, we assess their relevance to tax evasion using

ordinary least squares (OLS)[7].

Table 4.4: Correlation between SARA and main channels

	Column (1)	Column (2)	Column (3)
	Tax Evasion	Tax Evasion	Tax Evasion
Institutional quality	-0.012**		
	(0.022)		
Tax Compliance		-0.012***	
		(0.000)	
Time to pay taxes			0.001*
			(0.092)
Main controls	Yes	Yes	Yes
Year fixed effects	No	No	No
Country fixed effects	No	No	No
Observations	631	452	380
R^2	0.224	0.387	0.466

Table 4.5: Transmission channels

	Column (1)	Column (2)	Column (3)
	Institutional quality	Tax Compliance	Time to pay taxes
Sara	0.212***	2.229***	-145.537***
	(0.002)	(0.000)	(0.000)
Main controls	Yes	Yes	Yes
Year fixed effects	No	No	No
Country fixed effects	No	No	No
Observations	790	512	419
R^2	0.032	0.335	0.295

This approach aims to see if the channels identified above are each correlated with tax evasion. The results presented in Table 4.4 suggest that institutional quality, time to (prepare and) pay taxes, and tax compliance are correlated with tax evasion, representing potential transmission channels through which SARA can hurt tax evasion in sub-Saharan African countries. Based on ordinary least squares (OLS), with the main control variables used in the entropy model, we test whether our potential channels are correlated with SARA. The results compiled in Table 4.5 indicate that SARA is associated with a significant increase

[7]In Appendix Table 4.15, we provide bivariate correlations between tax evasion and transmission channels, namely institutional quality (proxied by control of corruption), time to pay taxes and tax compliance, to assess their relevance to tax evasion. However, we prefer ordinary least squares to be able to control the model with the main variables used in entropy balancing

in institutional quality and tax compliance, as well as a decrease in the time required to pay taxes. In summary, SARA reduces tax evasion by enhancing institutional quality, improves tax morale, and streamlines tax payment processes by lowering the time to pay taxes through reduced compliance costs.

4.7 Conclusion and policy implications

This paper examines whether SARA adoption provides a means to combat tax evasion. Using propensity score Matching (PSM) on a sample of 42 Sub-Saharan African countries over 1980–2015, our study concludes that SARA adoption decreases tax evasion in SARA countries relative to non-SARA countries. These findings are robust to several alternative specifications, including extending the vector of control variables, using various alternative dependent variables, and using concurrent estimation methods (entropy balancing and ordinary least squares). Additional estimations using various alternative dependent variables reveal that SARA adoption increases tax revenue (excluding natural resources), tax effort, and its components, i.e., persistent tax effort and time-varying tax effort in Sub-Saharan African countries. These results further reveal that SARA decreases tax inefficiency in sub-Saharan African countries. However, it should be underlined that the dynamic study reveals that this effect is not stable over time. In the two years following adoption, SARAs are ineffective in reducing tax evasion. From the third year onwards, significant effects are observed for several years, after which the effect is inhibited and reappears. Finally, we provide evidence that better institutional quality, simplification of the tax payment process, and improved tax compliance are transmission channels through which SARA affects tax evasion.

This article contributes to the literature on tax revenue mobilization in sub-Saharan African countries by analyzing the role of tax reforms, particularly the adoption of semi-autonomous tax administrations. In other words, the article analyzes the role of semi-autonomous tax administrations in combating tax evasion in these countries. In a post-COVID-19 environment characterized by higher public debt, rising borrowing costs due to increasing interest rates, and higher inflation, this paper may have significant economic policy implications for both tax administrations and governments. This document calls for governments to introduce fiscal reforms, in this case, the implementation of semi-autonomous administrations that escape political influence and the inconsistencies of public administration in general. Therefore, to increase tax revenues and bridge the financing gap resulting from tighter access to international financial markets, governments can establish semi-autonomous administrations while respecting the conditions for the effectiveness of such an institution, thereby benefiting fully from its positive effects. In addition, the government

must continue to work on improving the quality of other institutions that serve as channels for the effects of semi-autonomous administrations on tax evasion. For tax authorities, analysis of transmission channels delivers a fundamental message. That message is that simplifying the tax payment process increases tax compliance by reducing compliance costs. For example, by implementing digital payments (such as mobile money), payments are simplified, and taxpayers are better able to comply with their tax obligations.

This chapter 4 analyses the effect of adopting a semi-autonomous tax administration on tax evasion. Chapter 5 be examines digitalisation and the costs of tax compliance in developing countries.

4.8 Appendix

Table 4.6: Alternative dependent variables and composition effects: PSM

	Nearest Neighbor Matching			Radius Matching			Kermel Matching	Local Linear Matching
	n = 1	n = 2	n = 3	r = 0,005	r = 0,01	r = 0,05		
Panel B. Dependent variable: Tax revenue excluding natural resources, log								
ATT	0.263***	0.284***	0.257***	0.198***	0.220***	0.267***	0.269***	0.266***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No. of treated	270	270	270	270	270	270	270	270
No. of controls	901	901	901	901	901	901	901	901
No. Obs	1.171	1.171	1.171	1.171	1.171	1.171	1.171	1.171
Pseudo-R2	0.023	0.021	0.020	0.007	0.010	0.021	0.020	0.023
Stand. bias (p-val,)	0.009	0.021	0.028	0.649	0.407	0.019	0.023	0.009
R. bounds test	1.7	2.1	2.1	1.5	1.7	2.1	2.2	2.3
Panel C. Dependent variable: Tax Effort								
ATT	0.082***	0.074***	0.068***	0.076***	0.079***	0.080***	0.080***	0.088***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No. of treated	219	219	219	219	219	219	219	219
No. of controls	692	692	692	692	692	692	692	692
No. Obs	911	911	911	911	911	911	911	911
Pseudo R^2	0.030	0.023	0.019	0.006	0.008	0.016	0.017	0.030
Stand. bias (p-val,)	0.012	0.050	0.099	0.823	0.641	0.175	0.166	0.012
R. bounds test	1.8	2.1	2.4	2.5	2.9	3.2	3.2	3.8
Panel D. Dependent variable: Persistent Tax Effort								
ATT	0.080***	0.075***	0.070***	0.076***	0.080***	0.083***	0.083***	0.089***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No. of treated	219	219	219	219	219	219	219	219
No. of controls	692	692	692	692	692	692	692	692
No. Obs	911	911	911	911	911	911	911	911
Pseudo R^2	0.030	0.023	0.019	0.006	0.008	0.016	0.017	0.030
Stand. bias (p-val,)	0.012	0.050	0.099	0.823	0.641	0.175	0.166	0.012
R. bounds test	1.8	2.1	2.4	2.4	2.9	3.2	3.2	3.7
Panel E. Dependent variable: Time-varying Tax Effort								
ATT	0.035**	0.025*	0.022*	0.028**	0.027**	0.024**	0.025**	0.032***
	(0.017)	(0.058)	(0.085)	(0.012)	(0.018)	(0.022)	(0.016)	(0.003)
No. of treated	219	219	219	219	219	219	219	219
No. of controls	692	692	692	692	692	692	692	692
No. Obs	911	911	911	911	911	911	911	911
Pseudo R^2	0.030	0.023	0.019	0.006	0.008	0.016	0.017	0.030
Stand. bias (p-val,)	0.012	0.050	0.099	0.823	0.641	0.175	0.166	0.012
R. bounds test	1.4	1.5	1.5	1.7	1.8	1.9	2	2.3
Panel F. Dependent variable: Tax Inefficiency								
ATT	-0.082***	-0.074***	-0.068***	-0.076***	-0.079***	-0.080***	-0.080***	-0.088***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
No. of treated	219	219	219	219	219	219	219	219
No. of controls	692	692	692	692	692	692	692	692
No. Obs	911	911	911	911	911	911	911	911
Pseudo R^2	0.030	0.023	0.019	0.006	0.008	0.016	0.017	0.030
Stand. bias (p-val,)	0.012	0.050	0.099	0.823	0.641	0.175	0.166	0.012
R. bounds test	1.8	2.1	2.4	2.5	2.9	3.1	3.1	3.7

Appendix B

Table 4.7: Alternative dependent variables and composition effects: entropy balancing

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8
Panel B. Dependant variable: Tax revenue excluding natural resources, log								
Sara	0.076	1.123***	0.081	1.147***	0.136***	1.286***	0.136***	1.187***
	(0.213)	(0.000)	(0.101)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Covariates	No	No	No	No	Yes	Yes	Yes	Yes
Year fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Country fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,066	1,066	1,066	1,066	1,066	1,066	1,066	1,066
R2	0.004	0.826	0.149	0.861	0.560	0.871	0.593	0.874
Panel C. Dependant variable: Tax Effort								
Sara	0.032**	0.328***	0.035***	0.337***	0.034***	0.460***	0.036***	0.445***
	(0.012)	(0.000)	(0.002)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Covariates	No	No	No	No	Yes	Yes	Yes	Yes
Year fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Country fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	841	841	841	841	841	841	841	841
R2	0.017	0.793	0.090	0.813	0.354	0.814	0.426	0.821
Panel D. Dependant variable: Persistent Tax Effort								
Sara	0.044***	0.410***	0.045***	0.410***	0.046***	0.410***	0.047***	0.410***
	(0.003)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Covariates	No	No	No	No	Yes	Yes	Yes	Yes
Year fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Country fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	841	841	841	841	841	841	841	841
R2	0.026	1.000	0.067	1.000	0.482	1.000	0.508	1.000
Panel E. Dependant variable: Time-varying Tax Effort								
Sara	-0.007	-0.013	-0.004	0.001	-0.009	0.157***	-0.007	0.126*
	(0.362)	(0.788)	(0.507)	(0.982)	(0.212)	(0.009)	(0.305)	(0.057)
Covariates	No	No	No	No	Yes	Yes	Yes	Yes
Year fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Country fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	841	841	841	841	841	841	841	841
R2	0.001	0.061	0.102	0.152	0.034	0.152	0.122	0.182
Panel F. Dependant variable: : Tax Inefficiency								
Sara	-0.032**	-0.328***	-0.035***	-0.337***	-0.034***	-0.460***	-0.036***	-0.445***
	(0.012)	(0.000)	(0.002)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Covariates	No	No	No	No	Yes	Yes	Yes	Yes
Year fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Country fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	841	841	841	841	841	841	841	841
R2	0.017	0.793	0.090	0.813	0.354	0.814	0.426	0.821

Table 4.8: SARA and Tax Evasion: OLS

Variables	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)
Sara	-0.059***	-0.041***	-0.050***	-0.044***	-0.033***	-0.044***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)
Age dependency ratio	-0.000	0.000	-0.000	0.000	0.001	0.000
	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)
Agriculture share	0.001**	0.001	0.001*	0.001	-0.000	0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Trade Openness	0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population, log	0.038***	0.037***	0.040***	0.040***	0.041***	0.041***
	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Aid, log	-0.027***	-0.024***	-0.024***	-0.026***	-0.027***	-0.026***
	(0.005)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)
Resource rents, lag	0.002***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Shadow	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
IMF Program	-0.019	-0.024	-0.024	-0.022	-0.016	-0.022
	(0.027)	(0.027)	(0.027)	(0.028)	(0.029)	(0.027)
gdp cap	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Law and order		-0.008*				
		(0.004)				
Democratic Accountability			0.009			
			(0.006)			
Government stability				0.001		
				(0.002)		
Bureaucracy quality					-0.024***	
					(0.006)	
Corruption						0.003
						(0.005)
Constant	0.184**	0.109	0.075	0.072	0.109	0.068
	(0.087)	(0.109)	(0.109)	(0.115)	(0.111)	(0.111)
Observations	659	510	510	510	510	510
R-squared	0.582	0.526	0.525	0.523	0.537	0.523

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Table 4.9: SARA and Tax Revenue excl. Nat. resources, log: OLS

Variables	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)
Sara	0.214***	0.128***	0.178***	0.155***	0.141***	0.158***
	(0.027)	(0.029)	(0.029)	(0.028)	(0.029)	(0.028)
Age dependency ratio	-0.007***	-0.003*	-0.001	-0.002	-0.003	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Agriculture share	-0.018***	-0.012***	-0.014***	-0.013***	-0.012***	-0.013***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Trade Openness	0.002**	0.005***	0.005***	0.005***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Population, log	-0.081***	-0.035*	-0.050***	-0.054***	-0.055***	-0.057***
	(0.017)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Aid, log	0.083***	0.071***	0.075***	0.080***	0.082***	0.081***
	(0.018)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Resource rents, lag	-0.014***	-0.019***	-0.022***	-0.021***	-0.021***	-0.021***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Shadow	-0.006***	-0.008***	-0.008***	-0.007***	-0.007***	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
IMF Program	0.162**	0.139*	0.137*	0.130*	0.119	0.126*
	(0.076)	(0.073)	(0.074)	(0.074)	(0.074)	(0.074)
GDP cap	-0.000***	-0.000	0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Law and order		0.051***				
		(0.015)				
Democratic Accountability			-0.044**			
			(0.018)			
Government stability				0.000		
				(0.007)		
Bureaucracy quality					0.036*	
					(0.018)	
Corruption						-0.023
						(0.015)
Constant	3.456***	2.174***	2.366***	2.318***	2.279***	2.437***
	(0.299)	(0.334)	(0.333)	(0.348)	(0.334)	(0.342)
Observations	792	607	607	607	607	607
R-squared	0.551	0.564	0.560	0.555	0.558	0.557

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Table 4.10: SARA and Tax Effort: OLS

Variables	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)
Sara	0.059***	0.041***	0.050***	0.044***	0.033***	0.044***
	(0.008)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)
Age dependency ratio	0.000	-0.000	0.000	-0.000	-0.001	-0.000
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Agriculture share	-0.001**	-0.001	-0.001*	-0.001	0.000	-0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Trade Openness	-0.000*	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population, log	-0.038***	-0.037***	-0.040***	-0.040***	-0.041***	-0.041***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Aid, log	0.027***	0.024***	0.024***	0.026***	0.027***	0.026***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Resource rents, lag	-0.002***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Shadow	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***	-0.003***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
IMF Program	0.019	0.024	0.024	0.022	0.016	0.022
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
GDP cap	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Law and order		0.008*				
		(0.005)				
Democratic Accountability			-0.009			
			(0.006)			
Government stability				-0.001		
				(0.002)		
Bureaucracy quality					0.024***	
					(0.006)	
Corruption						-0.003
						(0.005)
Constant	0.816***	0.891***	0.925***	0.928***	0.891***	0.932***
	(0.084)	(0.110)	(0.109)	(0.114)	(0.108)	(0.112)
Observations	659	510	510	510	510	510
R-squared	0.582	0.526	0.525	0.523	0.537	0.523

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Table 4.11: SARA and Persistent Tax Effort : OLS

Variables	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)
Sara	0.079***	0.056***	0.065***	0.059***	0.045***	0.059***
	(0.007)	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)
Age dependency ratio	0.000	-0.001***	-0.001	-0.001**	-0.002***	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Agriculture share	-0.002***	-0.002***	-0.002***	-0.002***	-0.001**	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Trade Openness	-0.000**	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population, log	-0.046***	-0.050***	-0.052***	-0.053***	-0.053***	-0.053***
	(0.004)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Aid, log	0.027***	0.023***	0.023***	0.023***	0.026***	0.024***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Resource rents, lag	-0.002***	-0.003***	-0.004***	-0.004***	-0.003***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Shadow	-0.003***	-0.003***	-0.003***	-0.003***	-0.002***	-0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
IMF Program	0.024	0.029	0.029	0.023	0.019	0.027
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
GDP cap	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Law and order		0.007*				
		(0.004)				
Democratic Accountability			-0.009			
			(0.005)			
Government stability				-0.005**		
				(0.002)		
Bureaucracy quality					0.030***	
					(0.005)	
Corruption						-0.009**
						(0.004)
Constant	1.105***	1.369***	1.399***	1.459***	1.359***	1.433***
	(0.077)	(0.098)	(0.098)	(0.101)	(0.095)	(0.099)
Observations	659	510	510	510	510	510
R-squared	0.696	0.659	0.659	0.661	0.677	0.660

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Table 4.12: SARA and Time-varying Tax effort: OLS

Variables	Column -1	Column -2	Column -3	Column -4	Column -5	Column -6
Sara	-0.009	-0.007	-0.003	-0.006	-0.005	-0.006
	(0.008)	(0.009)	(0.010)	(0.009)	(0.010)	(0.009)
Age dependency ratio	0.000	0.001	0.001*	0.001*	0.001	0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Agriculture share	0.001	0.002***	0.002***	0.002***	0.002***	0.002***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Trade Openness	0.000	0.001**	0.001**	0.001**	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population, log	0.001	0.009	0.007	0.007	0.007	0.007
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Aid, log	0.003	0.003	0.004	0.005	0.004	0.004
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Resource rents, lag	-0.000	-0.000	-0.001	-0.001	-0.001	-0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Shadow	-0.001*	-0.002***	-0.001***	-0.001**	-0.001**	-0.001**
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
IMF Program	0.006	0.003	0.003	0.006	0.003	0.003
	(0.020)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
GDP cap	-0.000	0.000**	0.000**	0.000**	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Law and order		0.005				
		(0.005)				
Democratic Accountability			-0.004			
			(0.006)			
Government stability				0.004*		
				(0.002)		
Bureaucracy quality					-0.001	
					(0.006)	
Corruption						0.005
						(0.005)
Constant	0.742***	0.515***	0.534***	0.471***	0.531***	0.507***
	(0.081)	(0.113)	(0.113)	(0.117)	(0.113)	(0.115)
Observations	659	510	510	510	510	510
R-squared	0.028	0.046	0.045	0.050	0.044	0.046

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Table 4.13: SARA and Tax inefficiency: OLS

Variables	Column -1	Column -2	Column -3	Column -4	Column -5	Column -6
Sara	-0.059***	-0.041***	-0.050***	-0.044***	-0.033***	-0.044***
	(0.008)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)
Age dependency ratio	-0.000	0.000	-0.000	0.000	0.001	0.000
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Agriculture share	0.001**	0.001	0.001*	0.001	-0.000	0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Trade Openness	0.000*	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population, log	0.038***	0.037***	0.040***	0.040***	0.041***	0.041***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Aid, log	-0.027***	-0.024***	-0.024***	-0.026***	-0.027***	-0.026***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Resource rents, lag	0.002***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
Shadow	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
IMF Program	-0.019	-0.024	-0.024	-0.022	-0.016	-0.022
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
GDP cap	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Law and order		-0.008*				
		(0.005)				
Democratic Accountability			0.009			
			(0.006)			
Government stability				0.001		
				(0.002)		
Bureaucracy quality					-0.024***	
					(0.006)	
Corruption						0.003
						(0.005)
Constant	0.184**	0.109	0.075	0.072	0.109	0.068
	(0.084)	(0.110)	(0.109)	(0.114)	(0.108)	(0.112)
Observations	659	510	510	510	510	510
R-squared	0.582	0.526	0.525	0.523	0.537	0.523

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Table 4.14: Effect of SARA adoption over time

Tax Evasion	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)	Column (7)	Column (8)	Column (9)	Column (10)	Column (11)	Column (12)	Column (13)
Sara adoption (t0)	-0.022												
	(0.190)												
First year after adoption (t+1)		-0.019											
		(0.111)											
Second year after adoption (t+2)			-0.018*										
			(0.065)										
Third year after adoption (t+3)				-0.020**									
				(0.031)									
Fourth year after adoption (t+4)					-0.021**								
					(0.026)								
Fifth year after adoption (t+5)						-0.017*							
						(0.070)							
Fifth year after adoption (t+6)							-0.013						
							(0.215)						
Fifth year after adoption (t+7)								-0.008					
								(0.416)					
Fifth year after adoption (t+8)									-0.007				
									(0.509)				
Fifth year after adoption (t+9)										-0.010			
										(0.326)			
Fifth year after adoption (t+10)											-0.017*		
											(0.093)		
Fifth year after adoption (t+11)												-0.017*	
												(0.093)	
Fifth year after adoption (t+12)													-0.017*
													(0.095)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	636	650	664	677	690	703	718	841	841	841	768	777	786
R^2	0.885	0.884	0.884	0.881	0.876	0.865	0.843	0.821	0.821	0.821	0.823	0.823	0.824

