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Tackling tax base erosion in the era of digitalization and globalization: Challenges and opportunities for development financing

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List of acronyms

AEOI	Automatic Exchange of Information
AIPW	Augmented Inverse Probability Weighting
AML	Anti-Money Laundering
ATAF	African Tax Administration Forum
ATM	Automated Teller Machine
ATT	Average Treatment Effect on the Treated
BEPS	Base Erosion and Profit Shifting
CDI	Convention de Double Imposition
CFC	Controlled Foreign Corporation
CIT	Corporate Income Tax
CRS	Common Reporting Standard
CNUCED	Conférence des Nations Unies sur le Commerce et le Développement
DiD	Difference-in-Differences
DTTs	Double Taxation Treaties
EOI	Exchange of Information
EOIR	Exchange of Information on Request
FATCA	Foreign Account Tax Compliance Act
FATF	Financial Action Task Force
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
GSMA	GSM Association
IDE	Investissements Directs Étrangers (Foreign Direct Investment)
GAAR	General Anti-Avoidance Rule
G2P	Government-to-Person
GloBE	Global Anti-Base Erosion Rules
ICT	Information and Communication Technologies
IMF	International Monetary Fund
ITI	International Tax Institutions
IPW	Inverse Probability Weighting
IPWRA	Inverse Probability Weighting Regression Adjustment
ITU	International Telecommunication Union
LP	Local Projection
LGT	Liechtenstein Global Trust
MCAA	Multilateral Convention on Mutual Administrative Assistance
MNE	Multinational Enterprise
OCDE	Organisation de Coopération et de Développement Économiques
OECD	Organisation for Economic Co-operation and Development
OFCs	Offshore Financial Centers
P2G	Person-to-Government
P2P	Peer-to-Peer
PE	Permanent Establishment
PIT	Personal Income Tax

PSM	Propensity Score Matching
TIEA	Tax Information Exchange Agreement
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UBS	Union Bank of Switzerland
VAT	Value-Added Tax
WDI	World Development Indicators

Abstract

This thesis investigates how developing countries can preserve their fiscal sovereignty and effectively mobilize domestic resources in the face of tax base erosion. It identifies and analyzes the main mechanisms driving this erosion, particularly in connection with the digitalization of the economy and globalization, while assessing the effectiveness of international tax cooperation frameworks implemented to address these challenges. To do so, we conduct policy-oriented research using appropriate statistical and econometric tools and propose economic policy recommendations for developing countries. The first part analyzes the mechanisms of tax base erosion by identifying the main channels used to artificially reduce tax liabilities (Chapters 1 and 2). In Chapter 1, we examine the impact of Double Taxation Treaties (DTTs) on foreign direct investment (FDI) flows, distinguishing between real and phantom investments. We find that while DTTs increase real FDI, they also significantly stimulate phantom investments, especially in developing countries and tax havens. These robust results, confirmed across various estimators and control variables, highlight DTTs as a channel of base erosion and stress the urgency of reforming tax treaties to foster real investment while ensuring sustainable economic growth. Chapter 2 explores the relationship between mobile money adoption and money laundering risks in developing countries. We find that mobile money adoption increases the risk of money laundering. A detailed analysis of different services indicates that Peer-to-Peer (P2P) transfers and cash-out services contribute disproportionately to this risk. While Government-to-Person (G2P) transfers can mitigate short-term risks due to improved traceability, other services such as international remittances and bulk payments exacerbate vulnerabilities. These findings underscore the need for robust regulatory frameworks, strengthened technological safeguards, and enhanced international cooperation to mitigate these risks while preserving financial integrity. The second part of the thesis focuses on the effectiveness of international tax cooperation mechanisms in curbing tax base erosion (Chapters 3 and 4). Chapter 3 analyzes the impact of information exchange reforms on tax revenue mobilization in developing countries, finding that such reforms significantly increase tax revenues. Chapter 4 evaluates the effects of Exchange of Information (EOI) for tax purposes on investment flows from developing countries to offshore financial centers. Our results show a significant decrease in active offshore entities following the implementation of EOI, suggesting that increased transparency and compliance costs

discourage the creation of offshore structures. However, our analysis of FDI and portfolio flows shows that EOI does not significantly curb the overall volume of cross-border capital flowing from developing countries to offshore jurisdictions. This indicates that while EOI limits the creation of offshore entities, it does not fully constrain capital mobility through other offshore channels.To enhance the effectiveness of these reforms, countries should strengthen cooperation between developed and developing nations in order to better monitor cross-border financial flows.

Keywords: Tax base erosion, Resource mobilization, Development financing, Digitalization, Globalization, Fiscal sovereignty, Tax cooperation, Impact analysis, Foreign direct investment, Phantom investment, Real investment, Offshore financial centers, Money laundering, Tax transparency, Tax optimization, Harmful tax competition, Financial inclusion, Mobile money, International tax governance, International tax reforms.

Résumé

Cette thèse se pose la question de savoir comment les pays en développement peuvent préserver leur souveraineté fiscale et mobiliser efficacement les ressources domestiques face à l'érosion de la base fiscale. Elle identifie et analyse les principaux mécanismes à l'origine de cette érosion, en lien avec la digitalisation de l'économie et la mondialisation, tout en évaluant l'efficacité des dispositifs de coopération fiscale internationale mis en place pour y faire face. Pour cela, nous menons des analyses quantitatives rigoureuses et produisons des évidences empiriques permettant de formuler des recommandations de politiques économiques aux pays en développement. La première partie analyse les mécanismes d'érosion de la base fiscale, en identifiant les principaux canaux exploités pour réduire la charge fiscale (Chapitre 1 et Chapitre 2).

Dans le chapitre 1, nous examinons l'impact des conventions de double imposition (CDI) sur les flux d'investissements directs étrangers (IDE), en distinguant les investissements réels des investissements fantômes. Nous montrons que, bien que les CDI augmentent les IDE réels, ils stimulent également les investissements fictifs, surtout dans les pays en développement et les paradis fiscaux. Ces résultats, robustes à l'utilisation d'estimateurs alternatifs et de variables de contrôle, confirment que les CDI représentent un canal d'érosion de la base fiscale, et soulignent l'urgence d'adapter et de renforcer les réformes fiscales pour favoriser un environnement propice aux investissements réels, tout en assurant une croissance économique durable.

Nous explorons dans le Chapitre 2, la relation entre l'adoption des moyens de paiements mobiles et les risques de blanchiment d'argent dans les pays en développement. Nous constatons que l'adoption des moyens de paiement mobile augmente le risque de blanchiment d'argent. Les services de type transferts de pair à pair (P2P) et Retrait d'argent contribuent le plus et de manière disproportionnée à ce risque. Bien que les services de transferts gouvernementaux vers particuliers (G2P), puissent réduire les risques à court terme grâce à une meilleure traçabilité, d'autres services, comme les envois de fonds internationaux et les paiements de masse, exacerbent les risques de blanchiments. Ces résultats soulignent l'importance de régulations solides, de technologies renforcées et d'une coopération internationale pour minimiser ces risques tout en préservant l'intégrité financière.

La deuxième partie de cette thèse s'intéresse à l'efficacité des mécanismes de coopération fiscale internationale dans la lutte contre l'érosion de la base taxable (Chapitre 3 et Chapitre 4). En effet, nous analysons l'impact de la mise en place de la coopération en matière d'échange de renseignements sur la mobilisation des recettes fiscales dans les pays en développement (Chapitre 3) et nous trouvons que cette réforme a entraîné une augmentation significative des recettes fiscales. En outre, nous évaluons les effets de l'échange d'informations fiscales (EOI) sur les flux d'investissement provenant des pays en développement et à destination des centres financiers offshore (Chapitre 4). Nos résultats révèlent une diminution significative des entités offshore actives après la mise en œuvre de l'EOI, suggérant que la transparence accrue et les coûts de conformité découragent la création de structures offshore. Cependant, l'analyse des flux d'IDE et des investissements de portefeuille montre que l'EOI n'affecte pas de manière significative les flux de capitaux transfrontaliers des pays en développement vers les juridictions offshore. Cela indique que, bien que l'EOI limite la création d'entités offshore, elle ne freine pas complètement la mobilité des capitaux via d'autres canaux offshores.
Les pays devraient renforcer l'efficacité des réformes en favorisant une coopération accrue entre pays développés et en développement afin de mieux suivre les flux financiers transfrontaliers.

Mots clés : Érosion de la base fiscale; Mobilisation des ressources ; Financement du développement; Digitalisation, Mondialisation, Souveraineté fiscale, Coopération fiscale, Analyse d'impact, Investissements Directs Étrangers ; Investissements fantômes; Investissements réels ; Centres financiers offshore ; Blanchiment d'argent ; Transparence fiscale ; Optimisation fiscale ; Concurrence fiscale ; Inclusion financière ; Argent mobile ; Gouvernance fiscale internationale; Réformes fiscales internationales.

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INTRODUCTION GENERALE

Contexte et motivations

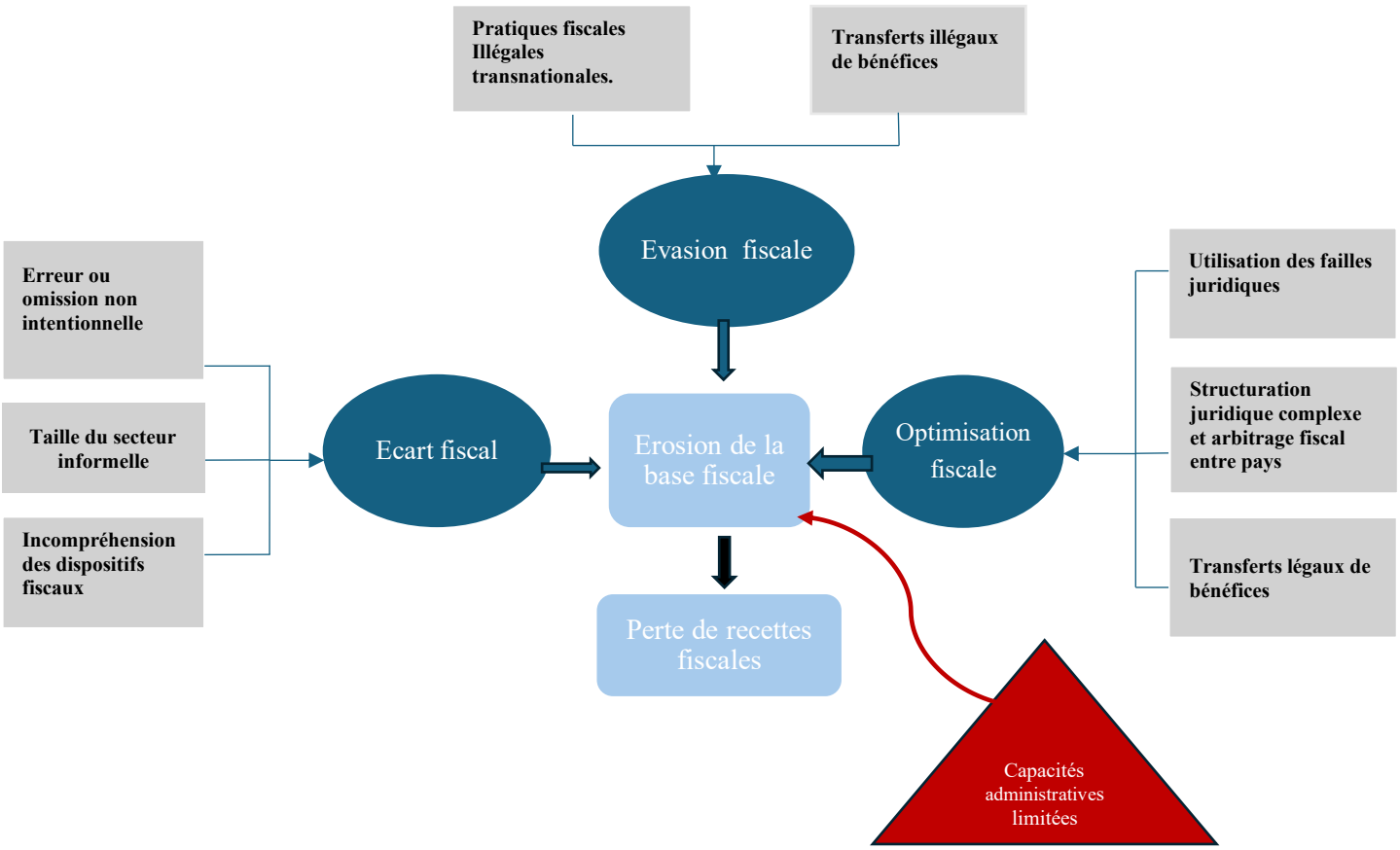
Le financement du développement constitue un pilier fondamental des politiques économiques mondiales, indispensable à la réalisation des Objectifs de Développement Durable (World Bank, 2015). Adopté lors de la conférence d'Addis-Abeba en 2015, l'Agenda 2030 érige la mobilisation des ressources domestiques en priorité stratégique pour le financement du développement. Les pays, en particulier ceux en développement, se sont engagés à réduire leur dépendance aux financements extérieurs afin de renforcer leur souveraineté économique et d'assurer une croissance plus stable et durable (Nations Unies, 2015).

L'érosion de la base fiscale constitue cependant un frein majeur à cette mobilisation, en réduisant l'assiette imposable et en limitant la capacité des États à financer durablement leur développement (Avi-Yonah, 2009). Ces effets sont d'autant plus marqués par l'inadaptation de nombreux systèmes fiscaux nationaux, notamment dans les pays en développement, qui se caractérisent par une forte informalité et des capacités administratives limitées.

L'érosion de la base fiscale résulte en grande partie de pratiques transnationales visant à réduire artificiellement l'imposition, que ce soit par l'utilisation de mécanismes, légaux ou illégaux (Owens & Saint-Amans, 2009). Ce phénomène s'inscrit dans la problématique plus large de l'érosion de la base fiscale et du transfert de bénéfices (BEPS), au cœur des travaux de réforme engagés au niveau international.

La figure 1 ci-après propose une synthèse de ces différents mécanismes et de leurs interactions.

Figure *0-1*: Principales dimensions d'érosion de la base fiscale



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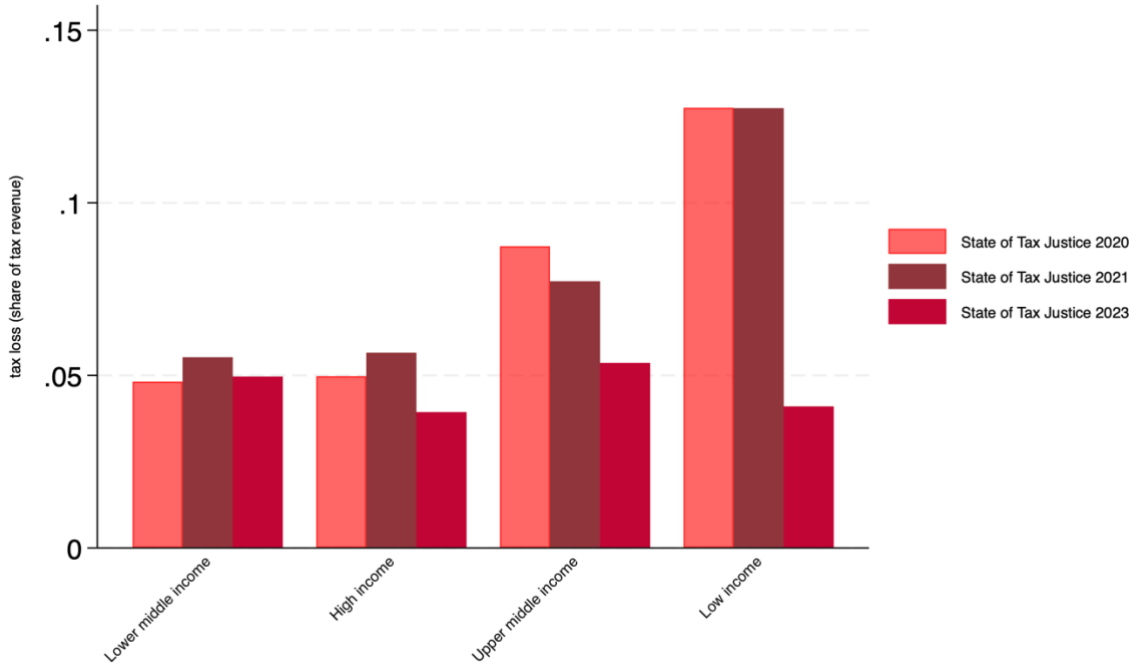
Face à ces enjeux, la réponse à l'érosion de la base fiscale ne peut être envisagée uniquement à l'échelle nationale. L'Organisation de coopération et de développement économiques (OCDE) mène depuis 2013 le projet de lutte contre l'érosion de la base fiscale et le transfert de bénéfices vers les juridictions à faible imposition (BEPS–Base Erosion and Profit Shifting), complété plus récemment par l'introduction du taux minimum global (GloBE – Global Anti-Base Erosion Rules). Ces initiatives visent à renforcer la transparence et la coopération entre administrations, mais elles demeurent peu adaptées aux contraintes des pays du Sud. Faiblement représentés dans les instances de décision, ces pays peinent à défendre leurs

intérêts, notamment pour la répartition des droits d'imposition et la protection de leurs bases fiscales. Parallèlement, les Nations Unies soutiennent une approche plus inclusive, visant à renforcer la représentation des pays en développement dans la négociation et la mise en œuvre des règles fiscales internationales. Le cadre des Nations Unies cherche à son niveau à promouvoir des règles fiscales internationales tenant compte des contraintes des pays en développement, en insistant sur l'équité dans la répartition des droits d'imposition et sur le renforcement des capacités administratives. Cette approche, plus proche des préoccupations des pays en développement, est toutefois limitée par l'absence de mécanismes contraignants et de moyens opérationnels suffisants pour assurer une mise en œuvre effective à grande échelle. Ce contraste entre l'OCDE et l'ONU illustre un dilemme central de la gouvernance fiscale mondiale où l'efficacité et la transparence doivent être conciliées avec l'inclusivité et la justice. Si certaines initiatives, comme l'échange automatique d'informations, représentent un progrès tangible pour tous, la majorité des solutions restent déséquilibrées, protégeant davantage les intérêts des pays développés et des multinationales que ceux des pays en développement.

L'érosion de la base fiscale produit des effets économiques majeurs, affectant les finances publiques, la stabilité macroéconomique et l'équité fiscale. Selon Zucman, (2015), près de 40 % des bénéfices des multinationales sont transférés vers des juridictions à faible fiscalité, illustrant l'ampleur mondiale du phénomène. À l'échelle mondiale, l'OCDE (2017) estime que l'érosion de la base fiscale et le transfert de bénéfices entraînent une perte annuelle comprise entre 100 et 240 milliards de dollars, soit 4 à 10 % des recettes de l'impôt sur les sociétés. Des travaux ultérieurs (Crivelli et al., 2016; Cobham & Janský, 2018) montrent que ces pratiques entraînent des pertes fiscales particulièrement lourdes pour les pays en développement, limitant ainsi leur capacité à financer un développement inclusif et durable. Au-delà de la seule perte de recettes, ces pratiques alimentent des déséquilibres structurels qui fragilisent la soutenabilité budgétaire et la légitimité de l'impôt.

À cet égard, les rapports State of Tax Justice (2020, 2021) révèlent que les pays en développement subissent, en proportion de leurs recettes fiscales, les pertes les plus importantes comparativement aux autres régions du monde.
La figure 2 ci-après illustre la perte fiscale totale exprimée en pourcentage des recettes fiscales.

Figure 0-2 : Perte fiscale totale en pourcentage des recettes fiscales



Source : Construction de l'Auteur

La réduction des ressources publiques limite directement le financement des services essentiels, restreint la capacité de l'État à investir dans le développement et aggrave le déficit public. En réponse, certains gouvernements recourent à l'endettement pour compenser les pertes fiscales, fragilisant ainsi leur stabilité économique à long terme.

Par ailleurs, l'érosion de la base fiscale engendre d'importantes distorsions économiques. Elle exacerbe les inégalités en transférant la charge fiscale des grandes entreprises et des contribuables à revenus élevés vers les ménages à faibles revenus et les Petites et Moyennes Entreprises (PME). Cette dynamique se traduit notamment par une transition accrue vers les impôts indirects (TVA, droits d'accises), qui pèsent proportionnellement davantage sur les ménages à faibles revenus. Oxfam[1] (2018) estime ainsi que les 1 % les plus riches paient proportionnellement moins d'impôts que les 50 % les plus pauvres, en grande partie grâce aux mécanismes d'évasion et d'optimisation fiscales.

[1] https://www.oxfam.org/fr/inegalites-et-pauvrete-le-cout-cache-de-levasion-fiscale

Enfin, selon Gaspar et al., (2019), les pays en développement disposant d'une base fiscale restreinte enregistrent en moyenne un ratio dette/PIB supérieur à ceux dotés d'une fiscalité plus stable, accentuant ainsi leur vulnérabilité face aux chocs économiques.

Face à ces défis pressants, une compréhension approfondie de l'érosion de la base fiscale impose un retour aux origines du cadre fiscal international. Loin d'être un phénomène récent, les tensions entre fiscalité et intégration économique ont marqué l'histoire des relations économiques entre États. Retracer l'émergence et l'évolution de la fiscalité internationale apparaît dès lors indispensable pour appréhender pleinement les défis contemporains auxquels elle est confrontée.

De la naissance de la fiscalité internationale aux défis contemporains de l'imposition

L'érosion des bases fiscales trouve ses racines dans un processus historique plus vaste, qui a vu les systèmes fiscaux nationaux évoluer sous l'influence de la mondialisation. En effet, jusqu'au XIXe siècle, l'imposition relevait exclusivement de la souveraineté nationale, chaque État définissant son propre cadre fiscal sans coordination avec les autres. Chaque pays déterminait ainsi les taux d'impositions, leur étendue, de même que leur répartition entre les contribuables.

Cependant, ces systèmes fiscaux traditionnels se sont retrouvés mis à rude épreuve. Avec la mondialisation marquée par l'essor du commerce international et la multiplication des investissements transfrontaliers, des tensions ont émergé, notamment autour de la double imposition – c'est-à-dire la taxation d'un même revenu ou capital par plusieurs juridictions. Ces évolutions ont soulevé deux interrogations majeures : comment prévenir la double imposition tout en respectant la souveraineté fiscale des États ? Et, de manière plus large, quel État doit être légitimement habilité à taxer un revenu généré par une entreprise ou un individu opérant dans plusieurs pays ?

Les premières analyses sur la double imposition remontent aux travaux de Seligman et al., (1911), qui proposait des solutions théoriques pour résoudre cette question. Dès les années 1920, la Société des Nations (SDN) a initié les premiers travaux de coordination fiscale avec des rapports visant à résoudre la double imposition. En 1928, elle a proposé des modèles de conventions fiscales bilatérales, posant les bases des conventions actuelles. Ces conventions s'appuyaient sur deux principes clés que sont **le principe de résidence** (taxation par le pays de

résidence du contribuable) et **le principe de la source** (taxation par le pays où le revenu est généré). Toutefois, elle ne répond pas à la question de savoir que privilégier entre la taxation à la source et celle basée sur la résidence (*League of Nations*, 1928. *Report on Double Taxation*). La création de l'OCDE en 1961 marqua un tournant majeur, car l'organisation prit rapidement le relais de la SDN en matière de coopération fiscale internationale. En 1963, l'OCDE publia son modèle de convention fiscale sur la double imposition, qui reste une référence utilisée pour les négociations fiscales internationales. Au cours de cette période, la fiscalité commença à être perçue non seulement comme un outil de politique publique et de mobilisation de ressources, mais aussi comme un levier de compétitivité économique.

Certains pays ont mis en place des régimes fiscaux avantageux pour attirer les entreprises et les capitaux, suscitant dès la fin des années 1990 les premiers débats sur la concurrence fiscale dommageable, portés à la fois par l'Union européenne et l'OCDE (OCDE, 1998), et principalement centrés sur les enjeux propres aux pays développés.

Devereux & Griffith, (1998); Devereux & Griffith, (2003) ainsi que Picciotto, (1992) affirment que les contribuables exploitent les failles des systèmes fiscaux, les différences réglementaires entre États et le contexte de compétitivité pour réduire leurs charges d'impôts**.** Cela se manifeste par des pratiques telles que la manipulation des prix de transfert, le traitement préférentiel des revenus passifs, le *treaty shopping*, la facturation des actifs incorporels, les montages financiers, l'utilisation des structures offshores et des entreprises écran ainsi que le transfert de bénéfices vers des paradis fiscaux (Zucman, 2015; Fuest et al., 2010). Pour faire face à la compétitivité, les États ont adopté des stratégies fiscales concurrentielles pour attirer les investissements, entraînant une baisse progressive des taux d'imposition (Wilson, 1999**;** Keen & Konrad, 2013).

Cependant, le débat a évolué au fil du temps. Conçues pour prévenir la double imposition et encourager les échanges internationaux, les conventions fiscales bilatérales se révèlent inadaptées aux réalités économiques modernes. D'une part, elles sont ancrées dans des concepts dépassés, tels que l'établissement stable, créant des failles importantes. Les disparités entre les régimes fiscaux des pays, combinées à une coordination internationale insuffisante, offrent aux acteurs économiques des opportunités d'exploiter ces lacunes pour réduire artificiellement leur charge fiscale. Cette situation peut mener soit à une absence d'imposition dans certaines juridictions, soit, à l'inverse, à une double imposition susceptible de dissuader les investissements. D'autre part, elles peinent à s'adapter à l'ère du numérique et aux stratégies sophistiquées de transfert de bénéfices. Les entreprises multinationales, en tirant parti de la

numérisation qui leur permet de mener des opérations sans présence physique, exploitent le principe d'établissement stable pour minimiser leurs charges fiscales (Neumann et al.,2009; OCDE, 1998). Parallèlement, les avancées technologiques et l'essor des nouvelles technologies de l'information et de la communication (NTIC) créent de nouvelles opportunités d'optimisation et de déplacement artificiel de la base imposable (Cornish & Clarke, 1985).

Ce contexte révèle un paradoxe majeur : bien que l'ouverture économique et l'intégration transfrontalière constituent des leviers essentiels de croissance et de développement, elles génèrent également d'importantes vulnérabilités au sein des systèmes fiscaux nationaux. La crise financière de 2008 a mis en lumière les faiblesses structurelles des systèmes financiers mondiaux, notamment l'ampleur des flux financiers illicites et le rôle des paradis fiscaux. Cela a propulsé l'érosion de la base fiscale au centre des débats au niveau global et a renforcé la prise de conscience de l'urgence de réformer les mécanismes fiscaux internationaux. En 2013 la question de l'évasion fiscale est placée au rang de priorité par le G20. En réponse, plusieurs réformes ont été initiées, telles que la création du Forum mondial sur la transparence et l'échange de renseignements à des fins fiscales, le lancement du Plan d'action BEPS par l'OCDE (OCDE, 2013) pour lutter contre l'optimisation fiscale agressive des multinationales, et les récentes discussions sur la mise en place d'un impôt minimum mondial (OCDE, 2023). Ces réformes visent à promouvoir une fiscalité plus équitable et une taxation plus efficace des grandes entreprises multinationales. Cependant, bien que la coopération fiscale soit largement perçue comme la principale solution pour réduire l'érosion de la base fiscale, elle n'est pas exempte de critiques et ne fait pas l'objet d'un consensus unanime.

Sur le plan théorique, le débat entre concurrence fiscale et coopération fiscale reste un point central, avec des arguments divergents sur les avantages et inconvénients de chaque modèle. Certains auteurs (Zodrow & Mieszkowski, 1986; Wilson, 1999; Keen & Konrad, 2013) soutiennent que la concurrence fiscale pousse les États à réduire leurs taux d'imposition pour attirer les capitaux mobiles, ce qui peut mener à une course vers le bas[2] des taux d'imposition et à une sous-provision des services publics. Ils comparent cette dynamique à un jeu d'oligopole, où les nations ajustent stratégiquement leurs politiques fiscales afin de maximiser leur bien-être économique. Cependant, cette situation peut compromettre les ressources nécessaires au financement des biens publics et exacerber les inégalités fiscales (Oates, 1972;

[2] Elle se traduit par une concurrence accrue entre les pays pour proposer des taux d'imposition plus bas et des régimes fiscaux avantageux

Genschel & Schwarz, 2011). D'autres, au contraire, estiment que la concurrence fiscale peut être bénéfique, car elle améliore l'efficacité économique et discipline les gouvernements en limitant les excès fiscaux (Tiebout, 1956; Besley & Case, 1992 ; Brennan et al., 1980). Pour Avi-Yonah (2009), bien que la coopération à travers les accords bilatéraux et multilatéraux visant à prévenir la double imposition et faciliter l'intégration économique soit essentielle, elle peut aussi restreindre l'autonomie fiscale des États et leur souveraineté, en limitant leur capacité à adapter leurs politiques fiscales nationales. En s'appuyant sur la théorie des jeux pour analyser les interactions stratégiques entre pays dans le domaine fiscal, Buchanan & Tullock, (1962); Tullock, (1991); Bacchetta & Espinosa, (1995) montrent que les décisions fiscales des États se prennent dans un environnement interdépendant, où chaque action d'un pays peut influencer les autres. Les États peuvent choisir soit de coopérer en harmonisant leurs politiques fiscales, soit de se livrer à une concurrence fiscale agressive. Les résultats dépendent des choix collectifs, et la coopération multilatérale peut offrir un équilibre stable si les pays reconnaissent l'importance de limiter la concurrence fiscale excessive pour maintenir l'équité fiscale et la stabilité économique. Ainsi, Deblock & Rioux (2008) mettent en évidence les limites du débat entre coopération et concurrence fiscales en soulignant que le stato-centrisme des États entrave toute avancée significative vers une véritable coordination fiscale internationale. En mobilisant le modèle du triangle d'incompatibilité de Mundell, ils démontrent que les tensions entre souveraineté nationale, intégration économique et autonomie fiscale rendent toute solution fondée sur une simple moralisation de la concurrence fiscale inefficace. Selon eux, le débat actuel ne mène qu'à une impasse tant qu'il ne remet pas en cause la primauté des intérêts souverains dans un contexte de mondialisation. Au-delà des contraintes institutionnelles, Rota-Graziosi, (2019) quant à lui, démontre que des limites structurelles existent. Dans un cadre de jeux supermodulaires, les taux d'imposition sont des décisions stratégiques interdépendantes, de sorte qu'une baisse du taux dans une juridiction incite les autres à réduire le leur pour rester compétitives, conduisant à une course vers le bas (*race to the bottom*). L'équilibre de Nash qui en découle est coalition-proof, ce qui signifie qu'aucune coalition partielle d'États ne peut atteindre collectivement un niveau de taxation plus élevé ou plus optimal, chaque pays étant incité à suivre la dynamique de baisse des autres. Il parvient à la conclusion que la coordination fiscale, comprise comme simple alignement des politiques nationales, est intrinsèquement difficile et que seule une coopération fiscale encadrée par des instances supranationales peut être réellement efficace.

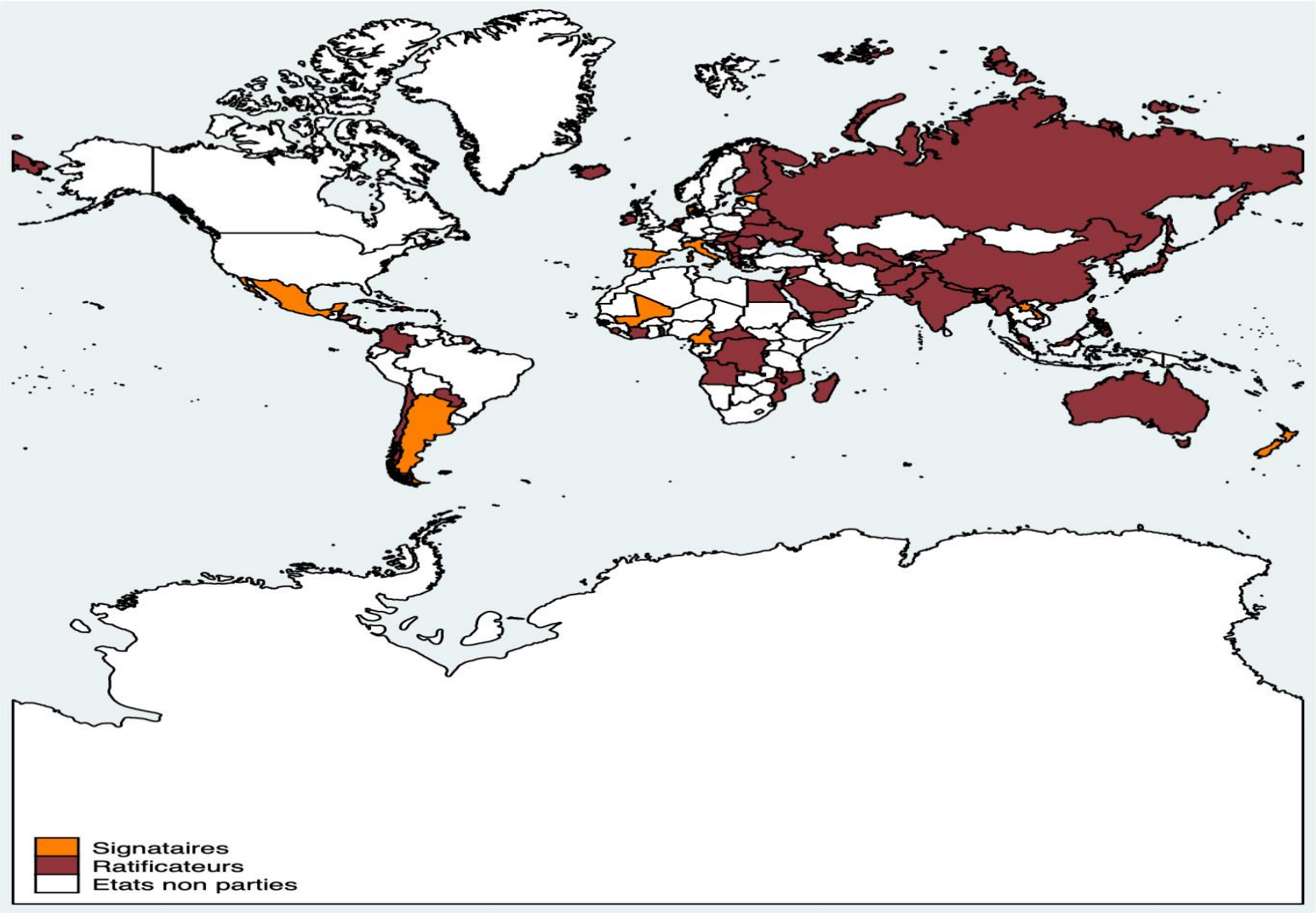
Du point de vue politique, la coopération fiscale est perçue comme une menace à la souveraineté fiscale des États, l'impôt constituant l'un des instruments centraux de l'autorité publique et du contrat social. L'ensemble des décisions relatives à l'impôt incombe au pouvoir régalien de l'État. Dès lors, toute harmonisation ou coordination fiscale peut être vécue comme une forme d'ingérence dans les politiques nationales (Hearson, 2018). Dans un contexte de mobilité accrue du capital, cette souveraineté se trouve redéfinie dans des espaces de négociation transnationaux, où les rapports de force conditionnent l'élaboration des normes.

La gouvernance fiscale internationale présente ainsi une asymétrie structurelle où les règles sont largement façonnées par les pays disposant de capacités administratives et diplomatiques élevées, ce qui conduit à la reproduction de leurs préférences fiscales. Les pays en développement, souvent contraints d'adopter ces standards pour rester insérés dans l'économie mondiale, disposent d'une marge de négociation réduite.

Les systèmes d'échange de renseignements à des fins fiscales illustrent parfaitement cette dynamique. Ces dispositifs visent à renforcer la transparence et à lutter contre l'évasion fiscale, mais leur mise en œuvre dépend largement des capacités administratives et techniques des pays. Les pays développés disposent des moyens nécessaires pour obtenir rapidement des informations fiables et exercer, le cas échéant, une pression sur leurs partenaires, tandis que les pays en développement peuvent éprouver des difficultés à obtenir des informations de qualité et à influer sur les règles du jeu.
Toutefois, ils ne restent pas pour autant en marge de cette orientation de la gouvernance. A travers plusieurs coalitions entre pays du Sud, telles que le G77, l'Union africaine ou l'ATAF, ils cherchent à redéfinir l'équilibre de la gouvernance fiscale mondiale en revendiquant une représentation effective dans la production des normes fiscales et une répartition plus équitable des droits**.**

Malgré les enjeux et les débats concernant la recherche d'une solution globale, l'adoption généralisée de la Convention multilatérale (MLI) témoigne de l'engagement des pays à renforcer la lutte contre l'érosion de la base fiscale et le transfert de bénéfices. La carte ci-dessous (figure 3) met en évidence les pays signataires, illustrant ainsi l'engagement international en faveur d'une solution concertée et globale.

Figure 0-3: Engagement à la Convention multilatérale relative à la prévention de l'érosion de la base fiscale



Source : Construction de l'Auteur

Cette évolution illustre l'adaptation continue des contribuables aux conditions économiques, technologiques et aux nouveaux enjeux fiscaux.

Cependant, les mesures mises en place jusqu'à présent peinent encore à répondre efficacement aux nouvelles formes d'érosion de la base fiscale. Afin d'examiner ces problématiques de manière approfondie, notre recherche adopte une approche en deux temps : identifier les mécanismes actuels d'érosion fiscale et évaluer l'efficacité des réformes mises en place. Nous présentons ci-dessous les grandes lignes de cette thèse.

Analyses de la thèse

Le phénomène d'érosion des bases fiscales soulève des préoccupations croissantes au cœur des débats contemporains sur la justice fiscale mondiale et l'avenir de la coopération internationale en matière de fiscalité.

Dans ce contexte, une question centrale émerge *:* Comment les mécanismes, anciens et émergents, de l'érosion de la base fiscale se manifestent-ils dans les pays en développement, et dans quelle mesure les réformes de gouvernance fiscale internationale permettent-elles d'y répondre de manière effective*?* Plus précisément, la thèse entend enrichir la littérature existante en apportant un éclairage nouveau sur les dynamiques actuelles de l'érosion de la base fiscale. Plus précisément, elle poursuit trois objectifs. Le premier est d'identifier les canaux et mécanismes d'érosion de la base taxable, notamment ceux liés aux innovations numériques et aux stratégies fiscales émergentes, afin de mieux comprendre les failles exploitées dans les systèmes fiscaux actuels et anticiper les défis futurs. Le second objectif est d'évaluer l'efficacité des réformes fiscales internationales en cours, en analysant leur capacité à freiner l'érosion de la base fiscale et à assurer une répartition plus équitable de l'imposition entre les États, sur la base d'études empiriques qui mettent en évidence les forces et limites des politiques existantes. Enfin, elle vise à combler le déficit empirique sur la fiscalité internationale dans les pays en développement, en exploitant de nouvelles sources de données et en proposant des approches adaptées aux contraintes statistiques de ces économies.

En s'appuyant sur des cadres théoriques issus de la concurrence fiscale, des incitations, de la gouvernance fiscale et de la théorie des opportunités criminelles, cette recherche apporte un éclairage nouveau sur la capacité des États à préserver leur souveraineté fiscale face aux défis posés par la digitalisation et la mondialisation. Par ces analyses, ce travail contribue à une

meilleure compréhension des interactions entre mondialisation, digitalisation et fiscalité, tout en proposant des pistes de réflexion pour améliorer la gouvernance fiscale internationale. Nos résultats permettent ainsi d'éclairer les débats académiques et politiques sur l'avenir de la fiscalité internationale, l'équilibre entre coopération et concurrence fiscales, les conditions d'une coopération fiscale plus inclusive et efficace et proposent des recommandations pour renforcer la transparence et l'équité du système fiscal international.

Afin d'examiner ces enjeux de manière approfondie, cette thèse se structure en deux parties complémentaires :

- **La première partie analyse les mécanismes d'érosion de la base fiscale**, en identifiant les principaux canaux exploités pour réduire artificiellement leur imposition.

Le premier chapitre (chapitre 1) examine l'impact des conventions de double imposition (CDI) sur les flux d'IDE, en distinguant les investissements réels des investissements fantômes, c'est-à-dire des transactions sans valeur économique substantielle. Suite aux rapports sur la concurrence fiscale dommageable, certains pays ont entrepris des réformes et renégociations de leurs conventions fiscales pour combler les lacunes existantes. Toutefois, des travaux empiriques récents de Damgaard et al., (2024) montrent que plus de 40 % des flux d'IDE mondiaux sont des investissements fantômes, soulignant ainsi l'impact de ce phénomène sur l'érosion de la base fiscale et la réduction artificielle de l'impôt payé par les multinationales. Ce constat met en lumière l'impact significatif de ce phénomène sur l'érosion de la base fiscale et la réduction artificielle de l'impôt payé par les multinationales. Les pays en développement en sont particulièrement vulnérables en raison de leur volonté d'attirer des investissements, des difficultés de régulation et de leurs capacités de négociation limitées. À l'aide d'un modèle de gravité et de données bilatérales couvrant 220 pays entre 2009 et 2017, l'étude révèle que les CDI augmentent les IDE tout en stimulant également les investissements fictifs, surtout dans les pays en développement et les paradis fiscaux. Ces résultats, robustes malgré l'utilisation d'estimateurs alternatifs et de variables de contrôle, confirment que les CDI représentent un canal d'érosion de la base fiscale, et soulignent l'urgence d'adapter et de renforcer les réformes fiscales pour favoriser un environnement propice aux investissements réels, tout en assurant une croissance économique durable.

Le second chapitre (chapitre 2), explore la relation entre l'adoption de l'argent mobile et les risques de blanchiment d'argent dans les pays en développement. Les services d'argent mobile

ont révolutionné l'inclusion financière dans ces pays, où les infrastructures bancaires traditionnelles sont souvent insuffisantes ou inaccessibles, en permettant à des millions de personnes non bancarisées d'accéder à des outils financiers essentiels. Cependant, si ces services offrent des opportunités pour l'inclusion financière, ils présentent également des risques, notamment en facilitant les transferts non déclarés et en contournant les mécanismes fiscaux traditionnels. En nous appuyant sur des données couvrant 70 pays en développement pour la période 2012-2022 et en utilisant une méthode de projection locale (Jordà, 2005), nous quantifions l'impact dynamique de l'adoption des moyens de paiement mobile sur ces risques. Nous constatons que l'adoption des moyens de paiement mobile augmente le risque de blanchiment d'argent d'environ 0,9 point de pourcentage. Les services de type transferts entre particuliers (P2P) et Retrait d'argent sont les plus grands contributeurs de manière disproportionnée à ce risque. Bien que les services de transferts gouvernementaux vers particuliers (G2P), peuvent réduire les risques à court terme grâce à une meilleure traçabilité, d'autres services, comme les envois de fonds internationaux et les paiements de masse, exacerbent les vulnérabilités. Ces résultats soulignent l'importance de régulations solides, de garanties technologiques renforcées et d'une coopération internationale pour minimiser ces risques tout en préservant l'intégrité financière.

- **La seconde partie s'intéresse à l'efficacité des mécanismes de coopération fiscale internationale dans la lutte contre l'érosion de la base taxable.**

La coopération fiscale multilatérale à l'échelle globale s'est progressivement imposée comme une réponse aux défis posés par la mobilité croissante des capitaux et l'utilisation des juridictions à fiscalité privilégiée. Malgré la multiplication des initiatives (actions BEPS, GloBE etc.) visant à renforcer la transparence et l'équité du système fiscal mondial, l'efficacité réelle des réformes engagées reste incertaine, en particulier pour les pays en développement, souvent marginalisés dans la gouvernance fiscale internationale. La promotion des mécanismes d'échange d'informations à des fins fiscales sous l'égide de l'OCDE et du G20 a marqué une étape décisive dans la lutte contre la dissimulation des avoirs à l'étranger. Ils sont souvent présentés comme des leviers essentiels pour renforcer la transparence et lutter contre l'optimisation fiscale agressive, mais leur efficacité réelle dans la réduction de l'érosion de la base fiscale reste insuffisamment documentée.

Le chapitre 3 analyse l'impact de la mise en place de la coopération en matière d'échange de renseignements sur la mobilisation des recettes fiscales dans les pays en développement. En utilisant la méthode semi-paramétrique de différences dans les différences (cf. Abadie, 2005), sur un échantillon de 60 pays en développement, couvrant la période de 2000 à 2020, nous montrons que cette réforme a entraîné une augmentation significative des recettes fiscales variant de 1,89 à 3,02 points de pourcentage du PIB. Ces résultats sont robustes aux méthodes d'estimation alternatives et à la désagrégation des données fiscales. L'analyse souligne également que la participation à l'initiative d'échange d'informations améliore la transparence et dissuade certains comportements de fraude et d'évasion.

Le chapitre 4 évalue l'impact de l'échange d'informations fiscales (EOI) sur les flux d'investissement provenant des pays en développement et à destination des centres financiers offshore. En utilisant les données des Panama Papers, nous appliquons l'approche de différences dans les différences de Callaway & Sant'Anna, (2021) pour évaluer l'influence de l'adoption de l'EOI sur l'utilisation des juridictions offshore et les décisions d'investissement transfrontalier. Nos résultats révèlent une diminution significative des entités offshore actives après la mise en œuvre de l'EOI, suggérant que la transparence accrue et les coûts de conformité découragent la création de structures offshore. Cependant, l'analyse des flux d'IDE de l'UNCTAD (United Nations Conference on Trade and Development) et des investissements de portefeuille du CDIS (Coordinated Direct Investment System) montre que l'EOI n'affecte pas de manière significative les flux de capitaux transfrontaliers des pays en développement vers les juridictions offshore. Cela indique que, bien que l'EOI limite la création d'entités offshore, elle ne freine pas complètement la mobilité des capitaux via d'autres canaux offshores. De plus, nos résultats montrent que les investisseurs adaptent leurs stratégies en réaffectant leurs actifs vers des structures alternatives fiscalement avantageuses, illustrant la résilience des stratégies d'investissement offshore face aux mesures de transparence fiscale. Cette étude contribue à la littérature sur la coopération fiscale internationale en fournissant des preuves empiriques de l'efficacité partielle des cadres EOI pour réduire les flux financiers illicites, tout en proposant des recommandations politiques pour renforcer leur application dans les pays en développement, notamment en créant une base de données centralisée intergouvernementale sur les bénéficiaires effectifs et en favorisant une coopération accrue entre pays développés et en développement afin de mieux suivre les flux financiers transfrontaliers.

Enfin, cette thèse se conclut par des recommandations politiques visant à renforcer l'efficacité des mécanismes fiscaux internationaux. Ces recommandations s'inscrivent dans une perspective globale, axée sur l'amélioration de la transparence fiscale et la coopération multilatérale dans la lutte contre l'érosion de la base fiscale et la concurrence fiscale dommageable.

Elles proposent notamment de corriger les failles des conventions fiscales bilatérales afin de favoriser des investissements réellement productifs et durables. Cela inclut l'intégration de clauses anti-abus telles que le Test du but principal (Principal Purpose) et la clause de limitation des avantages (Limitations on Benefits), le renforcement des mécanismes de transparence, notamment par l'échange automatique d'informations et la publication rigoureuse des bénéficiaires effectifs, ainsi que le contrôle strict des flux transitant par des entités spécialisées (Special Purposes Entities) ou des paradis fiscaux. Ces mesures doivent garantir que les avantages fiscaux ne s'appliquent qu'aux investissements générant de l'emploi, des infrastructures ou favorisant le transfert de technologie. Elles proposent également de renforcer la régulation du secteur du mobile money pour prévenir les abus et améliorer la résilience du système. Cela passe par l'harmonisation des standards de conformité entre prestataires, la limitation de la détention de multiples comptes par une même personne, et la formation ainsi que la supervision des agents, qui constituent la première ligne de détection des transactions suspectes. Une collaboration étroite entre opérateurs de mobile money et autorités nationales est également essentielle pour améliorer la surveillance, le signalement des irrégularités et le suivi des flux financiers. En dernier lieu, elles soulignent l'importance pour les pays en développement de renforcer les capacités techniques et institutionnelles nécessaires pour mettre en œuvre ces mesures, tout en participant activement et équitablement aux discussions internationales, afin d'éviter qu'ils ne soient désavantagés par les nouvelles normes fiscales mondiales.

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Part I: Analyzing the Channels of Tax Base Erosion

CHAPTER I : Double taxation treaties: a double-edged sword in attracting real and phantom investments?

This chapter is joint work with Pegdewende Nestor Sawadodo. A slightly different version of this chapter is published in The World Economy.

Abstract: Double Taxation Treaties (DTTs) are bilateral agreements designed to alleviate double taxation, enhance international trade, and attract Foreign Direct Investment (FDI). Despite these intentions, the actual effectiveness of DTTs remains controversial. Using a gravity model and bilateral data from 220 countries spanning 2009 to 2017, this study examines the dual impact of DTTs on both real and phantom investments. The results indicate that while DTTs increase FDI inflows, they also significantly boost phantom investments—financial transactions that lack substantive economic value. This effect is particularly pronounced in developing countries and tax havens. Our findings indicate that the existence of a tax treaty is associated with a significant increase in FDI from Northern to Southern countries. Furthermore, real investment rises substantially, while phantom investment also shows a notable increase. These results remain robust even when applying alternative estimators and incorporating additional control variables. The findings underscore the need for policymakers to address DTT-related loopholes to promote genuine investment and sustainable economic growth.

Keywords: Double Tax treaties; FDI, Phantom FDI, Real FDI, Gravity model.
JEL Codes: H22, H26, F21

Introduction

Many countries enter into double taxation treaties (DTTs) to allocate tax rights between jurisdictions and encourage foreign direct investment (FDI) and international activities. These treaties aim to attract multinational companies and stimulate economic growth by offering financial incentives, tax benefits, subsidies, and streamlined regulatory processes, addressing the demands of increasing globalization and competition for foreign capital (Blomström & Kokko, 1998; Bornschier, 1980; Kilic, 2015; Appiah-Kubi et al., 2021; De Mooij & Ederveen, 2003).

However, the effectiveness of these treaties in boosting FDI or reducing tax evasion is widely debated and remains inconclusive in academic literature. Some researchers, such as (Blonigen & Davies, (2005); Neumayer, (2007); Barthel et al., (2010), identify a positive relationship between DTTs and FDI. In contrast, others, like Egger & Pfaffermayr, (2004); Blonigen & Davies, (2004), report an insignificant or negative impact of DTTs. These differing results can be attributed to various factors, with the main challenge being the difficulty in tracking FDI flows within the complex network of DTTs.

Indeed, DTTs have significantly complicated the international tax system, creating opportunities for tax and financial abuse. Multinationals, high-net-worth individuals, and financial intermediaries navigate a landscape characterized by complex structures, offshore jurisdictions, and opaque transactions. They exploit regulatory loopholes and intricacies to obscure the true nature and implications of their financial activities. These sophisticated networks enable tax abuse through treaty shopping (Weyzig, 2013; Kingson, 1981; Petkova et al., 2020; Easson, 2000). Rather than attracting genuine, sustainable investment, Erokhin (2023) demonstrates that investors reroute their FDI through intermediate economies solely for tax advantages before reaching host countries.

In this context, Damgaard et al., (2019) introduce the concept of "phantom investments," describing financial maneuvers that, while seemingly substantial, lack real economic value or benefit to the local economy. These transactions are often vehicles for tax evasion or illicit financial activities, raising critical issues of economic governance, transparency, and fairness. The proliferation of phantom investments highlights the evolving dynamics of modern finance in an increasingly interconnected and digitized world. We suspect that by signing DTTs, countries may inadvertently encourage phantom investment, ultimately harming their economies rather than attracting genuine FDI.

This paper aims to revisit the impact of DTTs on FDI by differentiating between phantom and real investments. Following concerns over harmful tax competition, several countries have reformed

and renegotiated their tax treaties to close existing loopholes. However, Damgaard et al. (2024) estimate that over 40 percent of global FDI flows are phantom investments—transactions with little to no economic substance. This has major implications for tax base erosion and the artificial reduction of corporate tax liabilities by multinational enterprises. Overlooking these phantom investments can undermine the effectiveness of public policies aimed at attracting genuine FDI. Conducting this analysis is crucial to assess the true benefits or drawbacks of DTTs for countries seeking to attract FDI[3].

In this study, we aim to explore the intricate relationship between DTTs and FDI (both phantom and real investments) using a standard gravity model. Our investigation will delve into the mechanisms through which these treaties may unintentionally enable tax evasion, fraud, and illicit financial activities. We aim to aid policymakers in evaluating the effectiveness of current tax policies and identifying areas needing reform.

We assert that provisions such as preferential tax rates and withholding tax exemption within tax treaties can incentivize multinational corporations and wealthy individuals to adopt aggressive tax planning strategies, thereby obscuring the true nature and location of their economic activities. Instead of fostering genuine investment in the economy, bilateral treaties may facilitate capital evasion and laundering, jeopardizing national revenues, fiscal sovereignty, and the economic and financial stability of the signatory countries.

By emphasizing this relationship, our goal is to contribute to the ongoing debate about the impact of DTTs. Our contributions to the literature are multifaceted. First, we provide a clearer understanding of the role of DTTs in influencing both real and phantom FDI flows. Second, we highlight the potential for DTTs to facilitate tax avoidance and financial malpractices. Finally, we analyze the heterogeneous effects of this relationship by focusing on investments from Global North countries[4] to Global South countries. We have chosen to examine this particular relationship for several reasons. The existing literature suggests that developing countries have historically adopted these tax agreements mainly to attract foreign investment. Given their often fragile

[3] FDI can drive economic growth, generate employment, and, most importantly, facilitate substantial technology transfer to the recipient country. Additionally, FDI can stimulate economic activity, increasing the potential for higher government revenues.

[4] We define Global North as high-income countries, following the World Bank classification, while the Global South includes all other countries. No country transitions between income groups over the period. The full list of countries is provided in the annex.

institutional frameworks and economic volatility, these countries have viewed DTTs as a strategic tool to reassure investors and enhance fiscal predictability. However, they enter these agreements with considerable fiscal commitments, sometimes without fully assessing the tangible benefits they receive in return.

Another important consideration is the asymmetry in negotiation power and technical expertise between Northern and Southern countries, which significantly influences the content of DTTs.

Given the ongoing international discussions on tax reform, understanding the implications of DTTs on North-South FDI is particularly relevant. To the best of our knowledge, this study is the first to examine the impact of tax treaties on FDI while distinguishing between phantom and real investments.

We analyzed bilateral data from a comprehensive sample of 220 countries spanning 2009 to 2017, distinguishing between phantom FDI and real FDI. Our findings indicate that the existence of a tax treaty is associated with an increase in FDI by 168.83 percent from Northern to Southern countries. Furthermore, real investment increases by 153.94 percent, while phantom investment rises by 130.2 percent. These results remain robust, even when alternative estimators are applied, and additional control variables are incorporated. The effect is particularly marked in low-income countries and tax havens, consistent with Pulina & Zanaj (2022)[5].

By scrutinizing how DTTs enable phantom investments, policymakers can develop targeted measures to close loopholes, enhance tax enforcement, and foster better international cooperation on tax issues. This requires greater transparency and reforms that align tax rules with modern global objectives.

The structure of this paper is as follows: Section 2 presents the literature review, Section 3 presents the analytical framework, Section 4 describes the data, Section 5 introduces the empirical approach, Section 6 discusses the results, and Section 7 concludes.

[5] According to this theory, a substantial portion of FDI flowing into offshore financial centers (OFCs) is not intended for these locations but is rather "phantom FDI." These investments are rerouted to other countries or eventually return to the source country in a process known as round-tripping.

Literature review

The relationship between DTTs and FDI has been extensively explored in the literature, encompassing a broad spectrum of studies employing various methodologies, samples, and datasets. A thorough review of the impact of DTTs on FDI uncovers a complex and multifaceted relationship, shaped by numerous factors including treaty provisions, host country characteristics, and firm-specific attributes.

These factors can be categorized along the following axes:

Some researchers suggest that tax treaties positively impact FDI by reducing tax-related uncertainties and costs, thereby boosting investor confidence and facilitating capital mobility across borders. For instance, Petkova et al., (2020) analyze the effect of DTTs on FDI using network theory on a sample of 138 countries from 2005 to 2012. Their findings indicate that tax treaties positively influence foreign investment primarily when they reduce the tax burden relative to the global network of double taxation treaties. Similarly, Neumayer (2007) demonstrates that developing countries signing DTTs with the USA or other major capital exporters received more FDI from these partners from 1970 to 2001, with the effect being significant mainly for middle-income countries. Advani & Limardi (2014) review the channels through which tax treaties influence FDI, highlighting the reduction of withholding taxes, the allocation of taxing rights, and the establishment of bilateral tax dispute settlement mechanisms as factors that attract FDI flows to OECD countries. They also assess the heterogeneity across countries and business sectors. Desai et al. (2006) through a meta-analysis, find an overall positive but modest impact of DTTs on FDI flows, suggesting that tax treaties alone may not be the main determinant of FDI decisions. Several studies note that the impact of DTTs on FDI varies according to specific treaty provisions, bilateral relations, and the characteristics of investing companies and host countries. In contrast, other researchers have shown a non-significant or negative effect of double taxation treaties (DTTs) on foreign direct investment (FDI) flows. Blonigen & Davies (2005) employed ordinary least squares and fixed effects approaches, finding a negative effect of DTTs on FDI for the period from 1982 to 1992. Similarly, Egger et al. (2006) concluded that DTTs negatively impact FDI, using propensity score matching and difference-in-differences estimation strategies over the period from 1985 to 2000. Baker (2014) analyzed a sample of 30 capital-exporting OECD countries and 206 capital-receiving non-OECD countries from 1991 to 2006, utilizing propensity score and difference-in-differences analysis models, and found that DTTs have no effect on FDI from developed to less developed countries. Blonigen & Davies (2004)

focused specifically on the United States as a source country for FDI, using a fixed-effects strategy on data from 1980 to 1999, and found no evidence of an effect of DTTs on FDI. Coupé et al. (2009) also found no evidence of an effect of DTTs on FDI flows, using fixed and random effects and an instrumental variable strategy for the period from 1990 to 2001. While existing literature has significantly advanced the understanding of DTTs and FDI, several gaps remain. Many studies face empirical limitations, such as pooling advanced and developing economies or omitting key FDI determinants. Addressing these issues is crucial for a more precise assessment of the impact of DTTs. Furthermore, recent research has highlighted the importance of distinguishing between real and phantom investment flows. This study contributes to the literature by analyzing the relationship between DTTs and FDI with a specific focus on North-South dynamics, ensuring a clearer distinction between productive investments and financial engineering strategies.