Table 4.15: Bivariate correlations

Variables	Tax evasion	Corruption	Tax Compliance	Time to pay taxes
Tax evasion	1.000			
Corruption	-0.100**	1.000		
Tax Compliance	-0.310***	0.057	1.000	
Time to pay taxes	0.233***	-0.081	-0.937***	1.000

Table 4.16: Descriptive statistics

Panel A: Descriptive statistics before weighting			
	SARA	Non-SARA	Difference
Variables	(1)	(2)	3 = (2) - (1)
Age dependency ratio	85.13	92.23	7.10***
Agriculture share	23.62	23.8	0.18
Trade Openness	71.07	62.33	-8.74***
Population, log	15.61	15.65	0.04
Aid, log	19.42	19.38	0.60
Rent, Lag	7.73	13.01	5.28***
IMF Program	0.03564	0.09331	0.06***
GDP per cap	2090	1816	-274.91***
Observations	505	568	-
Panel B: Descriptive statistics after weighting			
	SARA	Non-SARA	Difference
Variables	(1)	(2)	3 = (2) - (1)
Age dependency ratio	85.13	85.25	0,12
Agriculture share	23.62	23.57	-0,05
Trade Openness	71.07	70.97	-0,10
Population, log	15.61	15.6	-0,01
Aid, log	19.42	19.41	-0,010
Rent, Lag	7.73	7.90	0.17
IMF Program	0.04	0.03772	0.002
GDP per cap	2090	2096	6
Observations	505	568	-
Total of weights	505	505	-

Table 4.17: Tax evasion by SARA adoption

	SARA	Non-SARA	Difference	Ttest	P_value
Tax Evasion	0 .42	0.50	0.08***	8.66	0.0000

Table 4.18: Panel A: Stage 2 - estimation of the time-variying tax inefficiency

					Number of obs = 956	
					Wald chi2(1) = 337.15	
Log likelihood = 70.86					Prob > chi2 = 0.000	
	Coef.	Std. Err.	z	P>|z|	[95% conf.	interval]
frontier (one)	0.224	0.012	18.36	0.000	0.200	.247
usigmas (_cons)	-2.497	0.102	-24.51	0.000	-2.697	-2.297
vsigmas (_cons)	-3.788	0.103	-36.66	0.000	-3.990	-3.585

Panel B: Stage 3 - estimation of the persistent tax inefficiency (stochastic frontier)

					Number of obs = 956	
					Wald chi2(1) = 600.83	
Log likelihood = -612.13					Prob > chi2 = 0.000	
	Coef.	Std. Err.	z	P>|z|	[95% conf. interval]	
frontier (one)	0.526	0.021	24.51	0.000	0.484	0.568
usigmas (_cons)	-0.926	0.084	-11.08	0.000	-1.089	-0.763
vsigmas (_cons)	-2.538	0.101	-25.16	0.000	-2.736	-2.341

Panel C: summary of tax effort estimation results

	Obs	Mean	Std.	Min	Max
Time-varying tax effort	956	0.811	0.095	0.190	0.963
Persistent tax effort	956	0.656	0.154	0.064	0.900
Total tax effort	956	0.533	0.142	0.033	0.825

Table 4.19: Year reform adopted

Countries	**SARA adoption year**	**Pretreatment**	**Post-traitement**
Botswana	2003	23	12
Burundi	2009	29	6
Ethiopia	1997	17	18
Gambia	2005	25	10
Ghana	1985	5	30
Kenya	1996	16	19
Lesotho	2001	21	14
Malawi	1995	15	20
Mauritius	2005	25	10
Mozambique	2006	26	9
Rwanda	1998	18	17
Sierra Leone	2002	22	13
Seychelles	2007	27	8
Swaziland	2008	28	7
South Africa	1997	17	18
Tanziania	1996	16	19
Togo	2012	32	3
Uganda	1991	11	24
Zambia	1994	14	21
Zimbabwe	2001	21	14

Table 4.20: The three-stage estimation results

Variables	NRTAX
Log GDP per cap. (Cst. 2010 USD)	0.297***
	(0.041)
Total trade (%GDP) (-1)	0.002***
	(0.001)
Agriculture value added (%GDP) (-1)	-0.009***
	(0.002)
Total natural resource rent (%GDP) (-1)	-0.006***
	(0.002)
Constant	0.440
	(0.321)
Observations	956
R-sqared	0.132
Number of country	39

Figure 4.3: Area Under ROC Curve

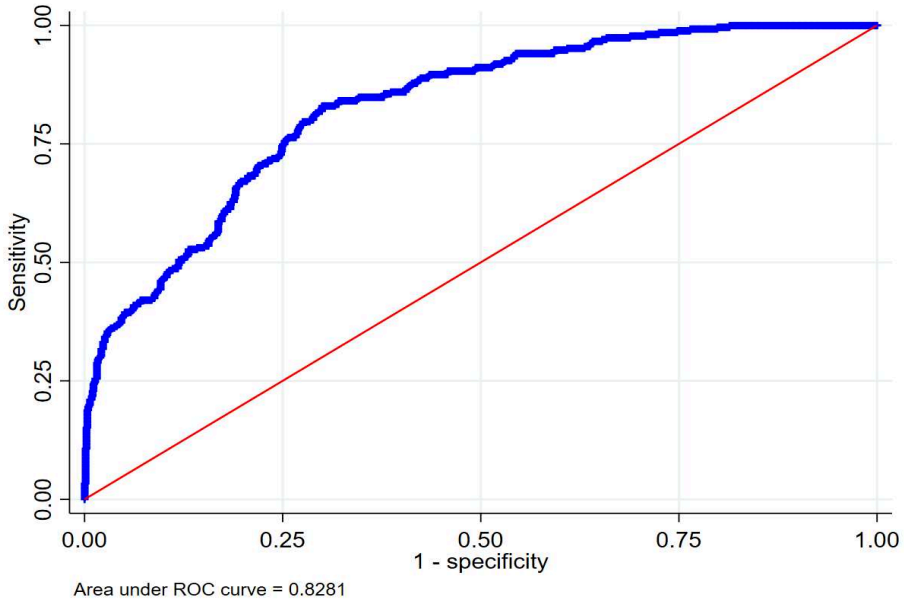


Table 4.22: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Tax revenues (excluding rents)	1472	12.457	6.674	0.545	49.852
Agriculture share	1363	24.109	14.601	0.893	71.763
rent	1449	10.645	10.369	0.001	62.04
gdp cap	1474	1822.458	2441.377	167.246	16438.641
Sara	1512	0.476	0.5	0	1
Corruption	910	2.415	1.008	0	6
Bureaucracy Quality	910	1.416	.916	0	4
Democratic Accountability	910	1.503	1.015	0	4.5
Government Stability	910	7.391	2.185	1	11.583
law order	908	2.826	1.105	0	6
Age dependency ratio	1512	90.065	13.386	40.5	116.601
Tax effort	939	0.544	0.136	0.04	0.829
Potentiel Fiscal	939	23.558	9.469	5.216	60.162
Tax evasion	939	0.456	0.136	0.171	0.96
Inefficiency	939	0.456	0.136	0.171	0.96

Table 4.21: Variable description

Variables	Description	Sources
Tax revenues (% GDP)	Total tax revenues excluding resource rent (% GDP)	Mansour (2014)
GDP per capita (Cst. 2010 USD)	The volume of imports and exports divided by the GDP	World Bank
Trade Openness % of GDP)	volume of imports and exports over GDP	
Agriculture share (% GDP)	The net output of forestry, hunting, and fishing, as well as cultivation of crops and livestock production after adding up all outputs and subtracting intermediate inputs, divided by GDP	
Age dependency ratio (% working-age population)	The ratio of dependent population to working-age population.	
Population	Total population number	
Aid (Cst. 2010 USD)	Total public development aid	
Resource rents	The sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents over GDP.	
Law and order	Level of respect for law and order	ICRG (2017)
Democratic Accountability	Level of democratic responsibility	
Government stability	Level of government stability	
Bureaucracy quality	Quality level of bureaucracy	
Corruption	Corruption level	

Chapter 5

Less Hassle, Less Cash: Mobile Money and Tax Compliance in Developing Countries

5.1 Introduction

Mobilizing domestic revenue remains the most reliable and sustainable means of financing development. Mobilizing domestic resources is important for several reasons: reducing dependence on mining revenues and development aid, and establishing a social contract based on accountability and transparency. Unlike high-income countries, which mobilize an average of 40% of GDP in revenue, low- and middle-income countries mobilize around 20% of GDP. Although there are several reasons for the low mobilization of tax revenue in these countries, taxpayer tax evasion is a key factor (M. Moore, 2020). In fact, in developing countries, taxpayers are often hostile to paying taxes for several reasons. On the one hand, they consider the public services and goods they receive in return to be insufficient. In addition, the origin of taxes has left its mark, leading taxpayers to view taxes as a constraint on their activities. In the current global context, following the COVID-19 pandemic, characterized by an economic slowdown, the climate emergency, and international tensions, developing countries must build robust and sustainable tax systems. Under these conditions, strengthening and improving taxpayer compliance becomes a priority for these countries. Unlike other sources of financing, such as natural resource rents, whose prices are volatile, and foreign aid, which is becoming increasingly scarce, tax revenues provide a stable financial alternative for combating inequality and poverty, as well as financing public goods and services. However, to achieve financial self-sufficiency, it is essential to help taxpayers understand the importance of taxes so that they will voluntarily comply with their tax obligations.

The widespread use of mobile phones in developing countries as a means of communication has led to the emergence of digital financial services such as mobile money, which represent an alternative to traditional financial services. As a result, in many countries, these digital services are being adopted to modernize tax administrations and improve tax collection. More specifically, mobile money can contribute to improving tax compliance, extending the tax base, improving back-end data, and collecting additional tax revenue (Apeti & Edoh, 2023; Arewa & Santoro, 2022; Santoro et al., 2022). In the literature, several studies have shown the positive impact of digitization or digital technologies on the mobilization of tax revenue in developing countries (Eissa & Zeitlin, 2014; Ali et al., 2015; Kochanova et al., 2020; Uyar et al., 2021; Dzansi et al., 2022; Okunogbe & Santoro, 2023a). However, the impact of digital innovations, such as “mobile money” on tax outcomes remains largely unexplored. In this rare literature, Bernad et al. (2023) shows a positive short-term impact of mobile phone adoption on VAT compliance by merchants in Rwanda. In a descriptive

analysis, Fichers and Naji (2020) reveals that between 2015 and 2016, following the adoption of digital services, including mobile money, the National Transport Safety Authority (NTSA) recorded an increase in revenues from US $ 1.1 million to US $ 2 million. Finally, using a sample of 104 developing countries, Apeti and Edoh (2023) demonstrates that the adoption of mobile money results in increased tax revenues. Although these studies examine the effect of mobile money on tax performance, its (direct) impact on taxpayer compliance remains largely unexplored. This study, therefore, aims to address this shortcoming by analyzing the link between tax compliance and the adoption of mobile money. To do this, we use the number of hours required to file and pay taxes per year to estimate tax compliance. The higher the number of hours required, which constitutes the cost of compliance, the lower the compliance rate, and vice versa. This study aims to address this deficiency by examining the relationship between tax compliance and the adoption of mobile money in developing countries. To do so, we use the number of hours required to declare and pay taxes per year to estimate tax compliance. The number of hours required represents the cost of tax compliance. Consequently, if tax compliance costs are high, taxpayers are discouraged from fulfilling their tax obligations. Conversely, if the costs are lower, taxpayers are more willing to honor their tax obligations. We employ the entropic balancing method developed by Hainmueller (2012) to assess the impact of mobile money adoption. Based on a panel of 91 developing countries over the period 2000–2021, our results suggest that mobile money payments reduce tax compliance costs. The results are robust to various specifications and other estimation methods, such as Ordinary Least Squares (OLS) and Generalized Method of Moments (GMM).

The rest of the article is structured as follows. Section 2 presents the theoretical arguments of our study. In Section 3, we present the data and methodology. Sections 4, 5, and 6 present the basic results, robustness tests, and heterogeneity tests, respectively. Finally, Section 7 concludes and provides implications for fiscal policy.

5.2 Mobile money and tax compliance cost: the arguments

The digitisation of taxation aims to improve compliance with tax obligations and increase tax revenue collection. However, its direct impact remains unclear. It is therefore essential to understand the underlying mechanisms of this relationship, as many dynamics come into play to explain the causal link between digitisation and tax compliance, particularly in the case of mobile money and tax compliance, as observed in our study. Although several studies have attempted to explore the effects of mobile money use, the channels through which it influences tax compliance remain unclear. This section aims to elucidate these

mechanisms, highlighting the empirical studies that have identified them. In our study, we focus more specifically on the mechanisms through which mobile money interacts with tax compliance. In general, mobile money can influence taxpayers' tax compliance through associated costs, including financial costs (such as bank charges and travel expenses), time costs (such as filling out forms, traveling, and waiting in long queues), and organisational costs (such as mobilising internal resources and staff training). Additionally, mobile money can impact tax compliance by reducing the informal sector and combating corrupt practices.

In most developing countries, tax systems are often poorly designed and highly complex for taxpayers. Added to this are administrative hassles, long distances travelled to file taxes, and long queues, which generate enormous costs for complying with tax obligations. Under these conditions, even the most loyal taxpayers can become discouraged. According to Beck, Lin, and Ma 2014, these conditions can encourage taxpayers to avoid complying with their tax obligations, thereby reducing their level of tax compliance. Thus, by providing people with the option to pay taxes remotely, thereby eliminating a significant portion of fiscal compliance costs, mobile money can facilitate tax payments, particularly for businesses located in areas where traditional computer use is impractical and for individuals who are often on the move. Outside of the tedious procedures associated with the complexity of tax systems, budgetary constraints due to ever-increasing needs, combined with low mobilization of internal resources, may lead the state to introduce new taxes Piketty (2014). This will lead to an increase in tax compliance costs. Taxpayers will feel obliged to evade their tax obligations even more, thus creating a vicious circle. As a result, mobile money can reduce the amount of tax generated by lowering the tax compliance costs associated with existing taxes.

Secondly, mobile money payments can help to reduce the level of corruption in tax administrations. In many developing countries, the problem of low tax revenue mobilization comes more from corrupt practices than from loopholes in tax law. Although no tax system is exempt from corrupt practices, the conditions that prevail in developing countries make them even more widespread. These conditions can lead to taxpayer non-compliance, as taxpayers have the opportunity to bribe tax officials to pay less tax. By enabling taxpayers to pay electronically, mobile money is likely to reduce the opportunities for corrupt practices. For example, electronic tax payments would reduce physical interactions between tax collectors and taxpayers, thereby reducing cases of corruption, tax evasion, and fraud (Santoro et al., 2023). Furthermore, electronic payments leave a trail, facilitating tax audits. This is likely to make taxpayers more compliant, as the financial costs of tax fraud can be enormous if detected.

Finally, mobile money can improve tax compliance by reducing the size of the informal or underground economy. The informal sector comprises economic activities that are not reported to tax or administrative authorities due to financial, institutional, or regulatory reasons. Financial reasons include not paying taxes, social security contributions, and formalization fees (Medina & Schneider, 2018). In low- and middle-income countries, unlike in high-income countries, a significant portion of the economy operates in the informal sector. The predominance of the informal sector in an economy makes it difficult for tax authorities to identify taxpayers, as many businesses operate outside the tax net (Mascagni & Nell, 2022). This situation makes tax audits more difficult, encouraging taxpayers to avoid compliance with their tax obligations. Okunogbe and Santoro (2023a) also examines this negative link between informality and tax compliance. For the authors, one of the main obstacles to tax compliance is the informal sector, as many taxpayers operate outside the scope of tax law. Furthermore, the presence of informal activities can generate economic distortions and undermine social morality. For Medina and Schneider, the use of technology can help identify taxable entities, track tax evasion cases if they occur, and simplify and improve the quality of services offered to taxpayers. Similarly, Jacolin et al. (2021) underlines that the use of mobile money can reduce companies' operating costs by making commercial transactions less expensive and more fluid, thereby increasing the "opportunity costs" of remaining in the informal sector. Therefore, the use of mobile money helps to reduce informal activities. Outside the "opportunity cost" channel, the authors argue that mobile money can reduce informal activities by facilitating access to credit. Using mobile money payments can help SMEs establish basic accounts, making them more credible and eligible for credit from banks or microfinance institutions. Mobile money can also indirectly benefit the informal sector by enhancing the performance of the formal sector, which in turn benefits from mobile agents. The predominance of the informal sector in developing countries is partly attributable to the formal sector's limited capacity to employ workers, which pushes surplus labor into the informal sector. Therefore, if mobile money can improve the performance of the formal sector, enabling new recruitment, then some actors in the informal sector may join the formal sector.

5.3 Data and empirical methodology

5.3.1 Data

To investigate the potential of mobile money adoption in improving tax compliance, we utilize an unbalanced panel of 91 developing countries. We focused on developing countries because mobile money adoption is widespread in these areas. The time horizon of our study depends on the availability of data, particularly our dependent variable. Descriptive statistics for the variables, complete definitions, and data sources are presented in the Appendix. For our dependent variable, tax compliance, we use tax compliance costs, measured by the annual time required for a company to prepare, report, and pay sales taxes, labour taxes, VAT, or corporate income tax. This time constitutes the cost of tax compliance. So the higher this cost, the lower the compliance, and vice versa.

For our interest variable, we form a control group of countries that have not adopted mobile money, presenting on average similar characteristics to countries that adopted mobile money before the treatment, i.e., the adoption of mobile money. The other explanatory variables were selected based on existing literature (Della Peruta, 2018; Eftimoski & Josheski, 2021; Jacolin et al., 2021; Apeti, 2023; Apeti & Edoh, 2023). We control for agricultural value added, natural resource rents, GDP per capita, the informal sector, government effectiveness, inflation, and trade openness. We postulate a negative correlation between mobile money adoption and GDP per capita, as mobile money adoption is a low-cost solution for low-income countries. The same effect is expected between natural resource rents. In countries that benefit from large financial rents of natural resources, governments often neglect to collect tax revenues from sources other than natural resources. For example, Nigeria only introduced VAT into its tax system in 1993, at a time when rents were falling due to lower global mineral prices. We expect a positive effect on agricultural value added and the informal sector. The prevalence of the informal sector may encourage governments to adopt mobile money to broaden their tax base and enhance tax compliance. Generally, in developing countries, the agricultural sector is exempt from taxation. Therefore, as the proportion of agricultural value added increases, the state collects less tax. As a result, governments are encouraged to implement tax reforms, such as the adoption of mobile money, for example. The correlation between government efficiency and the adoption of mobile money can be ambiguous. According to Alam et al. (2017), government effectiveness is positively correlated with economic development. However, according to Jacolin et al. (2021), efficient governments, i.e., governments with high-quality institutions, can implement reliable policies to finance public goods and services without the need for reforms, such as the adoption

of mobile money. This ambiguity also exists regarding the correlation between inflation and mobile money. Firstly, the implementation of reforms such as the adoption of mobile money can be facilitated by a healthy economic environment (Apeti, 2023; Apeti & Edoh, 2023). Secondly, periods of high inflation can lead economic agents to adopt mobile money to avoid shoe costs (Apeti & Edoh, 2023). Finally, trade liberalization can promote the adoption of mobile money to reduce transaction costs and improve financial inclusion (Konte & Tetteh, 2023; Della Peruta, 2018).

5.3.2 Methodology

This paper assesses the relationship between mobile money adoption and tax compliance via the tax compliance cost index, which is high if tax compliance is low, and vice versa, measured by the time required per year for a business to prepare, file, and pay taxes on value-added or sales taxes, taxes on labor, and corporate income. The potential difficulty with this analysis is that mobile money adoption is far from being a random characteristic (Apeti, 2023; Apeti & Edoh, 2023). Mobile money adoption may depend on several factors, including the level of development, access to traditional financial services, and economic performance. These factors may also affect tax compliance, making mobile money adoption endogenous (non-random), through selection bias. To address this endogeneity issue, we use the entropy balancing method proposed by Hainmueller (2012) and often used in impact analysis literature (Basri et al., 2021; Apeti & Edoh, 2023; Apeti, 2023). Specifically, it is used by Ogrokhina and Rodriguez (2019) to estimate the effect of inflation targeting on the denomination of international debt, Apeti and N'doua (2023) to investigate the effect on trade of regulations on timber and timber products, Caselli and Wingender (2021) to assess the impact of tax rules, and Neuenkirch and Neumeier (2016) to assess the impact of US sanctions on poverty. The approach we use in our estimation is based on the principle that mobile money adoption is the treatment and tax compliance costs are the outcome variable. The observations with mobile money constitute the treatment group, and those without mobile money constitute the control group, and the average treatment effect on the treated (ATT) is written as follows:

$$ATT = E[Y_{(1)} \mid T = 1] - E[Y_{(0)} \mid T = 1] \tag{5.1}$$

Where $Y_{(.)}$ denotes the outcome variable measuring the tax compliance cost, T indicates if the observation unit is subject to mobile money adoption (T = 1) or not (T = 0). $E[Y_{(1)} \mid T = 1]$ is the tax compliance cost during the mobile money period, $E[Y_{(0)} \mid T = 1]$ is the counterfactual result for countries that did adopt mobile money, i.e., what the tax compliance

cost in countries that did adopt mobile money would have been if they had not done so. The problem is that $E[Y_{(0)} \mid T = 1]$ is not observable due to the non-random nature of mobile money adoption. If this were the case, ATT could easily be identified by comparing tax compliance costs in countries that have not adopted mobile money and those that have. Identifying the ATT then requires a good approximation of $E[Y_{(0)} \mid T = 1]$. Therefore, we match mobile money countries with non-mobile money countries as closely as possible on observable characteristics according to two criteria: correlation with mobile money and the tax compliance cost index. Thus, we rewrite equation (1) as follows:

$$ATT = E[Y_{(1)} \mid T = 1, X = x] - E[Y_{(0)} \mid T = 0, X = x] \tag{5.2}$$

Where $X = x$ are the observable joint determinants of mobile money adoption and the tax compliance cost index, $E[Y_{(1)} \mid T = 1, X = x]$ represents the cost of tax compliance index for mobile money countries., $E[Y_{(0)} \mid T = 0, X = x]$ is the expected tax compliance cost index for control units (synthetics). Using entropy balancing involves two steps. Firstly, we calculate the exact weights for the untreated group of units, so that a set of desired pre-treatment characteristics of the untreated group matches those of the treated group of units. We choose the set of weights that achieves a balance that deviates as little as possible from uniform weights. More precisely, using entropy balancing, observations are re-weighted for treatment so that all relevant determinants are balanced, i.e., have the same mean. In other words, entropy balancing involves reweighting observations to statistically generate a group of countries where the treated group is comparable to the control group in terms of structural variables. The second step uses the weights calculated in the first step in a regression analysis where the cost of compliance index is the dependent variable. In this step, we control the variables used in the first step. This is equivalent to including control variables in a randomized experiment and increases estimation efficiency. In addition, we include year and country effects to better account for sources of country heterogeneity or time-specific effects.

Combining a regression and matching approach, the entropy balancing method offers advantages over several existing methods, such as propensity score matching (Neuenkirch & Neumeier, 2016). A fundamental advantage is that this method is non-parametric, meaning it is unnecessary to specify an empirical model for the outcome variable or the treatment selection. Additionally, treatment effect estimates based on entropy balancing do not suffer from multicollinearity, unlike those from regression-based analyses. This is because the reweighting scheme orthogonalizes the covariates with respect to the treatment indicator. Furthermore, entropy balancing guarantees a high level of covariate equilibrium between

the treatment and control groups, even in cases of small sample sizes, compared with other weighting approaches. More precisely, entropy-balancing weights minimize the entropy distance metric subject to moment constraints for each covariate and balancing constraints that ensure all weights are positive and their sum equals unity. Hence, the untreated units, or control group, are composed only of a subset of units that are not subject to treatment (Hainmueller, 2012; Diamond & Sekhon, 2013). In other words, with conventional matching methods, each unprocessed unit receives a weight of 1 if it represents the best match for a process unit, and a weight of 0 if it does not represent the best match for a process unit. However, when the number of pre-treatment features is large and the number of untreated units is limited, this procedure does not guarantee a sufficient balance of pre-treatment features between the treatment and control groups. This is a real problem, as poor covariate balancing can lead to biased estimates of the treatment effect. In contrast, with entropy balancing, the vector of weights assigned to units not exposed to treatment can contain any non-negative value. Thus, a control group is designed to represent a virtually perfect image of the treatment group. Entropic balancing can therefore be interpreted as a generalization of traditional matching approaches. In addition, entropy balancing uses more flexible reweighting schemes than traditional matching, where control units are either eliminated or matched. More precisely, it reweights the units to achieve a balance between processed and unprocessed units, while keeping the weights as close as possible to the base weights to minimize information loss. Finally, by combining regression analysis with a reweighting system, entropy balancing enables us to correctly handle the panel structure of our data by incorporating country- and time-fixed effects.

However, despite the many advantages of this method, it is essential to note that this approach may have some limitations. Indeed, entropy balancing may fail to control for potential endogeneity biases resulting from unobserved time-varying factors that can affect both moving money and tax compliance costs. Therefore, we test the robustness of our results by complementing the entropy balancing method with the two-stage system-GMM estimator and ordinary least squares (OLS).

5.4 Baseline results

5.4.1 Descriptive statistics and covariate balance

Table 5.1 compares the mean values of our control variables before and after weighting for country-year observations for the treatment group (column 1) and the control group (column 2). The treatment group comprises countries that have adopted mobile money, while the

control group includes countries that have not adopted it. Column 3 shows the differences between the groups and their statistical significance. As can be seen, units using mobile money differ significantly from units not using mobile money in terms of all pre-treatment characteristics.

Table 5.1: Descriptive statistics before and after weighting

	(1) **Mobile money**	(2) **No mobile money**	(3) **Difference**
Agriculture	17.34	13.54	3.80***
GDP per capita	2584.9	4740.78	-2155.88***
rent	6.7	9.36	-2.66***
Trade	68.66	77.6	-8.94***
Inflation	5.18	7.06	-1.88***
Shadow	38.72	37.42	1.3**
Govermment effectiveness	-0.64	-0.37	-0.27***
Observations	348	884	

	(4) **Mobile money**	(5) **No mobile money**	(6) **Difference**
Agriculture	17.34	17.18	0.16
GDP per capita	2584.9	2751.82	-166.92
rent	6.7	6.78	-0.08
Trade	68.66	68.92	-0.26
Inflation	5.18	5.35	-0.17
Shadow	38.72	38.62	0.10
Govermment effectiveness	-0.64	-0.63	-0.01
Observations	348	884	

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Compared to the control group, countries using mobile money are characterised by higher agricultural value added, lower GDP per capita, lower natural resource rents, lower trade openness, a larger informal sector, lower government effectiveness, and lower inflation rates. These statistics underscore the importance of carefully selecting the control group to minimize bias in estimating the treatment's impact. Columns 4, 5, and 6 show the average values after weighting between the treatment group and the control group. Comparing the average characteristics of the treatment group before treatment with those of the control group reveals the effectiveness of entropic balancing, as all covariates are perfectly balanced, and the statistically significant difference between the average values of the two groups disap-

pears. It is essential to note that entropic balancing enables us to construct a perfect control group that is highly similar to countries using mobile money in terms of the mean values of covariates before treatment. Finally, we present a test comparing the average tax compliance costs between groups that use mobile money and those that do not. Columns (1) and (2) show negative and statistically significant effects at the 1% level. Specifically, these results indicate that the adoption of mobile agents would reduce tax compliance costs by an average of 0.085 and 0.185, respectively, compared to countries that do not adopt it.

5.4.2 Baseline results

Table 5.2 presents the basic results of this analysis. Using the weights derived from the entropic equilibrium, we estimate several models based on equation 2 using the weighted least squares method. Column (1) presents the estimates without control variables and without fixed effects related to the period and country. Column (2) presents the estimates without control variables, but with fixed effects related to the period and country.

Table 5.2: Baseline results

	(1) **Tax compliance cost**	(2) **Tax compliance cost**	(3) **Tax compliance cost**
Mobile money	-0.085***	-0.185***	-0.121*
	(0.025)	(0.057)	(0.071)
Baseline covariates	No	No	yes
Year fixed effect	No	yes	yes
Country fixed effect	No	yes	yes
Observations	1,203	1,203	1,203

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Finally, column (3) presents our baseline specification, which includes all the matched covariates used in the first step as well as fixed effects related to country and year. The results indicate that the effect of mobile money on tax compliance costs is negative and statistically significant at the 10% level. More specifically, the adoption of mobile money reduces tax compliance costs by an average of 0.121 (column 3) in countries where mobile money is

used compared to countries where it is not.

5.5 Robustness checks

5.5.1 Potential omitted variables

Outside of selection bias, another source of endogeneity that could potentially skew the results of estimating the effects of mobile money adoption on tax compliance costs is the problem of omitted variables.

Table 5.3: Tax compliance costs and mobile money: additional control

	(1) Growth	(2) Rule of law	(3) ODA	(4) Corruption	(5) Regulatory quality
Mobile money	-0.118*	-0.120*	-0.123*	-0.123*	-0.122*
	(0.072)	(0.072)	(0.073)	(0.071)	(0.071)
Baseline covariates	yes	yes	yes	yes	yes
Year fixed effect	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes
Observations	1,203	1,203	1,137	1,203	1,203

	(6) Political stability	(7) Age dependency	(8) Urban population growth	(8) Size of government	(10) All covariates
Mobile money	-0.127*	-0.127*	-0.193***	-0.124*	-0.218***
	(0.071)	(0.072)	(0.072)	(0.070)	(0.075)
Baseline covariates	yes	yes	yes	yes	yes
Year fixed effect	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes
Observations	1,203	1,203	1,186	1,197	1,114

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.
ODA = official development assistance.

Although our basic specification takes control variables into account, in this section, we reexamine our baseline model by including additional control variables. Thus, based on the existing literature (Apeti & Edoh, 2024; Della Peruta, 2018; Eftimoski & Josheski, 2021; Jacolin et al., 2021), we select a further set of control variables that are likely to impact tax

compliance costs and mobile money simultaneously. First, we select other institutional and political variables such as the rule of law, control of corruption, regulatory quality, voice accountability, and political stability. All these variables are ranked from -2.5 to 2.5. In addition to these variables, we also include the size of government, urban population (% of total population), age dependency ratio, (% of working-age population), GDP growth (annual %), official development assistance (% of GNI), population density (people per sq. km of land area), and internet use (% of population). After reestimating our basic model with the additional variables, we perform the same exercise using the Ordinary Least Squares (OLS) method. First, we include these variables individually and alternately in the reference model, similarly to, then we integrate them all together. The results presented in column 10 of Table 5.3 and in column 12 of Table 5.7 demonstrate that our benchmark result remains robust.

5.5.2 Alternative specification

In this section, we test the robustness of our results through various analyses. Firstly, we exclude from our sample countries that have adopted Semi-Autonomous Tax Administrations (SARA). This reform consists of merging the tax and customs services into a single entity.

Table 5.4: Tax compliance and mobile money: altering the sample

	(1) Exc. SARA	(2) Exc. Colonization	(3) Exc. haven	(4) Exc. Addis Ababa
Mobile money	-0.081***	-0.089***	-0.087***	-0.090***
	(0.026)	(0.029)	(0.026)	(0.028)
Baseline covariates	yes	yes	yes	yes
Year fixed effect	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes
Observations	1,080	793	1,136	937

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

In fact, SARAs differ from traditional tax administrations for several reasons. Unlike traditional tax administrations, SARAs are autonomous and do not operate according to the

rules of general public administration. Among other characteristics, their agents are paid in performance and can be dismissed if the targets are not met, unlike general public administrations. The management process is also much more flexible. Such a reform may impact compliance with tax obligations. Consequently, we exclude countries that have adopted this reform to isolate the effect of adopting mobile money more clearly. The results are presented in column (1) of Table 5.4. Secondly, we excluded countries with a colonial past, as colonisation can influence compliance with tax obligations, therefore skewing our results (Cogneau et al., 2021). The findings are presented in column (2) of Table 5.4. Thirdly, we exclude from our sample countries that are qualified as tax havens. These countries are not cooperative in terms of fiscal information sharing and have advantageous tax regulations (Apeti & Edoh, 2024). The results are presented in column (3) of Table 5.4. Finally, we exclude the period following the Addis Ababa conference. The Addis Ababa conference aimed to strengthen taxation and mobilise additional tax revenues to finance development, ensure debt sustainability, and achieve the Sustainable Development Goals (SDGs). Since the 2015 conference, countries have intensified tax reforms to achieve these goals. These reforms are likely to skew our results, which is why we have excluded them from our sample (see column 4, Table 5.4 for results). The results compiled in columns 1 to 4 of Table 5.4 show that our benchmark result remains solid.

To ensure that our results are independent of the chosen estimator, we also employ other estimators, such as the Generalized Method of Moments (GMM) and Ordinary Least Squares (OLS). Table 5.7, (column 1) in the appendix presents the estimation of Ordinary Least Squares (OLS). Overall, the results are consistent with the basic findings of our analysis. We complete our analysis by incorporating additional control variables from the existing literature into our baseline model. The results are presented in Table 5.7 in the appendix, columns 2 to 12. We note that the effect of mobile money on tax compliance costs remains positive and statistically significant. To overcome potential endogeneity issues, we also model GMM estimators. This approach presents two main benefits. Firstly, it enables the inclusion of lagged tax compliance costs in the explanatory variables, which helps control the structural inertia inherent in tax compliance. Second, it also eliminates the constraint associated with the limited availability of valid external instruments for identifying the effect of mobile money, while also correcting for the (Nickell, 1981) bias inherent in dynamic panels. The results are presented in Table 5.8 in the Appendix and demonstrate that they are robust to the basic model used in our study.

5.6 Heterogeneity

5.6.1 The types of mobile money services

In this section, we examine the impact of various mobile money services on tax compliance costs. In fact, the variable 'mobile money' encompasses various types of mobile money transactions, including person-to-government (P2G) transfers, person-to-person (P2P) transfers, merchant payments, airtime transactions, bill payments, international remittances, and bulk payments.

Table 5.5: Tax compliance cost and mobile money: effect of different types of mobile money

Tax compliance cost	(1)	(2)	(3)	(4)	(5)	(6)	(7)
P2P transfer	-0.066**						
	(0.027)						
P2G transaction		-0.052**					
		(0.026)					
Airtime top-up transaction			-0.124*				
			(0.069)				
Merchant payment				-0.123**			
				(0.026)			
International remittances					0.018		
					(0.055)		
Bill payment						-0.104*	
						(0.063)	
Bulk payment							-0.102*
							(0.061)
Baseline covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,203	1,203	1,203	1,103	1,203	1,203	1,180

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Given that each type of mobile money service is specific, we expect that each ser-

vice may have different effects on tax compliance costs. In contrast to cash payments, P2G transactions, for example, can reduce interactions between taxpayers and tax authorities, thereby limiting fraud and enhancing tax compliance. The possibility for a tax official to require payment and insist that the transaction be carried out in cash opens the door to corruption and reduces the risk of the tax official being identified and prosecuted.

According to Okunogbe and Santoro (2023a), bulk payments [1] and bill payments [2]may enable the tax administration to broaden the tax base by identifying as many enterprises and households as possible to check taxpayers' tax compliance. Especially those in the liberal professions such as architects, lawyers, and others. Nevertheless, it is worth noting that the effectiveness of these services for tax authorities depends on the exchange of data between tax authorities and mobile money operators, which is a particularly complex issue in developing countries. Nevertheless, it is worth noting that the effectiveness of these services for tax authorities depends on the exchange of data between tax authorities and mobile money operators, which poses a particularly complex challenge in developing countries. Furthermore, international transfers made through mobile financial services can simplify access to funds, reducing financial constraints on households and businesses. This, in turn, could limit tax evasion or strengthen compliance with tax obligations (Bachas et al., 2019; Alm et al., 2019). To estimate the effect of each type of mobile money service on tax compliance costs, we use our empirical benchmark approach. Columns 1 to 7 of Table 5.5 above present the results of these estimates.

Outside of international mobile money transfer services, we find that the effect of all other mobile money services on tax compliance costs is negative and statistically significant at 5 or 10%. These results corroborate our intuition, as we observe relative variations in the coefficients depending on the type of mobile money service. Considering the extent of the effects, it is evident that merchant payments are one of the types of mobile money services that have the highest impact compared to other mobile money services. Merchant payments refer to transactions made via a mobile money platform between merchants themselves or between merchants and customers in exchange for goods or services. For Bernad et al. (2023), this type of mobile money service enables tax authorities to promote tax compliance. Merchant payments enable consumers to benefit from more secure, faster, and formalised transactions, thereby promoting business development while generating a digital sales trail

[1] Bulk payment is a payment made by an organization through a mobile money platform to an individual's mobile money account.

[2] Bill payment is a payment made by an individual from their mobile money account or at a counter to a bill issuer or billing organization through a mobile money platform in exchange for services provided.

that can be used by tax authorities to monitor and enforce tax compliance (Okunogbe & Santoro, 2023b).

5.6.2 Sub-Saharan Africa versus the rest of the world

Assuming that the effect of mobile agent adoption on tax compliance costs may be different across geographical zones, we analyze these effects in this section. Therefore, we divided our sample into two geographical zones: Sub-Saharan Africa and the other countries in the sample. In most sub-Saharan African (SSA) countries, tax administration and policy, as well as tax revenue mobilisation, remain fragile. This situation can be explained by several factors: the significant weight of the informal economy, the high predominance of cash payments, which reduces the state's ability to track transactions and broaden the tax base, institutional weakness, and the complexity of tax systems, which increases the administrative burden on taxpayers. At the same time, the rise of mobile money is a striking feature of the African continent, recognised as the birthplace of this innovation.

Table 5.6: Tax compliance cost and mobile money by geographic location

	(1) **Outside SSA**	(2) **SSA**
Mobile money	-0.105**	-0.192***
	(0.122)	(0.059)
Baseline covariates	Yes	Yes
Year fixed effect	Yes	Yes
Country fixed effect	Yes	Yes
Observations	786	417

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

The case of Kenya exemplifies this phenomenon, where mobile money services have

been highly successful since their introduction in 2007. We expect that the adoption of mobile money will reduce the costs that deter taxpayers from complying with their tax obligations. To test this hypothesis, we compare the effect of mobile money adoption in sub-Saharan Africa with the rest of the countries in our sample by reestimating our baseline model. The results are presented in Table 5.6 below. We note that regardless of the geographical region considered, i.e., Sub-Saharan Africa or other countries in our sample, the adoption of mobile money reduces the burden of complying with tax regulations. However, the impact is more pronounced in sub-Saharan African countries than in other countries in the sample (excluding SSA), which corroborates our initial hypothesis. In terms of magnitude, the adoption of mobile money reduces tax compliance costs by an average of 0.195 in Sub-Saharan African countries and 0.105 in the other countries in our sample.

5.7 Conclusion and policy implications

In developing countries, digital financial services are becoming increasingly widespread. The benefits of using them span all domains. They have become essential components of modernizing tax administration, and therefore, of tax compliance. This article analyses the correlation between mobile money adoption and tax compliance costs, estimated by the number of hours required to file and pay the main taxes per year in developing countries, using the entropy balancing method. Using an unbalanced panel of 91 countries covering the period 2000–2021, the results show that mobile money is associated with a statistically significant reduction in tax compliance costs. More specifically, we find that, on average, the adoption of mobile money generally reduces tax compliance costs by 0.121. This result is robust to the adoption of alternative estimation methods, as well as several alternative specifications, i.e., modifying our sample and including additional control variables. Furthermore, there is some heterogeneity in the results depending on the type of mobile money services and the geographical location of the countries in our sample (SSA vs. other countries in the sample). The results shed more light on the contribution of digital payments to tax compliance. As tax administrations in these countries increasingly adopt digital payment solutions, this study is particularly relevant in terms of tax policy implications for tax authorities and their governments. Firstly, digital payments facilitate access to and use of taxpayer data in developing countries, particularly third-party and transaction data. This results in lower administrative costs and more efficient data management systems and processes. Secondly, by enabling digital tax payments, mobile money simplifies and reduces the burden on taxpayers. Furthermore, it can help to reduce corruption by promoting greater transparency in tax information.