Analytical Framework

DTTs are bilateral agreements between two countries aimed at addressing double taxation, allocating taxing rights, preventing tax evasion and avoidance, fostering cooperation, and stimulating cross-border trade and investment. These treaties enhance certainty, predictability, and transparency in the taxation of international transactions while reducing tax barriers and administrative complexities. Tax professionals and administrators traditionally agree that such treaties can attract foreign investment.

The evidence on the ability of DTTs to boost FDI remains inconclusive. Researchers have yet to reach a consensus on whether tax treaties effectively attract FDI. Some studies suggest that DTTs play a crucial role in fostering cross-border investment by reducing tax barriers and providing greater certainty to investors. For instance, Barthel et al. (2010) used a large dyadic panel dataset to demonstrate that DTTs significantly increase FDI stocks between treaty partners, reinforcing the idea that such agreements contribute to economic integration. However, other studies challenge this positive narrative, arguing that the impact of DTTs on FDI is not uniform. Blonigen & Davies (2004) found that empirical evidence on the effectiveness of DTTs remains inconclusive, with the impact largely depending on specific treaty provisions and the economic context of the host country. These contrasting perspectives emphasize the need for further research to clarify the relationship between DTTs and FDI.

Our theoretical foundation is grounded in international economics and tax policy literature. We begin with the premise that DTTs are designed to mitigate double taxation, reduce tax-related uncertainties, and enhance the attractiveness of host countries to foreign investors. However, the actual impact of DTTs on FDI flows is influenced by various factors, including treaty provisions, the economic environment of host countries, and the strategic behavior of multinational corporations (MNCs). For instance, Arel-Bundock (2017) demonstrates that the proliferation of tax treaties has unintentionally led to treaty shopping. Weyzig (2013) supports this, showing that many investors divert FDI through countries with favorable tax treaties to avoid withholding taxes in the host country. Utilizing the distinction made by Damgaard et al. (2024) between real and phantom investments, this study aims to explore the nuanced relationship between DTTs and FDI. Real investments contribute to the economic activities and productivity of the host country, while phantom investments are primarily financial maneuvers designed to minimize tax liabilities without significant economic impact. The numerous renegotiations or suspensions of tax treaties reflect ongoing debates about their economic justification, their ability to attract FDI, and their role in guaranteeing sustainable growth. This distinction between real and phantom investments could provide the basis for a more in-depth analysis of the impact of DTTs on FDI. In this context, we aim to test the following hypotheses:

- H1: DTTs have a positive impact on real FDI by reducing tax-related uncertainties, facilitating capital mobility, and limiting phantom investments.
- H2: DTTs can inadvertently create phantom investment opportunities, as MNCs exploit treaty provisions to minimize tax liabilities without contributing significantly to the host country's economy.

We intend to verify these hypotheses using a gravity model on a sample of 220 country pairs over the period 2009 to 2017.

Data and stylized fact

To conduct our analysis, we utilize the newly released FDI database from Damgaard et al., (2024). This database distinguishes between real and phantom FDI, offering a more accurate representation of total FDI. The distinction between real and phantom FDI is inferred for all countries except 16, where the data is directly reported. This methodology applies an estimated elasticity of -0.5

between the ratio of real FDI to total FDI and the ratio of total FDI to GDP, providing a structured approach to approximating these shares across countries.

For any given pair of economies, total FDI includes both real and phantom components. The database provides four essential statistics for each pair of economies: total FDI in host country j by immediate investors from economy i; phantom FDI in host country j by immediate investors from country i; real FDI in host country j by immediate investors from country i; and real FDI in host country j by final owners from country i[6]. Our sample encompasses bilateral stock FDI data for 220 countries from 2009 to 2017, measured in millions of dollars, which serves as our dependent variable. Given that our analysis is based on stock data, the dataset contains some negative values. However, from both a theoretical and practical perspective, negative FDI stock values lack meaningful interpretation. To resolve this issue, we adopt the approach of Kox & Rojas-Romagosa (2020), setting the remaining negative values to zero. The data on tax treaties is sourced from the International Centre for Tax and Development (ICTD). This comprehensive database includes information on 2,450 bilateral tax treaties, spanning both the pre-independence and post-independence periods. In our study, we use a binary variable to indicate the presence of a tax treaty between country pairs, with a value of 1 for existing treaties and 0 otherwise. Only treaties that were in force during the study period are considered. The data used in this study encompasses GDP figures for both host and home countries, distances between partner countries, contiguity, common colonizer, and common language, all sourced from the CEPII (Centre d'études et de prospectives d'informations internationales) database. Additionally, we incorporate variables on capital controls from the Chinn & Ito (2002) database, institutional quality variables from the World Governance Indicators (WGI), and anti-avoidance rules from the ITI database (Wamser et al., 2024).

Figure 1 depicts the evolution of phantom and real FDI levels in the overall sample, while Figure 2 focuses specifically on FDI from Northern countries to Southern countries. Regarding real investments, there are year-to-year fluctuations observed both in the total sample and within Southern countries. In contrast, phantom investments show a consistent upward trend, indicating a need for further investigation. In 2011, we observed a sharp increase in phantom FDI in Southern countries, driven by capital flows from the North. This surge stemmed from the aftermath of the

[6] In the case of developing countries, there is a serious lack of data on the ultimate investor economies. The few data that do exist are confidential and inaccessible to the public.

2008 financial crisis, which reshaped multinational corporations' strategies. In response, they reallocated capital, established new financial hubs, and restructured their investments, often focusing on countries that had yet to implement immediate regulatory reforms.

Figures 3(a), 3(b), and 3(c) display the investment trends in tax havens, low-income countries, and upper middle-income countries, respectively. Although phantom investments have risen over the years, they remain below real investments in low- and middle-income countries. Figures 4(a) and 4(c) provide an overview of the largest sources of FDI for low-income and middle-income countries, respectively. Meanwhile, Figures 4(b) and 4(d) depict the main destinations for investments from Northern countries within these income groups.

Figures 5(a) and 5(c) detail the primary exporters of real investment from Northern countries to low- and middle-income countries, while Figures 5(b) and 5(d) highlight the main recipients. Correspondingly, Figures 6(a) and 6(c) show the leading exporters of phantom investments to these countries, with Figures 6(b) and 6(d) indicating the main recipients.

Empirical approach

We rely on the gravity model—first introduced by Tinbergen (1962) and later developed by Linnemann (1966) and Isard & Peck (1954) among others—to explain bilateral trade flows between countries. Our study applies this framework to assess the impact of DTTs on both real and phantom FDI across 220 countries from 2009 to 2017. To predict bilateral FDI flows, we control for the economic size of each partner country, the geographical distance between them, and key institutional characteristics, including the presence of DTTs. The core concept of the gravity model describes investment flows between two countries "i" and "j" as a function of their economic size (typically measured by GDP) and the distance between them:

$$Tij = k * (Mi * Mj)/Dij \qquad (1)$$

where Tij represents the value of FDI between countries i and j. Mi and Mj represent the economic sizes (e.g., GDP) of countries i and j, respectively. Dij represents the distance between countries i and j. k is a constant of proportionality.

To better capture the drivers of FDI, we use an augmented gravity model, which includes additional explanatory variables such as institutional indicators, capital controls, and dummy

variables for shared language, colonial ties, and common borders. This richer specification allows for a more nuanced understanding of how bilateral treaties influence cross-border investment patterns. As Blonigen & Davies, (2004) recommend, we express the model in a log-linear form:

$$ln(Y_{i,j,t}) = \beta_0 + \beta_1 ln(GDP_{i,t}) + \beta_1 ln(GDP_{j,t}) + \beta_3 ln(distance_{i,j}) + \beta_4 Commoncolonizer_{i,t} + \beta_5 CapitalOpeness_{i,t} + \beta_6 CapitalOpeness_{j,t} + \beta_7 DTTsi, j, t + \alpha_i + \gamma_j + \lambda_t + \epsilon_{i,j,t} \quad (2)$$

Distance serves as a proxy for the cost of doing business across borders, while common language may reflect cultural proximity and trust, both of which can influence investment decisions. Though the gravity model is typically applied in a static form, underlying economic fundamentals evolve over time. To account for this, we include fixed effects at the home country, host country, and year levels. We estimate this model using both Ordinary Least Squares (OLS) and Poisson Pseudo-Maximum Likelihood (PPML)[7] estimators.

Results and Discussion

Effect of DDTs on FDI

This section presents the overall effects of DTTs on FDI. We begin with aggregate results (Table 1), followed by investment flows from the global North to the global South (Table 2).

Table 1 reports the results of the augmented gravity model[8] for the full sample. The first three columns show results for the full sample, while the last three focus on investments directed toward tax havens. In both cases, DTTs are associated with significant increases in FDI. Total FDI rises by 128.4 percent on average. When distinguishing between types, real FDI increases more markedly (127.7 percent) than phantom FDI (85.4 percent). This suggests that while DTTs support productive investment, they also facilitate tax-motivated flows.

[7] To ensure the robustness of our results, we run an alternative gravity model employing the PPML estimator.
The use of PPML addresses potential limitations of OLS when dealing with zero FDI flows. As it does not require log transformation of the dependent variable, PPML is particularly suitable for data with a high frequency of zeros and ensures that the estimation captures both the presence and absence of FDI between country pairs.

[8] The dependent variables—FDI, Phantom FDI, and Real FDI—are expressed in logarithmic form within the context of the (augmented) gravity model.

These patterns are also evident in tax haven destinations, where both real and phantom FDI rise substantially in the presence of DTTs. The findings are consistent with previous literature emphasizing the role of DTTs in fostering cross-border investment.

We observe that host-country GDP has a positive and significant impact on both total inward FDI and real FDI across all groups analyzed. However, there is no significant effect on phantom FDI. This finding aligns with the notion that larger markets promote economic activity, economies of scale, and attract FDI (Neumayer, 2007). It is expected that phantom investments are unaffected since they are driven by factors other than genuine economic contributions. Additionally, there is a positive relationship between home-country GDP and all FDI specifications. This can be explained by domestic investors' desire to diversify their investments, leverage specific advantages of other countries, and expand their market reach (Kyrkilis & Pantelidis, 2003). The positive and significant effect on phantom investments suggests motivations such as illicit profit transfer or money laundering. We also note that distance has a significant and negative effect on FDI, highlighting the associated relocation costs (Brenton et al., 1999). Conversely, shared borders and colonial and linguistic proximity enhance inbound FDI by reducing communication costs and fostering a more favorable business environment (Ly et al., 2018). Notably, greater capital openness in the host country reduces phantom investment inflows.

Table I.1: Effect of DTTs on Investments: Full sample

	(1)	(2)	(3)	(4)	(5)	(6)
	From All countries to all countries			From All countries to Tax Haven host countries		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
Ln (host country GDP)	0.2423***	1.8330***	0.2752***	0.6090**	1.5216***	0.7928***
	(0.0836)	(0.2412)	(0.0834)	(0.2456)	(0.2953)	(0.2445)
Ln (home country GDP)	0.2548***	-0.1593	0.2596***	0.4340**	-0.1086	0.4460**
	(0.0860)	(0.2114)	(0.0858)	(0.2125)	(0.2949)	(0.2112)
Ln (distance)	-1.6327***	-1.8396***	-1.6380***	-1.5512***	-1.6011***	-1.5666***
	(0.0146)	(0.0337)	(0.0145)	(0.0355)	(0.0445)	(0.0352)
Common language	1.1817***	0.9614***	1.1870***	0.9179***	1.0349***	0.9124***
	(0.0395)	(0.0805)	(0.0395)	(0.0897)	(0.1070)	(0.0891)
Capital openness host country	-0.0254	-0.9239***	-0.0295	-0.1662*	-0.5054***	-0.1979**
	(0.0325)	(0.0908)	(0.0325)	(0.0873)	(0.1200)	(0.0871)
Capital openness home country	0.0253	0.0074	0.0268	0.0015	0.0063	0.0079
	(0.0377)	(0.0874)	(0.0376)	(0.0923)	(0.1117)	(0.0919)
DTTs	0.8262***	0.6172***	0.8229***	0.5240***	0.6371***	0.5251***
	(0.0378)	(0.1021)	(0.0377)	(0.1452)	(0.1848)	(0.1440)
Constant	5.7480***	-17.3742***	5.7844	4.1038	-5.6359	1.5162
	(1.5047)	(3.4199)		(3.5349)	(4.1292)	(3.5254)
Number of observations	51739	20619	51721	6608	5597	6608
Pseudo R-squared	.6374	.608	.6389	.7079	.6855	.7205
R-squared	0.2423***	1.8330***	0.2752***	0.6090**	1.5216***	0.7928***
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2 focus on investment flows to global South countries from global North economies. The results confirm that DTTs stimulate FDI, including a 130.2 percent increase in phantom FDI and a 153.9 percent rise in real FDI. However, these investments are often funneled through tax havens. Specifically, when global South countries sign DTTs with tax havens, phantom FDI rises by 77.5 percent and real FDI by 37.9 percent relative to countries without such agreements. This pattern suggests that recipient countries may act either as final destinations or as conduits for investments ultimately routed to tax havens. Other control variables show expected signs, and results are broadly consistent across specifications.

While DTTs are intended to reduce tax barriers and promote cross-border investment, their impacts vary widely by context. Our results show that DTTs stimulate FDI overall, with real FDI dominating North–South flows, affirming the view that treaties support economic integration and legal certainty. Yet, this benefit comes with a trade-off: in low-income countries, phantom FDI grows more rapidly than real investment, echoing warnings in the literature about treaty abuse for tax avoidance (Petkova et al., 2020). Moreover, the asymmetric gains—with capital-exporting countries benefiting more than recipients— underscore the need for reevaluation of treaty design within the evolving global tax framework.

DTTs face growing scrutiny amid global tax reforms, including the introduction of a minimum tax. While this reform curbs profit shifting by reducing the appeal of low-tax jurisdictions, it applies only to large multinationals (revenue above €750 million), leaving much FDI unaffected. Firms may still encounter overlapping tax claims due to inconsistent national rules. DTTs therefore remain relevant, ensuring legal certainty, preventing double taxation, and defining tax residency.

In this evolving landscape, DTTs must be reformed to align with modern tax objectives. Enhancing anti-abuse provisions—such as the Principal Purpose Test (PPT) and Limitation of Benefits (LOB) clauses—alongside greater transparency (e.g., Automatic Exchange of Information (AEOI) and beneficial ownership disclosure), can help curb artificial flows and promote more productive investments. Reforms should aim to ensure tax benefits are granted to investments that support employment, infrastructure, and technology transfer, while discouraging treaty use by special purpose entities and tax havens.

Table I.2: Impact of DTTs on Investments: Insights from Global North to Global South Countries

	(1)	(2)	(3)	(4)	(5)	(6)
	From Global North to Global South Countries			From global south countries to Tax Havens		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
Ln (host country GDP)	0.4594***	0.3863	0.5233***	0.8716**	2.0459***	0.9543***
	(0.1332)	(0.4096)	(0.1330)	(0.3494)	(0.4552)	(0.3461)
Ln (home country GDP)	0.4429**	0.0838	0.4514**	0.3152	-0.2439	0.3044
	(0.2066)	(0.4130)	(0.2062)	(0.2827)	(0.4170)	(0.2794)
Ln (distance)	-1.7769***	-1.6203***	-1.7787***	-1.9843***	-1.9960***	-2.0008***
	(0.0342)	(0.0733)	(0.0342)	(0.0637)	(0.0863)	(0.0623)
Common language	1.3192***	1.0829***	1.3189***	0.3001*	0.5630***	0.2884*
	(0.0689)	(0.1706)	(0.0689)	(0.1539)	(0.2127)	(0.1533)
Capital openness host country	-0.0542	-0.1095	-0.0693	-0.3310*	-0.7892***	-0.3306**
	(0.0440)	(0.0847)	(0.0439)	(0.1699)	(0.2025)	(0.1679)
Capital openness home country	0.0262	0.1977	0.0206	-0.0166	-0.0485	-0.0092
	(0.0912)	(0.1652)	(0.0913)	(0.1103)	(0.1404)	(0.1104)
DTTs	0.9326***	0.8338***	0.9342***	0.3454*	0.5738**	0.3216*
	(0.0570)	(0.1305)	(0.0570)	(0.1912)	(0.2613)	(0.1887)
Constant	-2.2162	10.7973	-2.6570	12.4736***	9.2181**	10.3814***
	(2.0967)	(7.0270)	(2.0880)	(2.7638)	(3.7129)	(2.7399)
Number of observations	17445	4885	17445	2549	2338	2549
Pseudo R-squared	.5743	.5585	.577	.7045	.572	.7298
R-squared	.5789	.5685	.5815	.7215	.5984	.7453
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Sensitivity Analysis

To assess the robustness of our findings, we conduct a sensitivity analysis along two key dimensions. *(i)* heterogeneity across country groups, and *(ii)* the role of institutional and policy-related factors, including estimation techniques.

First, we test for heterogeneity across country groups by comparing effects between low-income and middle-income economies. This helps evaluate the stability of our results across different income levels, development stages, and capital flow intensities (Tables 3–8). We distinguish between low/lower-middle-income countries—facing similar structural challenges—and upper-middle-income countries, which often exhibit institutional traits closer to high-income peers. Table 3 presents the results for investments from Northern countries. In low-income countries[9], tax treaties significantly increase both real (214.3 percent) and phantom (390.3 percent) investments, with a stronger effect on phantom flows—suggesting that treaties in these

[9] This group consists of low-income and lower-middle-income countries.

settings may disproportionately support non-productive capital movements. In contrast, in middle-income countries, the overall increase in investment is smaller (105.5 percent), and the distribution shifts. Here, tax treaties appear to support real investment (105.1 percent) more than phantom flows (52.5 percent). This divergence may reflect stronger institutions and bargaining positions in upper-middle-income economies. Table 4 shifts the focus to tax havens, showing that treaties signed by low-income countries lead to rapid growth in phantom investment (232.3 percent) compared to more modest growth in real investment (105.2 percent). However, for middle-income countries, the effects are less uniform. Table 5 reinforces this pattern by isolating the role of major capital-exporting countries. Phantom investments again dominate in low-income settings, whereas in middle-income countries, real investment appears more responsive. We then examine tax havens as recipients of capital flows in Table 6. While tax treaties do facilitate FDI inflows from these jurisdictions, the increase in phantom investment remains more pronounced, especially in countries with weaker enforcement and high evasion risks. Table 7 explores the role of major capital importers, showing that DTTs attract more phantom than real investment in low-income destinations, but the opposite holds in middle-income countries where treaties more consistently support real economic activity. Tables 8 further examine major exporters and importer country pairs. The trend remains consistent: phantom investment dominates in low-income settings, whereas real investment is more responsive in middle-income countries.

Table I.3: Effect of DTTs on Investments: Insights from the Global North to Low-Income Countries and Middle

	(1)	(2)	(3)	(4)	(5)	(6)
	From Global North to Low Income Countries			From Global North to Middle Income Countries		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
DTTs	1.1383***	1.5898***	1.1452***	0.7204***	0.4217***	0.7182***
	(0.0930)	(0.3314)	(0.0929)	(0.0686)	(0.1378)	(0.0685)
Constant	-0.0325	15.1402**	-0.5264	13.5176***	6.8580	12.1089**
	(3.0218)	(7.6939)	(3.0153)	(5.0111)	(9.5972)	(5.0068)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	8135	1406	8135	9310	3479	9310
Pseudo R-squared	.5148	.482	.5187	.6344	.6276	.6375
R-squared	.523	.5122	.5269	.6389	.6374	.6419
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table I.4 : Effect of DTTs on Investments: Insights from the South to Tax havens Countries

	(1)	(2)	(3)	(4)	(5)	(6)
	From Low Income Countries to Tax Havens			From Middle Income Countries to Tax Havens		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
DTTs	0.7786***	1.2009***	0.7187***	0.1709	0.4021	0.1613
	(0.2370)	(0.3804)	(0.2314)	(0.3385)	(0.4308)	(0.3365)
Constant	11.6318***	-19.8881**	9.1559	0.2263	7.1666	0.0363
	(3.1632)	(9.4994)	(6.3863)	(10.8953)	(8.0262)	(8.9672)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1245	1170	1248	1304	1168	1301
Pseudo R-squared	.7333	.5426	.754	.6965	.6732	.7174
R-squared	.7545	.581	.7735	.7142	.6939	.734
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table I.5: Effect of DTTs on Investments: Insights from Major Exporters

	(1)	(2)	(3)	(4)	(5)	(6)
	to low income host countries			to Middle Income host Countries		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
DTTs	0.9046***	1.1188***	0.9126***	0.6708***	0.6000***	0.6702***
	(0.1007)	(0.3519)	(0.1005)	(0.0734)	(0.1427)	(0.0732)
Constant	10.0890***	29.4887**	9.5051**	4.7522	3.3643	4.4226
	(3.7706)	(11.8353)	(3.7634)	(5.3365)	(9.4481)	(5.3259)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	5428	942	5428	4804	1608	4804
Pseudo R-squared	.5226	.4582	.5249	.7018	.7006	.7059
R-squared	.532	.4893	.5343	.7067	.7112	.7107
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	Yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table I.6: Effect of DTTs on Investments: Insights from the Major Exporters classified as Tax Havens

	(1)	(2)	(3)	(4)	(5)	(6)
	to low income host countries			to Middle Income host Countries		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
DTTs	1.1443***	3.0352***	1.1430***	0.4002**	0.3835	0.4012**
	(0.1950)	(0.5560)	(0.1934)	(0.1619)	(0.2900)	(0.1617)
Constant	8.6928	64.5651***	8.2587	21.5564***	-1.4869	18.6649***
	(6.4537)	(18.8357)	(6.4106)	(4.6297)	(13.5616)	(4.6263)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	1498	255	1498	1546	558	1546
Pseudo R-squared	.6318	.5697	.6334	.7233	.7528	.7217
R-squared	.653	.6323	.6545	.7342	.7714	.7327
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table I.7: Effect of DTTs on Investments: Insights from Global North Countries to Main Importers

	(1)	(2)	(3)	(4)	(5)	(6)
	to Main low income host importers countries			to Main Middle income host importers countries		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
DTTs	0.9782***	1.9305***	0.9866***	0.8037***	0.6140**	0.8053***
	(0.1043)	(0.3449)	(0.1040)	(0.0784)	(0.2384)	(0.0783)
Constant	4.3949	42.7034***	2.8774	14.6012**	0.3403	14.4410**
	(5.7201)	(13.6340)	(5.6817)	(6.5663)	(6.0813)	(6.5595)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	4542	881	4542	5088	2053	5088
Pseudo R-squared	.5071	.5691	.5179	.7048	.6999	.7126
R-squared	.5173	.6044	.5279	.7096	.7109	.7172
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table I.8: Effect of DTTs on Investments: Key Exporter and Importer Countries

	(1)	(2)	(3)	(4)	(5)	(6)
	to Main low income host importers countries			to Main Middle host importers countries		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
DTTs	0.8247***	2.1018***	0.8359***	0.4889***	0.0306	0.4918***
	(0.1126)	(0.3640)	(0.1121)	(0.0799)	(0.2186)	(0.0798)
Constant	13.0016***	55.0188***	11.2394**	12.8500*	-19.4576**	10.8409
	(4.8748)	(16.9089)	(4.8422)	(6.7844)	(9.6328)	(6.7782)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	2939	583	2939	2380	906	2380
Pseudo R-squared	.4458	.5001	.4569	.6787	.695	.7063
R-squared	.4577	.5388	.4685	.6852	.7088	.7122
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Second, we control for institutional and policy-related factors that could influence the treaty-investment relationship, including corruption and enforcement quality. These controls do not meaningfully alter the results (Tables A2–A5 in the appendix), reinforcing our baseline findings. We also employ Poisson pseudo-maximum likelihood (PPML) estimators to account for zero flows (Table 9). Results confirm the strong treaty effect on phantom investment, particularly in tax havens. Finally, Tables 10–12 confirm the patterns by focusing on treaty effects between specific regions. Notably, real investments respond more to treaties in middle-income countries, while phantom investments dominate the response in low-income countries and tax haven destinations.

Table I.9: Effect of DTTs on Investments (full sample using PPML estimator)

	(1)	(2)	(3)	(4)	(5)	(6)
	From All countries to all countries			From All countries to Tax Haven host countries		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
Ln (host country GDP)	0.7802***	1.0010***	0.7946***	0.9064***	1.0585***	0.7256**
	(0.2027)	(0.3532)	(0.1950)	(0.3297)	(0.3924)	(0.2883)
Ln (home country GDP)	0.1761	0.0945	0.1395	-0.0415	0.0065	-0.2209
	(0.2459)	(0.3584)	(0.2406)	(0.3488)	(0.3831)	(0.3242)
Ln (distance)	-0.6371***	-0.7348***	-0.6985***	-0.8133***	-0.8033***	-0.8560***
	(0.0222)	(0.0344)	(0.0217)	(0.0371)	(0.0431)	(0.0345)
Common language	0.9174***	0.3376***	0.9910***	0.2853***	0.2268**	0.2908***
	(0.0560)	(0.0845)	(0.0564)	(0.0889)	(0.1095)	(0.0829)
Capital openness host country	-0.0570	-0.1375	-0.0454	-0.2474	-0.2804	-0.0779
	(0.0423)	(0.1659)	(0.0419)	(0.2198)	(0.2464)	(0.1680)
Capital openness home country	0.0500	0.0288	0.0468	0.0851	0.0307	0.0310
	(0.1041)	(0.1101)	(0.1202)	(0.1225)	(0.1288)	(0.0969)
DTTs	0.0059	0.2485**	0.0305	0.2461	0.4395***	-0.0583
	(0.1377)	(0.1124)	(0.1299)	(0.1536)	(0.1651)	(0.1409)
Constant	-4.4717	-7.4449	-3.8938	3.3887	-5.0833	5.4818
	(4.0053)	(7.1774)	(4.0251)	(5.2650)	(8.1962)	(4.6428)
Number of observations	117826	57461	117826	11070	10246	11070
R-squared	.6499	.8388	.6951	.8753	.8693	.8476
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table I.10: Effect of DTTs on Investments: Insights from Global North to Global South Countries (using PPML estimator)

	(1)	(2)	(3)	(4)	(5)	(6)
	From Global North to Global South Countries			From global south countries to Tax Havens		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
Ln (host country GDP)	0.5429***	-1.3483***	0.5889***	0.3246	0.1102	0.6219
	(0.1832)	(0.4325)	(0.1844)	(0.5297)	(0.6158)	(0.4962)
Ln (home country GDP)	0.2209	0.8816	0.1720	-0.4463	-0.5238*	-0.3936
	(0.2648)	(0.5493)	(0.2694)	(0.2824)	(0.3086)	(0.2989)
Ln (distance)	-1.1275***	-0.9937***	-1.1312***	-1.0233***	-0.9508***	-1.1590***
	(0.0341)	(0.1324)	(0.0347)	(0.0880)	(0.0939)	(0.0861)
Common language	1.6808***	1.6105***	1.6811***	0.9247***	1.0782***	0.8209***
	(0.0734)	(0.1715)	(0.0759)	(0.1570)	(0.1719)	(0.1584)
Capital openness host country	-0.0495	-0.0395	-0.0448	-0.0066	-0.0414	0.1494
	(0.0589)	(0.1532)	(0.0597)	(0.3700)	(0.3918)	(0.3673)
Capital openness home country	0.0576	-0.0366	0.0621	0.1069	0.0377	0.0265
	(0.2808)	(0.2963)	(0.2875)	(0.1539)	(0.1538)	(0.1249)
DTTs	0.1757***	0.3021*	0.1913***	0.2539	0.5606***	-0.2102
	(0.0634)	(0.1628)	(0.0630)	(0.1611)	(0.1994)	(0.1790)
Constant	5.4566	14.1810**	5.8918	11.0480	12.7471	6.3272
	(4.3542)	(6.7590)	(4.4124)	(6.8254)	(8.2877)	(6.9286)
Number of observations	32094	11778	32094	6140	5807	6140
R-squared	.9284	.8344	.9317	.9636	.9604	.9605
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table I.11: Effect of DTTs on Investments in Low-Income Countries (using PPML estimator)

	(1)	(2)	(3)	(4)	(5)	(6)
	From Global North to Low Income Countries			From Global North to Middle Income Countries		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
Ln (host country GDP)	0.8629***	-1.0325**	0.9537***	0.4063*	-1.3932***	0.4263**
	(0.1556)	(0.4912)	(0.1577)	(0.2091)	(0.5020)	(0.2088)
Ln (home country GDP)	0.3913	-0.2926	0.4374*	0.1789	1.2908**	0.0941
	(0.2413)	(0.8621)	(0.2356)	(0.2788)	(0.5347)	(0.2822)
Ln (distance)	-1.0111***	-0.6961***	-1.0549***	-1.0930***	-1.2939***	-1.0883***
	(0.0554)	(0.1976)	(0.0511)	(0.0398)	(0.0942)	(0.0409)
Common language	1.0668***	1.6141***	1.0825***	1.7194***	1.5692***	1.7171***
	(0.0845)	(0.3047)	(0.0850)	(0.1034)	(0.1787)	(0.1121)
Capital openness host country	0.0540	0.5891**	0.0462	-0.0632	-0.1761	-0.0491
	(0.0567)	(0.2358)	(0.0561)	(0.0763)	(0.1402)	(0.0774)
Capital openness home country	-0.0511	0.6382*	-0.0835	0.0894	-0.2542	0.1060
	(0.2197)	(0.3856)	(0.2224)	(0.3282)	(0.3285)	(0.3359)
DTTs	0.2675***	1.2359***	0.2084***	0.2677***	-0.1755	0.3083***
	(0.0755)	(0.2276)	(0.0734)	(0.0663)	(0.1278)	(0.0659)
Constant	-1.3343	24.1398*	-2.0324	10.4846**	15.2780	9.4940**
	(3.8467)	(13.6956)	(3.7763)	(4.3454)	(10.3541)	(4.3877)
Number of observations	18012	4267	18012	13975	7427	13975
R-squared	.8075	.4675	.8205	.9448	.8781	.9479
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table I.12: Effect of DTTs on Investments in Tax Havens (using PPML estimator)

	(1)	(2)	(3)	(4)	(5)	(6)
	From Low Income Countries to Tax Havens			From Middle Income Countries to Tax Havens		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
Ln (host country GDP)	0.0228	-0.1973	0.8294	0.3147	0.0913	0.5892
	(0.6110)	(0.6750)	(0.5472)	(0.5626)	(0.6446)	(0.5513)
Ln (home country GDP)	-0.7692**	-0.8114**	-0.5748*	-0.4381	-0.5121	-0.3786
	(0.3523)	(0.3911)	(0.3235)	(0.2997)	(0.3279)	(0.3139)
Ln (distance)	-1.4824***	-1.4547***	-1.6648***	-0.9580***	-0.8984***	-1.0837***
	(0.1906)	(0.1889)	(0.1033)	(0.1029)	(0.1043)	(0.1054)
Common language	1.1910**	1.5598**	0.6543***	0.9461***	1.0842***	0.8250***
	(0.5357)	(0.6324)	(0.1924)	(0.2081)	(0.2222)	(0.2041)
Capital openness host country	-2.0301***	-1.9828***	-1.9597***	0.2284	0.2168	0.3066
	(0.3681)	(0.3694)	(0.3709)	(0.4240)	(0.4621)	(0.4017)
Capital openness home country	0.1147	0.1041	0.1340	0.1231	0.0467	0.0091
	(0.1068)	(0.1218)	(0.0903)	(0.1759)	(0.1665)	(0.1482)
DTTs	1.8918***	2.0901***	1.6383***	0.1555	0.5321**	-0.3725*
	(0.2558)	(0.2742)	(0.2355)	(0.1830)	(0.2297)	(0.1928)
Constant	19.6686***	20.1850***	21.4992***	12.8032*	24.2185***	8.8605
	(4.9555)	(5.5319)	(7.3346)	(7.4533)	(8.0281)	(7.8213)
Number of observations	3245	3173	3245	2757	2542	2757
R-squared	.9566	.9426	.9622	.9648	.9632	.9592
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Conclusion

This study provides a detailed examination of Double Taxation Treaties (DTTs) and their dual impact on Foreign Direct Investment (FDI), distinguishing between real and phantom investments. The results show that while DTTs stimulate inward FDI, they also inadvertently encourage phantom flows— financial maneuvers with minimal economic benefit to host countries. This effect is more pronounced in developing economies and tax havens, which tend to attract a larger share of phantom investment relative to developed countries. Using a gravity model applied to data from 220 countries between 2009 and 2017, we find that DTTs raise real FDI by approximately 153.94 percent and phantom FDI by 130.2 percent. These findings are robust to model specification, including when estimated using the Pseudo Poisson Maximum Likelihood (PPML) method. They remain consistent even with the inclusion of additional control variables. Our findings underscore the need for policymakers to address DTT-related loopholes to promote genuine investment and sustainable economic growth. Treaty revisions should incorporate anti-abuse provisions such as the Principal Purpose Test (PPT) and Limitation on Benefits (LOB) clauses, along with stronger transparency mechanisms including Automatic Exchange of Information (AEOI) and more rigorous beneficial ownership disclosure requirements. Reforms should ensure that tax advantages apply only to investments that generate employment, build infrastructure, or enable technology transfer, while imposing tighter scrutiny on flows routed through special purpose entities (SPEs) or tax havens. Furthermore, country-specific case studies could provide further insight into how DTTs affect the composition and destination of FDI. Analyzing sector-level and firm-level differences would help design more targeted and effective policy responses.

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Appendix A: Estimation Results

Table A I-1 : Effect of DTTs on Investments: Simple Gravity model

	(1)	(2)	(3)	(4)	(5)	(6)
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
	From All countries to all countries			From All countries to Tax Haven host countries		
DTTs	0.7940***	0.5466***	0.7896***	0.4095***	0.6221***	0.4016***
	(0.0373)	(0.1003)	(0.0372)	(0.1380)	(0.1876)	(0.1365)
Obsevations	56895	23348	56876	7485	6658	7485
Pseudo R-squared	.6429	.622	.6392	.7246	.7011	.7244
	From Global North to Global South Countries			From global south countries to Tax Havens		
DTTs	0.9306***	0.8380***	0.9319***	0.2425	0.4191*	0.2232
	(0.0553)	(0.1276)	(0.0553)	(0.1873)	(0.2439)	(0.1853)
Obsevations	19355	5408	19355	2981	2756	2981
Pseudo R-squared	.5721	.5648	.5744	.6852	.5828	.7011
	From Global North to Low Income Countries			From Global North to Middle Income Countries		
DTTs	1.1693***	1.6149***	1.1759***	0.6481***	0.4368***	0.6453***
	(0.0923)	(0.3276)	(0.0922)	(0.0662)	(0.1337)	(0.0661)
Obsevations	8914	1521	8914	10441	3887	10441
Pseudo R-squared	.5073	.4685	.5111	.6358	.6366	.6385
	From Low Income Countries to Tax Havens			From Middle Income Countries to Tax Havens		
DTTs	0.7803***	1.2336***	0.7192***	-0.1608	-0.0793	-0.1752
	(0.2354)	(0.3605)	(0.2302)	(0.3246)	(0.3932)	(0.3220)
Obsevations	1382	1307	1385	1599	1449	1596
Pseudo R-squared	.7092	.5408	.7277	.6726	.6587	.6829
	From Main exporters to low income host countries			From Main exporters to Middle Income host Countries		
DTTs	0.8656***	1.2050***	0.8733***	0.6382***	0.5817***	0.6368***
	(0.1007)	(0.3634)	(0.1005)	(0.0723)	(0.1406)	(0.0721)
Obsevations	5753	996	5753	5227	1746	5227
Pseudo R-squared	.5246	.4481	.527	.6899	.695	.6931
	From ten Main exporters to low income host countries			From ten Main exporters to Middle Income host Countries		
DTTs	0.9705***	1.6602***	0.9729***	0.6722***	0.3044*	0.6707***
	(0.1143)	(0.4132)	(0.1133)	(0.1161)	(0.1695)	(0.1158)
Obsevations	2392	411	2392	2155	705	2155
Pseudo R-squared	.6474	.5388	.6512	.7287	.7739	.7289
	Main exporters Tax Haven to low income countries			Main exporters Tax Haven to Middle income countries		
DTTs	1.0934***	2.9894***	1.0927***	0.3247**	0.3083	0.3249**
	(0.1993)	(0.5972)	(0.1977)	(0.1544)	(0.2698)	(0.1542)
Obsevations	1748	303	1748	1873	687	1873
Pseudo R-squared	.6077	.5193	.6103	.6965	.7464	.6935
	Global North to Main low income host importers countries			Global North to Main Middle income host importers countries		
DTTs	1.0172***	2.0684***	1.0254***	0.7072***	0.6021**	0.7089***
	(0.1037)	(0.3494)	(0.1034)	(0.0774)	(0.2348)	(0.0773)
Observations	4935	956	4935	5852	2355	5852
Pseudo R-squared	.4998	.544	.5106	.7057	.711	.7122
	From main exporters to main importers in low income countries			From main exporters to main importers in Middle income countries		
DTTs	0.7603***	2.0932***	0.7714***	0.3739***	0.0333	0.3764***
	(0.1126)	(0.3790)	(0.1122)	(0.0788)	(0.2158)	(0.0786)
Obsevations	3101	616	3101	2619	992	2619
Pseudo R-squared	.4441	.4841	.4561	.6543	.6963	.6795

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Note: This table presents a summary of the results from the basic gravity model. The model accounts for GDP of the source country (GDPi) and the destination country (GDPj), distance, contiguity, shared colonizer, and common language, alongside the variable of interest, DTTs. Year fixed effects, host country fixed effects, and home country fixed effects are included in the analysis. The dependent variables—FDI, Phantom FDI, and Real FDI—are expressed in logarithmic form.

Table A I-2: Sensitivity analysis of effect of DTTs on Investments: Full sample

	(1)	(2)	(3)	(4)	(5)	(6)
	From All countries to all countries			From All countries to Tax Haven host countries		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
Ln (host country GDP)	0.0847	0.8403***	0.1036	0.6487**	1.1951***	0.8317***
	(0.0908)	(0.2489)	(0.0906)	(0.2676)	(0.3027)	(0.2663)
Ln (home country GDP)	0.2725***	0.0029	0.2814***	0.4679*	0.0372	0.5038**
	(0.0998)	(0.2382)	(0.0997)	(0.2463)	(0.3436)	(0.2450)
Ln (distance)	-1.6541***	-1.8538***	-1.6591***	-1.5934***	-1.6729***	-1.6091***
	(0.0150)	(0.0343)	(0.0150)	(0.0374)	(0.0495)	(0.0368)
Common language	1.1513***	0.9205***	1.1578***	0.8478***	0.9913***	0.8427***
	(0.0408)	(0.0822)	(0.0407)	(0.0947)	(0.1138)	(0.0942)
Capital openness host country	-0.0275	-0.3694***	-0.0331	-0.3072***	-0.8169***	-0.3307***
	(0.0338)	(0.0865)	(0.0338)	(0.1118)	(0.1511)	(0.1111)
Capital openness home country	0.0248	0.0352	0.0271	0.0016	0.0167	0.0115
	(0.0388)	(0.0858)	(0.0388)	(0.0972)	(0.1176)	(0.0969)
DTTs	0.8197***	0.6160***	0.8154***	0.4246***	0.6712***	0.4234***
	(0.0393)	(0.1031)	(0.0392)	(0.1418)	(0.2028)	(0.1399)
Avoidance rule home country	-0.1592**	-0.2558	-0.1502**	-0.4269**	-0.3028	-0.4038**
	(0.0741)	(0.1806)	(0.0741)	(0.1926)	(0.2113)	(0.1937)
Avoidance rule host country	-0.3734***	-3.9531***	-0.3507***	1.6254**	-5.6063**	1.5682*
	(0.0762)	(0.3740)	(0.0761)	(0.8243)	(2.4880)	(0.8201)
Corruption control home country	-0.0154	-0.2273	-0.0133	-0.2488	-0.3480	-0.2401
	(0.0970)	(0.2231)	(0.0968)	(0.2359)	(0.2677)	(0.2344)
Corruption control host country	-0.0587	-0.2269	-0.0560	-1.1744***	-1.6260***	-1.0505***
	(0.0928)	(0.2125)	(0.0926)	(0.2670)	(0.3218)	(0.2638)
Political stability home country	0.0301	-0.0817	0.0251	0.0663	-0.1265	0.0389
	(0.0605)	(0.1369)	(0.0604)	(0.1688)	(0.1981)	(0.1675)
Political stability host country	0.1137**	0.2811*	0.1406***	0.1052	0.5735**	0.1810
	(0.0525)	(0.1467)	(0.0523)	(0.2034)	(0.2373)	(0.2020)
Constant	4.5660***	12.9618	4.3736***	7.6693***	7.0428**	4.8198**
	(1.5182)	(.)	(1.5139)	(2.3176)	(3.0169)	(2.2851)
Number of observations	48767	19556	48750	5647	5011	5648
Pseudo R-squared	.6404	.633	.6418	.7301	.6826	.7475
R-squared	.643	.638	.6445	.7399	.6953	.7566
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A I-3: Sensitivity analysis of Effect of DTTs on Investments: From global North countries to global South countries

	(1)	(2)	(3)	(4)	(5)	(6)
	From Global North to Global South Countries			From global south countries to Tax Havens		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
Ln (host country GDP)	0.2536*	-0.3315	0.3011**	0.8468**	1.7838***	0.9314**
	(0.1454)	(0.4319)	(0.1449)	(0.3832)	(0.4641)	(0.3807)
Ln (home country GDP)	0.4471**	0.2622	0.4545**	0.5277	-0.0237	0.5204
	(0.2191)	(0.4452)	(0.2188)	(0.3526)	(0.5452)	(0.3500)
Ln (distance)	-1.8218***	-1.7340***	-1.8235***	-2.0412***	-2.0435***	-2.0511***
	(0.0354)	(0.0746)	(0.0353)	(0.0648)	(0.0905)	(0.0635)
Common language	1.3389***	0.9912***	1.3393***	0.3108**	0.5743***	0.2999*
	(0.0709)	(0.1827)	(0.0709)	(0.1565)	(0.2187)	(0.1560)
Capital openness host country	-0.0687	0.0948	-0.0823*	-0.4578**	-0.9487***	-0.4476**
	(0.0471)	(0.1184)	(0.0470)	(0.2001)	(0.2398)	(0.1973)
Capital openness home country	-0.0151	0.1263	-0.0197	-0.0190	-0.0475	-0.0141
	(0.0938)	(0.1681)	(0.0938)	(0.1105)	(0.1422)	(0.1108)
DTTs	0.9172***	0.8170***	0.9183***	0.5007**	0.7096***	0.4853**
	(0.0582)	(0.1325)	(0.0582)	(0.1971)	(0.2709)	(0.1944)
Avoidance rule home country	-0.1760	-0.1792	-0.1699	-0.2199	-0.0546	-0.2213
	(0.1391)	(0.2832)	(0.1392)	(0.2378)	(0.2741)	(0.2413)
Avoidance rule host country	-0.4638***	-3.3851***	-0.4563***	6.4804***	-16.0560***	6.2951***
	(0.1151)	(0.7174)	(0.1151)	(0.5708)	(2.4180)	(0.5573)
Corruption control home country	-0.3465*	-0.3541	-0.3465*	-0.3209	-0.3171	-0.2718
	(0.1897)	(0.3428)	(0.1896)	(0.3537)	(0.4340)	(0.3495)
Corruption control host country	0.1708	-0.6530	0.1289	-0.8976**	-1.1360**	-0.8252**
	(0.1493)	(0.3988)	(0.1493)	(0.4090)	(0.5418)	(0.4031)
Political stability home country	-0.2072	-0.6597**	-0.2107	-0.0220	-0.2248	-0.0455
	(0.1406)	(0.2659)	(0.1405)	(0.2124)	(0.2558)	(0.2115)
Political stability host country	0.1035	-0.0667	0.1312*	0.0081	0.9618***	-0.0194
	(0.0724)	(0.2130)	(0.0722)	(0.2920)	(0.3709)	(0.2905)
Constant	5.9011*	20.0028**	5.4350*	2.9701	9.9798**	8.1223**
	(3.2416)	(8.5963)	(3.2367)	(5.4436)	(4.4384)	(3.3680)
Number of observations	16587	4631	16587	2456	2251	2457
Pseudo R-squared	.5791	.5722	.582	.7099	.5732	.7347
R-squared	.5839	.5827	.5867	.7277	.6011	.7509
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A I-4: Effect of DTTs on Investments: From Global North countries to low and middle-income

	(1)	(2)	(3)	(4)	(5)	(6)
	From Global North to Low Income Countries			From Global North to Middle Income Countries		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
Ln (host country GDP)	0.6903***	-3.5276***	0.6991***	0.1106	0.5418	0.1966
	(0.2118)	(1.1321)	(0.2110)	(0.2092)	(0.4941)	(0.2090)
Ln (home country GDP)	0.2948	0.0312	0.2984	0.4426*	0.5267	0.4455*
	(0.3494)	(1.1084)	(0.3488)	(0.2668)	(0.4399)	(0.2665)
Ln (distance)	-1.7866***	-1.3982***	-1.7892***	-1.8139***	-1.8543***	-1.8158***
	(0.0620)	(0.1810)	(0.0620)	(0.0441)	(0.0860)	(0.0441)
Common language	1.0565***	0.2242	1.0600***	1.3177***	1.0023***	1.3129***
	(0.0949)	(0.3396)	(0.0949)	(0.1103)	(0.1950)	(0.1101)
Capital openness host country	-0.0409	0.5435*	-0.0527	-0.0521	-0.0972	-0.0617
	(0.0806)	(0.3084)	(0.0806)	(0.0581)	(0.1281)	(0.0581)
Capital openness home country	-0.0099	0.2090	-0.0161	-0.0149	-0.0030	-0.0167
	(0.1547)	(0.3820)	(0.1549)	(0.1124)	(0.1747)	(0.1124)
DTTs	1.1564***	1.5769***	1.1599***	0.6930***	0.4228***	0.6914***
	(0.0952)	(0.3293)	(0.0951)	(0.0700)	(0.1405)	(0.0700)
Avoidance rule home country	-0.1753	-0.1700	-0.1627	-0.1752	-0.0438	-0.1747
	(0.2197)	(0.5372)	(0.2198)	(0.1750)	(0.3266)	(0.1751)
Avoidance rule host country	-0.3197**	-3.0230***	-0.3129**	-0.5828***	1.2891	-0.5738***
	(0.1538)	(0.7667)	(0.1538)	(0.1847)	(1.4783)	(0.1846)
Corruption control home country	-0.4508	0.2393	-0.4540	-0.2481	-0.3969	-0.2456
	(0.2906)	(0.7978)	(0.2900)	(0.2443)	(0.3741)	(0.2443)
Corruption control host country	0.6312**	1.9895*	0.7017***	-0.0734	-0.4581	-0.1756
	(0.2564)	(1.1269)	(0.2558)	(0.1983)	(0.4397)	(0.1985)
Political stability home country	-0.1461	-1.3336**	-0.1554	-0.2596	-0.5372*	-0.2599
	(0.2218)	(0.6439)	(0.2215)	(0.1759)	(0.2837)	(0.1759)
Political stability host country	-0.1818*	-1.3412***	-0.1307	0.3316***	0.6621**	0.3336***
	(0.1013)	(0.3779)	(0.1009)	(0.1117)	(0.2604)	(0.1116)
Constant	0.4596	56.8838***	0.4756	9.3076***	6.3919	8.7556***
	(4.0039)	(21.0060)	(3.9927)	(2.5815)	(6.3663)	(2.5739)
Number of observations	7661	1247	7661	8926	3384	8926
Pseudo R-squared	.5214	.5313	.5256	.6372	.6286	.6407
R-squared	.5303	.5633	.5344	.642	.6391	.6455
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A I-5: Effect of DTTs on Investments: From Global Soutth countries to Tax Havens

	(1)	(2)	(3)	(4)	(5)	(6)
	From Low Income Countries to Tax Havens			From Middle Income Countries to Tax Havens		
	FDI	Phantom FDI	Real FDI	FDI	Phantom FDI	Real FDI
Ln (host country GDP)	1.2007**	3.2020***	1.1750**	0.4877	0.5537	0.6874
	(0.5543)	(0.7599)	(0.5507)	(0.5467)	(0.5644)	(0.5464)
Ln (home country GDP)	-0.4778	-1.8157**	-0.3934	1.3591**	1.7674***	1.2054**
	(0.4328)	(0.7759)	(0.4285)	(0.5500)	(0.6108)	(0.5500)
Ln (distance)	-1.9001***	-1.9374***	-1.9036***	-2.0159***	-1.8914***	-2.0454***
	(0.0972)	(0.1491)	(0.0957)	(0.1012)	(0.1089)	(0.0996)
Common language	-0.0228	-0.3278	0.0208	0.4607*	1.0119***	0.4347
	(0.1925)	(0.3046)	(0.1909)	(0.2690)	(0.3204)	(0.2694)
Capital openness host country	-1.1525***	-1.5064***	-1.1403***	-0.0155	-0.6034*	-0.0189
	(0.2619)	(0.3253)	(0.2601)	(0.2858)	(0.3352)	(0.2824)
Capital openness home country	-0.0458	-0.2817	-0.0057	-0.0327	0.0596	-0.0437
	(0.1402)	(0.2159)	(0.1398)	(0.1791)	(0.1844)	(0.1790)
DTTs	0.9348***	1.3864***	0.8791***	0.1554	0.3904	0.1485
	(0.2483)	(0.3999)	(0.2418)	(0.3426)	(0.4370)	(0.3401)
Avoidance rule home country	-0.0821	0.3398	-0.1131	-0.3516	-0.6415*	-0.3200
	(0.3008)	(0.4263)	(0.3028)	(0.3387)	(0.3349)	(0.3529)
Avoidance rule host country	8.2738***	-23.8258***	1.0492	5.0599***	5.4708***	4.9599***
	(2.7640)	(7.0955)	(1.4876)	(0.5109)	(1.8956)	(0.5128)
Corruption control home country	-0.1521	0.1657	-0.1180	-0.3375	-0.6220	-0.2789
	(0.4637)	(0.6689)	(0.4557)	(0.5040)	(0.5371)	(0.5035)
Corruption control host country	-1.5478***	-0.7911	-1.6382***	-0.7784	-1.5283**	-0.6005
	(0.5563)	(0.8577)	(0.5569)	(0.5428)	(0.6590)	(0.5354)
Political stability home country	0.0838	-0.1690	0.0323	-0.1200	-0.1343	-0.1153
	(0.2732)	(0.3881)	(0.2708)	(0.3251)	(0.3341)	(0.3258)
Political stability host country	-0.5957*	0.6076	-0.6932**	0.1652	0.6930	0.2370
	(0.3487)	(0.5240)	(0.3510)	(0.4450)	(0.4770)	(0.4410)
Constant	3.7854	13.5075**	9.8749*	4.2893	-6.4825	-0.5066
	(7.3297)	(6.2645)	(5.8795)	(7.2992)	(7.2649)	(9.3482)
Number of observations	1175	1103	1179	1281	1148	1278
Pseudo R-squared	.7382	.5433	.7597	.7017	.6779	.7215
R-squared	.761	.5851	.7805	.7209	.7001	.7394
Home-country FE	yes	yes	yes	yes	yes	yes
Host-country FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix B: Figures

Figure I-1: Evolution of Inward FDI Over Time (Full sample)

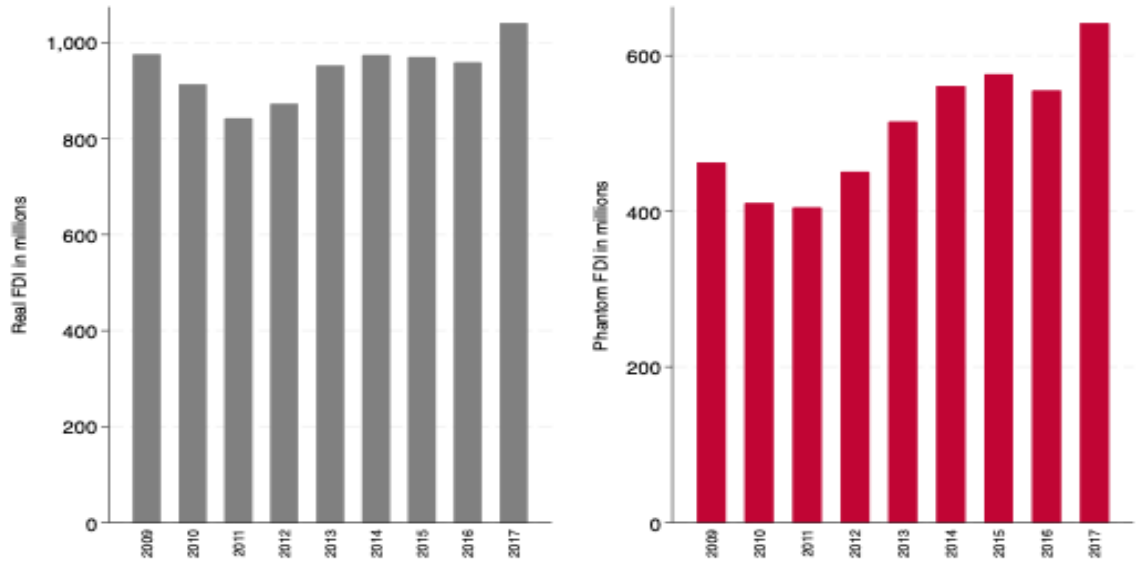


Figure I-2: Evolution of Inward FDI in Southern Countries Over Time

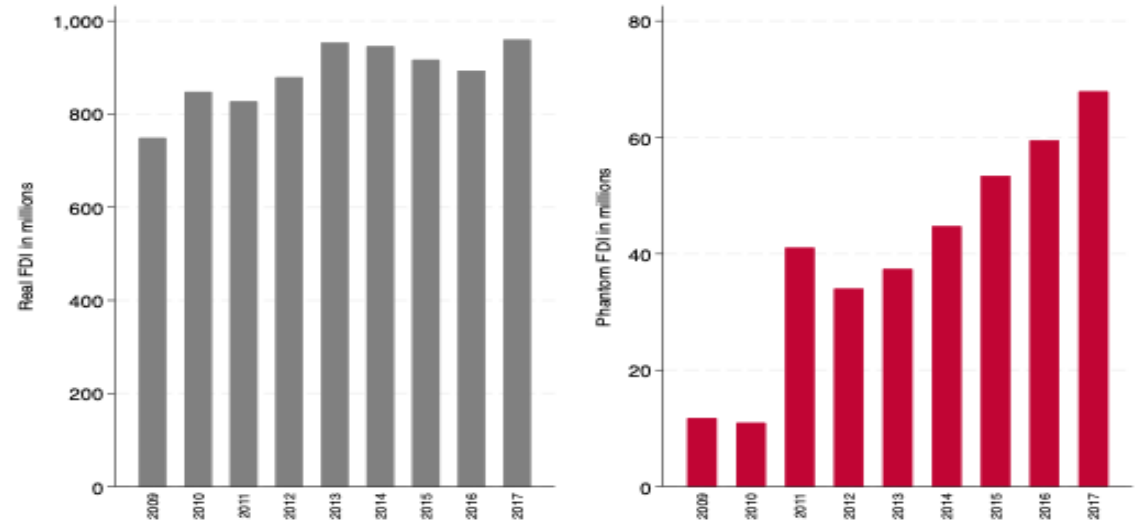


Figure I-3: Evolution of Inward FDI in Tax havens, Low income and Middle income over time