Nevertheless, it is essential to acknowledge that, despite the opportunities digital payment services offer to enhance tax management, particularly by reducing the burden of complying with tax laws, some challenges remain to be addressed in order to benefit from the advantages of this payment method fully. Among these difficulties, the exchange of data between tax authorities and telecommunications companies, corruption, and inadequate infrastructure remain significant challenges for developing countries. Firstly, data sharing between telecommunications companies and tax authorities is not yet fully institutionalised or systematic. In practice, cooperation between tax authorities and mobile network operators faces several obstacles, particularly of a judicial, technical, and organisational nature. Differences in privacy protection, data security, and regulatory frameworks are hindering the establishment of effective and regular information transmission mechanisms. However, enhanced collaboration appears essential to enable smoother and more secure access to transaction data and taxpayer information. Such data sharing would not only help improve the accuracy of tax bases but also support the effectiveness of tax policies and administration in developing countries.

Secondly, as shown by Okunogbe and Santoro (2022) and Santoro et al. (2023), the adoption of new tax technologies is not always automatic. Indeed, both taxpayers and tax officials may be reluctant or even opposed to their use. This resistance can be explained by several factors: a lack of training and digital skills, the sometimes high cost of acquiring and mastering these tools, or the fear of losing certain advantages associated with informal practices such as negotiation, corruption, or partial evasion. In this context, the successful integration of digital payments into tax systems depends not only on the availability of technical infrastructure but also on support for the actors involved. This requires the implementation of clear and inclusive communication strategies, digital and tax capacity-building programmes, and appropriate regulatory frameworks. Together, these measures can reduce resistance to change, increase confidence in new practices, and ultimately promote the wider and more effective adoption of digital payments in the tax field. Secondly, as shown by (Santoro et al., 2023, 2022), the adoption of new tax technologies is not always automatic. Indeed, both taxpayers and tax officials may be reluctant or even opposed to their use. This resistance can be explained by several factors: a lack of training and digital skills, the sometimes high cost of acquiring and mastering these tools, or the fear of losing certain advantages associated with informal practices such as negotiation, corruption, or partial evasion. In this context, the successful integration of digital payments into tax systems depends not only on the availability of technical infrastructure but also on support for the actors involved.

This requires the implementation of clear and inclusive communication strategies, digital and tax capacity-building programmes, and appropriate regulatory frameworks. Together, these measures can reduce resistance to change, increase confidence in new practices, and ultimately promote the wider and more effective adoption of digital payments in the tax field.

Next, inadequate or inappropriate infrastructure is a significant obstacle to the development and effectiveness of mobile money services. The efficient operation of these services depends directly on the availability of basic infrastructure, such as stable, wide-coverage telecommunications networks, regular access to electricity, high-quality Internet connectivity, and accessible technological equipment. In many developing countries, particularly in rural and remote areas, this infrastructure remains fragile or unevenly distributed. This situation creates a digital divide that limits access to mobile money and, consequently, its potential to improve tax collection. Lastly, it is essential to nuance the often optimistic view of the impact of digital infrastructure on tax administration, particularly in terms of taxpayer compliance. Although these technologies are generally expected to reduce opportunities for corruption and enhance the efficiency of the tax system, the reality can be more complex. Digital tools, such as electronic registers or online tax service platforms, can also be exploited for malicious purposes. Tax officials with advanced technical skills can manipulate databases, alter records, or divert digital flows for personal gain (IMF, 2019). In this case, digital infrastructure ceases to serve as a tool for transparency and instead becomes a new vehicle for corrupt practices. This paradox highlights the importance of designing public policies and institutional mechanisms that anticipate and address these risks. This involves implementing robust internal control mechanisms, automated traceability and audit systems, and deterrent penalties for abuse. In addition, strengthening the integrity of civil servants through ethics training programmes and improving the transparency of administrative processes can help limit the temptation to use digital tools as a new source of rent-seeking. Such measures appear essential if mobile money and, more generally, digital infrastructure are to effectively deliver on their promise of improving tax compliance, rather than creating new opportunities for corruption.

Appendix

Table 5.7: Tax compliance costs and mobile money: additional control (OLS)

Tax compliance cost	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mobile money	-0.093**	-0.097***	-0.081**	-0.088**	-0.091**	-0.081**	-0.092**	-0.094**	-0.141***	-0.100***	-0.096**	-0.115***
	(0.038)	(0.037)	(0.036)	(0.037)	(0.038)	(0.038)	(0.039)	(0.038)	(0.040)	(0.037)	(0.038)	(0.038)
Regulatory quality		0.080										0.065
		(0.058)										(0.054)
Political stability			0.055**									0.059**
			(0.025)									(0.027)
Voice accountability				0.051								0.029
				(0.042)								(0.046)
Rule of law					0.029							-0.050
					(0.052)							(0.061)
Internet						-0.001						-0.000
						(0.001)						(0.001)
Age dependency							-0.000					-0.002
							(0.001)					(0.002)
Size of government								0.012				0.007
								(0.013)				(0.013)
Urban population growth									0.024**			0.028***
									(0.011)			(0.011)
Population density										0.000		0.000
										(0.000)		(0.000)
Growth											-0.001	-0.002
											(0.003)	(0.002)
Baseline covariates	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Year fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Country fixed effect	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	1,203	1,203	1,203	1,186	1,203	1,119	1,203	1,203	1,179	1,203	1,189	1,012

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Table 5.8: Tax compliance costs and mobile money: GMM

	(1) GMM
Lag tax compliance costs	0.164* (0.085)
Mobile money	-0.051** (0.026)
GDP per capita	-0.000 (0.002)
Agriculture	0.005 (0.002)
Rents	0.007 (0.006)
Trade	-0.060 -0.000
Inflation	-0.004* (0.002)
Shadow	0.002 (0.007)
Govermment effectiveness	-0.066** (0.027)
AR(1)/AR(2) p-value	0.000/0.979
Hansen test p-value	0.817
Number of instruments/number of countries	40/88
Observations	1048

Note: Robust standard errors in parentheses, *,**,*** denote significance at 10%, 5% and 1%, respectively.

Table 5.9: Description of variables and sources

Variables	Description	Sources
Tax compliance costs	This indicator measures the annual time required by a company to prepare, declare, and pay corporate income tax, VAT, and employment taxes.	WDI
Mobile money	Dummy variable taking 1 if a country at date t adopts mobile money and 0 otherwise.	GSMA
P2P transfer	Person-to-person (P2P) transfers are domestic transfers that are made between two customer accounts, including over-the-counter (OTC) transactions, off-net/cross-net transfers, bank account-to-mobile money account transfers, and mobile money-to-bank account transfers. 1 if a country uses P2P services, 0 otherwise.	GSMA
P2G transaction	Person-to-government (P2G) transaction is the transfer of funds from an individual to a government agency to pay for a public good, settle an outstanding amount, or file taxes. 1 if a country uses P2G services, 0 otherwise.	GSMA
Airtime top-up	Airtime top-up is a purchase of airtime via mobile money, funded from a mobile money account. 1 if a country uses airtime top-up services, 0 otherwise.	GSMA
Merchant payment	Merchant payment is a payment made from a mobile money account via a mobile money platform to a retail or online merchant in exchange for goods or services. 1 if a country uses merchant payment services, 0 otherwise.	GSMA
International remittances	An international transfer is a cross-border transfer of funds from one person to another, and can be done directly via mobile phone or through an intermediary, such as Western Union and others. 1 if a country uses international remittances services, 0 otherwise.	GSMA
Bill payment	Bill payment is a payment made by an individual from their mobile money account or over the counter to a biller or billing agency via a mobile money platform in exchange for services provided. 1 if a country uses bill payment services, 0 otherwise.	GSMA
Bulk payment	A bulk payment is a payment made by an organization through a mobile payment platform to an individual's mobile account. For example, a payment made by a government to a beneficiary's mobile account, a payment made by a development organization to a beneficiary's mobile account, or a salary payment made by an organization to an employee's mobile account. 1 if a country uses bulk payment services, 0 otherwise.	GSMA
Agricultural value added (% of GDP)	This indicator refers to the proportion of added value in the agricultural and forestry sector as a percentage of total GDP.	WDI
GDP per capita (constant 2015 US$)	GDP per capita is gross domestic product divided by midyear population, expressed in constant 2015 US dollars.	WDI
Trade openness (% of GDP)	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product as a percentage of GDP.	WDI
Inflation (annual %)	Inflation refers to the consumer price index and measures the annual percentage change in the cost to the average consumer of purchasing a basket of goods and services.	WDI
Government effectiveness	Government Effectiveness captures perceptions of the quality of public services. This score ranges from -2.5 to 2.5.	WGI
Rule of law	Rule of Law captures perceptions of the extent to which agents have confidence in and abide by 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. This score ranges from -2.5 to 2.5.	WGI
Internet (per 100 people)	Internet users are individuals who have used the Internet (from any location) in the last 3 months.	WDI

Table 5.10: List of countries

Angola	Cabo Verde	Kazakhstan	Namibia	Tajikistan
Albania	Dominican Republic	Kenya	Niger	Tunisia
Argentina	Ecuador	Kyrgyz Republic	Nicaragua	Türkiye
Azerbaijan	Egypt, Arab Rep.	Cambodia	Nepal	Tanzania
Burundi	Fiji	Lao PDR	Panama	Uganda
Benin	Georgia	Lebanon	Peru	Ukraine
Burkina Faso	Ghana	Liberia	Philippines	Uruguay
Bangladesh	Guinea	Sri Lanka	Paraguay	Vietnam
Bulgaria	Gambia, The	Lesotho	Qatar	South Africa
Brazil	Guinea-Bissau	Morocco	Romania	Zambia
Bhutan	Guatemala	Moldova	Rwanda	Zimbabwe
Botswana	Honduras	Madagascar	Saudi Arabia	
Chile	Croatia	Mexico	Senegal	
China	Haiti	Mali	Sierra Leone	
Cameroon	Hungary	Myanmar	El Salvador	
Comoros	Indonesia	Mongolia	Eswatini	
Costa Rica	India	Mozambique	Seychelles	
Congo, Dem. Rep.	Iran, Islamic Rep.	Mauritania	Chad	
Congo, Rep.	Jamaica	Mauritius	Togo	
Côte d'Ivoire	Jordan	Malawi	Thailand	

Table 5.11: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Mobile money	1820	0.323	0.468	0	1
Agricultural value added (% of GDP)	1769	15.14	11.31	0.477	79.042
GDP per capita	1807	4088.073	444.308	263.361	33136.4447
Rents (% of GDP)	1820	8.831	11.417	0.001	66.06
Trade opness (% of GDP)	1691	774.009	35.188	11.855	347.997
Inflation (annual %)	1754	7	18.928	-10.063	513.907
Shadow economy (% of official GDP)	1530	37.835	10.955	11.173	68.913
Government Effectiveness	1736	-0.483	0.626	-2.219	1.255

Chapter 6

Tax Compliance Implications of Public Sector Management Reform in Sub-Saharan Africa

6.1 Introduction

How can taxpayers be persuaded to comply with their tax obligations? This is probably the central concern of all tax authorities, particularly in developing countries. To finance education, health, poverty reduction, environmental protection, and road construction, the state requires additional funds to expand its budgetary space. To this purpose, the state must collect taxes from businesses and individuals. Unfortunately, for several reasons, including poverty, corruption, a lack of transparency in public fund management, inadequate public infrastructure, and injustice, businesses and households are often unwilling to pay taxes, at least not voluntarily. Added to this are administrative complications due to the complexity of tax systems. Under these conditions, many businesses and individuals may be discouraged from paying their taxes. Their perceptions and attitudes show a lack of consent towards taxes, leading to fraudulent practices or non-compliance with tax obligations. The state must therefore implement reforms to encourage businesses and individuals to comply with their tax obligations.

Several reforms have been implemented by tax authorities to address this issue, specifically, taxpayer non-compliance. To reduce tax compliance costs, improve taxpayer perception, tackle corruption, and reinforce administrative capacities, some developing countries have decided to institutionalize their tax administrations under the name SARA [1] This reform aims to make the tax administration 'autonomous' and run it like a 'private company' to benefit from the performance advantages of the latter. The results in terms of compliance with tax obligations, and consequently the mobilisation of tax revenues, are ambiguous. Some authors find that this reform leads to better personnel management, more effective anti-corruption measures, reduced compliance costs, encouragement of formalization, and greater credibility for the tax administration (K. D. Moore, 2014; Therkildsen, 2004; O.-H. Fjeldstad, 2003). The second category of literature emphasises that the results may be limited or even counterproductive. It argues that the creation of 'autonomous' authorities can lead to institutional conflicts with finance ministries, which can complicate the coordination of fiscal policies (Kloeden, 2011). Despite their status, political pressures persist, leading to partisan appointments and clientelism. This limits their ability to guarantee independent, fair, and equitable management (M. Moore, 2014). In some circumstances, tax administration is perceived as overly intrusive without any tangible improvement in the quality of public services, which can reduce voluntary tax compliance. The third category of literature nuances the conclusions and underlines that the impact of autonomous administrations is highly dependent on the political environment and institutional context (M. Moore, 2014;

[1] For further details, see Gbato et al. (2021).

O.-H. Fjeldstad, 2003; Devas & Kelly, 2001).

Another major reform of tax administrations in developing countries aimed at improving taxpayer compliance is the digitization of taxes, particularly the introduction of digital payments, which is a low-cost option for these countries. This reform has several advantages for improving tax compliance. Digitization enables administrations to monitor more effectively to detect cases of fraud if they occur; it also reduces the costs of complying with tax law (by reducing the time spent on filing returns and transaction costs); and it helps to combat corruption by limiting interactions between taxpayers and tax officials (Apeti & Edoh, 2024, 2023; Bernad et al., 2023). The tax structure was also changed for the same reasons, namely, to enforce tax compliance among taxpayers. The tax structure refers to the combination of different types of taxes (indirect and direct) that taxpayers must pay. If the tax system is poorly designed, i.e., a system with multiple taxes and multiple rates, the costs of tax compliance increase, encouraging taxpayers to engage in fraudulent practices such as tax evasion (Slemrod, 2019). Tax structures that incorporate easily verifiable taxes, as compared to self-declarations and third-party declarations, increase the probability of detection and consequently improve tax compliance (Bellon, Dabla-Norris, Khalid, & Lima, 2022). This explains the almost widespread adoption of VAT, particularly by African countries. In fact, its mechanism makes it difficult to evade, which explains its adoption in several tax systems. Today, more than 170 countries have adopted VAT (IMF, 2021, and OECD, 2022). Despite these various reforms, among others, tax compliance remains low in developing countries. Unlike high-income countries, which collect an average of 40% of GDP in revenue, low- and middle-income countries collect around 20% of GDP. According to E. Lewis (1954) theory, tax policy alone cannot formalize the economy and improve tax compliance. Tax penalties and incentives can only have sustainable effects if they are part of a more extensive strategy of structural transformation, such as institutional development, employment creation, and education.

From this perspective, this article aims to examine the relationship between overall public sector management reform and tax compliance costs, using the World Bank indicator on the number of hours required to file and pay taxes per year. To identify the effect of public sector management, we use the local projection developed by Jordà (2005). Based on a sample of 36 sub-Saharan African countries over the period 2005-2022, our results indicate that public sector management reforms lead to reduced tax compliance costs. Our results are robust to the use of alternative estimation methods (the entropy-balancing method and the Local Projections method with the Inverse Probability Weighted Regression Adjustment: LP-IPWRA), the inclusion of additional control variables, and the use of the components of

our variable of interest, public sector management reform.

The rest of the article is structured as follows. Section 2 presents the theoretical arguments of our study. In Section 3, we present the data and descriptive statistics. Sections 4, 5, 6, and 7 present the estimation method, the basic results, the robustness tests, and the heterogeneity tests, respectively. Finally, section 8 concludes and provides implications for fiscal policy.

6.2 Theoretical background

This section explains how public sector management reform could influence tax compliance. To do this, we use governance data from the World Bank's Country Policy and Institutional Assessment (CPIA[2]), in particular the public sector management (PSM) indicator, which includes other indicators such as: quality of public administration; quality of budgetary and financial management; transparency, accountability and corruption in the public sector; property rights and rule-based governance; and revenue mobilization efficiency. These sub-components also include other sub-sub-components[3]. These indicators influence tax compliance through various interconnected channels, such as the trust channel, economic channels, and behavioural channels.

Firstly, the quality of public administration can shape tax compliance through various channels. A public administration that is committed to meeting the needs of the population by managing public funds fairly and efficiently strengthens the population's trust in state institutions. Under these conditions, taxpayers perceive taxation as a legitimate and necessary contribution to the financing of public goods and services, rather than as a burdensome obligation. This translates into greater acceptance of taxation by taxpayers. In addition, the quality of administration can shape compliance with tax law by providing the population with health, education, and security infrastructure that is commensurate with their contributions. When citizens experience an improvement in the quality of public services, they develop a sense of reciprocity, tax fairness, and legitimacy towards the state. This translates into better cooperation between taxpayers and tax officials, and therefore improved tax compliance. Finally, as discussed in Chapter 5, a public administration that adopts new information and communication technologies reduces the burden of tax compliance. The digitization of government services simplifies administrative procedures and makes them more efficient (minimising errors), which eliminates long waiting lines and long distances for taxpayers, reducing incentives for tax evasion. In summary, the quality of public administrations im-

[2]This data may have some limitations, but for now, it is not better.
[3]see the Data section for more details

pacts tax compliance through taxpayers' trust and legitimacy towards the state (Asri et al., 2025; Batrancea et al., 2022; Williams, 2020).

Secondly, the quality of budgetary and financial management impacts the decision to comply or not comply with tax payments through the credibility of the state and also through the legitimacy of public expenditure. Rigorous and prudent management that complies with established rules, avoiding the accumulation of deficits, excessive debt, and maintaining a balanced budget, contributes to macroeconomic stability and the predictability of public policies. This also improves taxpayers' perception that tax revenues are being used optimally for the benefit of the population. This will make taxpayers more willing to participate voluntarily in the tax system. Conversely, budgetary management characterised by misappropriation and waste does not inspire confidence among citizens, leading to resistance among taxpayers to paying taxes.

Thirdly, the protection of property rights and rules-based governance are also important determinants of tax compliance. They influence compliance with tax rules through regulation, economic formalisation, and economic formalisation. In a country where laws are enforced impartially and property rights are protected, economic operators have confidence in institutions and in the security of their investments. This motivates them to operate in the formal sector and comply with their tax obligations. Conversely, in an environment where governance is characterised by judicial corruption or state weakness and arbitrary judgements, economic operators prefer to operate clandestinely, i.e., in the informal sector, to protect themselves from institutional risks, thereby eroding the tax base and encouraging tax avoidance (Wilson & Rosenzweig, 2024; Nistotskaya & D'Arcy, 2023; Djankov et al., 2020).

Fourthly, administrative efficiency is a significant determinant of tax compliance. It impacts compliance by simplifying tax filing and payment processes, improving administrative capacity, and strengthening the perception of tax fairness. On the one hand, when taxpayers perceive the tax system to be fair, i.e., that each citizen contributes according to their ability and that tax rules are applied equally without favouritism, legitimacy is strengthened, leading to a reduction in tax fraud. In addition, process simplification and digitalization minimise transaction costs, making compliance less complex. A tax administration with qualified staff and adequate technological resources is better able to identify taxpayers, monitor them, and detect fraudulent practices if they occur.

Finally, transparency, public accountability, and the fight against corruption can affect tax compliance through institutional and behavioural channels. Corruption hurts tax compliance. In an environment where corruption becomes endemic, it undermines taxpayers' intrinsic motivation to pay taxes. Taxpayers believe that the revenue collected is not being

used for its intended purposes. They consider taxation to be useless, even unfair, thereby reinforcing tax evasion practices. Thus, corruption and the perception of public impunity directly influence taxpayers' compliance with their tax obligations. Transparency and accountability have the opposite effect, promoting an environment in which taxpayers can assess how tax revenues are being used. They also make it possible to judge whether public goods are commensurate with the taxes collected.