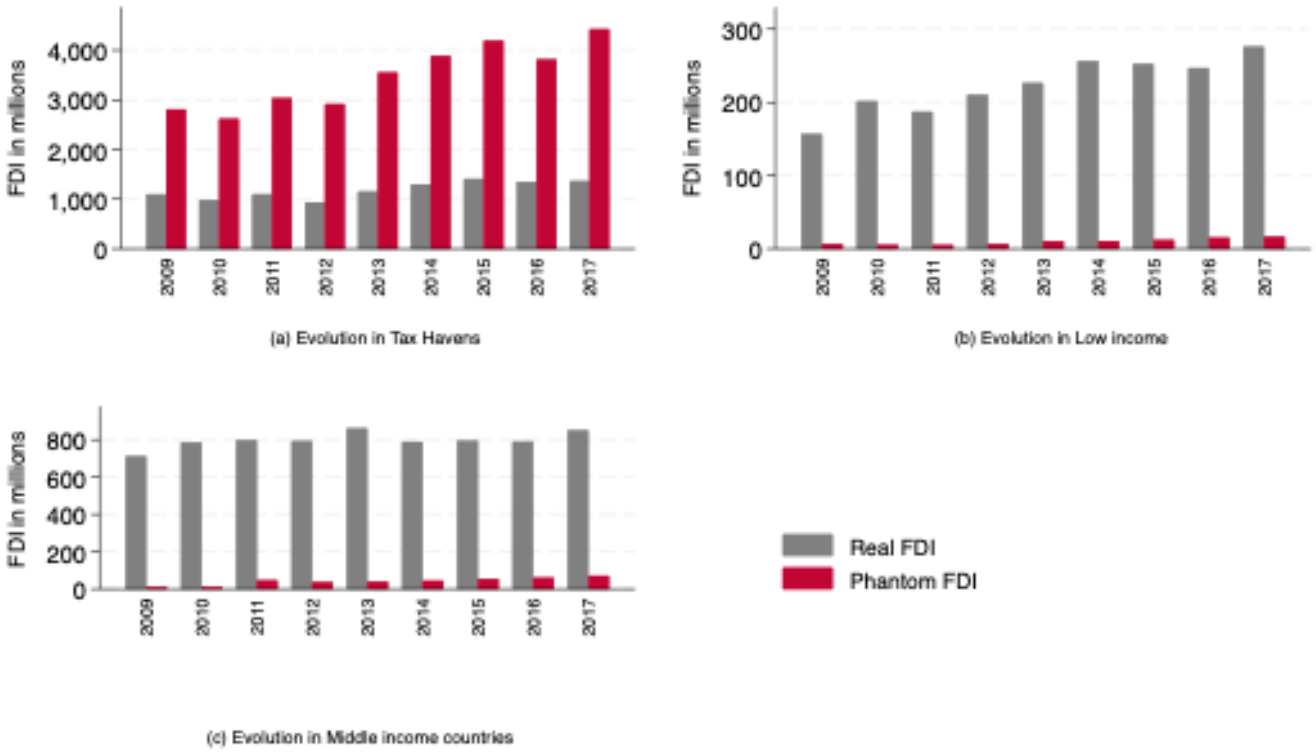


Figure I-4: Main exporters and importers of FDI in low and middle income

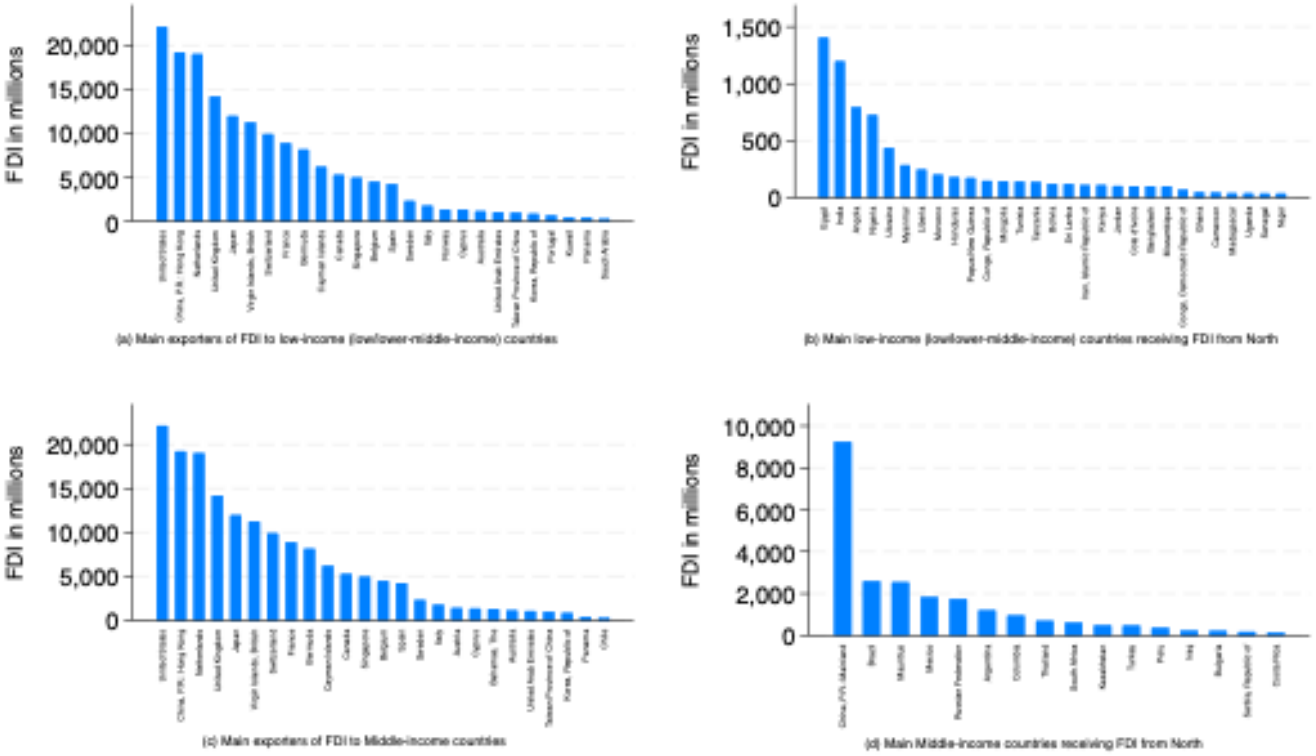


Figure I-5: Main exporters and importers of Real FDI in low and middle income

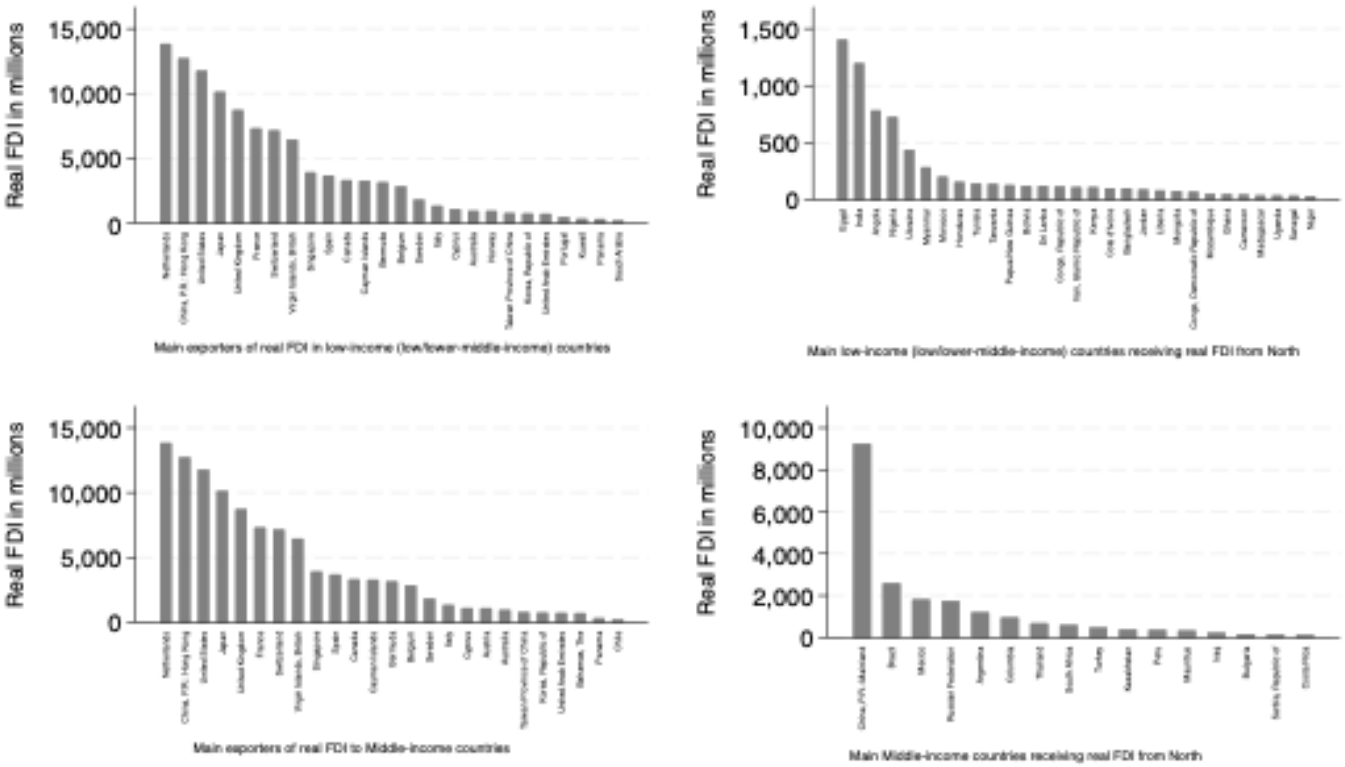
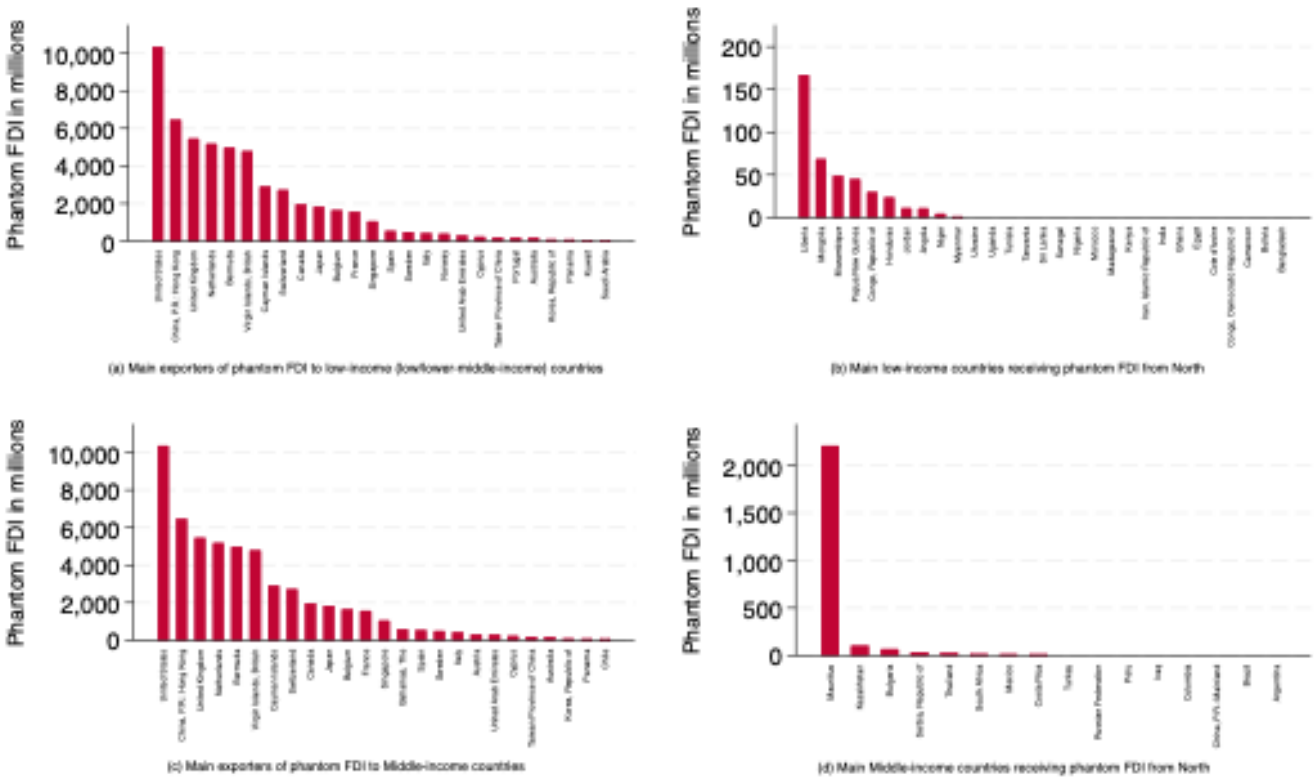


Figure I-6: Main exporters and importers of phantom FDI in low and middle income



Appendix C: Descriptive statistics

Table A I-6: Descriptive statistics: Full sample

Variable	Obs.	Mean	Std. dev.	Min	Max
Ln (host country FDI)	64,823	3.194844	3.923461	-35.24865	14.03259
Ln (host country Phantom FDI)	64,803	2.944541	3.89333	-35.55001	14.03259
Ln (host country Real FDI)	28,036	.9363424	5.77827	-36.59501	13.60636
host country FDI	166,603	1540.556	18400.41	0	1242441
host country Phantom FDI	166,603	1012.439	12678.21	0	1242441
host country Real FDI	166,603	529.0605	11000.12	0	811270.6
Ln (host country GDP)	411,180	10.20092	2.386775	3.33495	16.79166
Ln (home country GDP)	411,180	10.20092	2.386775	3.33495	16.79166
Ln (distance)	378,225	8.796792	.8346966	-.0048749	9.901043
Contiguity	378,225	.013135	.1138532	0	1
Common colonizer	378,225	.1184057	.3230883	0	1
Common language	378,225	.1762284	.3810149	0	1
Capital openness host country	340,780	.3279896	1.596911	-1.931087	2.299361
Capital openness home country	340,780	.3279896	1.596911	-1.931087	2.299361
Avoidance rule host country	435,600	.0263361	.1601329	0	1
Avoidance rule home country	390,940	.6601013	.4736752	0	1
DTTs	390,940	.6601013	.4736752	0	1
Corruption control home country	401,940	-.0148875	.9990509	-1.739779	2.435494
Corruption control host country	401,940	-.0148875	.9990509	-1.739779	2.435494
Political stability home country	404,360	-.0110268	1.001938	-3.312951	1.965062
Political stability host country	404,360	-.0110268	1.001938	-3.312951	1.965062

Table A I-7: Descriptive statistics: Low-income countries

Variable	Obs	Mean	Std. dev.	Min	Max
Ln (host country FDI)	16,339	2.352199	3.565332	-35.05067	11.38161
Ln (host country Phantom FDI)	16,339	2.27991	3.5804	-35.363	11.38161
Ln (host country Real FDI)	3,072	.2833078	3.800154	-36.36647	8.467322
host country FDI	51,425	171.675	1754.07	0	87694.3
host country Phantom FDI	51,425	166.0784	1745.285	0	87694.3
host country Real FDI	51,425	5.596617	102.5029	0	4756.761
Ln (host country GDP)	156,640	9.622988	1.887625	4.944388	14.79063
Ln (home country GDP)	153,258	10.20092	2.38678	3.33495	16.79166
Ln (distance)	143,910	8.790016	.7624514	2.302685	9.898699
Contiguity	143,910	.01601	.1255141	0	1
Common colonizer	143,910	.143277	.3503564	0	1
Common language	143,910	.1919325	.3938216	0	1
Capital openness host country	144,540	-.5053854	1.371683	-1.931087	2.299361
Capital openness home country	127,018	.3279896	1.596915	-1.931087	2.299361
Avoidance rule host country	162,360	.020898	.1430434	0	1
Avoidance rule home country	145,714	.6601013	.4736762	0	1
DTTs	147,620	.6378539	.4806224	0	1
Corruption control host country	149,814	-.0148875	.999053	-1.739779	2.435494
Corruption control home country	160,160	-.7122798	.5627686	-1.739779	1.572965
Political stability host country	150,716	-.0110268	1.00194	-3.312951	1.965062
Political stability home country	159,940	-.6837848	.924711	-3.312951	1.422732

Table A I-8: Descriptive statistics: Middle-income countries

Variable	Obs	Mean	Std. dev.	Min	Max
Ln (host country FDI)	21,929	2.523167	3.826331	-27.63102	14.03259
Ln (host country Phantom FDI)	21,929	2.355687	3.830462	-27.63102	14.03259
Ln (host country Real FDI)	9,236	.1645062	4.004075	-21.5987	10.93522
FDI host country	46,188	906.5342	16012.89	0	1242441
Phantom FDI host country	46,188	860.175	15969.01	0	1242441
Real FDI host country	46,188	46.35923	869.9469	0	56118.64
Ln (host country GDP)	102,960	10.09028	2.532828	3.33495	16.32596
Ln (home country GDP)	97,188	10.20092	2.386784	3.33495	16.79166
Ln (distance)	90,405	8.846531	.8376223	.6512182	9.901043
Contiguity	90,405	.0156297	.1240385	0	1
Common colonizer	90,405	.0921852	.2892888	0	1
Common language	90,405	.1480338	.3551355	0	1
Capital openness host country	89,100	.026387	1.322562	-1.931087	2.299361
Capital openness home country	80,548	.3279896	1.596919	-1.931087	2.299361
Avoidance rule host country	102,96	.0379953	.1911859	0	1
Avoidance rule home country	92,404	.6601013	.4736771	0	1
DTTs	93,500	.5647059	.4957981	0	1
Corruption control host country	95,004	-.0148875	.9990549	-1.739779	2.435494
Corruption control home country	102,96	-.3023246	.5866885	-1.627693	1.33094
Political stability host country	95,576	-.0110268	1.001942	-3.312951	1.965062
Political stability home country	102,960	-.0527327	.8017205	-2.480338	1.453984

Table A I-9: Descriptive statistics: Tax Havens

Variable	Obs	Mean	Std. dev.	Min	Max
Ln (Total FDI host country)	8,764	4.412424	4.054169	-10.95331	13.76989
Ln (Phantom FDI host country)	8,765	3.107986	4.020889	-11.97697	12.5749
Ln (Real FDI host country)	7,762	3.949554	4.372749	-18.35836	13.60636
FDI host country	21,730	4993.124	37604.99	0	955401.2
Phantom FDI host country	21,730	1245.196	10153.11	0	289206.5
Real FDI host country	21,730	3750.275	30178.68	0	811270.6
Ln (host country GDP)	62,920	8.960017	2.462725	3.788187	13.71599
Ln (home country GDP)	74,760	10.20092	2.386788	3.33495	16.79166
Ln (distance)	68,265	8.892113	.9142011	-.0048749	9.897904
Contiguity	68,265	.0025049	.0499871	0	1
Common colonizer	68,265	.2054054	.4040005	0	1
Common language	68,265	.2907053	.4540911	0	1
Capital openness host country	39,820	.9974953	1.576239	-1.931087	2.299361
Capital openness home country	61,960	.3279896	1.596922	-1.931087	2.299361
Avoidance rule host country	79,200	.0128409	.1125885	0	1
Avoidance rule home country	71,080	.6601013	.4736779	0	1
DTTs	65,340	.5589226	.4965198	0	1
Corruption control home country	73,080	-.0148875	.9990565	-1.739779	2.435494
Corruption control host country	61,600	.7687538	.8472446	-.7166778	2.20672
Political stability home country	73,520	-.0110268	1.001943	-3.312951	1.965062
Political stability host country	60,280	.8039096	.5311388	-1.335418	1.61567

Table A I-10: Description of variables, and sources

Variable	Description	Sources
FDI (host country)	Total FDI stock in millions of dollars as reported by the destination (host) country	Damgaard et al. (2024)
Phantom FDI (host country)	Phantom inward stock in millions of dollars as reported by the destination (host) country	
Real FDI (host country)	Real inward stock in millions of dollars as reported by the destination (host) country	
Ln (host country GDP)	Gross domestic product of the destination (host) country	CEPII
Ln (home country GDP)	Gross domestic product of the origin (home) country	
Ln (distance)	Distance between country i and j in km	
Contiguity	Dummy equal to 1 if two countries are contiguous and 0 if not	
Common colonizer	Dummy equal to 1 if two country have the same colonizer and 0 if not	
Common language	Dummy equal to 1 if two country have the same official or primary language and 0 if not	
Capital openness	It is an index measuring the extent of a country's capital flow liberalization. It is constructed based on restrictions on international financial transactions	
Avoidance rule	Dummy equal to 1 if general anti-avoidance rule is applied in the country, and 0 otherwise.	Wamser et al., (2024) ITI Database
DTTs	Dummy equal 1 if there is a double tax treaty exists, and 0 otherwise.	ICTD
Corruption control	Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	WGI (World Bank)
Political stability	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	

Table A I-11: List of countries in the sample

Afghanistan, Islamic Republic of	Comoros	Haiti	Moldova	Slovak Republic
Albania	Congo, Democratic Republic of	Honduras	Monaco	Slovenia
Algeria	Congo, Republic of	Hungary	Mongolia	Solomon Islands
American Samoa	Cook Islands	Iceland	Montenegro	Somalia
Andorra	Costa Rica	India	Morocco	South Africa
Angola	Cote d'Ivoire	Indonesia	Mozambique	South Sudan
Anguilla	Croatia	Iran, Islamic Republic of	Myanmar	Spain
Antigua and Barbuda	Cuba	Iraq	Namibia	Sri Lanka
Argentina	Curacao	Ireland	Nauru	St. Kitts and Nevis
Armenia, Republic of	Cyprus	Isle of Man	Nepal	St. Lucia
Aruba	Czech Republic	Israel	Netherlands	St. Vincent and the Grenadines
Australia	Denmark	Italy	New Zealand	Sudan
Austria	Djibouti	Jamaica	Nicaragua	Suriname
Azerbaijan, Republic of	Dominica	Japan	Niger	Sweden
Bahamas, The	Dominican Republic	Jordan	Nigeria	Switzerland
Bahrain, Kingdom of	Ecuador	Kazakhstan	Niue	Syrian Arab Republic
Bangladesh	Egypt	Kenya	Northern Mariana Isl	Taiwan, Province of China
Barbados	El Salvador	Kiribati	Norway	Tajikistan
Belarus	Equatorial Guinea	Korea, Democratic People's Rep. of	Oman	Tanzania
Belgium	Eritrea	Korea, Republic of	Pakistan	Thailand
Belize	Estonia	Kosovo, Republic of	Palau	Timor-Leste, Dem. Rep. of
Benin	Eswatini, Kingdom of	Kuwait	Panama	Togo
Bermuda	Ethiopia	Kyrgyz Republic	Papua New Guinea	Tokelau Islands
Bhutan	Falkland Islands	Lao People's Democratic Republic	Paraguay	Tonga
Bolivia	Faroe Islands	Latvia	Peru	Trinidad and Tobago
Bosnia and Herzegovina	Fiji	Lebanon	Philippines	Tunisia
Botswana	Finland	Lesotho	Pitcairn Islands	Turkey
Brazil	France	Liberia	Poland	Turkmenistan
Brunei Darussalam	French Territories: French Polynesia	Libya	Portugal	Turks and Caicos Islands
Bulgaria	French Territories: New Caledonia	Liechtenstein	Puerto Rico	Tuvalu
Burkina Faso	Gabon	Lithuania	Qatar	Uganda
Burundi	Gambia, The	Luxembourg	Romania	Ukraine
Cabo Verde	Georgia	Macedonia, FYR	Russian Federation	United Arab Emirates
Cambodia	Germany	Madagascar	Rwanda	United Kingdom
Cameroon	Ghana	Malawi	Samoa	United States
Canada	Gibraltar	Malaysia	San Marino	Uruguay
Cayman Islands	Greece	Maldives	Sao Tome and Principe	Uzbekistan
Central African Republic	Greenland	Mali	Saudi Arabia	Vanuatu
Chad	Grenada	Malta	Senegal	Vietnam
Chile	Guam	Marshall Islands, Republic of	Serbia, Republic of	Virgin Islands, British
China, P.R.: Hong Kong	Guatemala	Mauritania	Seychelles	West Bank and Gaza
China, P.R.: Macao	Guinea	Mauritius	Sierra Leone	Yemen, Republic of
China, P.R.: Mainland	Guinea-Bissau	Mexico	Singapore	Zambia
Colombia	Guyana	Micronesia, Federated States of	Sint Maarten	Zimbabwe

CHAPTER II : Does mobile money adoption strengthen anti-money laundering in developing countries?

Abstract: We examine the causal relationship between mobile money adoption and money laundering risks in developing countries. Using data from 98 countries between 2012 and 2022, we apply a local projection method to assess the dynamic impact of mobile money on money laundering risks. Our findings reveal that mobile money adoption increases money laundering risk by approximately 0.9 percentage points, with the strongest effects concentrated in the early forecast horizons. This relationship is driven by specific services, such as peer-to-peer transfers, cash-in/cash-out operations, airtime top-ups, bill payments, bulk payments, and merchant payments, which show significant positive associations with laundering risks. These services are particularly vulnerable due to high transaction volumes, limited customer identification, and the ease with which funds can be moved across accounts and networks. In contrast, international remittances display only short-term effects, which may reflect increasing scrutiny and regulatory tightening around cross-border transfers. Government-related services (G2P, P2G), however, exhibit no consistent or significant relationship with money laundering, suggesting that their traceability and formal structure serve as natural deterrents. These results are robust to alternative estimation methods and the inclusion of additional control variables. They highlight the importance of developing targeted regulatory responses that address the specific vulnerabilities inherent in different mobile money services. Balancing financial innovation with integrity will require stronger oversight frameworks, technological safeguards, and international coordination.

Keywords: Mobile money adoption; Money Laundering; Local projection; Financial inclusion; Developing countries.
JEL Codes : O31, G20, G38, K42

Introduction

Mobile money services have revolutionized financial inclusion, particularly in developing countries, where traditional banking infrastructure is often insufficient or inaccessible. These services have granted millions of unbanked individuals access to essential financial tools, significantly enhancing economic participation and empowering marginalized populations (Muthiora, 2015; Ahmad et al., 2023). As mobile money adoption expands, it holds the potential to foster transformative changes in economic and social inclusion, offering individuals in previously underserved regions the ability to save, invest, and transact efficiently.

However, the rapid adoption of mobile money systems introduces significant challenges, notably increasing the susceptibility to money laundering activities (Solin & Zerzan, 2010; Whisker & Lokanan, 2019; Chatain et al., 2011). Money laundering, which involves concealing the origins of illegally obtained funds, relies on anonymity, transactional ease, and the rapid movement of money. These characteristics, also present in mobile money systems, may inadvertently increase their vulnerability to misuse by illicit actors. This duality creates a complex relationship between mobile money adoption and money laundering risks. While mobile money reduces reliance on cash, thereby limiting traditional laundering methods (Reuter, 2017 GSMA, 2024), its digital framework and real-time regulatory challenges open new avenues for illicit financial activities (Aron, 2018). An Interpol report (2020) underscores this concern, identifying a potential causal link between the proliferation of mobile money platforms and the rise in mobile money-related crimes. Given these risks, understanding the relationship between mobile money adoption and money laundering risks is crucial, particularly in developing countries where mobile money services are expanding at a rapid pace.

Despite the growing body of research on mobile money, most studies have focused on its impact on financial inclusion, migrant transfers, and household welfare, with an emphasis on factors influencing adoption, such as agent proximity, wealth, and education (Munyegera & Matsumoto, 2016; Weil et al., 2012). Key benefits such as consumption (Twumasi Baffour et al., 2021), investment (Batista & Vicente, 2020), resilience (Blumenstock et al., 2016), and inclusion (Demirguc-Kunt et al., 2018; Jack & Suri, 2011) have been extensively explored. However, the relationship between mobile money and anti-money laundering (AML) remains underexplored.

While mobile money promotes financial inclusion and expands access to financial services, its rapid growth raises concerns about its potential misuse. On one side of the debate, institutions such as the Financial Action Task Force (FATF, 2013) warn that the relative anonymity, speed, and ease of mobile transactions may facilitate illicit financial flows and hinder effective transaction monitoring. Supporting this view, Mazer & Rowan, (2016) highlight system-level vulnerabilities, while Aron (2018), using econometric analysis, identifies transaction patterns consistent with potential laundering behavior. Conversely, other researchers and institutions emphasize mobile money's potential to support AML objectives when implemented within strong regulatory frameworks. De Koker, (2009) maintains that mobile money systems, despite regulatory challenges, mobile money systems offer more transparency than informal cash-based alternatives, especially when customer due diligence and traceability protocols are enforced. Likewise, Dornbierer (2020) contends, although mobile money can be abused, its digital footprints serve as valuable tools for law enforcement in detecting and prosecuting corruption or laundering schemes.

Despite this ongoing debate, existing research on the relationship between mobile money and money laundering risks remains limited in scope. Most studies focus on country-specific case studies (Whisker & Lokanan, 2019; Akomea-Frimpong et al., 2019 Vlcek, 2011) and analytical reports (Baroud, 2020; Union, 2019; FATF, 2021), with limited empirical investigation into its nature or magnitude. This lack of empirical investigation represents a notable gap in the literature, particularly in developing countries, where mobile money usage where mobile money usage is expanding rapidly.

This study bridges the existing gap by empirically analyzing mobile money adoption on money laundering risks in developing countries. Specifically, it investigates how mobile money shapes these risks, explores the underlying mechanisms affecting anti-money laundering efforts, and leverages a novel, uniquely compiled database for analysis. By using a panel dataset of 90 countries over the period 2012–2022, the study applies a local projection method to capture the evolving relationship between mobile money adoption and money laundering risks. We hypothesize that widespread mobile money adoption will increase the risk of money laundering through illicit financial flows. Our findings reveal that mobile money adoption increases money laundering risk by 0.9 percentage points on average. These results remain robust across alternative specifications and methods.

The results underscore the need for policymakers to balance the goals of financial inclusion and AML enforcement. We advocate for regulatory frameworks that promote transparency, encourage cooperation, and enhance information sharing between mobile money providers and law enforcement agencies to mitigate the risks of money laundering. The structure of this paper is as follows: Section 2 presents the analytical framework, Section 3 describes the data and introduces the methodology, Section 4 discusses the results, and Section 5 concludes.

Analytical framework

Mobile money refers to financial services delivered through mobile devices that allow users to store, send, and receive funds electronically without a traditional bank account (World Bank, GSMA). These services are particularly transformative in regions with limited banking infrastructure, where they support digital payments, transfers, and savings among underserved populations. By operating outside the traditional banking system, mobile money offers speed, convenience, and accessibility, making it a cornerstone of financial inclusion. However, these very strengths also pose challenges. Mobile money's design, while boosting inclusion, can inadvertently facilitate illicit financial activities such as money laundering. Several structural features of mobile money contribute to its vulnerability to misuse. One major factor is the low entry barrier, as registration typically requires only a mobile phone and SIM card. While this simplicity enhances access, it also allows users to open multiple accounts or operate under false identities, complicating the enforcement of Know Your Customer (KYC) regulations. Additionally, although mobile money platforms record transactions, they often enforce less rigorous identity verification than traditional banks. This limited oversight increases the risk of users conducting financial activities with inadequate transparency, particularly in jurisdictions with weak regulatory frameworks. Another concern is the reliance on agent networks to facilitate deposits and withdrawals. These agents often operate semi-independently and apply inconsistent verification practices, with limited capacity to detect suspicious activities. As a result, oversight is weakened, creating opportunities for illicit transactions to go undetected. Finally, mobile money enables rapid and low-cost cross-border transfers that may bypass traditional banking controls. Criminals can exploit this feature to

move funds quickly between jurisdictions with weaker financial monitoring, further complicating anti-money laundering efforts.

To better understand these risks, this study adopts Opportunity Theory, originally developed by Cohen and Felson (1979) in their Routine Activity. According to this framework, three elements must converge for a crime to occur: (i) Suitable Target (rapid, poorly overseen transactions enabling money laundering), (ii) Motivated Offender (criminals exploiting reduced regulatory scrutiny), and (iii) Absence of Capable Guardianship (weak KYC and AML systems increasing vulnerability)

These conditions make mobile money a potentially attractive vehicle for money laundering, especially in jurisdictions lacking robust anti-money laundering (AML) systems.

Based on this analytical foundation, the study proposes the following hypotheses:

- H1: Higher mobile money adoption increases money laundering risks in regions with weak regulatory frameworks.
- H2: Robust regulatory frameworks and advanced technological safeguards mitigate money laundering risks associated with mobile money.

Data and stylized facts

Our analysis utilizes the GSMA database, offering global mobile money adoption data since 2000. Adoption is measured using a binary variable (1 for availability, 0 otherwise) and alternatively by the proportion of registered mobile money accounts to population. Money laundering risk is assessed using the Basel Institute's AML risk index, which aggregates 18 indicators across five domains, drawing from FATF, Transparency International, the World Bank, and the World Economic Forum. The sample includes 98 developing countries over the period 2012-2022, with control variables sourced from the World Bank, the IMF, and the Heritage Foundation. Figure 1 shows a sharp rise in live mobile money services from 2001 to 2024, with Sub-Saharan Africa accounting for nearly half of global platforms by 2024 (165 of 336). This reflects limited banking access and high demand but also raises concerns about oversight in regions with weaker

institutions. Figure 2 illustrates a positive association between mobile money adoption and increased money laundering risk.

Figure II-1 : Availability of mobile money services, by region

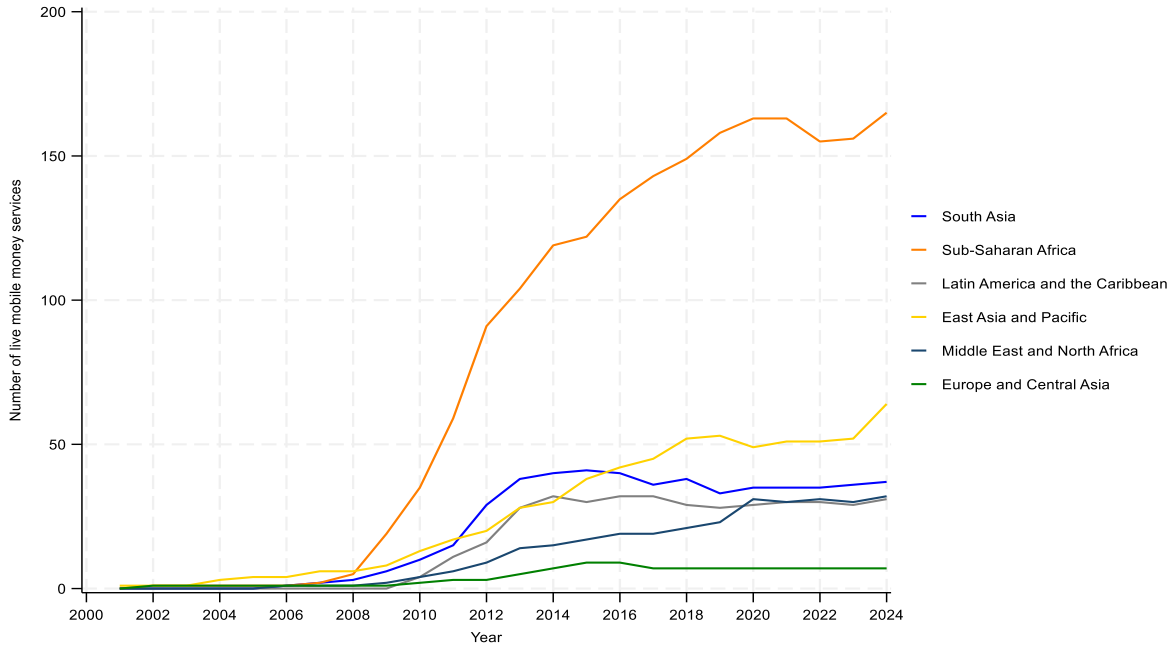


Figure II-2: Correlation between money laundering risk and mobile money adoption

Empirical approach

To examine the impact of mobile money use on money laundering risks, we estimate an Ordinary Least Squares (OLS) model using data from 98 developing countries spanning 2012–2022. The model is specified as follows:

$$Risks_{i,t} = \alpha + \beta_0 MobileMoney_{i,t} + \beta_i X_{i,t} + \theta + \mu + \epsilon_{i,t.} \quad (1)$$

where: $Risks_{i,t}$ represents the money laundering risk index for country i at time t. $MobileMoney_{i,t}$ represents a binary variable equal to 1 if country i adopts mobile money at time t, and 0 otherwise. $X_{i,t}$ represents control variables, including income per capita, tax burden, debt, investment freedom, mobile subscriptions, trade and capital openness, urban population growth, and internet usage. θt represents the year-specific time dummy, and μ denotes the country-specific effect. ϵ_i represents the error term, robust to heteroscedasticity, autocorrelation, and cross-sectional dependence.

Equation 1 is estimated using a fixed-effects model, controlling for time-invariant country-specific factors influencing money laundering risks. The coefficient β0 captures the elasticity of money laundering risks relative to mobile money adoption. However, this model cannot account for transient or persistent changes over time and ignores the lagged response of risks to mobile money adoption, potentially biasing results. Since money laundering risks exhibit temporal persistence, failing to include lagged dependent variables overlooks this effect. To address these limitations, we adopt a dynamic model incorporating lagged variables and feedback effects, enabling the assessment of short- and medium-term responses. Specifically, we apply the local projection method combined with augmented inverse propensity scoring, following Jordà & Taylor (2016), and Cook & Jones, (2021). This methodology tackles random allocation bias and endogeneity to assess the causal impact of mobile money adoption on money laundering risks. It accounts for exogenous shocks (e.g., policy or regional factors) and selection bias arising from differences between adopters and non-adopters, ensuring more accurate causal estimates.

Our approach addresses these issues in three stages.

1. **Propensity Score Estimation**: We calculate the propensity score, representing a country's likelihood of adopting mobile money, using a probit model:

$$\pi_{i,t} = Pr(D = 1|X) = \theta(X) \quad (2)$$

where $\pi_{i,t}$ is the probability of mobile money adoption, and X is a vector of covariates.

2. **Sample Rebalancing**: We reweight observations using the inverse of their propensity scores to achieve quasi-randomization. Higher weights are assigned to underrepresented observations in the treatment group and lower weights to overrepresented observations in the control group. This rebalancing allows us to estimate a more balanced outcome model.
3. **Outcome Estimation via Local Projections** (LP): We estimate the causal impact of mobile money adoption using the following LP model:

$$Risks_{i,t+h} = \alpha_{i,h} + \beta_h \Delta MobileMoney_{i,t} + \gamma_h X_{i,t} + \theta + \mu + \epsilon_{i,t+h.} \quad (3)$$

where: $Risks_{i,t}$ is the Money laundering risk index for country i at horizon t+h; $\alpha_{i,h}$ are the country fixed effects controlling for time-invariant factors. $\Delta MobileMoney_{i,t}$ Changes in mobile money adoption between t-1 and t. $X_{i,t}$ is a set of control variables. θ_t , μ , and ϵ_i are time dummies, country-specific effects, and robust error terms, respectively.

The model uses four lags and a forecast horizon of five years. Robust standard errors are clustered by country. The coefficient β_h measures the effect of mobile money adoption on money laundering risks over time. A positive β_h indicates that adoption increases risk.

Local Projection (LP) has several advantages. It captures both direct and indirect effects across multiple horizons, accounting for future realizations of the dependent variable. It incorporates multiple lags and applies correction factors (Teulings & Zubanov, 2014) to address within-horizon changes. LP also accommodates subsequent shocks and their interactions, providing a more robust alternative to fixed effects models.

Empirical results

Baseline results

Table 1 presents fixed-effects regression estimates assessing the impact of mobile money adoption on money laundering risks. Across all specifications, mobile money adoption is positively and significantly associated with an increase in money laundering risk, ranging from 0.08 to 0.14 points. Among the control variables, foreign debt is also positively associated with money laundering risk, potentially reflecting issues of corruption and mismanagement, in line with findings by Rajan and Subramanian (2011). In contrast, GDP growth and capital account openness

are both linked to reduced risk. Economic growth may enhance state capacity and institutional quality, thereby limiting illicit financial activities (Sharman & Alldridge, 2013; Mauro, 1995). Capital openness, as discussed by Blanco and Ghosh (2006), Quirk (1997), and Coelho (2013), appears to promote transparency, strengthen international oversight, and discourage opaque financial practices, contributing to a reduction in money laundering risks.

Table II.1: Effect of Mobile Money Adoption on Money Laundering Risks: Insights from Fixed Effects Analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Mobile Money Adoption	0.1467**	0.1333*	0.1427*	0.1383*	0.1354*	0.1375*	0.1435*	0.1433*	0.0886	0.1566**
	(0.0692)	(0.0727)	(0.0730)	(0.0732)	(0.0756)	(0.0756)	(0.0767)	(0.0775)	(0.0820)	(0.0753)
GDP growth		-0.0054	-0.0072	-0.0071	-0.0034	-0.0034	-0.0034	-0.0033	-0.0005	-0.0026
		(0.0048)	(0.0047)	(0.0048)	(0.0051)	(0.0051)	(0.0051)	(0.0052)	(0.0063)	(0.0050)
Capital openness			-0.8143***	-0.8042***	-0.7102***	-0.7444***	-0.7438***	-0.7817***	-0.8454***	-0.7448***
			(0.2200)	(0.2211)	(0.2236)	(0.2254)	(0.2255)	(0.2338)	(0.2564)	(0.2260)
Tax Burden				0.0057	0.0070	0.0064	0.0061	0.0060	0.0073	0.0059
				(0.0081)	(0.0082)	(0.0082)	(0.0082)	(0.0083)	(0.0086)	(0.0083)
debt					0.0033*	0.0036*	0.0037*	0.0037*	0.0042**	0.0044**
					(0.0020)	(0.0020)	(0.0020)	(0.0021)	(0.0021)	(0.0020)
Investment Freedom						0.0043	0.0041	0.0047	0.0056	0.0044
						(0.0036)	(0.0036)	(0.0037)	(0.0039)	(0.0035)
urban pop growth							0.0163	0.0194	0.0076	0.0344
							(0.0339)	(0.0366)	(0.0372)	(0.0338)
Mobile cellular								-0.0001	-0.0005	
								(0.0016)	(0.0017)	
TradeofGDP									0.0041*	
									(0.0025)	
Internet users										0.0053**
										(0.0027)
Constante	8.3081***	8.3370***	6.5714***	6.0899***	5.8096***	5.7231***	5.6695***	5.6507***	5.2895***	5.4884***
	(0.1665)	(0.1681)	(0.1528)	(0.7032)	(0.7229)	(0.7262)	(0.7353)	(0.7432)	(0.8098)	(0.7426)
Observations	706	643	626	623	580	580	580	574	539	565
Number_group	90	87	84	84	81	81	81	81	77	81
Pseudo-R2	.8519	.8528	.8494	.8498	.8577	.8581	.8582	.8582	.8615	.8712

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2 reports the results of the local projection method, which captures the dynamic effects of mobile money adoption on money laundering risk over time while addressing endogeneity concerns. The estimates span forecast horizons h=0 to h=5, and all models include country and year fixed effects. At h=0, mobile money adoption is associated with a statistically significant 0.74-point increase in money laundering risk. From h=1 to h=5, the effect remains positive but varies over time, peaking at h=3 before declining and losing statistical significance. We observe that lagged GDP growth initially lowers money laundering risk but exhibits a reversal in later years. Consistent with prior literature, higher levels of external debt and mobile subscriptions also correlate with increased risk.

The inertia of money laundering mechanisms, with a strong autocorrelation (ρ=0.94), explains the stability of risk between h=0 and h=1. This reflects the slow evolution of economic and regulatory systems, where structural complexities create resistance to rapid change. By extending beyond contemporaneous analysis, the local projection method highlights critical dynamic trends that might otherwise be overlooked.

Based on the estimated effects (β) of mobile money adoption on money laundering risk across horizons (h), the impulse response in Figure 2 illustrates the dynamic relationship. The solid line shows the effect over time, with 90% (dark gray) and 95% (light gray) confidence intervals. Consistent with Table 2, the impact diminishes at longer horizons, suggesting a non-permanent effect

These findings point to a nuanced reality for policymakers and regulators, especially in developing countries where mobile money adoption is growing rapidly. While the immediate increase in money laundering risk associated with mobile money adoption is evident, it raises critical questions about the capacity of existing regulatory frameworks to address these risks. The initial surge in risk, followed by a gradual decline over time, may indicate that financial criminals exploit the system early on, but also suggests that adaptation and countermeasures by authorities can mitigate such risks. This highlights the importance of proactive policy-making. In an era of increasing global scrutiny over illicit financial flows and tax base erosion mechanisms, governments need to be agile, ensuring that anti-money laundering systems evolve alongside technological advancements in the mobile money sector. For instance, the ability of mobile money platforms to facilitate cross-border transactions may lead to a decentralization of risk, as funds move quickly across jurisdictions with varying levels of oversight. This emphasizes the need for

international regulatory cooperation, where countries harmonize their efforts to address cross-border money laundering threats. Furthermore, strengthening state capacity and institutional frameworks over the long term could offer more sustainable solutions. More specifically, this process must be complemented by a focus on developing regulatory infrastructures that are specifically designed for mobile financial ecosystems, which are fundamentally different from traditional banking systems. Improved regional integration of mobile payment systems, combined with coordinated regulatory frameworks, may serve as a strong foundation for risk prevention.

Table II.2 : Effect of Mobile Money Adoption on Money Laundering Risks: Insights from Local Projection Analysis

	(1)	(2)	(3)	(4)	(5)	(6)
	$Risks_{it+0}$	$Risks_{it+1}$	$Risks_{it+2}$	$Risks_{it+3}$	$Risks_{it+4}$	$Risks_{it+5}$
Mobile Money	1.0516***	1.0516***	1.0904***	1.2208***	0.4804	0.4203**
	(0.2360)	(0.2360)	(0.2138)	(0.1999)	(0.5081)	(0.1850)
lag Mobile Money Adoption	0.6287**	0.6287**	0.6576**	0.5134**	0.5767**	0.9045***
	(0.2812)	(0.2812)	(0.2738)	(0.1946)	(0.2313)	(0.1637)
lag_2.Mobile Money Adoption	0.8356*	0.8356*	0.9684***	0.9637***	0.9052***	1.2221***
	(0.4681)	(0.4681)	(0.3193)	(0.2911)	(0.1774)	(0.1837)
lag_3.Mobile Money Adoption	0.8744***	0.8744***	0.8233***	0.7651***	0.8191***	0.9610***
	(0.1664)	(0.1664)	(0.0901)	(0.1353)	(0.1402)	(0.2080)
lag_4.Mobile Money Adoption	1.3476***	1.3476***	1.2964***	1.4535***	1.1487***	0.9140***
	(0.2066)	(0.2066)	(0.1837)	(0.1761)	(0.2015)	(0.1761)
lag GDP growth	-0.1154***	-0.1154***	-0.0005	0.0289	0.0336	0.0570**
	(0.0296)	(0.0296)	(0.0400)	(0.0356)	(0.0307)	(0.0242)
lag Capital openness	-0.7606	-0.7606	-0.6724	-0.8410	-0.6981	-3.1878***
	(1.5019)	(1.5019)	(1.2274)	(1.0566)	(0.9454)	(1.0233)
Tax Burden	0.0664	0.0664	0.0321	-0.0241	-0.1005*	-0.0811
	(0.0599)	(0.0599)	(0.0677)	(0.0672)	(0.0569)	(0.1318)
debt	0.0258***	0.0258***	0.0325***	0.0318***	0.0183**	0.0282***
	(0.0096)	(0.0096)	(0.0091)	(0.0071)	(0.0091)	(0.0055)
Investment Freedom	0.0666**	0.0666**	0.0722***	0.0628***	0.0624***	0.0347
	(0.0263)	(0.0263)	(0.0268)	(0.0231)	(0.0174)	(0.0230)
urban pop growth	-0.8334	-0.8334	-0.6388	-0.7568*	-0.4648*	-0.1101
	(0.5063)	(0.5063)	(0.4717)	(0.4505)	(0.2782)	(0.1343)
Mobile cellular sub	0.0285***	0.0285***	0.0266**	0.0216**	0.0317***	0.0289***
	(0.0105)	(0.0105)	(0.0102)	(0.0088)	(0.0109)	(0.0103)
Constante	2005.1789***	2006.1789***	2008.2947***	2014.7464***	2020.9805***	2021.1320***
	(5.1187)	(5.1187)	(5.4845)	(5.4140)	(5.0888)	(10.7095)
Observations	452	452	399	318	237	160
Number_group	82	82	82	81	80	80
R2	.5832	.5832	.5472	.5219	.5293	.5704

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Alternative measure of mobile money adoption

Table 3 considers an alternative measure of mobile money adoption, the ratio of registered accounts to population. Results align with prior findings, showing that a one-unit increase in this ratio raises money laundering risk by 2 to 3.88 points. These trends confirm that while mobile money systems aim to enhance financial inclusion, they also create opportunities for illicit activities. The dynamic patterns reflect both the evolution of mobile money services and the introduction of regulatory measures to address associated risks. While the magnitude of the risks declines over time, the persistent positive effect highlights ongoing vulnerabilities in mobile money systems.

Table II.3: Effect of Mobile Money Adoption on Money Laundering Risks: Insights from Local Projection Analysis Using an Alternative Measure

	(1)	(2)	(3)	(4)	(5)	(6)
	$Risks_{it+0}$	$Risks_{it+1}$	$Risks_{it+2}$	$Risks_{it+3}$	$Risks_{it+4}$	$Risks_{it+5}$
Mobile Money	2.0097***	2.0097***	3.4943***	3.8817**	2.1293	7.1751
	(0.6565)	(0.6565)	(0.8508)	(1.6201)	(2.4833)	(6.6551)
lag Mobile Money	2.0563**	2.0563**	0.2749	-0.8683	0.6369	17.4679*
	(0.9644)	(0.9644)	(1.5146)	(2.0795)	(3.0454)	(10.2882)
lag_2.Mobile Money	-0.3994	-0.3994	0.5518	1.6923	1.7621	-5.1681
	(1.1836)	(1.1836)	(1.6427)	(2.1767)	(2.6683)	(4.3394)
lag_3.Mobile Money	-0.0803	-0.0803	1.0814	0.5237	1.7244	9.8195**
	(1.2635)	(1.2635)	(1.6463)	(2.1673)	(2.5281)	(4.0510)
lag_4.Mobile Money	2.9522**	2.9522**	3.3316**	3.9183**	4.1751**	3.3972
	(1.2702)	(1.2702)	(1.5802)	(1.7946)	(2.0860)	(3.4343)
lag GDP growth	-0.1365***	-0.1365***	-0.0627	-0.0608	-0.0442	-0.3151**
	(0.0272)	(0.0272)	(0.0449)	(0.0531)	(0.0632)	(0.1509)
lag Capital openness	-1.4869	-1.4869	-3.2639	-5.5605*	-4.8985	-2.2805
	(2.2849)	(2.2849)	(2.7195)	(3.1934)	(3.4305)	(3.1126)
Tax Burden	0.0141	0.0141	0.0488	0.0016	0.0017	-0.2346
	(0.0404)	(0.0404)	(0.0621)	(0.0939)	(0.1589)	(0.2129)
debt	0.0080	0.0080	0.0134*	0.0200	0.0203	-0.1605
	(0.0059)	(0.0059)	(0.0069)	(0.0216)	(0.0406)	(0.1235)
Investment Freedom	-0.0026	-0.0026	-0.0245	-0.0383	-0.0367	-0.1532***
	(0.0257)	(0.0257)	(0.0302)	(0.0352)	(0.0392)	(0.0585)
urban pop growth	0.2649	0.2649	0.9222	0.3732	-0.2317	5.3657
	(0.5290)	(0.5290)	(0.6628)	(1.0035)	(1.4505)	(3.5047)
Mobile cellular	0.0296***	0.0296***	0.0273**	0.0311**	0.0298	-0.0317
	(0.0093)	(0.0093)	(0.0117)	(0.0141)	(0.0240)	(0.0370)
Observations	133	133	116	85	54	34
Number_group	35	35	34	32	20	18
R2	. 8938	.8938	.8478	.8401	.7716	.9054

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Differentiating Effects by Mobile Money Services

The GSMA identifies eight key services offered by mobile money operators:

- P2P Transfers: Fund transfers between individuals (e.g., friends, family, or colleagues).
- P2G Transfers: Payments to government accounts for taxes, fines, or civic obligations.
- G2P Transfers: Government payments to individuals, such as subsidies or social assistance.
- Merchant Payments: Payments for goods and services to merchants accepting mobile money.
- Bill and Bulk Payments: Payments for utilities (electricity, water, etc.) and bulk transfers like salaries or dividends.
- International Remittances: Cross-border fund transfers.
- Cash-in/Cash-out: Deposits and withdrawals via agents.
- Airtime Transfers: Converting mobile money into transferable call credit.

To identify services most vulnerable to money laundering and test robustness, we disaggregate the effects of each service on money laundering risk. Analyzing these unique services allows us to pinpoint their specific exposure to illicit activities and better understand their individual contributions to overall risk.

Tables 4 analyze the effects of various mobile money services on money laundering risks.

Key findings include a significant positive relationship between several mobile money services, such as peer-to-peer transfers, cash-in/cash-out operations, airtime top-ups, bill payments, and merchant payments, and heightened money laundering risk, particularly within the first three forecast horizons. The prominence of these services underscores their vulnerability due to high transaction volumes, limited customer identification, and ease of fund mobility. The observed significance of bulk payments in early horizons may reflect misuse of payroll systems, aid disbursements, or corporate structures to distribute illicit funds, a strategy noted in both formal and informal economies. Interestingly, international remittances are significant in early periods but lose significance later, which may point to increased scrutiny over cross-border flows or institutional tightening in remittance channels. In contrast, government-related services (G2P, P2G) show no consistent or non-significant effects, suggesting that traceability and formalization act as natural deterrents. This is expected, as these flows tend to be more transparent, centrally

audited, and less susceptible to manipulation. Overall, the heterogeneity in effects across services aligns well with economic theories of financial crime, which suggest that criminals seek out channels with high liquidity, low traceability, and minimal regulatory oversight to move and integrate illicit funds. These distinctions provide actionable insights for policymakers: prioritizing oversight on consumer-oriented platforms may yield the greatest returns in mitigating laundering risks.

These findings align with publicly reported money laundering cases documented in the press. In Uganda (2020), a coordinated criminal network exploited vulnerabilities in mobile money platforms operated by MTN and Airtel to divert and distribute illicit funds across multiple accounts before withdrawing the money in cash, illustrating the use of transaction layering and agent-based cash-out as a laundering strategy (Daily Monitor, 2020). In Ghana (2021), authorities dismantled a fraud ring that used fictitious merchant accounts and SIM identity manipulation to circulate and integrate proceeds of crime through MTN Mobile Money transfers (CitiNews, 2021). Similarly, in Tanzania (2022), police arrested several mobile money agents who facilitated the structuring of illicit withdrawals, converting funds obtained through cybercrime into cash while avoiding threshold-based detection systems (The Citizen, 2022). In Pakistan (2021), the Federal Investigation Agency reported the use of fake mobile money accounts and unregistered SIMs via Easypaisa and JazzCash to move funds abroad in a cross-border laundering operation (Dawn, 2021). Likewise, in Cambodia (2019), authorities reported the use of Wing mobile money wallets linked to casino operators to obscure the origins of criminal proceeds (Phnom Penh Post, 2019). In Kenya (2023), mobile money agents were found to be converting proceeds from illegal online betting schemes into legitimate-looking M-Pesa transactions, enabling reintegration of funds into the formal system (The Standard, 2023). Across these cases, cash-out operations consistently appear as the critical vulnerability in the laundering process. Because cash-out converts digital value back into physical currency, it breaks the transaction traceability chain, enabling funds to exit the monitored financial system. Weak identity verification at agent locations, the use of third-party SIMs, and the presence of informal or complicit agents further reduce the effectiveness of Know-Your-Customer controls, making it difficult for regulators and financial intelligence units to trace ultimate ownership or reconstruct the transaction trail.

Table II.4: Effect of Mobile Money Services Availability on Money Laundering Risks: Insights from Local Projection Analysis

	(1)	(2)	(3)	(4)	(5)	(6)
	$Risks_{it+0}$	$Risks_{it+1}$	$Risks_{it+2}$	$Risks_{it+3}$	$Risks_{it+4}$	$Risks_{it+5}$
P2P	1.0516***	1.0516***	1.0904***	1.2208***	0.4804	0.4203**
	(0.2360)	(0.2360)	(0.2138)	(0.1999)	(0.5081)	(0.1850)
Observations	452	452	399	318	237	160
R2	.5832	.5832	.5472	.5219	.5293	.5704
G2P	-0.1060	-0.1060	0.1334	0.2552	0.6514	0.7923*
	(0.5495)	(0.5495)	(0.5065)	(0.4469)	(0.4852)	(0.4489)
Observations	452	452	399	318	237	160
R2	.4577	.4577	.3681	.324	.3582	.3858
P2G	0.6293	0.6293	0.9152*	0.7448	-0.0510	0.5520
	(0.5442)	(0.5442)	(0.5377)	(0.5262)	(0.4043)	(0.4231)
Observations	452	452	399	318	237	160
R2	.4474	.4474	.367	.3481	.4093	.4184
Merchant payment	1.2244***	1.2244***	1.3701***	1.2403***	1.0913***	0.1255
	(0.2862)	(0.2862)	(0.2869)	(0.2870)	(0.3987)	(0.1027)
Observations	452	452	399	318	237	160
R2	.5346	.5346	.478	.4477	.4925	.568
Bulk payment	1.5201***	1.5201***	1.7743***	1.0295	0.5031	0.4142*
	(0.3655)	(0.3655)	(0.3195)	(0.6890)	(0.3242)	(0.2458)
Observations	452	452	399	318	237	160
R2	.4737	.4737	.3673	.313	.3703	.3972
Bill payment	1.2507***	1.2507***	1.2574***	1.1796***	0.0147	0.5104**
	(0.2487)	(0.2487)	(0.2357)	(0.1951)	(0.1918)	(0.2277)
Observations	452	452	399	318	237	160
R2	.5889	.5889	.5401	.5146	.5441	.5482
International remittances	0.8994*	0.8994*	0.9452**	1.0184**	0.0000	0.0000
	(0.5053)	(0.5053)	(0.4407)	(0.4394)	0.0000	0.0000
Observations	452	452	399	318	237	160
R2	.4527	.4527	.3681	.3167	.3609	.4527
Cashin	1.0516***	1.0516***	1.0904***	1.2208***	0.4804	0.4203**
	(0.2360)	(0.2360)	(0.2138)	(0.1999)	(0.5081)	(0.1850)
Observations	452	452	399	318	237	160
R2	.5832	.5832	.5472	.5219	.5293	.5704
Cashout	1.3205***	1.3205***	1.4442***	1.5230***	0.5966	0.4343**
	(0.2563)	(0.2563)	(0.2765)	(0.2653)	(0.4381)	(0.1700)
Observations	452	452	399	318	237	160
R2	.5809	.5809	.5227	.4937	.4915	.5872
Airtime to pup	1.3251***	1.3251***	1.3345***	1.3591***	0.5021	0.4828**
	(0.2349)	(0.2349)	(0.2050)	(0.1979)	(0.5025)	(0.1891)
Observations	452	452	399	318	237	160
R2	.5732	.5732	.5337	.512	.5388	.523

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Alternative method

To assess the robustness of our baseline results, we apply generalized method of moments (GMM) estimators. These approaches address potential endogeneity concerns, such as reverse causality or omitted variable bias, that may affect the estimated relationship between mobile money usage and money laundering risk. As external instruments, we rely on variables capturing geographical outreach and financial infrastructure, specifically, the number of commercial bank branches (excluding headquarters), ATMs per 1,000 km2, and the density of mobile money agents. These instruments are theoretically relevant, as they influence mobile money adoption, while remaining exogenous to money laundering activities themselves.

Compared to local projection methods, which offer flexibility in tracing short- and medium-term dynamic responses but are limited in causal inference, the GMM technique allows for more rigorous identification strategies. They are particularly valuable in panel settings where simultaneity and unobserved heterogeneity may bias estimates. Importantly, the validity of our instruments is supported by both the Sargan and Hansen tests, which indicate that the instruments are not overidentified and satisfy the orthogonality conditions.

Our robustness checks confirm that the adoption of mobile money significantly increases money laundering risk (Table 5 and Table 6). These findings reinforce the earlier results and highlight the channels most vulnerable to misuse, particularly those offering high liquidity, rapid fund mobility, and limited traceability.

Conclusion

This study explores the causal effect of mobile money adoption on money laundering risks and finds that increased mobile money usage leads to a significant rise in laundering risk, approximately 0.9 percentage points. A more granular analysis reveals that several mobile money services, particularly peer-to-peer transfers, merchant payments, bill payments, cash-in operations, and airtime top-up, are strongly associated with higher laundering risks. These services often involve high transaction volumes, rapid fund mobility, and relatively weak customer identification procedures, making them attractive channels for illicit financial flows. These findings remain robust across a range of econometric specifications, including instrumental variable approaches and GMM estimations, which reinforce the reliability of the results.