In summary, governance indicators—quality of public administration; quality of budgetary and financial management; transparency, accountability, and corruption in the public sector; property rights and rule-based governance; and efficiency of revenue collection—influence tax compliance through three main channels: trust in public institutions, perceived legitimacy of the tax system, and institutional capacity of the state.

6.3 Data and descriptive statistics

6.3.1 Data

Our analysis is based on the World Bank's CPIA database, which includes indicators of governance quality, public economy, political parties and elections, the political system, and bureaucratic structure. Data on public sector management and institutions include indices relating to rule-based governance and property rights, the quality of financial and budgetary management, the quality of public administration, the effectiveness of revenue mobilization, accountability, and corruption in the public sector. All these variables range from 1 to 6 (1 = low to 6 = high). This data covers a group of sub-Saharan African countries and the time frame necessary for our study. Specifically, for our study, we have selected data on public sector management, as the objective is to analyze the impact of public sector management reform (the variable of interest) on tax compliance costs. It is essential to note that the variable of interest comprises five subvariables: revenue mobilization efficiency, property rights and rule-based governance ratings, quality of public administration, transparency, accountability, and corruption in the public sector, as well as the quality of budgetary and financial management. Our sample covers 36 countries in sub-Saharan Africa for the period 2005-2022.

- **Public sector management**: The Country Policy and Institutional Assessment (CPIA) evaluates the extent to which a country's policy and institutional framework promotes sustainable growth and poverty reduction, and therefore the effective use of development aid. The assessment results in an overall score and scores for sixteen criteria

that make up the CPIA. More specifically, the Public Sector Management and Institutions cluster measures a state's ability to effectively manage its resources, ensure transparency and accountability, and the rule of law.

- **Quality of Public Administration**: The first sub-component of the public sector management indicator covers central government, defined as the central civil service (and subnational governments, to the extent that their size or policy responsibilities are significant), excluding police, education, and health personnel. This criterion assesses the functioning of the central government in three areas: **(i)** coordinating the broader public sector human resource management regime outside central government (decentralized and independent bodies and subsidiary governments); **(ii)** managing its own operations; and **(iii)** ensuring the quality of policy implementation and regulatory management.

- **Quality of budgetary and financial management**: The second sub-component of the public sector management indicator, this criterion of budgetary and financial management quality assesses the extent to which there are: **(i)** timely and accurate accounting and financial reports, including timely auditing of public accounts and adequate follow-up arrangements; **(ii)** effective financial management systems to ensure that the budget is implemented as planned, in a controlled and predictable manner; and **(iii)** a comprehensive and credible budget linked to policy priorities.

- **Transparency, accountability, and corruption in the public sector**: The third sub-component of the public sector management indicator, this criterion measures the extent to which senior civil servants, legislators, and the executive branch can be held accountable for their administrative decisions, use of funds, and results achieved. Generally, access to relevant and timely information, transparency in decision-making, institutional controls (such as an independent auditor, inspector general, or ombudsman), and public and media scrutiny all strengthen the accountability of the chief executive. This criterion covers four dimensions: **(i)** integrity in the management of public resources, including aid receipts and natural resources; **(ii)** civil society access to timely and reliable information on public affairs and policies, including budgetary information (on the awarding of significant contracts, public expenditure, and revenue); **(iii)** accountability of the executive and other senior officials to effective oversight institutions; and **(iv)** capture of the state by narrow special interests.

- **Property Rights and Rule-Based Governance**: The fourth sub-component of the public sector management indicator, this criterion measures the extent to which a rules-

based governance structure and an effective legal system in which property rights and contractual rights are reliably enforced facilitate economic activity. It includes three dimensions: textbf(i) crime and violence as obstacles to economic activity and citizen security; textbf(ii) the quality of the legal and judicial system, measured by the independence, accessibility, legitimacy, effectiveness, transparency and integrity of courts and other relevant dispute resolution mechanisms; and textbf(iii) the legal framework guaranteeing the security of property rights and contractual rights, including the predictability and impartiality of laws and regulations.

- **Revenue mobilisation effectiveness** : Last sub-component of the public sector management index, this criterion of revenue mobilisation effectiveness assesses the overall structure of revenue mobilisation, not only the tax structure as it exists on paper, but also revenue from all sources as it is collected. Separate sub-scores are assigned for (i) tax administration and (ii) tax policy.

- **Tax compliance costs**: This indicator measures the annual time required by a company to prepare, declare, and pay corporate income tax, VAT, and employment taxes.

To identify reforms in public sector management, we follow the empirical literature on institutional and administrative reforms (Giuliano et al., 2013; Prati et al., 2013; Alesina et al., 2023; De Haan & Wiese, 2022). Reforms are defined as changes (or major policy shifts) in the public sector management index.

$$Reform_{i,t}^{PSM} = Index_{i,t}^{PSM} - Index_{i,t-1}^{PSM} \tag{6.1}$$

$$Reform_episodes_{i,t}^{PSM} = \begin{cases} 1 & \text{if } \Delta Index_{i,t}^{PSM} = Index_{i,t}^{PSM} - Index_{i,t-1}^{PSM} > \sigma \\ 0 & \text{otherwise.} \end{cases} \tag{6.2}$$

Where I = Public Sector Management (PSM) and $\Delta Index_{i,t}^{PSM} = Reform_{i,t}^{PSM} = Index_{i,t}^{PSM} - Index_{i,t-1}^{PSM}$ denotes the change in the public sector management index. A positive value of $Reform_{i,t}^{PSM}$ indicates a reform aimed at improving governance and efficiency, while a negative value reflects a counter-reform or rollback. σ represents the standard deviation of annual changes in the index across the sample.

We identify episodes of public sector management reforms when, for a given country in a specific year, the annual change in the index exceeds one standard deviation (Tola & Waelti, 2018; DAVID et al., 2022; Gomado, 2024). Unlike a simple annual change, reform

episodes capture substantial transformations in public sector management that are likely to have meaningful impacts on tax compliance costs.

6.3.2 Data description and stylized facts

Table 6.1 presents the descriptive statistics of all variables included in our baseline model, and Figure 6.10 in the appendix presents the average level of the public sector management index for the period 2005-2022. It is worth noting that countries such as Cape Verde, Rwanda, Ghana, Senegal, Burkina Faso, and Kenya are at the top, meaning they have the highest average public sector management index. These positions may be due to the various reforms implemented in recent years. For example, Rwanda implemented the Structural Adjustment Programme II (SAP II) in partnership with the African Development Bank and the World Bank from 1998 to 2000. This policy aimed to restore internal and external macroeconomic balances to promote the conditions for sustainable and equitable growth through **(i)** achieving a growth rate of 6.7% in 1998 and 8% from 1999; **(ii)** reducing inflation to 5% from 1999; **(iii)** reducing the external current account deficit (excluding official transfers) to approximately 17% of GDP in 2000; and **(iv)** maintaining the level of gross reserves at 5.5 months of CAF imports.

Table 6.1: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Tax compliance costs	531	5.621	0.48	4.505	6.726
Public sector managment (1=low to 6=high)	635	2.984	0.486	1.6	4.1
Revenue mobilization efficiency (1=low to 6=high)	635	3.385	0.513	2	4.5
Property rights and rule-based governance (1=low to 6=high)	624	2.816	0.601	1	4
Transparency-accountability-corruption in public sector (1=low to 6=high)	624	2.767	0.622	1	4.5
Quality of public administration (1=low to 6=high)	624	2.906	0.495	1	4
Quality of budgetary and financial management (1=low to 6=high)	635	3.099	0.593	1.5	4.5
Inflation (annual %)	626	10.011	30.417	-16.86	557.202
Agricultural value added (% of GDP)	637	3.933	12.799	-65.959	246.469
Rents share (% of GDP)	612	12.052	9.557	1.227	53.315
Trade opennes (% of GDP)	586	61.639	27.083	2.699	165.049
GDP per capita (constant 2015 US$)	648	1087.04	708.554	253.692	4115.903
Tax burden (% of GDP)	356	13.28	6.175	3.856	39.986

To achieve these objectives, the actions envisaged within the framework of SAP II aimed at the establishment and application of specific measures in the sectoral and macroeconomic fields and, which covers three main components: **(i)** institutional reforms, **(ii)** the cleaning up of the macroeconomic framework, and **(iii)** structural and sectoral reforms[4].

Senegal, for its part, in partnership with the IMF, implemented the Emerging Senegal Plan (PSE) for the period 2014-2018[5], which aimed to improve public financial management.

[4]https://urls.fr/UMRAcA
[5]https://urls.fr/YDSO7t

It was updated for the period from 2019 to 2023. This reform has several axes. The first axis concerns economic regulation and competition reform. Its objectives were to guarantee a more competitive and equitable market. Specifically, it consisted of adopting new, more pro-competitive legislation to prevent anti-competitive practices and monopolies. The second axis concerns the reform of public administration, aiming to make administration more efficient, transparent, and results-oriented. Therefore, actions such as reducing bureaucracy, simplifying administrative procedures, establishing performance indicators to evaluate administrative services, training public administration officials, and digitizing several public services have been implemented to facilitate access for citizens and businesses. Finally, it also focuses on tax reforms and public financial management. Within the framework of this last axis, actions such as adopting more efficient and transparent budget monitoring systems, streamlining public spending to strengthen the impact of investments, and improving tax revenue collection to finance public services have been undertaken.

Similar reforms took place in Ghana in 2010 to reform public financial management. The objectives of this reform were to enhance transparency, improve efficiency, and increase accountability in financial management. To achieve these objectives, the integrated public financial management system was introduced, the capacity of the Ghana Revenue Authority was strengthened, and the automated customs management system was established. Another area of this reform concerns public sector management[6], aimed at rationalizing the size and composition of the public sector, enhancing wage competitiveness, and ensuring equity. To achieve the objectives of this area, an audit of the public wage bill and the development of strategies to monitor staffing levels and remuneration were carried out.

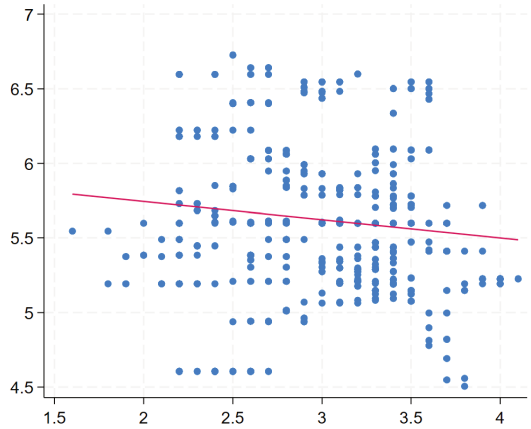
Finally, Cape Verde has implemented several programs to modernize its public sector. In 2005, in partnership with the United Nations Development Program (UNDP), it established the Strategic Program for the Information Society (PESI)[7]. With the same partner, the Electronic Governance Strengthening Project was implemented for the period 2008 to 2010[8]. In 2014, a strategy for the modernization of state and public administration was implemented[9]. The objectives of these reforms were to promote digital inclusion and equitable access to public services; stimulate economic development through better management of public resources; modernize public administration to make it more efficient and results-oriented; and strengthen the governance and accountability of public institutions. As a result, several actions were implemented. These included digitization and e-government; continuing training for civil servants; the establishment of performance monitoring and evaluation

[6] https://urls.fr/Sa20fK
[7] https://urls.fr/RaAaLj
[8] https://urls.fr/5F95TR
[9] https://urls.fr/1aLMwr

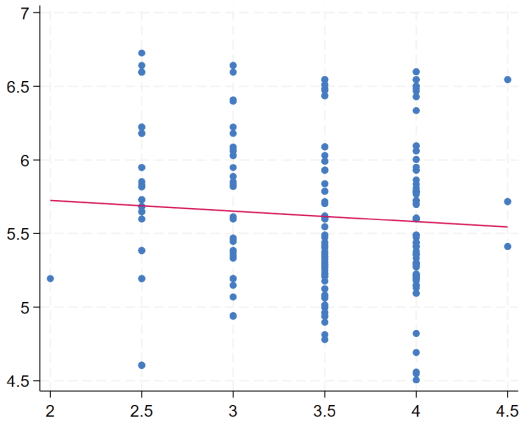
mechanisms; the introduction of an integrated public finance management system; the strengthening of budgetary transparency; the improvement of public debt management; and the development of quality standards for public services.

Figure 6.1 shows the negative relationship between the public sector management score and tax compliance costs, as well as the link between compliance costs and the sub-components of the public sector management score. Panel (a) shows the link between the public sector management score and tax compliance costs. Panels (b) to (f) show the link between tax compliance costs and the components of the public sector management score.

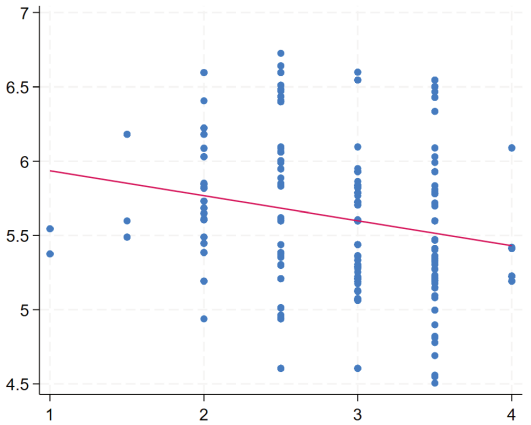
Figure 6.1: Relationship between tax compliance costs and the public sector management index and its components



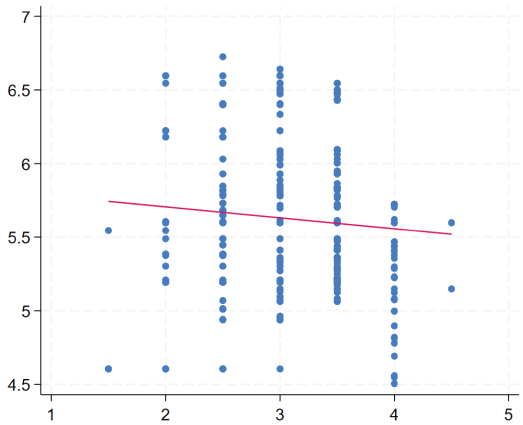
(a) Tax Compliance Costs and Public Sector Management



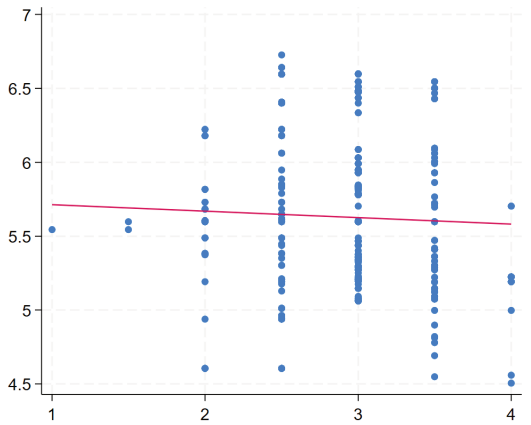
(b) Tax Compliance Costs and Revenue Mobilization Efficiency



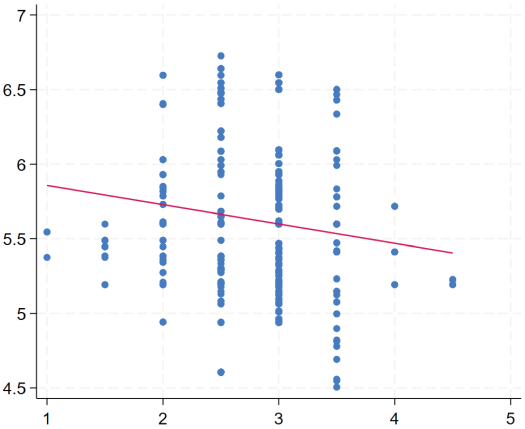
(c) Tax Compliance Costs and Property Rights-Rule-Based Governance



(d) Tax Compliance Costs and Quality of Budgetary-Financial Management



(e) Tax Compliance Costs and Quality of Public Administration

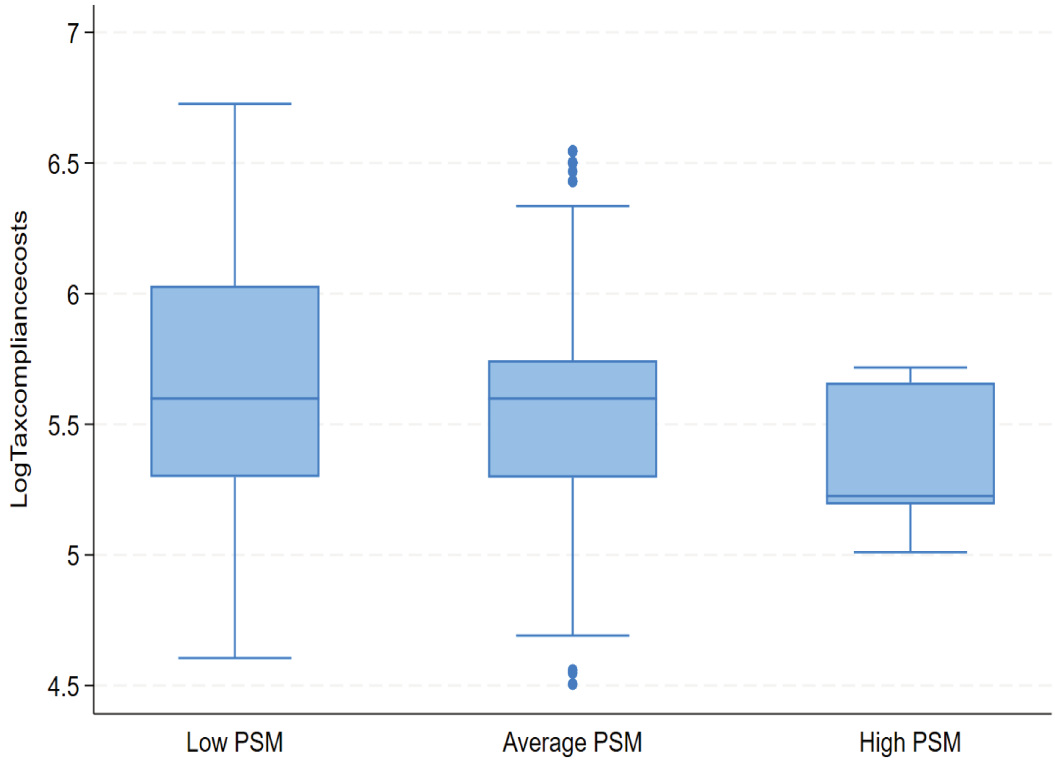


(f) Tax Compliance Costs and Transparency-accountability-corruption in public sector

Figure 6.2 shows the level of tax compliance costs according to the level of the public sector management score. The public sector management score is composed as follows:

a score of 3.2 or below is classified as low; a score between 3.2 and 3.8 is classified as medium; and a score above 3.6 is classified as high. It can be seen that when the public sector management score is low, the level of tax compliance costs is higher. Conversely, when the public sector management score is high, tax compliance costs are low. This confirms the hypothesis of a negative relationship between compliance costs and the public sector management score.

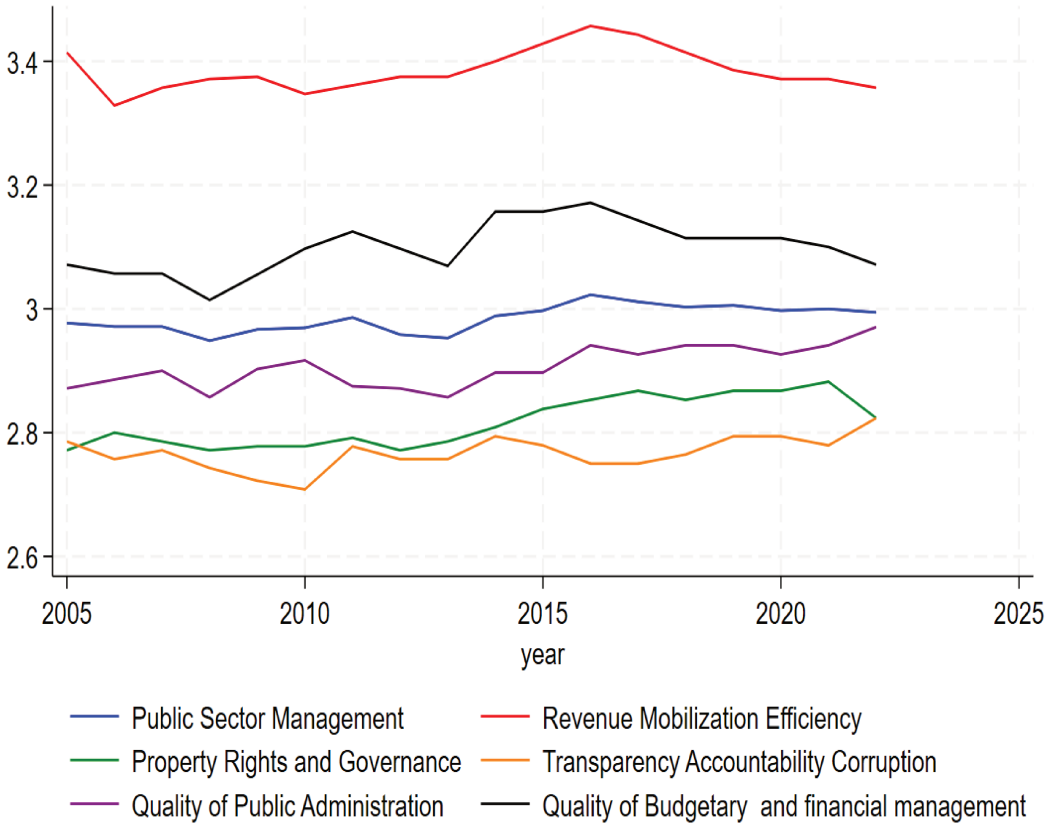
Figure 6.2: Tax compliance costs according to the level of the public sector management score



Source:Author based on connected data

Figure 6.3 shows the evolution of the public sector management score and its components over the period 2005-2022. There is a noticeable upward trend in these scores over time. The tax revenue mobilization efficiency score has the highest average score. It is followed by the budgetary and financial quality score and the public administration quality score, respectively. The transparency-accountability-corruption score in the public sector has the lowest score. It is preceded by the property rights and rule-based governance scores. There is also considerable variation in compliance costs across countries, as shown in Figure 6.11 in the appendix.

Figure 6.3: Evolution of the public sector management score and its components, 2005-2022



Source:Author based on connected data

6.4 Empirical strategy

To study the impact of public sector management reforms on tax compliance costs, we apply the local projection method proposed by Jordà (2005), which estimates impulse response functions flexibly over time. This approach is appropriate because the effects of reforms may depend on initial conditions—such as governance quality, administrative capacity, fiscal pressures, or economic context—without imposing the restrictions of vector autoregressive models. Local projections have been widely applied in recent studies to evaluate the effects of structural reforms and governance improvements (Jordà & Taylor, 2016; Ramey & Zubairy, 2018; Alesina et al., 2023; Gomado, 2023). Building on the approach of Alesina et al. (2023), our baseline specification is expressed as:

$$Cost_{i,t+h} - Cost_{i,t-1} = \alpha_i^h + \gamma_t^h + \delta_k^h \sum_{k=1}^{5} (Cost_{i,t-k} - Cost_{i,t-1-k}) + \beta^h Reform_{i,t} + \zeta^h X_{i,t-1} + \varepsilon_{i,t+h} \quad (6.3)$$

where $Cost_{i,t+h} - Cost_{i,t-1}$ represents the cumulative change in tax compliance costs for country i between $t+h$ and $t-1$. The time horizon h belongs to $\{0,1,2,3,4,5\}$. $Reform_{i,t}$ captures the implementation of public sector management reforms between periods $t-1$ and t. To reduce potential selection bias, we also adopt an alternative approach based on reform episodes (*Reform_episodes*), as defined in Section 3. This approach offers a complementary perspective for evaluating the impact of significant administrative changes while minimizing selection bias.

The term $\sum_{k=1}^{5}(Cost_{i,t-k} - Cost_{i,t-1-k})$ is an AR(5) term capturing the lagged dynamics of tax compliance costs. $X_{i,t-1}$ is a set of control variables including GDP per capita, inflation, agricultural share, rents share, trade openness, tax burden (all as percentages of GDP), and aid-to-GNI ratio. These variables are detailed in **Table A2 in Appendix A.** We also control for time country (α_i^h) and time (γ_t^h) to capture common shocks and unobserved time-invariant country characteristics, respectively. The residual term $\varepsilon_{i,t+h}$ is assumed to follow a normal distribution with mean zero and standard deviation one.

Equation 6.3 is estimated via ordinary least squares (OLS), generating impulse responses using the LP-OLS method. Since reform adoption is non-random and may be influenced by political or economic incentives, causal interpretation is limited (Alesina & Drazen, 1991). To address this selection bias, we complement our approach with a quasi-experimental design based on reform episodes, estimating the average treatment effect on the treated (ATT).

We first compute propensity scores for experiencing a reform episode conditional on observed covariates. Using inverse probability weighting, we reweight the sample to approximate a randomized experiment. Finally, we apply a doubly robust estimator combining local projections with inverse probability-weighted regression adjustment (LP-IPWRA) (Jordà & Taylor, 2016; De Haan & Wiese, 2022), which remains valid even if either the treatment or outcome model is misspecified (Imbens, 2004; Lunceford & Davidian, 2004; Wooldridge, 2007, 2010).

The IPWRA method relies on two key assumptions: **(i)** conditional independence, meaning reform assignment is as-if random given covariates, and **(ii)** positivity, ensuring each country has a nonzero probability of experiencing a reform episode. Both assumptions are satisfied in our sample (**??**), supporting credible causal inference.

6.5 Main results

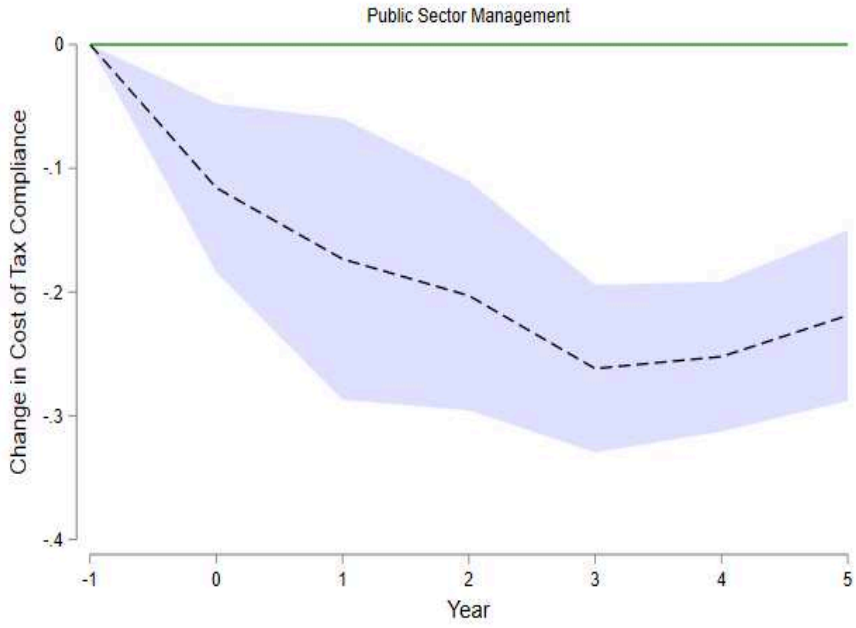
6.5.1 Local projection results

We begin by presenting the baseline estimates derived from Equation 3. Two alternative definitions of reform are considered: in the first specification, reforms are measured in a continuous form, corresponding to the annual change in the public sector management score described in Section 3; in the second, we adopt a binary definition, where reform episodes are identified as outlined earlier. Figure 6.4 depicts the dynamic effect of public sector management reforms on the cost of tax compliance, estimated through the local projection at different time horizons using the ordinary least squares method. The corresponding estimated coefficients are reported in Table B1 in section 6.10. The horizontal axis indicates the time horizon relative to the reform year, the dashed line reports the average impulse responses, while the shaded bands represent 90% confidence intervals. To ensure robustness against cross-sectional dependence and serial correlation in the error structure, standard errors are adjusted as described in Driscoll and Kraay (1998).

The results displayed in Figure 6.4 indicate that a reduction follows reforms in public sector management in tax compliance costs. Starting from the year of implementation, the estimated response becomes negative and remains below the pre-reform level for several years. The decline reaches its peak around the third to fourth year, amounting to roughly –0.3 points on the 0–10 scale, before stabilizing at a lower but still negative level. These findings suggest that reforms aimed at improving public sector management can generate efficiency gains in tax administration, primarily by simplifying procedures, improving transparency, and reducing the administrative burden on taxpayers. The dynamics are consistent with the view that such institutional reforms require time to take hold, as their effects depend on the progressive rollout of new processes and digital tools, as well as organizational changes within the administration.

Although these patterns are consistent with the expected benefits of governance reforms, it is essential to exercise caution in their interpretation. Reform adoption is not random, but often shaped by prevailing political, social, and economic conditions that may also influence compliance outcomes. Consequently, the estimates reported here may be subject to selection bias. To address this concern, and rather than placing too much weight on the LP-OLS results alone, the following sections employ a quasi-experimental approach based on reform episodes to provide more credible evidence.

Figure 6.4: Baseline results: Responses for public sector management reform



Note:The figures present the impulse responses obtained from local projection estimates of public sector management reforms on the cost of tax compliance. The black dashed line shows the response for public sector management reforms. Year 0 marks the year of reform implementation, and the value of the line at $t = 6$ represents the cumulative effect of the reform on compliance costs six years later. The shaded areas indicate the 90% confidence intervals.

6.5.2 Quasi-experimental estimate based on IPWRA

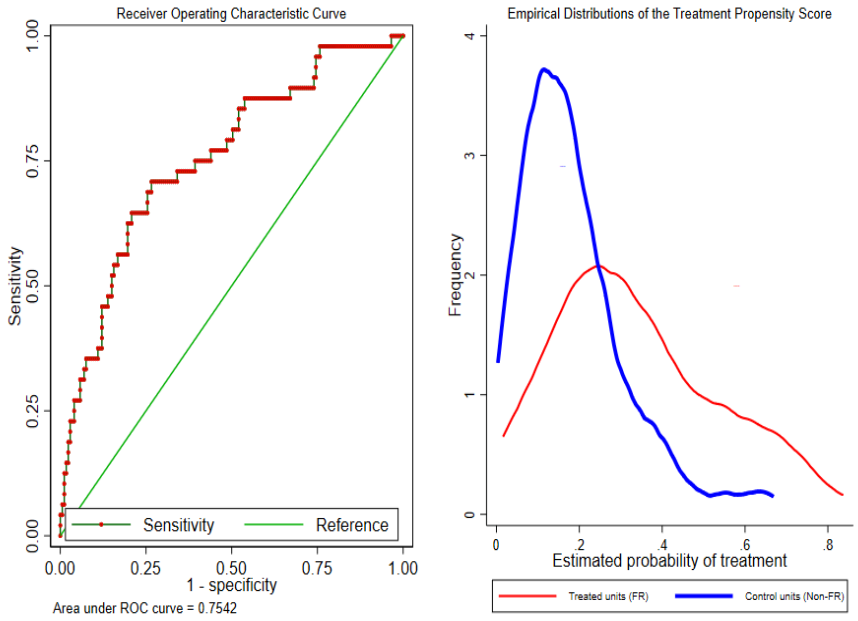
This section presents the results based on a quasi-experimental approach by combining the Local Projections method with the Inverse Probability Weighted Regression Adjustment (LP-IPWRA). As discussed in Section 3, we begin by estimating the propensity score model, which is the treatment model that describes the likelihood of implementing PSM reforms.

Drawing on the recent literature on public sector management reforms (Andrews, 2013; Dabla-Norris et al., 2017; IMF, 2019; Gaspar et al., 2019; Besley & Persson, 2020), we consider a broad set of structural, economic, and institutional factors that may shape reform adoption. Resource dependence can affect reform incentives; hence, we include agricultural rents as a share of GDP. Economic openness and development are captured through trade openness and GDP per capita. To reflect fiscal constraints and pressures for modernization, we add the tax burden and official development assistance (ODA) inflows (Knack, 2001; Morrissey, 2015). Institutional quality and governance play a central role in the feasibility and effectiveness of reforms. We therefore include indicators of control of corruption, rule of law, and government effectiveness (Kaufmann et al., 2010; Fukuyama, 2013). Since political regimes can strongly condition reform dynamics, we account for democracy and au-

tocracy measures, consistent with Persson and Tabellini (2003) and Acemoglu and Robinson (2006). In addition, we control for digital readiness and social structure by including internet penetration and the degree of urbanization, both of which influence state capacity and the demand for efficient public administration (World Bank, 2016; OECD, 2019).

As a preliminary step, we assess the adequacy of the treatment model that underpins the LP-IPWRA estimation. Figure 6.5 reports two complementary diagnostics. The left-hand panel presents the receiver operating characteristic (ROC) curve for the probability of undertaking a public sector management reform. The area under the curve (AUC) is 0.75, indicating solid predictive performance and a statistically significant difference from the random benchmark of 0.5. The right-hand panel shows the kernel density distributions of estimated propensity scores for treated and control units. The substantial overlap between the two distributions confirms that the common support condition is satisfied, providing confidence that our treatment model is suitable for identifying the average treatment effect on the treated (ATT) within the quasi-experimental framework.

Figure 6.5: ROC curves and Overlap of propensity scores for PSM reform

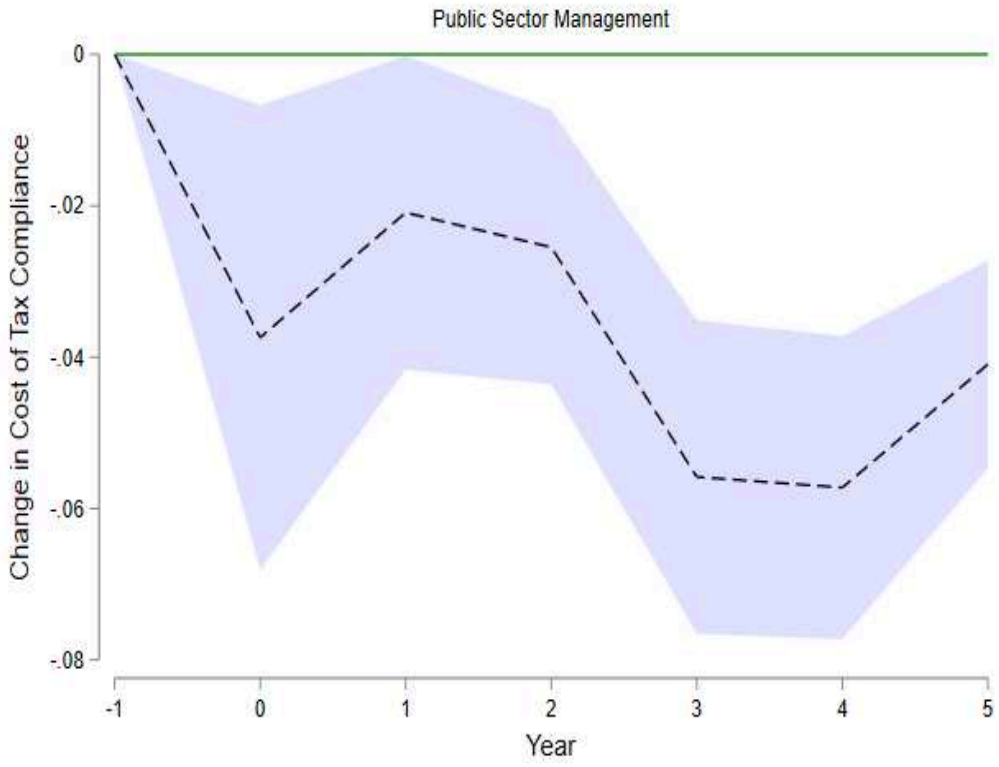


Source:Author based on connected data

Figure 6.6 reports the results obtained using the doubly robust IPWRA estimator for episodes of public sector management reform. The impulse responses plot from estimated coefficients in Table B2 in section 6.10 indicate that a persistent reduction follows such reforms in the cost of tax compliance. The effect emerges immediately in the year of im-

plementation, with a decline of roughly 0.04 points on the 0–10 scale, and becomes more pronounced over the following years. The strongest impact is observed around the third to fourth year after reform, with reductions approaching 0.06–0.07 points relative to the pre-reform baseline. Although the effect partially attenuates thereafter, it remains negative and statistically different from zero throughout the five-year horizon.

Figure 6.6: LP-IPWRA: Impact of public sector management reforms



Note: The figure shows the impulse responses obtained from local projection IPWRA estimates of public sector management reforms on the cost of tax compliance. The black dashed line shows the response for public sector management reforms. Year 0 marks the year of reform implementation, and the value of the line at $t = 6$ represents the cumulative effect of the reform on compliance costs six years later. The shaded areas indicate the 90% confidence intervals.

Importantly, the patterns documented here closely mirror those obtained with the LP-OLS approach, which reinforces the robustness of the findings. These results are also broadly consistent with the prior literature, which shows that simplifying administrative procedures and improving transparency can reduce compliance costs and enhance the efficiency of tax administration (Berger et al., 2018; OECD, 2017; McNamara, 2025). Taken together, these results support the interpretation that improvements in public sector management enhance the efficiency of tax administration by streamlining procedures, increasing transparency, and reducing the administrative burden on taxpayers.

6.6 Robustness checks

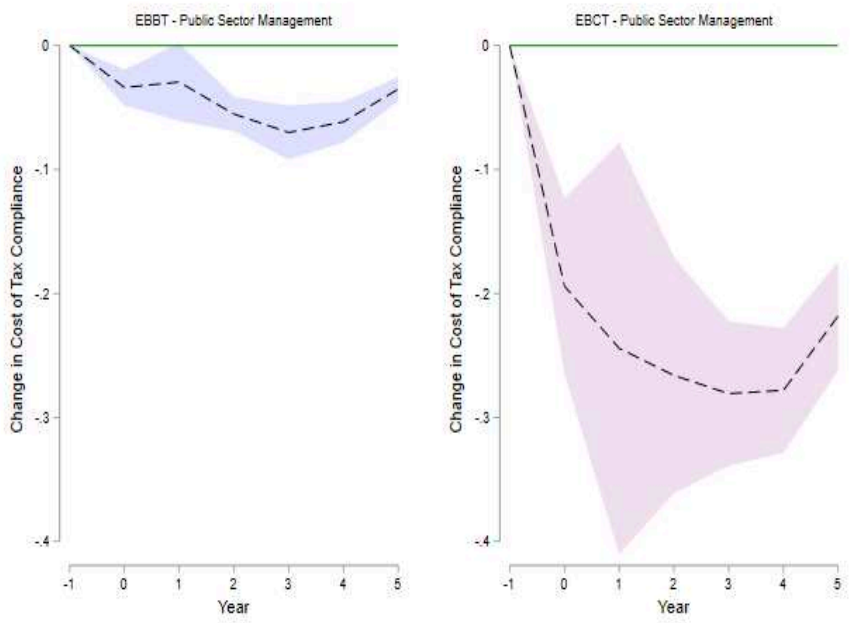
Our main results indicate that public sector management reforms contribute to a reduction in tax compliance costs in the African countries studied during the analysis period. In this section, we conduct robustness checks of these results by addressing concerns related to omitted variable bias and the complementarity across different dimensions of PSM reforms, using alternative methods and specifications.

6.6.1 Alternative weighting using the entropy balancing method

In this section, we employ an alternative method for constructing observation weights based on entropy balancing. This approach relies on the use of a treatment variable - either binary (Hainmueller, 2012) or continuous (Tübbicke, 2022) - and allows for rebalancing the observable characteristics of reforming and nonreforming countries. It ensures maximum comparability between the two groups by adjusting the weights to match the moments (means, variances, etc.) of the control variables, while maintaining as close a resemblance as possible to the original weights.