To manage the dual imperative of enhancing financial inclusion while mitigating financial crime, policymakers must pursue a more sophisticated regulatory strategy. Strengthening the consistency of compliance standards across mobile money providers would ensure a uniform approach to AML enforcement. Limiting the ability of individuals to hold multiple accounts under a single identity can help reduce opportunities for abuse. Equally important is the regulation and training of mobile money agents, who often serve as the first line of defense against fraudulent activities. Their ability to identify suspicious transactions can significantly influence the system's resilience.

Furthermore, closer collaboration between mobile money operators and government authorities responsible for AML oversight would enhance the effectiveness of monitoring and enforcement mechanisms. As the ecosystem evolves, emerging risks such as cybercrime, identity theft, and digital fraud must also be addressed through investment in cybersecurity and targeted public awareness campaigns.

In summary, while mobile money offers transformative benefits for economic inclusion, it also calls for adaptive and forward-looking regulatory responses. The findings of this study underscore the importance of tailored strategies that reflect the specific vulnerabilities inherent in each type of mobile money service. Only by aligning innovation with robust safeguards can we fully realize the potential of mobile finance without compromising financial integrity.

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Appendix A: Estimation results

Table II.5: Effects of Mobile Money Adoption on Money Laundering Risks: Insights from GMM model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Lag AML _	1.0266***	1.0371***	1.0371***	1.0368***	1.0631***	1.0706***	1.0577***	1.0197***	0.9590***	0.7544***
	(0.0260)	(0.0208)	(0.0208)	(0.0376)	(0.0989)	(0.0711)	(0.0996)	(0.1420)	(0.1657)	(0.1325)
Mobile Money	0.3137**	0.2448**	0.3047**	0.3426*	0.5811*	0.6715**	0.6403*	0.6612**	0.0489	0.5400*
	(0.1529)	(0.1080)	(0.1276)	(0.1802)	(0.3145)	(0.3007)	(0.3444)	(0.3235)	(0.4635)	(0.2944)
lag GDP growth		-0.0040	-0.0040	-0.0054	-0.0198**	-0.0202***	-0.0234***	-0.0218**	-0.0294***	-0.0193*
		(0.0030)	(0.0046)	(0.0039)	(0.0097)	(0.0073)	(0.0088)	(0.0095)	(0.0104)	(0.0116)
lag Capital openness			-0.0002	-0.0636	-0.0571	-0.0857	-0.0888	-0.0304	-0.1636	-0.3986
			(0.1060)	(0.0976)	(0.2144)	(0.1905)	(0.1861)	(0.2622)	(0.3361)	(0.3812)
Tax Burden				0.0044	0.0364***	0.0365**	0.0378**	0.0393**	0.0211	0.0226
				(0.0070)	(0.0112)	(0.0142)	(0.0152)	(0.0164)	(0.0157)	(0.0164)
debt					-0.0049**	-0.0050**	-0.0048**	-0.0050*	-0.0037	-0.0066**
					(0.0023)	(0.0022)	(0.0023)	(0.0027)	(0.0024)	(0.0029)
Investment Freedom						0.0021	0.0031	0.0044	0.0078	0.0009
						(0.0073)	(0.0066)	(0.0084)	(0.0090)	(0.0078)
urban pop growth							0.0360	0.0190	0.1178*	0.0413
							(0.0875)	(0.1013)	(0.0657)	(0.0925)
Mobile cellular								-0.0014		-0.0043
								(0.0036)		(0.0037)
Internet users									0.0002	
									(0.0072)	
TradeofGDP										0.0090**
										(0.0039)
_cons	-0.5043**	-0.4922**	-0.5469***	-0.9060	-3.5084***	-3.7581***	-3.9037***	-3.6951**	-1.9146	-0.5214
	(0.2091)	(0.1989)	(0.2048)	(0.8365)	(1.2609)	(1.1730)	(1.3424)	(1.6114)	(2.0855)	(1.1556)
Observations	174	174	174	174	166	166	166	166	165	163
Number_group	34	34	34	34	34	34	34	34	34	33
Number Instruments	16	20	19	21	21	21	21	21	20	47
hansen	.4098	.5524	.5091	.526	.6252	.6847	.4831	.3661	.8386	.9451
AR1	.0347	.0338	.0337	.0346	.0453	.039	.038	.0366	.0523	.0546
AR2	.5862	.5873	.5855	.5905	.5843	.5874	.6	.5985	.4659	.6361

Standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix B : Figures

Figure II-3 : Elasticity of money laundering risk in response to mobile money adoption.

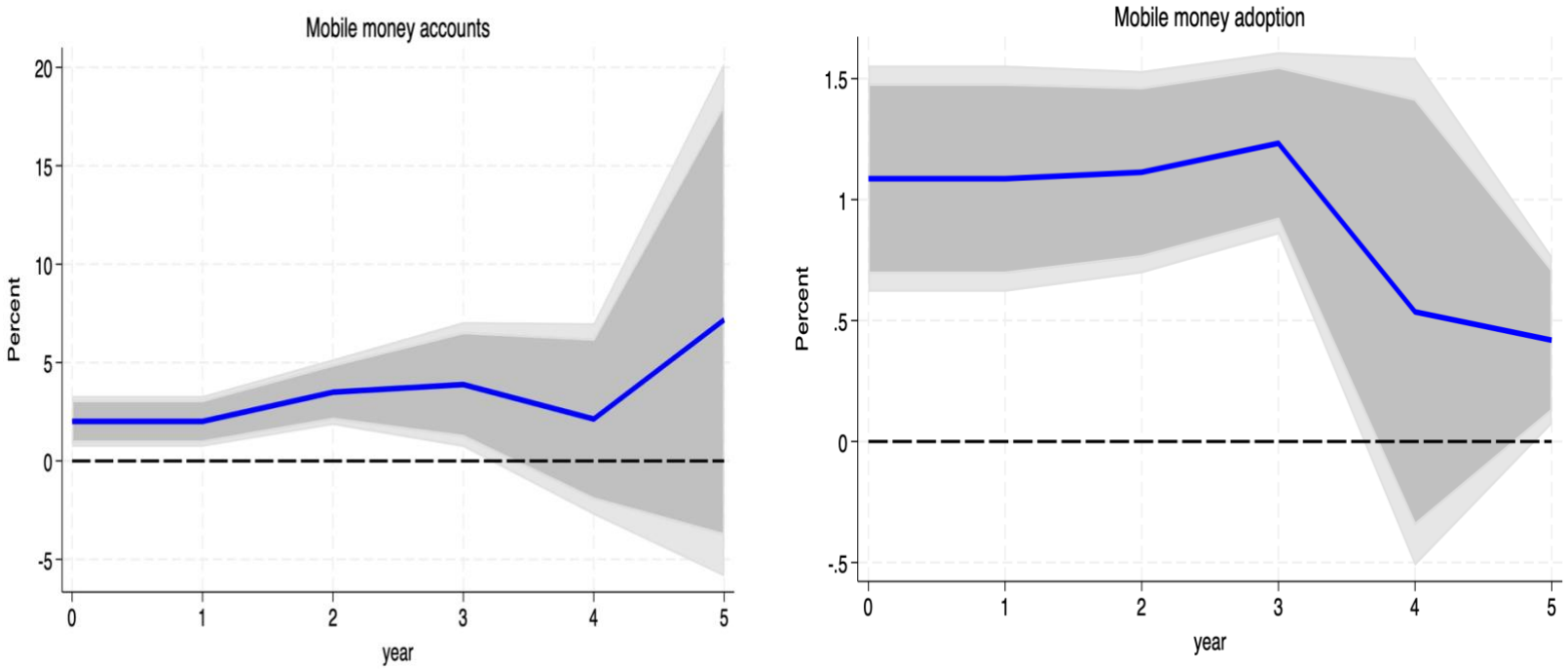


Figure II-4: Elasticity of money laundering risk in response to mobile money services adoption (Part 1)

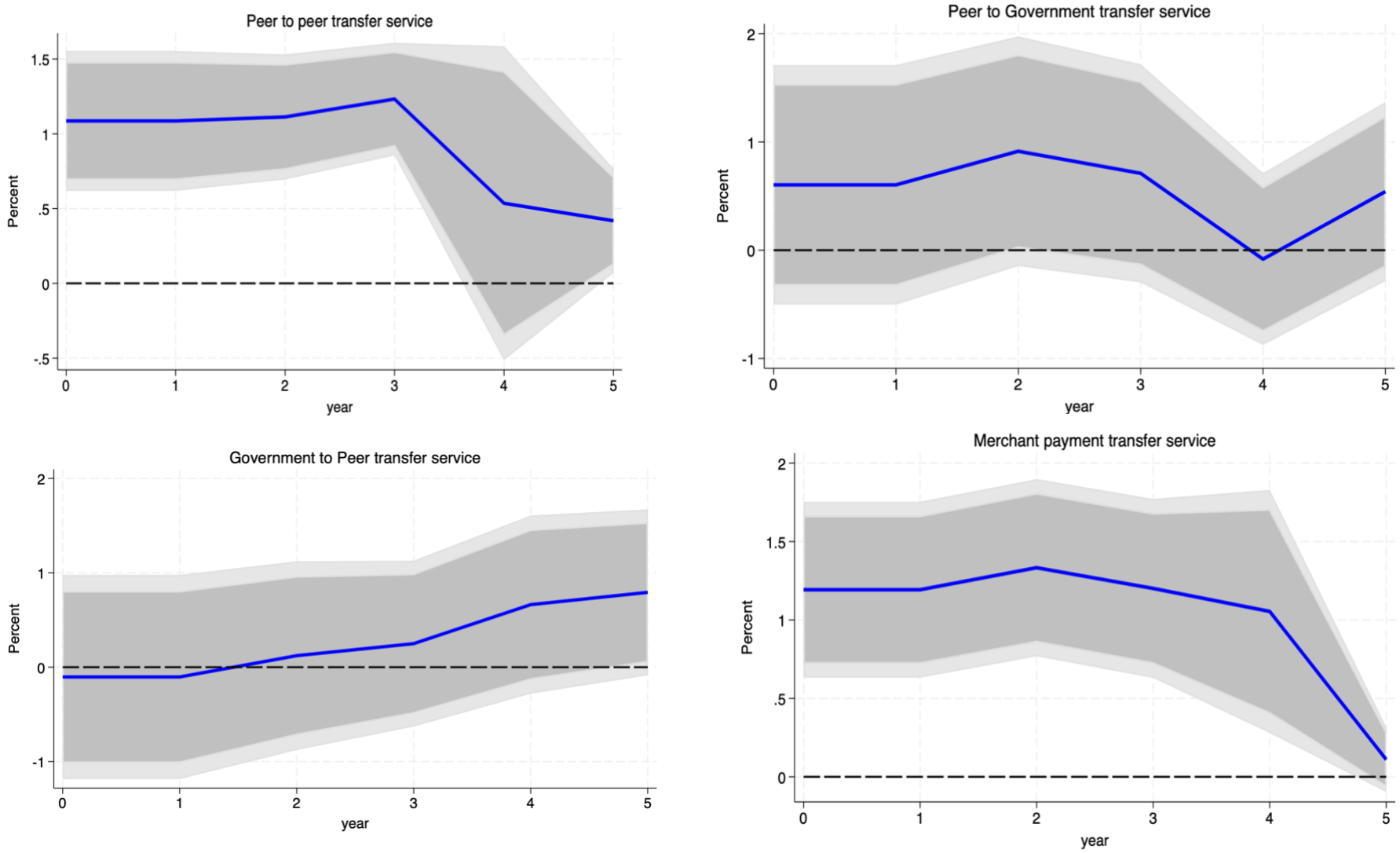
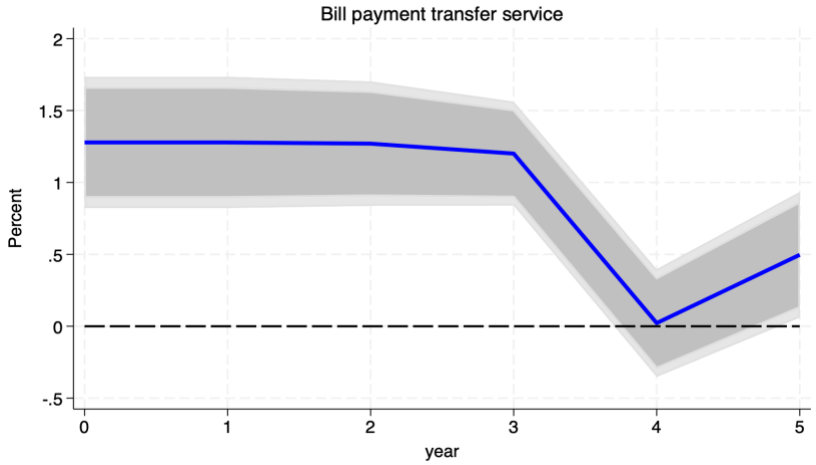
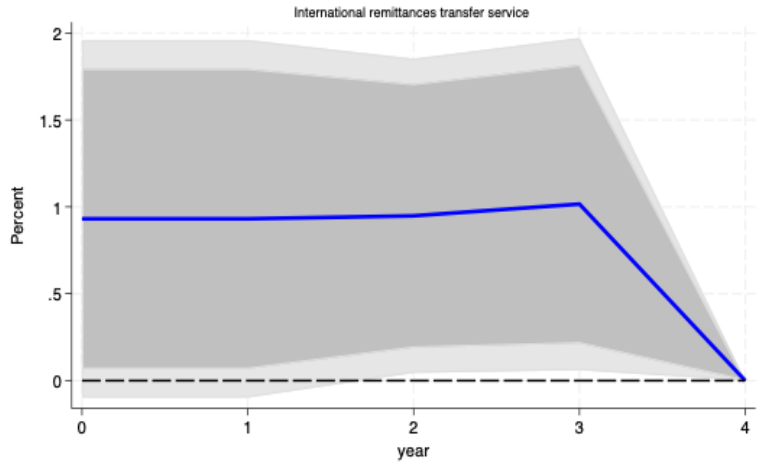
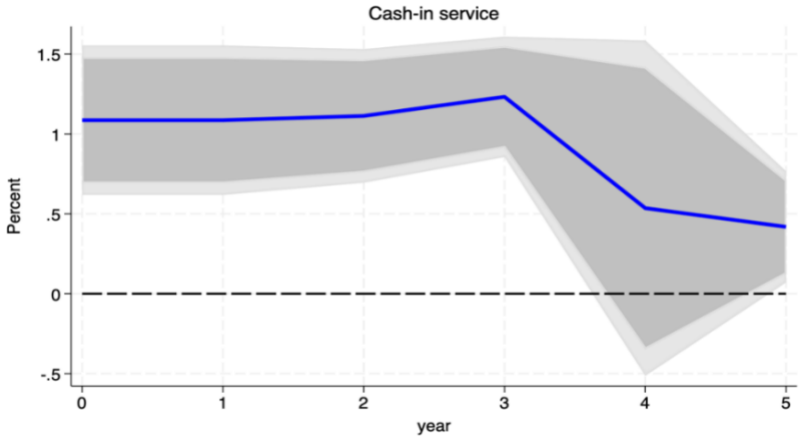


Figure II-5 : Elasticity of money laundering risk in response to mobile money services adoption (Part 2)







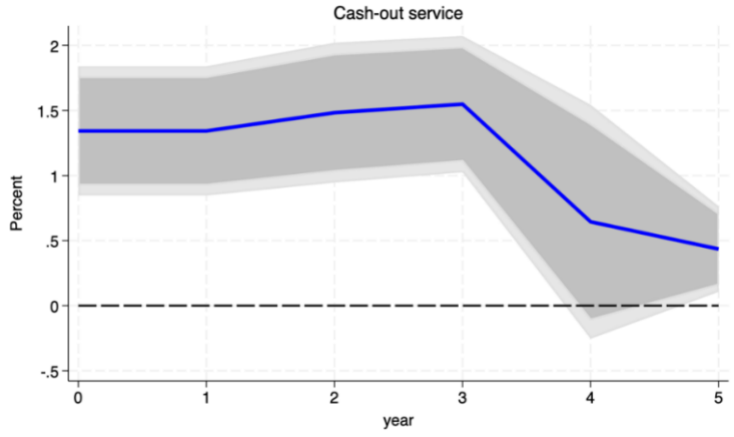


Figure II-6: Elasticity of money laundering risk in response to mobile money services adoption (Part 3)

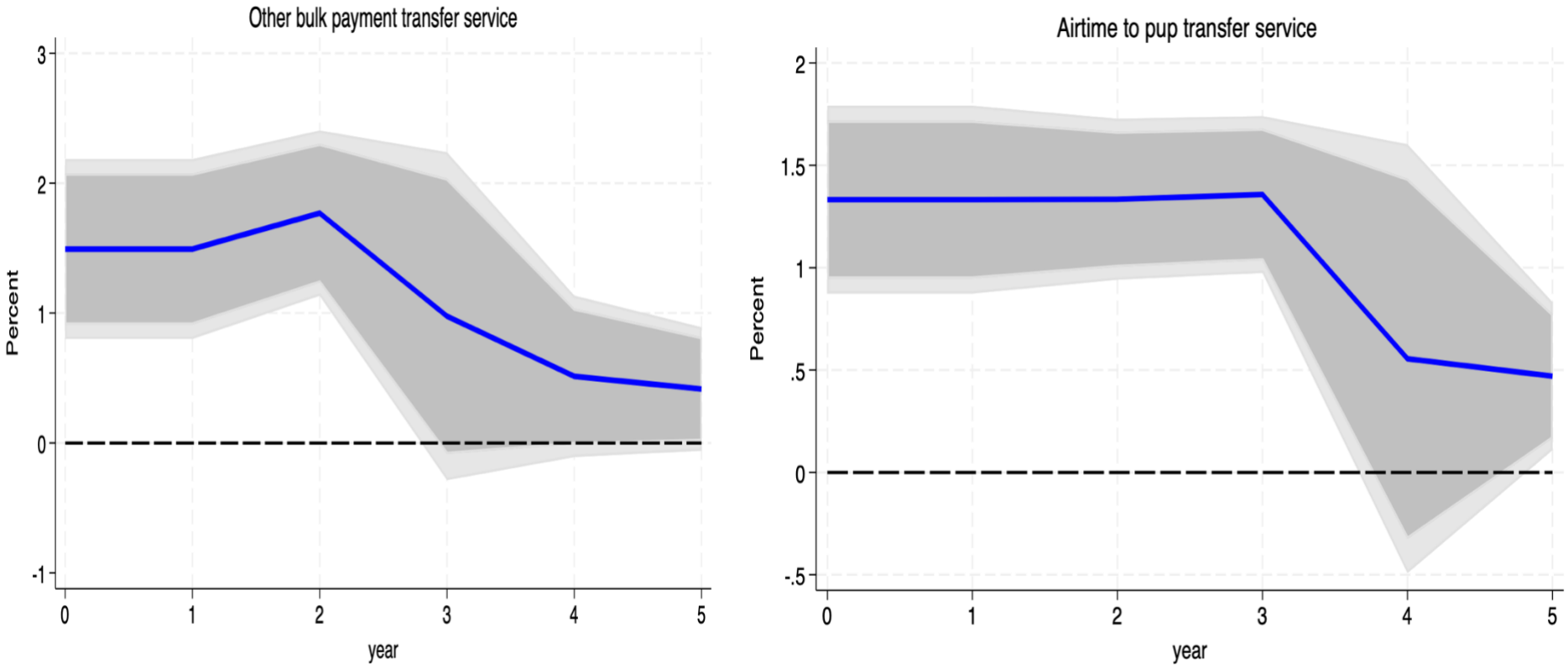


Figure II-7 : Evolution of registered mobile money accounts number one year

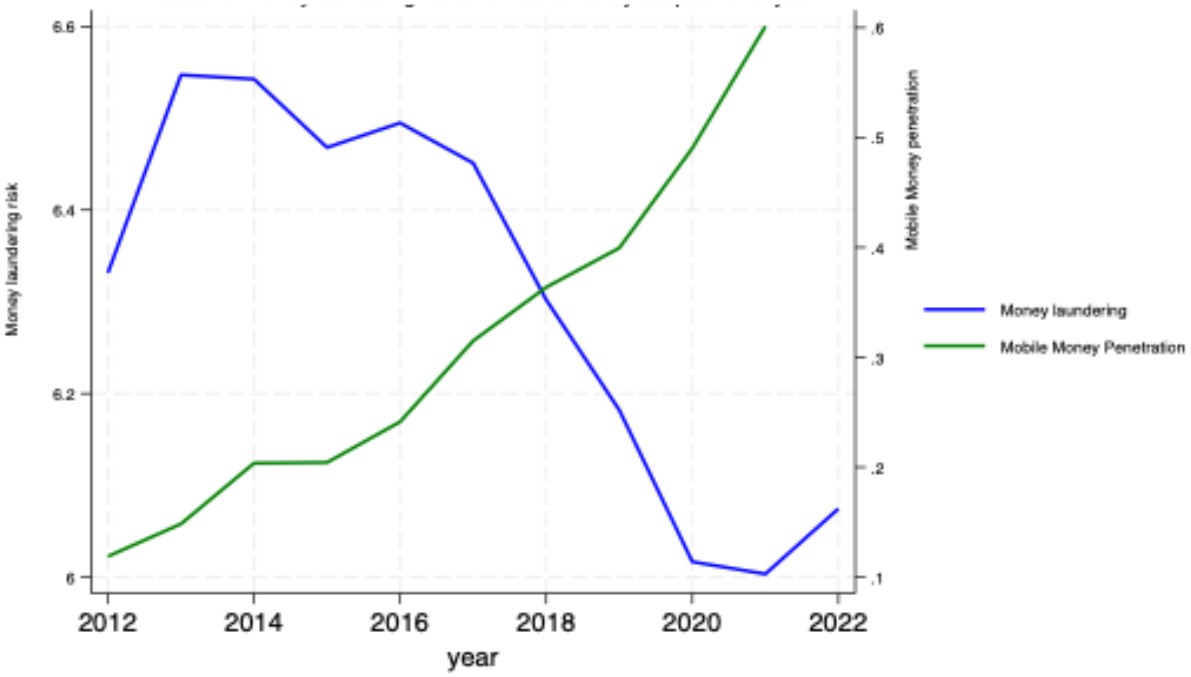
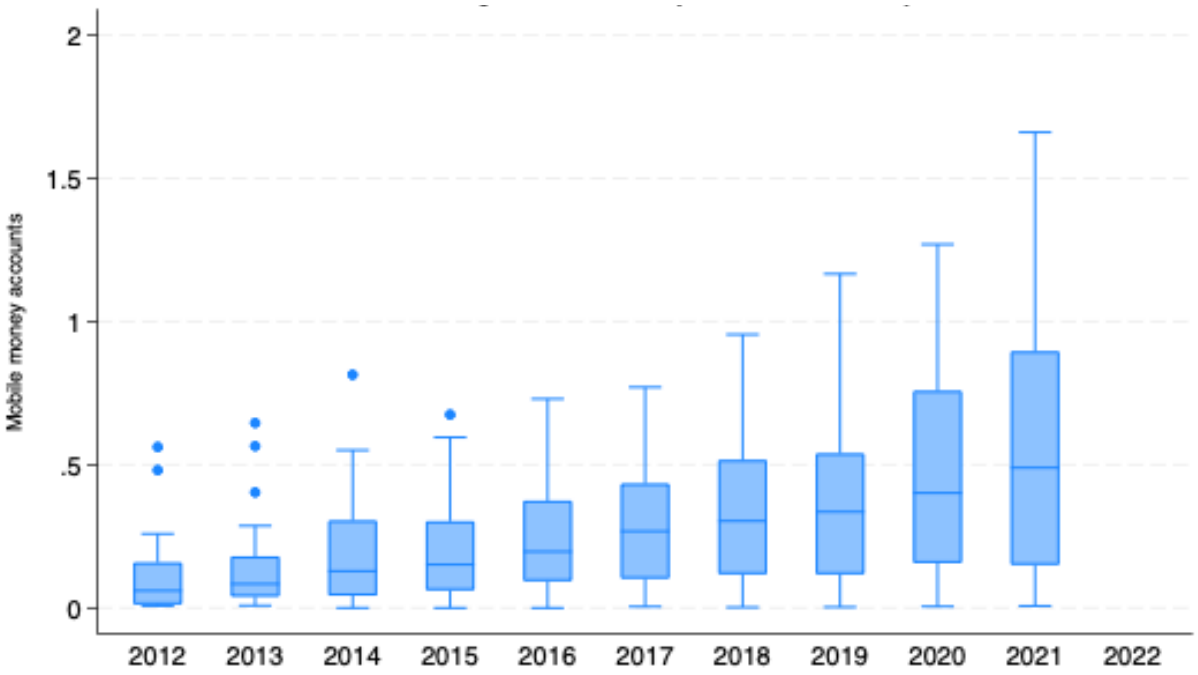


Figure II-8 : Evolution of registered mobile money accounts number over year



Appendix C : Descriptive Statistics

Table II.6 : Descriptive statistics

	Obs	Mean	Sd	Min	Max
Money laundering risk	706	6.332266	1.013974	3.13	8.54691
Mobile Money adoption	1,078	.8218924	.3827809	0	1
Mobile Money adoption(accounts)	336	.3273297	.3205977	.0000306	1.660923
P2P transfer service	1,078	.8218924	.3827809	0	1
P2G transfer service	1,078	.554731	.4972262	0	1
G2P transfer service	1,078	.2699443	.4441367	0	1
Merchant payment transfer service	1089	.7355372	.4412494	0	1
Other bulk payment transfer service	1,078	.648423	.4776843	0	1
Bill payment transfer service	1089	.7924702	.4057245	0	1
International remittances transfer service	1089	.5289256	.4993919	0	1
Cash-in service	1,078	.8209647	.3835598	0	1
Cash-out transfer service	1,078	.7949907	.4038958	0	1
Airtime to pup transfer service	1,078	.8061224	.3955176	0	1
GDP growth	885	3.419233	4.964684	-33.4928	43.47956
Capital_openness	904	.4018579	.3310978	0	1
Tax Burden	957	80.05256	8.83507	48.2	100
Debt	814	46.45044	39.48301	4.657072	399.6819
Investment Freedom	961	49.94277	18.16223	0	90
Urban population growth	890	2.792352	1.495431	-2.605206	12.77099
Mobile cellular subscriptions	968	93.71349	37.97481	7.426826	221.3088
Internet Users	934	35.47657	25.43948	1.05	347.9965
Trade of GDP	888	74.12389	39.62059	.7568755	100
ATM density	300	427.3366	1146.583	0	8630.698
Mobile Money agents density	544	32.63086	65.68673	.0505244	580
Number of Bank branches	572	2002.628	3156.945	6	15244

Table II.7: Description of variables and sources

Variable	Description	Sources
Anti-Money Laundering Index	Measures a country's exposure to money laundering risks	Basel Institute
Mobile Money System Availability	Indicates if a mobile money system is available in a country (1 = Yes, 0 = No).	GSMA
Mobile Money Account Ratio	Proportion of registered mobile money accounts to the population.	
Peer-to-Peer (P2P) Transfer Service	Availability of P2P transfer services (1 = Yes, 0 = No).	
Person-to-Government (P2G) Transfer Service	Availability of P2G transfer services (1 = Yes, 0 = No).	
Government-to-Person (G2P) Transfer Service	Availability of G2P transfer services (1 = Yes, 0 = No).	
Merchant Payment Transfer Service	Availability of merchant payment transfer services (1 = Yes, 0 = No).	
Bulk Payment Transfer Service	Availability of bulk payment transfer services (1 = Yes, 0 = No).	
Bill Payment Transfer Service	Availability of bill payment transfer services (1 = Yes, 0 = No).	
International Remittances Service	Availability of international remittance services (1 = Yes, 0 = No).	
Cash-In Service	Availability of cash-in services (1 = Yes, 0 = No).	
Cash-Out Service	Availability of cash-out services (1 = Yes, 0 = No).	
Airtime Transfer Service	Availability of airtime transfer services (1 = Yes, 0 = No).	
GDP Growth	Annual percentage change in GDP.	WDI
Trade of GDP	Trade (% of GDP)	
Urban Population Growth	Urban population growth (annual %)	
Debt	Total external debt stocks, % of GDP [External and private sector debt]	
Capital Openness	Normalized Chinn-Ito index measuring capital market openness.	Chinn-Ito
Tax Burden	Tax burden Index .	Heritage Foundation
Investment Freedom	Index measuring freedom in investment activities.	
Mobile Cellular Subscriptions	Mobile-cellular subscriptions per 100 inhabitants	ITU
ATM density	Key Indicators, Geographical Outreach, Number of registered mobile money agent	Financial Development Database (IMF)
Mobile Money agents density	Key Indicators, Geographical Outreach, Number of ATMs per 1,000 km2	
Number of Bank branches	Geographical Outreach, Number of Branches, Excluding Headquarters, Commercial banks	

Table II.8: List of countries

Afghanistan	Cook Islands	Jamaica	Nepal	South Sudan
Albania	Côte d'Ivoire	Jordan	Nicaragua	Sri Lanka
Angola	Djibouti	Kazakhstan	Niger	Sudan
Argentina	Dominican Republic	Kenya	Nigeria	Swaziland
Bangladesh	Egypt	Kyrgyzstan	Pakistan	Tajikistan
Barbados	El Salvador	Laos	Palestinian Territories	Tanzania
Belize	Ethiopia	Lesotho	Papua New Guinea	Thailand
Benin	Fiji	Liberia	Paraguay	Togo
Bolivia	Gabon	Madagascar	Peru	Tonga
Botswana	Gambia	Malawi	Philippines	Tunisia
Burkina Faso	Ghana	Malaysia	Qatar	Turkey
Burundi	Guatemala	Maldives	Russian Federation	Uganda
Cambodia	Guinea	Mali	Rwanda	United Arab Emirates
Cameroon	Guinea-Bissau	Mauritania	Samoa	Vanuatu
Central African Republic	Guyana	Mauritius	Senegal	Vietnam
Chad	Haiti	Mexico	Seychelles	Yemen
Colombia	Honduras	Morocco	Sierra Leone	Zambia
Comoros	India	Mozambique	Solomon Islands	Zimbabwe
Congo	Indonesia	Myanmar	Somalia	
Congo, Democratic Republic of	Iraq	Namibia	South Africa	

Part II: Effectiveness of Global Tax Cooperation in Limiting Tax Base Erosion

CHAPTER III : Tackling Tax Base Erosion in Developing Countries: Does Information Exchange Initiative make a difference?