Table B3 in section 6.10 presents the estimated coefficients, while Figure 6.7 plot the impulse responses functions. The left panel illustrates the impact of PSM reform episodes using the binary treatment version of the entropy balancing method (EBBT). In contrast, the right panel shows the effect when exploiting the continuous treatment version (EBCT). Both specifications indicate a persistent decline in the cost of tax compliance following the PSM reforms. Under the binary treatment, the estimated reduction reaches around 0.9 points on the 0–10 scale after three to four years. Under the continuous treatment, the cumulative effect is even stronger, approaching 1.5–2 points by year three and remaining negative throughout the horizon. These alternative methods yield results similar to those of the baseline specifications, confirming that the observed effects of PSM reforms on tax compliance costs are robust to different econometric approaches that explicitly address selection bias in the reforms.

Figure 6.7: Alternative Estimation: Local Projection Combined with Entropy Balancing



Note:The charts report the impulse responses from local projection estimates, using entropy balancing weights. The left panel (EBBT) relies on a binary treatment variable, while the right panel (EBCT) employs a continuous treatment variable. The estimates report the impact of public sector management reforms on the cumulative cost of tax compliance. Year 0 marks the year of reform implementation, and the line's position at $t = 6$ reflects the accumulated effect six years after implementation (in percentage change). The shaded area represents the 90% confidence interval.

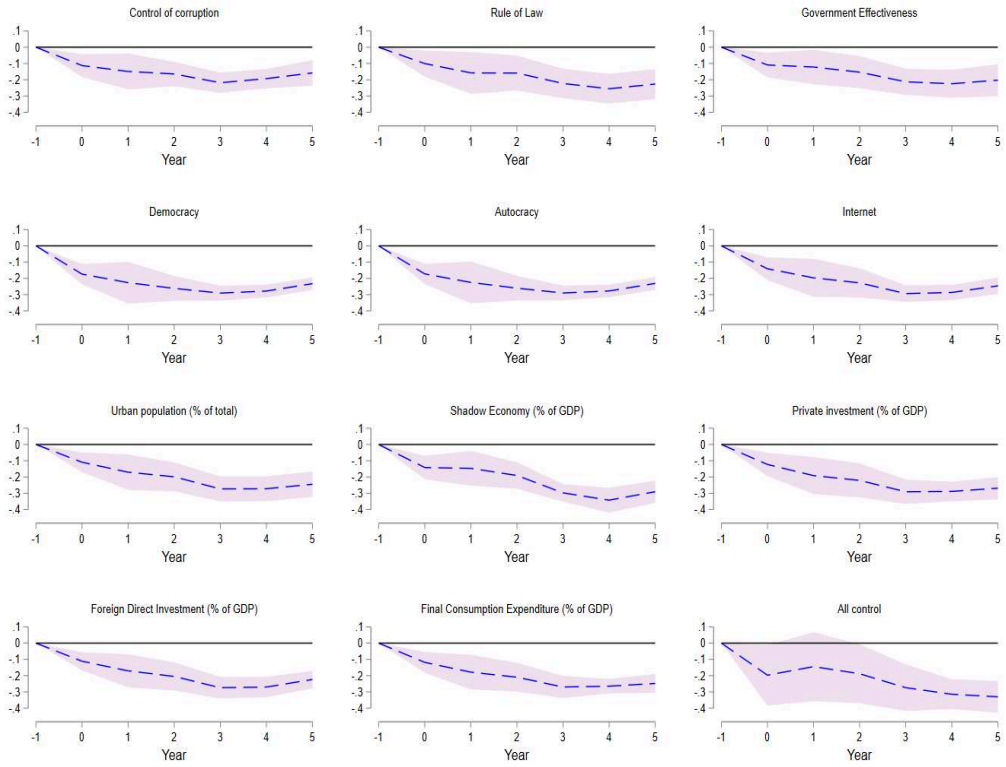
6.6.2 Potential omitted variables

Aside from the potential selection bias of reforms, another important source of endogeneity is the problem of omitted variables. Although our baseline specification already includes standard controls, unobserved factors correlated with both reform implementation and compliance costs could still bias the estimated coefficients. To address this concern, we extend our analysis by incorporating additional variables that the literature has identified as relevant determinants of institutional performance and tax compliance, such as governance indicators including corruption control, rule of law, government effectiveness (Djayasinga, 2019; Torgler et al., 2010; Amedanou, 2025b), economic structure (shadow economy, urbanization, private investment, foreign direct investment, internet penetration (Okunogbe & Santoro, 2023c; Adegboye et al., 2022; Ciucci, 2024), and macroeconomic conditions such as final consumption expenditure, domestic credit (Amo-Yartey et al., 2019).

Figure 6.8 reports the results obtained by adding these variables individually to the baseline model and when including them jointly in the last panel. The impulse responses remain very similar to our baseline estimates: public sector management reforms continue to be followed by a persistent reduction in the cost of tax compliance. This confirms that our results

are not driven by omitted variable bias and remain robust to the inclusion of a wide range of potential confounding factors.

Figure 6.8: Impact of public sector management reforms, including additional control



Note: The charts show the impulse responses from local projection estimates, incorporating additional control variables, for public sector management reforms (blue dashed line) on the cumulative cost of tax compliance. Year 0 marks the year the reforms were implemented, and the position of the line at $t = 6$ represents the accumulated impact of the reform on compliance costs six years after implementation. The shaded area denotes the 90% confidence interval.

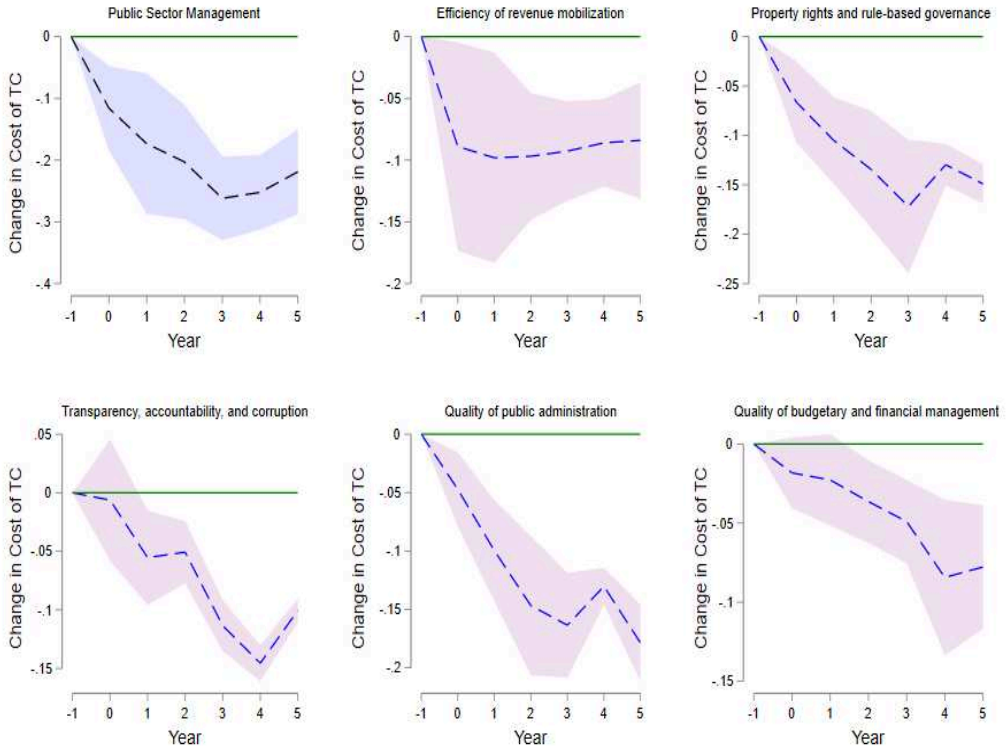
6.7 Heterogeneity Analysis: Disaggregating Public Sector Management

To shed light on the channels through which public sector management (PSM) reforms influence tax compliance costs, we disaggregate the composite PSM index into five core dimensions: efficiency of revenue mobilization, property rights and rule-based governance, transparency and accountability in the public sector, quality of public administration, and quality of budgetary and financial management. Each of these dimensions captures a distinct facet of state capacity that can shape the interaction between taxpayers and the tax administration.

The disaggregated results, shown in Figure 6.9, corroborate the baseline findings. Across most dimensions, we observe statistically significant reductions in tax compliance costs beginning in the first year following reform implementation. This pattern is evident in reforms that enhance revenue mobilization efficiency, strengthen property rights and rule-based governance, improve transparency and accountability, and enhance the quality of public administration. In contrast, reforms targeting the quality of budgetary and financial management exhibit a lagged effect, with significant reductions in compliance costs emerging only from the second year onward. The detailed coefficients for each component are presented in Table C1 in section 6.11.

The temporal dynamics mirror those identified in the aggregate analysis. In particular, the decline in compliance costs reaches its peak around the third to fourth year after reform and stabilizes thereafter at a lower level. The magnitude of the effect across components is broadly comparable to that observed in the overall PSM score. These dynamics are consistent with the idea that reforms that simplify administrative procedures, strengthen governance frameworks, and improve bureaucratic performance can quickly alleviate the burdens on taxpayers, while reforms that involve institutional changes in budgeting and financial management require more time to be internalized within administrative processes. Overall, the disaggregated analysis underscores the robustness of the baseline findings. It highlights that while Public Sector Management reforms are systematically associated with efficiency gains in tax administration, the timing of their impact differs across institutional domains. Some reforms generate relatively immediate improvements in compliance costs, whereas others exhibit delayed but persistent effects. This heterogeneity is consistent with the view that institutional reforms unfold through complementary channels and along different temporal trajectories.

Figure 6.9: Impact of disaggregating Public Sector Management score



Note:The charts display impulse responses from local projection estimates, with additional control variables, for the disaggregated components of public sector management reforms (blue dashed line) on the cumulative cost of tax compliance. The black dashed line in the first panel shows the baseline response for the aggregate PSM index to facilitate comparison. Year 0 marks the year the reforms were implemented, and the position of the line at $t = 6$ represents the accumulated impact of the reform on compliance costs five years after implementation. Shaded areas denote 90% confidence intervals.

6.8 Conclusion and implications

The purpose of this study is to examine the dynamic impact of public sector management reforms on tax compliance costs in Sub-Saharan African countries between 2005 and 2022. Using ordinary least squares (OLS) and generating impulse responses with the LP-OLS method, our results consistently show that public sector management reform significantly contributes to reducing tax compliance costs, regardless of the estimation method used. To prevent potential endogeneity issues due to selection bias in the adoption of the reform, we used the inverse probability weighted estimator augmented by (Jordà & Taylor, 2016), as well as the entropy balancing method for binary treatment variables proposed by (Hainmueller, 2012). The results of these econometric specifications confirm the reliability of our baseline result. The estimates show immediate results from the first year of implementation. Our sensitivity analyses confirm the robustness of these results,

taking into account heterogeneity across different components of public sector management reform, other dependent variables such as corruption control, democracy, autocracy, the informal economy, efficiency, and urban population.

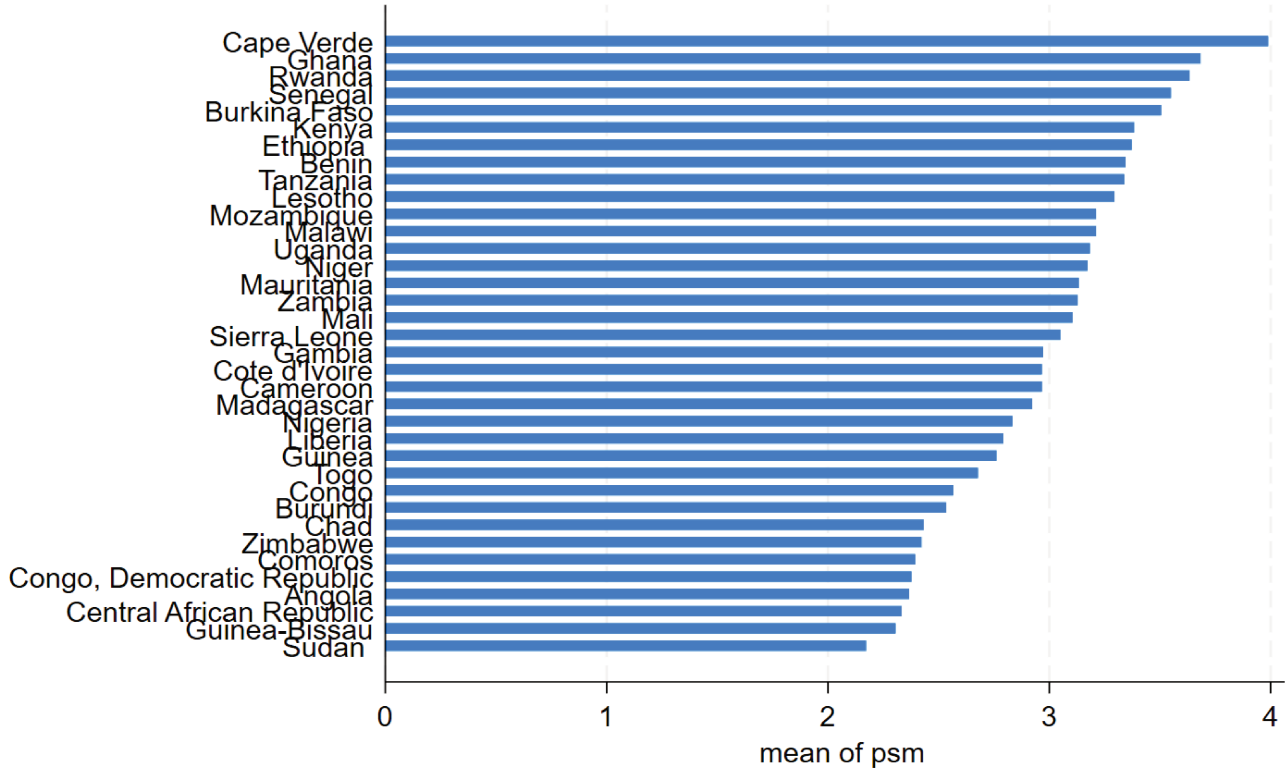
The study's findings suggest that simultaneous and consistent improvement in the various components of public sector management can be a decisive lever for reducing tax compliance costs and, in turn, stimulating tax compliance and public revenue mobilization. First, strengthening property rights and rule-of-law-based governance secures the economic and legal environment. Reliable property titles, respected contracts, and accessible judicial remedies reduce uncertainty, minimize litigation, and make the application of tax rules more transparent and predictable. Second, improving the quality of budgetary and financial management through credible budgeting, transparent public accounts, regular controls, and independent audits increases the confidence of citizens and businesses in the use of tax revenues, thereby promoting their voluntary compliance. Thirdly, increasing the efficiency of revenue mobilization requires modernizing and digitizing tax administrations, simplifying procedures, expanding online filing systems, targeting audits more effectively, and reducing arbitrary exemptions. These reforms reduce transaction costs for taxpayers and facilitate the gradual integration of informal actors into the formal economy. Fourth, improving the quality of public administration, through the professionalization of civil servants, more strategic human resource management, continuous training, and depoliticizing careers, makes the state more responsive and reliable in its daily interactions with citizens, thereby reducing bureaucratic red tape and delays. Finally, promoting transparency, accountability, and anti-corruption measures in the public sector creates a climate of trust and fairness: the absence of favouritism, the disclosure of budgetary information, and clear control procedures reduce incentives for evasion and increase the legitimacy of the tax system. By combining these five dimensions in a comprehensive strategy, governments can not only substantially reduce tax compliance costs but also broaden the tax base without raising tax rates, stabilize and diversify their public revenues, and sustainably finance social and investment policies. This process sets in motion a virtuous circle in which good governance, tax compliance, economic formalization, and economic growth mutually reinforce one another, thereby improving long-term fiscal sustainability and social cohesion.

Contrary to Chapters 4 and 5, which analyse the exclusive effect of adopting a SARA and the digitisation of taxation, Chapter 6 examines the dynamic effect of public sector management reform on tax compliance. Public sector management reform refers to the coordination of various reforms in the public sector. In fact, one of the most important lessons

from E. Lewis is that tax policy cannot be the exclusive solution for improving tax compliance. Thus, recent studies recommend coordinated reforms, combining tax policies with more general structural reform (Kamasa et al., 2025; Mpofu, 2022). In this perspective, our final chapter (Chapter 6) analyses the impact of public sector management reform, which includes various public sector reforms on tax compliance. Consequently, it repeats some of the analyses from chapters 4 and 5, but in the context of policy coordination.

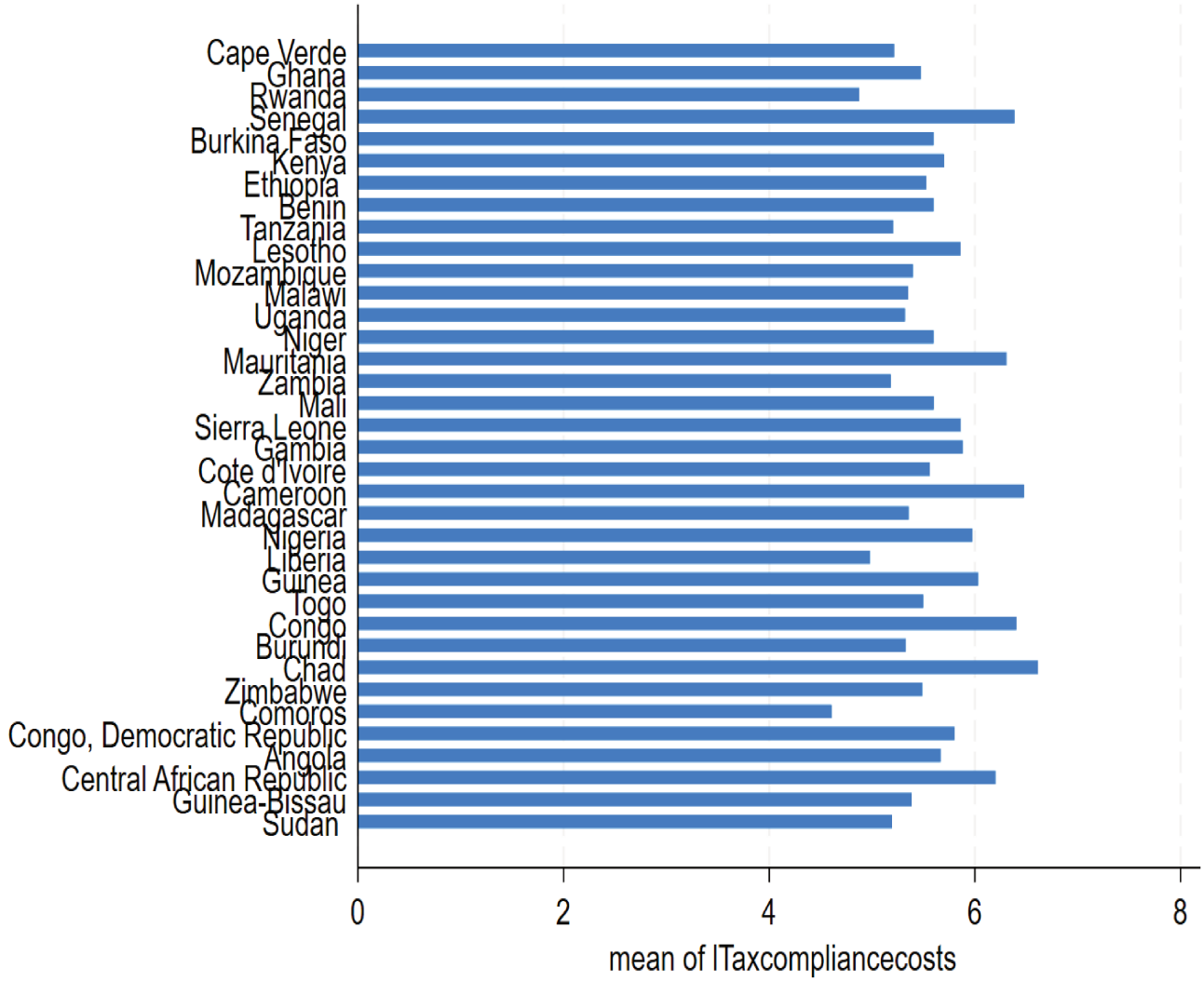
6.9 APPENDIX A: DATA AND DESCRIPTIVE STATISTICS

Figure 6.10: Public Sector Management score Average by Country, 2005-2022



Source: Authors based on the study's datasets.

Figure 6.11: Average tax compliance costs by country, 2005-2022



Source:Authors based on connected data

Table 6.2: Data sources

Variables	Description	Sources
Tax compliance costs	This indicator measures the annual time required by a company to prepare, declare, and pay corporate income tax, VAT, and employment taxes.	WDI
GDP per capita (constant 2015 US$)	GDP per capita is gross domestic product divided by midyear population, expressed in constant 2015 US dollars.	WDI
Inflation (annual %)	Inflation refers to the consumer price index and measures the annual percentage change in the cost to the average consumer of purchasing a basket of goods and services.	WDI
Agricultural value added (% of GDP)	This indicator refers to the proportion of added value in the agricultural and forestry sector as a percentage of total GDP.	WDI
Rents share (% of GDP)	Total natural resource rents are the sum of oil rents, gas rents, coal rents (hard coal and soft coal), mining rents, and forest rents as a percentage of GDP.	WDI
Trade openness (% of GDP)	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product as a percentage of GDP.	WDI
Tax burden (% of GDP)	Tax revenue refers to compulsory transfers (personal income tax, VAT, corporate tax, customs duties) to the central government for public purposes expressed as a percentage of GDP.	WDI
Aide (% of GNI)	French Net official development assistance (ODA) includes disbursements of concessional loans (minus principal repayments) and grants from official agencies of the Development Assistance Committee (DAC) members.	WDI
Control of corruption	The corruption control score reflects perceptions of the extent to which public power is exercised for private gain, including minor and major forms of corruption, as well as the 'capture' of the state by elites and private interests. This score ranges from -2.5 to 2.5.	WGI
Rule of law	Rule of Law captures perceptions of the extent to which agents have confidence in and abide by 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. This score ranges from -2.5 to 2.5.	WGI
Government effectiveness	Government Effectiveness captures perceptions of the quality of public services. This score ranges from -2.5 to 2.5.	WGI
Democracy	ndex ranging from 0 to 10	Polity5
Autocracy	ndex ranging from 0 to 10	Polity5

6.10 APPENDIX B: MAIN RESULTS

Table B1: Baseline : Impact of PSM reform on Cost of Tax Compliance

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
PSM reform	-0.116**	-0.173**	-0.203***	-0.262***	-0.252***	-0.219***
	(0.041)	(0.069)	(0.056)	(0.041)	(0.037)	(0.042)
Observations	283	266	246	226	206	184
Number of id	25	25	25	25	25	24
R squared	0.667	0.589	0.466	0.415	0.457	0.494
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses. *** p≤0.01, ** p≤0.05, * p≤0.1.

Table B2: Quasi-experimental method: LP-IPWRA

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
PSM reform episode	-0.037*	-0.021	-0.025**	-0.056***	-0.057***	-0.041***
	(0.019)	(0.013)	(0.011)	(0.013)	(0.012)	(0.008)
Observations	201	201	201	201	201	182
Number of id	23	23	23	23	23	23
R squared	0.641	0.657	0.666	0.608	0.519	0.530
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses. *** p≤0.01, ** p≤0.05, * p≤0.1.

Table B3: Alternative Estimation: Local Projection Combined with Entropy Balancing

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
	Entropy balancing binary treatment (PSM reform episode)					
PSM reform episode	-0.034***	-0.029	-0.055***	-0.070***	-0.062***	-0.035***
	(0.009)	(0.019)	(0.008)	(0.013)	(0.010)	(0.006)
R squared	0.697	0.627	0.613	0.627	0.622	0.616
	Entropy balancing countinuous treatment (PSM refom)					
PSM reform	-0.194***	-0.244**	-0.266***	-0.281***	-0.278***	-0.218***
	(0.043)	(0.101)	(0.058)	(0.035)	(0.031)	(0.027)
R squared	0.588	0.558	0.505	0.447	0.452	0.516
Observations	192	192	192	192	192	173
Number of id	23	23	23	23	23	23
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses. *** $p \leq 0.01$, ** $p \leq 0.05$, * $p \leq 0.1$.

6.11 APPENDIX C: HETEROGENEITY ANALYSIS

Table C1: Heterogeneity Analysis by PSM components

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
D.Efficiency of revenue mobilization	-0.089	-0.098*	-0.097***	-0.093***	-0.086***	-0.084**
	(0.051)	(0.052)	(0.031)	(0.025)	(0.022)	(0.029)
Observations	283	266	246	226	206	184
Number of id	25	25	25	25	25	24
R-squared	0.671	0.583	0.438	0.326	0.327	0.325
D.Property rights and rule-based governance	-0.066**	-0.105***	-0.134***	-0.172***	-0.130***	-0.149***
	(0.025)	(0.027)	(0.036)	(0.041)	(0.013)	(0.012)
Observations	277	260	240	220	200	178
Number of id	25	25	25	25	25	24
R-squared	0.667	0.587	0.458	0.389	0.388	0.422
D.Transparency, accountability, and corruption in the public sector	-0.006	-0.055**	-0.051***	-0.113***	-0.145***	-0.100***
	(0.031)	(0.024)	(0.016)	(0.013)	(0.009)	(0.006)
Observations	277	260	240	220	200	178
Number of id	25	25	25	25	25	24
R-squared	0.665	0.588	0.461	0.396	0.447	0.477
D.Quality of public administration	-0.047**	-0.100***	-0.147***	-0.163***	-0.130***	-0.179***
	(0.019)	(0.026)	(0.036)	(0.027)	(0.010)	(0.020)
Observations	277	260	240	220	200	178
Number of id	25	25	25	25	25	24
R-squared	0.668	0.596	0.490	0.447	0.458	0.505
D.Quality of budgetary and financial management	-0.018	-0.023	-0.036**	-0.049***	-0.084**	-0.078***
	(0.014)	(0.018)	(0.016)	(0.016)	(0.030)	(0.024)
Observations	283	266	246	226	206	184
Number of id	25	25	25	25	25	24
R-squared	0.662	0.571	0.424	0.308	0.321	0.326
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	Yes	Yes	Yes	Yes	Yes	Yes

Notes. Standard errors in parentheses. *** p≤0.01, ** p≤0.05, * p≤0.1.

Table C2: List of countries

Angola	Congo	Lesotho	Rwanda
Benin	Congo, Democratic Republic	Liberia	Senegal
Burkina Faso	Ethiopia	Madagascar	Sierra Leone
Burundi	Gambia	Malawi	Sudan
Cameroon	Ghana	Mali	Togo
Cape Verde	Guinea	Mauritania	Uganda
Central African Republic	Guinea-Bissau	Mozambique	Tanzania
Chad	Cote d'Ivoire	Niger	Zambia
Comoros	Kenya	Nigeria	Zimbabwe

Chapter 7

General Conclusion

Conformément aux recommandations de la conférence d'Addis-Abeba, aux objectifs de développement durable de l'Agenda 2030, les pays en développement doivent mobiliser des recettes fiscales supplémentaires pour financer leur développement, c'est-à-dire réduire la pauvreté et fournir les biens et services publics pour les années à venir. Contrairement aux pays de l'OCDE, les pays en développement, notamment les pays d'Afrique subsaharienne, présentent un niveau de civisme fiscal faible. Dans les pays en développement, plus de la moitié des citoyens ne sont pas disposés à payer les impôts (OCDE, 2023). Cette thèse a pour objectif d'identifier les leviers que les décideurs publics peuvent actionner pour amener les contribuables à respecter leurs obligations fiscales. Par conséquent, elle revisite d'une part les principaux déterminants socio-démographiques, politico-économiques et institutionnels. Nous apportons en plus quelques éclairages nouveaux, en faisant une analyse comparative du civisme fiscal en fonction de la culture (pays anglo-saxons vs pays francophones) et de l'appartenance à une zone d'intégration ou non (CEDEAO/UEMOA vs les autres). D'autre part, la thèse étudie le lien entre les réformes fiscales comme : l'adoption d'une administration semi-autonome (SARAs), l'adoption de l'argent mobile, une réforme globale de la gestion du secteur public et la conformité fiscale. Cette thèse est structurée en deux parties. La première comprend deux (02) chapitres et la seconde trois (03) chapitres.

Le chapitre 2 examine, pour les pays d'Afrique subsaharienne, les déterminants du civisme fiscal des particuliers, en utilisant les données de la sixième série d'enquêtes Afro-baromètre menée en 2014-2015, couvrant 30 pays. De plus, nous faisons une analyse comparative du civisme fiscal selon la culture (pays anglophone vs pays francophone), puis enfin nous testons l'hétérogénéité des résultats selon la culture et les sous-groupes de pays de notre échantillon (UEMOA, CEDEAO, pays francophones et pays anglophones). Enfin, nous testons la robustesse des résultats en changeant de variable dépendante. En utilisant un modèle Probit, les résultats révèlent que des facteurs institutionnels tels que la confiance dans l'administration, la démocratie, la qualité des services publics, la lutte contre la corruption, l'accessibilité à Internet et la légitimité des autorités fiscales améliorent le civisme fiscal des citoyens. À l'inverse, la complexité du système fiscal nuit à la discipline fiscale des citoyens. Concernant les facteurs socio-économiques, nos résultats indiquent que les femmes sont moins susceptibles de se conformer à leurs obligations fiscales que les hommes. Ces résultats sont robustes aux sous-échantillons de notre étude et à une mesure alternative du civisme fiscal. Mais on note une hétérogénéité des résultats selon ces sous-groupes. L'analyse comparative montre que le degré de civisme fiscal est plus élevé dans les pays francophones que dans les pays anglophones. Enfin, nos résultats montrent que la coordination fiscale entre les États de la CEDEAO et/ou de l'UEMOA améliore le

civisme fiscal des citoyens de ces régions. En d'autres termes, le civisme fiscal est plus élevé dans les zones d'intégration comme la CEDEAO et l'UEMOA que dans les pays situés hors de ces zones.

Le chapitre 3 : Quels sont les facteurs qui déterminent la motivation des entreprises à payer des impôts ? Nous abordons cette question à l'aide des données d'une enquête sur le civisme fiscal menée par l'Office togolais des recettes fiscales (OTR) en 2019, portant sur 413 entreprises formelles. Pour ce faire, nous construisons deux mesures de civisme fiscale. Les déterminants potentiels du civisme fiscale comprennent l'appréciation de la fraude fiscale, la modification des lois fiscales, la connaissance de la fiscalité, les bénéficiaires de l'impôt, les pots-de-vin, la sévérité des sanctions, la légitimité des droits de douane, l'appréciation du montant de l'impôt, la charge fiscale, la légitimité de la TVA et la localisation géographique des entreprises. Les résultats montrent que tous ces facteurs sont des déterminants clés de la conformité fiscale volontaire, à l'exception de la modification des lois fiscales, de l'appréciation du montant de l'impôt et de la charge fiscale. Lorsque nous isolons la région Maritime, le résultat reste inchangé, mais l'appréciation de la fraude fiscale n'a pas d'impact significatif sur la conformité volontaire dans cette région. Enfin, les déterminants varient lorsque nous distinguons les entreprises par taille, que ce soit au niveau national ou régional.

Le chapitre 4 examine si l'adoption d'une administration fiscale semi-autonome, communément appelée SARA, permet de lutter contre l'évasion fiscale. En utilisant l'appariement par score de propension (PSM) sur un échantillon de 39 pays d'Afrique subsaharienne entre 1980 et 2015, notre étude conclut que l'adoption d'une SARA réduit l'évasion fiscale dans les pays SARA par rapport aux pays non-SARA. Ce résultat est robuste à plusieurs spécifications alternatives, notamment l'ajout d'autres variables de contrôle additionnelles, l'utilisation de diverses variables dépendantes alternatives et l'utilisation de méthodes d'estimation concurrentes comme : l'équilibrage d'entropique et les moindres carrés ordinaires (OLS). Des estimations supplémentaires sur diverses variables dépendantes alternatives révèlent que l'adoption d'une SARA augmente les recettes fiscales (hors ressources naturelles), l'effort fiscal et ses composantes, c'est-à-dire l'effort fiscal persistant et l'effort fiscal variable dans le temps, dans les pays d'Afrique subsaharienne. Ces résultats révèlent en outre que l'adoption d'une SARA réduirait l'inefficacité fiscale dans les pays d'Afrique subsaharienne. Cependant, il convient de souligner que l'étude dynamique révèle que cet effet est instable dans le temps. Enfin, nous apportons la preuve qu'une meilleure qualité institutionnelle (mesurée par le contrôle

de la corruption), une simplification du processus de paiement des impôts et la conformité fiscale sont des canaux de transmission par lesquels une SARA affecte l'évasion fiscale.

Le chapitre 5 analyse la corrélation entre l'adoption de l'argent mobile et les coûts de conformité fiscale, estimés par le nombre d'heures nécessaires pour déclarer et payer les principaux impôts par an dans les pays en développement, en utilisant la méthode d'équilibrage entropique. À l'aide d'un panel non équilibré de 91 pays couvrant la période 2000-2021, les résultats montrent que l'argent mobile est associé à une réduction statistiquement significative des coûts de conformité fiscale. Plus précisément, nous constatons qu'en moyenne, l'adoption de l'argent mobile réduit généralement les coûts de conformité fiscale de 0,121. Ce résultat est robuste à l'utilisation de méthodes d'estimation alternatives : moindres carrés ordinaires (OLS) et la méthode des moments généralisés (GMM), à plusieurs spécifications alternatives de notre échantillon: premièrement nous excluons certains groupes de pays ou de période susceptible de biaiser le résultat (les pays qui ont adoptés l'administration fiscale semi-autonome, la période post conférence d'Addis Abeba, les pays qui ont un passé colonial et les pays considérés comme paradis fiscaux) ; deuxièmement, nous incluons des variables de contrôle supplémentaires à notre modèle de base. De plus, il existe une certaine hétérogénéité dans les résultats selon le type de services d'argent mobile et la localisation géographique des pays de notre échantillon (ASS vs autres pays de l'échantillon).

Le chapitre 6 a pour objectif d'examiner l'impact dynamique des réformes de la gestion du secteur public sur les coûts de la conformité fiscale dans les pays d'Afrique subsaharienne entre 2005 et 2022. En utilisant la méthode des moindres carrés ordinaires (MCO), générant des réponses impulsionnelles à l'aide de la méthode LP-OLS, nos résultats montrent constamment que la réforme de la gestion du secteur public contribue de manière significative à réduire les coûts de la conformité fiscale, indépendamment des méthodes d'estimation utilisées. Pour prévenir d'éventuels problèmes d'endogénéité dus au biais de sélection dans l'adoption de la réforme, nous avons utilisé l'estimateur pondéré par probabilité inverse augmenté de Jordà and Taylor (2016), ainsi que la méthode d'équilibrage d'entropie des variables binaires proposée par Hainmueller (2012) et les variables de traitement continu par Tübbicke (2022). Les résultats de ces spécifications économétriques confirment la fiabilité de notre résultat de base. Les estimations montrent des résultats immédiats dès la première année de sa mise en œuvre. Nos analyses de sensibilité confirment la robustesse de ces résultats, en tenant compte de l'hétérogénéité selon les différentes composantes de la réforme de la gestion du secteur publique, d'autres variables dépendantes telles le contrôle

de la corruption, la démocratie, l'autocratie, l'économie informelle, l'efficacité, population urbaine.

7.1 Recommandations et limites de la thèse

Au regard des résultats de cette thèse, quelques recommandations peuvent être formulées au gouvernement et aux autorités fiscales : **(i)** Premièrement, la thèse suggère que les décideurs publics des pays en développement pourraient bénéficier beaucoup d'un assainissement de la gouvernance pour améliorer le civisme fiscal des citoyens. Précisément, les gouvernements de ces pays doivent mener une "guerre" contre la corruption, être transparents dans la gestion des recettes fiscales collectées, simplifier les systèmes fiscaux, fournir des services publics de qualité, promouvoir l'équité et la justice fiscale, pour améliorer le civisme fiscal. En outre, les résultats montrent que certains groupes sociaux tels que les hommes, les travailleurs indépendants, les jeunes ont un civisme fiscal faible comparé respectivement aux femmes, aux agents du secteur public et aux personnes plus âgées. Par conséquent, les décideurs peuvent affiner leur politique fiscale en étant plus regardants sur ces groupes, qui ont un civisme fiscal faible. Par exemple, les autorités fiscales peuvent intensifier les campagnes de sensibilisation, organiser régulièrement des programmes éducatifs, voire organiser fréquemment les contrôles fiscaux auprès de ces groupes. **(ii)** Deuxièmement, pour les pays francophones, les pays en dehors des zones d'intégration telles que la CEDEAO et l'UEMOA où le niveau du civisme fiscal est faible, les décideurs publics doivent mettre à jour leurs législations fiscales afin d'améliorer le civisme fiscal des citoyens de leurs pays. **(iii)**Troisièmement, la thèse recommande aux pays en développement de digitaliser leur système fiscal, notamment en introduisant le paiement des impôts par mobile money, tout en garantissant les conditions nécessaires pour tirer pleinement des avantages d'une telle politique. Le partage d'informations n'étant pas systématique, il faut assurer le partage d'informations entre les autorités fiscales et les sociétés de télécommunication, les banques, et déployer les infrastructures nécessaires pour que la politique soit efficace. Il en est de même pour la SARA. Son adoption peut aider à combattre l'évasion fiscale, pourvu de garantir les conditions de son efficacité, c'est-à-dire le développement institutionnel qui véhicule les effets des SARAs. **(iv)** Pour finir, la thèse recommande une réforme globale de la gestion du secteur public. En effet, les politiques fiscales implémenter isolement ont des effets limiter dans le temps. Ainsi, pour avoir les effets durables dans le temps, il faut coordonner la politique fiscale à d'autres politiques comme une politique de l'emploi, une politique de développement institutionnel. Bref, il faut une politique inclusive pour garantir les effets de la politique fiscale à long terme.

Cette thèse présente certaines limites, comme tout travail de recherche. Premièrement, elle est confrontée à une indisponibilité de données, ce qui a conduit à une restructuration de certains chapitres. Par exemple, dans le chapitre 2, il aurait été intéressant d'inclure davantage d'entreprises situées sur le territoire national, c'est-à-dire dans d'autres régions que la région maritime, afin de mieux analyser l'effet régional et d'identifier les facteurs qui sous-tendent la conformité fiscale volontaire des entreprises. De cette manière, nous pourrions connaître les déterminants de la conformité fiscale dans chacune des cinq régions administratives du pays. Il serait également utile de comparer la conformité fiscale des entreprises étrangères à celle des entreprises nationales. Cependant, la base de données utilisée dans ce chapitre ne fait pas de distinction entre les entreprises étrangères et nationales. Une autre extension importante consisterait à distinguer les entreprises selon leurs activités (production de biens et/ou de services) ainsi que leurs secteurs d'activité (agriculture, agro-industrie, construction, transports, télécommunications, etc.) afin de tirer des enseignements en termes de politique fiscale, de contrôle et de collecte des impôts pour une meilleure efficacité du système fiscal. Enfin, il sera également important d'examiner si certaines politiques fiscales, telles que les crédits d'impôt pour certaines entreprises, constituent un instrument de lutte contre la fraude fiscale. Deuxièmement, les données utilisées sur la conformité fiscale sont un proxy. Les données de la conformité fiscale doivent être mesurables et observables. Par conséquent, elles devraient émaner des administrations fiscales après les déclarations et le paiement des impôts à l'échéance. Mais, à cause de la confidentialité de ces données, elles sont rarement accessibles. Une telle base aurait permis de distinguer la conformité fiscale volontaire et la conformité fiscale forcée, afin de voir comment les réformes fiscales influencent ces différents types de conformité. Par conséquent, des recherches futures pourraient se concentrer sur ces pistes pour approfondir la compréhension du civisme fiscal, pilier de tout système fiscal.

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