A slightly different version of this chapter is published in Economics of Governance

Abstract: This study investigates how multilateral cooperation on tax information exchange affects tax revenue mobilization in developing countries. In response to global efforts to curb tax evasion, the OECD launched the Global Forum on Transparency and Exchange of Information for Tax Purposes. Focusing on its core objective of enhancing tax transparency, we analyze the impact of Forum membership on non- resource direct tax revenues in 60 developing countries from 2000 to 2020. Using a semi-parametric difference-in-differences approach, we find that membership significantly boosts tax revenues. These results are robust to alternative estimation techniques and remain consistent across disaggregated tax data. Our findings highlight the critical role of cross-border information exchange in improving transparency and strengthening domestic revenue systems, particularly where enforcement capacity is limited. By showing that cooperation enhances tax collection without compromising investment attractiveness, this study contributes to debates on international tax reform and the Base Erosion and Profit Shifting (BEPS) agenda, emphasizing the value of information sharing and capacity building for equitable tax governance.

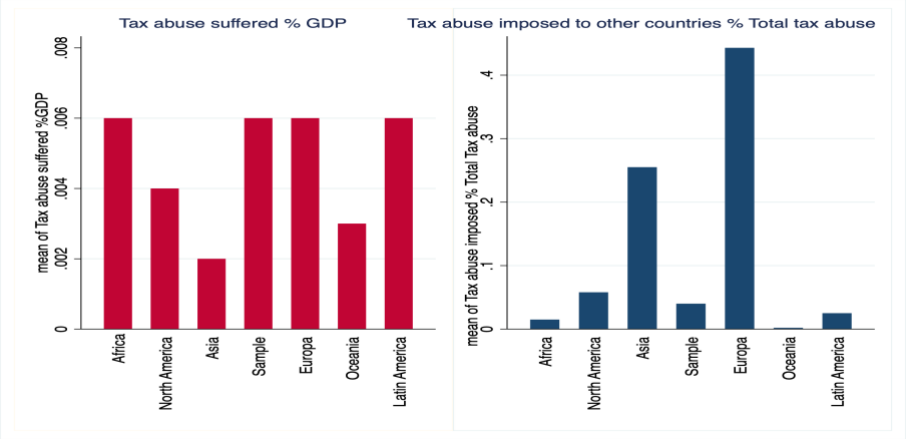
Keywords: Tax cooperation, Tax information exchange, Tax evasion, Foreign direct investment, transparency, tax revenue, developing countries.
JEL Classification: F42, H26, H73, H77, H87.

Introduction

Tax abuse—through evasion, avoidance, and other strategies to minimize obligations—remains one of the most pressing issues affecting both developed and developing countries (Spicer, 1986; Allingham & Sandmo, 1972; Marrelli, 1984; Cowell, 1985). Such practices undermine the integrity of the global financial system and erode public trust in tax institutions. Recent tax scandals have revealed that tax abuse persists as a significant and ongoing problem in the current international tax system. High-profile leaks such as Lux Leaks (2014), Swiss Leaks (2015), Panama Papers (2016), Paradise Papers (2017), Mauritius Leaks (2019), Luanda Leaks et Fincen files (2020), and Lux Letters (2021) have exposed how wealthy individuals and multinational companies use offshore structures and secret financial arrangements to avoid taxes. In 2012, the Tax Justice Network, alongside economist James S. Henry[10], estimated global tax evasion at approximately $30 trillion, with half of this wealth concentrated in the hands of just 0.0015% of the global population. Despite the development of repressive measures, the Tax Justice Network (2021) estimates in its "State of Tax Justice" report that approximately $483 billion in tax revenue is lost annually due to tax abuses by multinationals and high-net-worth individuals, with 57% of the revenue losses for developing countries. Figure 1 illustrates that, Africa and Latin America are the regions most affected by tax abuse while, conversely, contributing the least to such practices. In contrast, Europe, despite being heavily impacted by tax avoidance, also plays a significant role in enabling it through jurisdictions that facilitate aggressive tax planning.

[10] James S Henry is an American economist, lawyer, and investigative journalist specializing in capital flight, tax evasion, tax justice, and development finance. He is a founding member of the Tax Justice Network.

Figure III-1: Tax Abuse level by continent



Source: Author's construction

Abusive tax manipulation can pose a threat to state sovereignty. On the one hand, the problem of tax evasion and fraud, in addition to causing revenue losses, puts states in a weak position (Drummond et al., 2012), deteriorates the social environment, and encourages tax incivism (Kisters, 2022). Keen & Ligthart, (2006) also stressed that tax evasion affects the fairness of the tax system and facilitates the proliferation of harmful activities such as money laundering, terrorist financing, bribery, and corruption. In the case of developing countries, the phenomenon is more significant and constitutes an obstacle to the achievement of the commitments made to prioritize the mobilization of domestic resources as the primary source of development financing in Addis Ababa [11] in July 2015.

On the other hand, developing countries face a greater risk of abusive tax manipulation. Characterized by limited tax administrations (Chang et al., 2020a) and tax control systems, many countries have experienced a rise in tax evasion and avoidance, driven in part by the recent growth in foreign direct investment (FDI), the promotion of free trade, and increasing globalization. These global developments have facilitated the expansion of cross-border activities, making it more difficult for domestic tax systems, often still governed by national laws, to effectively manage taxation. Several studies have highlighted the mismatch between traditional tax governance and the evolving structure of the global economy.

[11] Through negotiations, the States participating in the Conference on Financing for Development in Addis Ababa, Ethiopia reached a historic agreement on a series of bold measures to reform the global practice of financing for sustainable development

In addition, the pioneering work of the Organization for Economic Cooperation and Development (OECD) in 1998 drew attention to the existence of harmful tax competition. Neumann et al., (2009) and Avi-Yonah, (2009) have underscored the risks of tax arrangements and revenue losses stemming from the lack of harmonization among national tax systems. In response to these challenges, the OECD proposed the creation of the Global Forum on Transparency and Exchange of Information for Tax Purposes in 2000—an initiative that, at first, received limited international support. The 2008 financial crisis, along with revelations of large-scale tax avoidance by multinational corporations, served as a catalyst for accelerating the institutionalization of the Forum and the adoption of international tax transparency standards in 2009. The main objective of the Forum is to promote tax transparency by establishing a framework for the exchange of tax-related information between domestic financial institutions, national tax authorities, and foreign tax administrations concerning cross-border taxpayer activities. Although often associated with recent reforms, the concept of exchanging tax information dates back several decades. Its formal origins can be traced to 1927, when the League of Nations' Committee on Double Taxation and Tax Evasion introduced the first international framework.

This laid the foundation for further developments, particularly with the OECD's involvement starting in 1963 and culminating in the Multilateral Convention on Mutual Administrative Assistance (MCAA) in Tax Matters, proposed in 1979 and ratified in 1987. In the U.S., high-profile tax evasion cases involving Liechtenstein's LGT and Switzerland's UBS spurred efforts to enhance cross-border transparency, ultimately leading to the introduction of FATCA[12], specific to the US states.

Unlike FATCA, the Global Forum is more ambitious and includes developing countries. While existing studies have shown that information exchange has contributed to resource mobilization for developed countries, evidenced by the modification of bank deposits and the reduction of illicit financial flows (Zucman, 2013; Johannesen & Zucman, 2014; Cobham & Janský, 2018), the impact on developing countries remains less clear. This paper aims to address that gap by analyzing how tax information exchange affects tax revenue mobilization in

[12] Foreign Account Tax Compliance Act

developing countries. This focus is particularly relevant given the distinct institutional, economic, and fiscal environments that characterize these countries.

First, the technological deficiency and the outdated organization of tax administrations create a different context for these countries. Such constraints can hinder the effective implementation of the standards set by the Global Forum. Moreover, in the absence of favorable economic conditions, tax incentives and the assurance of confidentiality for foreign taxpayers have long contributed to making these countries attractive for investment, as demonstrated by Schjelderup (2016); Sharman (2010); and Gordon (2009). Secondly, several studies (Ajayi & Ndikumana, 2014) have shown that developing countries are the most exposed to capital flight and illicit financial flows, and advocate for the exchange of information between national tax authorities as a key policy tool to mitigate this issue (Fuest & Riedel, 2010). Finally, the stagnation of official development assistance, combined with fiscal pressures arising from the COVID-19 crisis and growing development needs, underscores the urgency of finding sustainable domestic financing solutions (United Nations, 2020; IMF, 2020). The critical question in this context is whether participation in the Global Forum for transparency and exchange of information for tax purposes improves resource mobilization in developing countries.

This paper attempts to answer this question by comparing members and non-members developing countries through the information available in the Forum's annual reports using impact analysis methods. The potential impact of the Forum is twofold: it may enhance revenue generation by reducing illicit financial flows and increasing tax transparency, but it may also be influenced by FDI[13] flow reduction. To better understand this dual impact, the work of Bacchetta & Espinosa (1995) provides a useful theoretical framework, suggesting that the exchange of information between countries, while beneficial in many ways, can also generate unintended consequences. According to their game theory model, the choice to share tax information can be strategic, with both positive and negative effects.

While some argue, like Dagan (2000) that tax transparency could deter FDI, especially if capital-exporting countries are trying to avoid taxes, others, such as Johannesen & Zucman, 2014; Cobham

[13] FDI can contribute to growth, create employment, and, above all, facilitate significant technology transfer to the recipient country. They can also stimulate economic activity and create greater potential for government revenues

& Janský, 2018) highlight the potential benefits of tax transparency for FDI-receiving countries, suggesting that it can reduce illicit financial flows, attract stable investments, and boost investor confidence.

This study aims to examine the net impact of tax information exchange on tax revenues in developing countries, considering the potential adverse effects on FDI. It is one of the first empirical investigations to focus exclusively on developing countries. Given the complex institutional diversity and data constraints in developing countries, our primary goal is to provide rigorous empirical evidence on the effects of Global Forum membership on tax revenue mobilization. These findings serve as a foundation for future theory-building, helping to shape more context-sensitive models that can better capture the diverse mechanisms at play.

We apply the semi-parametric difference in difference method of Abadie (2005), adapted for panel data structure and non-randomized studies, which allows for the relaxation of parallel trend hypotheses. Using a reweighting technique, this method estimates the effects based on observable characteristics after controlling for the country and time-specific factors without imposing restrictions on functional forms compared to standard regression methods. It adjusts for differences between groups on observable characteristics correlated with the propensity score and enables evaluation of the treatment effect linked to membership in the Forum. In our case, where the treatment start date corresponding to membership of the global information exchange forum is not the same for all countries, it also reduces unobserved and time-varying differences between early and late member countries that can confound our results.

In robustness checks, we employ the difference-in-differences with multiple time periods proposed by Callaway and Sant'Anna (2021) which has the advantage of better handling dynamic contexts. Additionally, we apply alternative matching methods and Inverse Probability Weighting to address potential selection bias and verify the consistency of our findings across various specifications. To further validate the results, we conduct a sensitivity analysis, testing the stability of the outcomes under various assumptions and model specifications.

This study also considers the impact analysis of the application of each of the two primary standards of the Global Forum and evaluates the effect on disaggregated revenues. The main finding in this paper indicates that Global Forum membership significantly improves non-resource direct tax revenue mobilization by about 2.68 percentage points on average. We also remark a significant

effect on corporate income tax revenues of 2.49 percentage points and personal income tax of 0.94 percentage points on average.

We demonstrate that our finding is particularly robust to different specifications and the use of additional identification strategies. Moreover, we find that countries implementing the Global Forum's Exchange Of Information on Request (EOIR) Standard presents improvements in its tax revenue mobilization. that applies the EOIR Standard of the global forum also experience improvements in tax revenue mobilization. The analysis of main transmission channels supports our hypothesis and presents expected effects. Our results are in line with the theoretical model of Bacchetta & Espinosa (1995) which indicates that the choice of sharing tax information can generate negative effects but can also provide positive effects that counterbalance the negative effects. The rest of the paper is organized as follows: after a review of the existing literature on the issue in section 2, section 3 presents the data and stylized facts, section 4 outlines the methodology used, section 5 discusses the results obtained, section 6 explores the effects through the primary transmission channels, section 7 presents robustness checks, and the last section concludes.

Literature review

The literature on information exchange for tax purposes is broad and multifaceted. We focus on contributions that are most relevant for understanding the fiscal outcomes of tax information exchange.

A first strand of research examines the determinants of countries' willingness to cooperate. An examination of the literature reveals that countries' engagement in tax information exchange agreements is motivated by a combination of strategic, economic, and regulatory factors. Early foundational work includes Bacchetta & Espinosa (1995) and Huizinga & Nielsen (2003), who developed game-theoretical models to explain the strategic incentives behind cooperation. Bacchetta & Espinosa (1995) argue that governments weigh the temporary benefits of withholding information against the long-term costs of potential retaliatory tax policies. Similarly, Huizinga & Nielsen (2003), further emphasize that cooperation is driven by the desire to monitor taxpayers' cross-border activities. Key factors encouraging cooperation include bank secrecy, reciprocity, tax rates, and the interaction dynamics between governments. Real-world case studies provide

empirical support for these theoretical insights. Voget (2009), using a Heckman Tobit model on information sharing between the Netherlands and 81 partners (1992–2005), finds that high tax rates, significant capital abroad, and public fund costs incentivize countries to sign such agreements. Ligthart et al (2011), analyzing double taxation treaties among 189 countries, identify personal tax rates, withholding tax rates, and direct investment stocks as positive determinants of treaty formation. Bilicka & Fuest (2014) examine 565 Tax Information Exchange Agreements (TIEAs) signed by tax havens and find that bilateral economic ties (portfolio investment, FDI, and trade) significantly increase the likelihood of agreement. Finally, Lesage et al. (2020) analyze BRICs[14] countries and conclude that their motivations are shaped by exposure to illicit flows but constrained by sovereignty concerns.

Building on these determinants, a second strand of research investigates the consequences of information exchange for fiscal outcomes. While some studies such as Hanlon et al. (2015), De Simone et al. (2020) show that tax information exchange agreements reduce investments in tax havens, other studies highlight more complex relationships. Indeed, Blonigen & Davies (2004), use a conditional multinomial logit model on 88 countries (1980–1999) and find adverse effects of tax treaties on FDI flows, attributing this to increased investment uncertainty. They argue that while tax agreements may facilitate FDI, they can also deter it due to enhanced information exchange between tax authorities, which limits opportunities for tax avoidance.

An alternative explanation is provided by Kinda and Tagem (2024), who investigate the role of treaty network centrality in resource-rich developing countries. Using a network analysis approach, they show that countries highly embedded in treaty networks, often acting as conduits for treaty shopping, experience lower revenue mobilization from natural resources. Their findings suggest that the negative effects of tax treaties on investment or revenues may stem not only from uncertainty but also from structural exposure to treaty abuse, which can erode the domestic tax base.

[14] Brazil, Russia, India, China, South Africa

To contribute to this broad literature, this study assesses the overall impact of tax information exchange within the institutional framework of the Global Forum[15] on tax revenue mobilization in developing countries. While previous literature has primarily focused on developed economies and tax havens, this paper fills a gap by providing one of the first empirical analyses centered exclusively on developing countries. Employing a semi-parametric approach, it captures the non-linear and heterogeneous effects of international tax cooperation, overcoming limitations of traditional Difference-in-Differences (DiD) models that assume uniform treatment effects. Drawing on Abadie (2005), the methodology offers flexibility in modeling varying country-specific impacts over time. Moreover, this study also contributes to current debates on international tax reforms. By shedding light on how membership in international tax forums like the Global Forum on Transparency and Exchange of Information can enhance tax revenue mobilization, it underscores the importance of information exchange for achieving global tax reform objectives. As the international community pushes for measures like beneficial ownership disclosure and a global minimum tax, the study highlights the role of data collection and sharing in achieving these goals. This empirical evidence supports the notion that strengthening international tax cooperation can play a critical role in curbing tax avoidance and base erosion, aligning with ongoing efforts to reform global tax rules.

Analytic framework

This study is grounded in a framework that connects international tax cooperation, particularly through participation in the Global Forum, to domestic resource mobilization in developing countries. The central hypothesis is that information exchange agreements, by increasing transparency and curbing illicit financial flows, can strengthen tax compliance and enhance tax revenue. The framework draws on existing theoretical and empirical insights to identify the channels through which Global Forum membership can influence domestic tax revenue. As illustrated in **Figure 2**, we identify **three primary causal mechanisms** linking Global Forum participation to improved tax mobilization:

[15] Global Forum on Transparency and Exchange of Information for Tax Purposes

- **Reducing illicit financial flows:**

The Global Forum fosters a standardized framework that encourages tax information exchange among member countries, thereby promoting transparency, accountability, and regulatory compliance. This institutional environment is expected to reduce illicit financial flows[16] by curbing corruption, opacity, profit shifting and opportunities for tax evasion. Reuter (2017) underscores that improving transparency and governance is essential to addressing the complex drivers of illicit financial activity.

- **Capacity-Building and Institutional Strengthening**:

Participation in the Global Forum is often associated with peer reviews, legal reforms, and technical support (OECD, 2011). These processes contribute to strengthening tax administrations by improving audit capabilities, enforcement mechanisms, and overall institutional capacity, which in turn enhance domestic revenue mobilization (Mascagni, 2018).

- **Compliance Spillovers and Reputational Effects :**

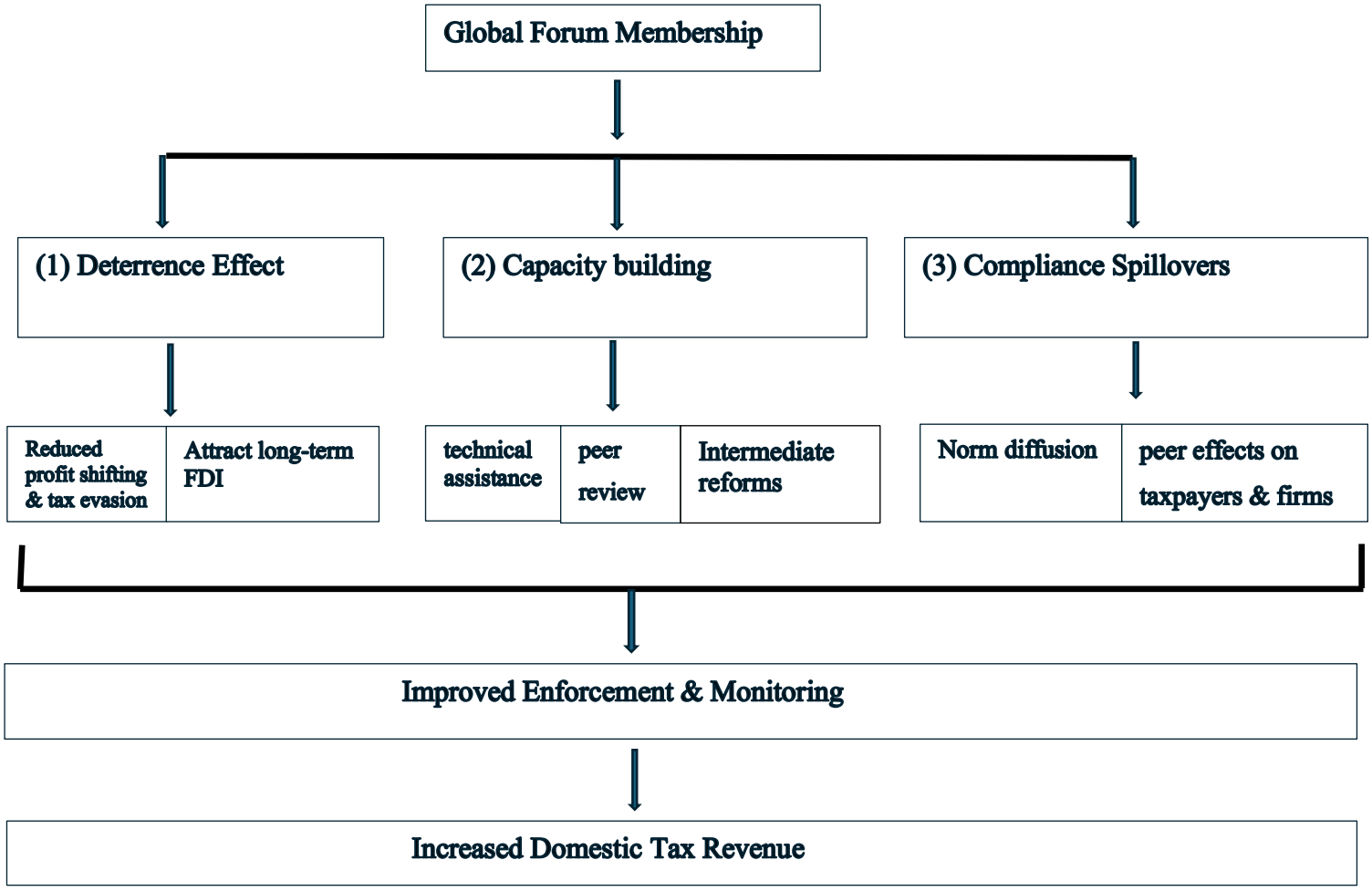
Information exchange can influence FDI patterns in opposing ways. On one hand, as Davies et al. (2009) argue, it may deter tax-motivated investment by constraining tax arbitrage opportunities and increasing disclosure risks. On the other hand, improved transparency and institutional credibility can enhance investor confidence and attract more stable, long-term capital. Countries may also benefit from reputational gains at the international level, further improving their attractiveness. Prior research, including Gropp & Kostial (2001), has shown that FDI, particularly when accompanied by strong governance, can contribute significantly to tax revenue mobilization.

To test these mechanisms, we employ a semi-parametric Difference-in-Differences method to estimate the effect of Global Forum participation on both total and disaggregated direct tax revenues, while controlling for country-specific characteristics, timing of implementation, and potential selection bias. This approach allows us to capture the heterogeneity in responses across

[16] As highlighted by Combes et al.(2019), adopting measures to combat illicit financial flows is an effective way to improve tax revenue mobilization in developing countries.

countries and over time, providing a nuanced understanding of the effectiveness of tax information exchange in the developing world.

Figure III-2 Conceptual Framework: Channels through which Global Forum Membership Affects Domestic Tax Revenue



Data and Stylized facts

Data

The analysis is based on a panel of 60 countries covering the period from 2000 to 2020. The selection of these countries was based on their level of development and constrained by data availability. This sample contains 42 developing countries that joined the Global Transparency Forum on different dates and 18 that are not members until 2020. Among these countries participating in the Forum,26 are willing to apply standard 1 of the Forum, which corresponds to the exchange of request information, and 10 for standard 2, which corresponds to the automatic exchange of information. We use the direct tax revenue as a percentage of GDP from the Government Revenue Dataset (GRD) developed by UNU-WIDER as the dependent variable in our analysis (2021). This database offers the advantage of distinguishing between these different tax components. In this study, we focus specifically on non-resource direct tax revenues, excluding social contributions. This choice is guided by several considerations. First, the Global Forum's initiatives have primarily targeted direct rather than indirect taxation. Second, existing assessments and empirical evidence indicate that the most significant losses from tax evasion stem from direct tax revenues, as illustrated in Figure 2. Finally, revenues derived from natural resources are subject to high price volatility and can mask the actual performance of tax systems in mobilizing stable, broad-based revenues. As highlighted by Baunsgaard & Keen (2010), non-resource tax revenues are more sensitive to policy changes and administrative improvements, making them a more relevant indicator for assessing the impact of tax information exchange frameworks.

Our primary variable of interest is a dummy taking the value 1 from the year in which a country joins the Global Forum and 0 otherwise (data available on the OECD's Global Forum on Transparency and Exchange of Information for Tax Purposes website)[17]. To refine our analysis, we examine the impact of the implementation of Forum's two primary information exchange standards. Thus, the variable of interest will take the value 1 if the country implements the EOIR and 0 otherwise. Similarly, it will take the value 1 if the country adopts the AEOI, and 0 otherwise. The data on the control variables used in this study come from various sources (Table

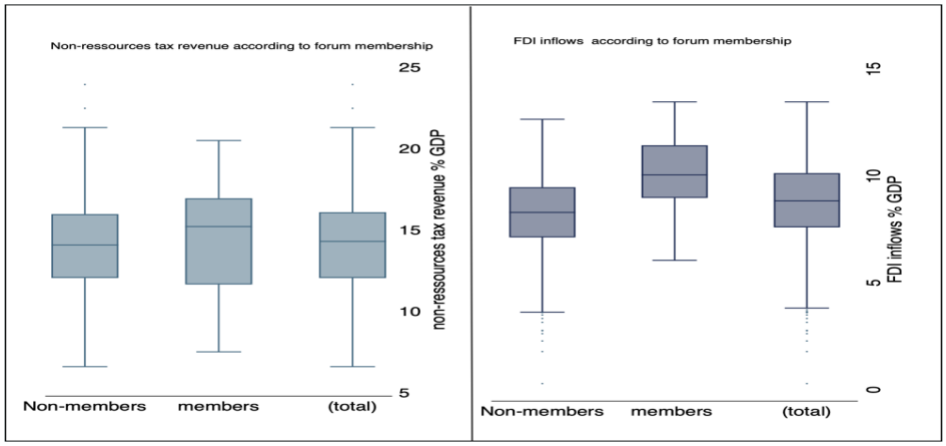
[17] https://www.oecd.org/fr/fiscalite/transparence/

13), including the World Development Indicators, the World Bank's World Governance Index, the ICTD (International Center for Tax and Development), the Heritage Foundation database, the International Tax Institutions (ITI) Database and the UNCTAD database of the United Nations Conference on Trade and Development.

Stylized facts

First, we compare the level of revenue and FDI between countries that are members of the transparency and information exchange forum and those that are not. Looking at figure 3,
we observe that Forum members tend to have a higher average level of non-resource tax revenue compared to non-members. The same trend is evident for net FDI flows. When comparing the median revenue and FDI of the sample, we also find that Forum members exhibit higher median levels than the overall sample. A two-sample t-test confirms the findings, showing that the difference is statistically significant. This test presents a mean difference of 2.07 percentage points for tax revenue. However, no significant difference was found for FDI, suggesting that Forum membership does not have a clear or consistent impact on FDI flows between member and non-member countries.

Figure III-3: Tax revenue and FDI level according to forum membership



Source: Author's construction

Empirical Approach

This study aims to assess the causal impact of international cooperation for tax purposes on tax revenue mobilization in developing countries. Specifically, we focus on the case of the Global Forum for Transparency and Exchange of Information for Tax Purposes as an example of such international cooperation. The primary challenge of this analysis is establishing a causal link between a country's membership in this forum and its subsequent tax revenue mobilization. In this context, we treat a country's membership in the Global Forum as the treatment, where membership is defined at a given date. To conduct the analysis, we divide our sample into two subgroups, the treatment group, and the control group. The treatment group corresponds to countries that are members of the Forum, and the control group to the non-member countries of the Forum.

In the literature, various impact assessment methods are used, each with its own strengths, weaknesses, and underlying assumptions. Like many studies on international cooperation for tax information exchange, our study faces challenges related to endogeneity and the difficulty of constructing a perfect counterfactual.

Previous studies have addressed these issues using various methods, such as the Heckman (1979) two-step estimator or the Prais-Winsten method for panel data (Hanlon et al., 2015). Other studies also use conventional matching methodologies like the difference in difference method (Lesage et al., 2020; Braun & Weichenrieder, 2015; Beer et al. 2019). Following this approach, in our study, we apply the difference-in-differences estimator to assess the impact of membership in the Global Forum by comparing the changes in tax revenue over time between the treated group (member countries) and the control group (non-member countries). This method allows us to account for systematic differences between the two groups, control for biases due to omitted variables (Wan et al., 2019), and effectively address endogeneity concerns (Meyer, 1995).

In its classic form, the difference-in-differences model involves two periods and two groups. The first period is the pre-treatment period, when no country is a member of the Forum, and the second period represents the post-treatment period, when some countries have become members (treated group) and others have not (control group). To estimate the treatment effect of Forum membership, we rely on the parallel trends assumption, which posits that, in the absence of treatment, the treated and control countries would have followed parallel trends over time.

However, in the case of our study, we cannot ensure the validity of this hypothesis, as illustrated in figure 3. This limitation could compromise the reliability of the traditional difference-in-differences estimator in accurately capturing the causal effect of Forum membership on tax revenue mobilization. Fortunately, more recent methodological developments have addressed these challenges. One of the most notable contributions is the semi-parametric difference-in-difference method proposed by Abadie (2005).

The semi-parametric difference in difference method offers key advantages over traditional DiD approaches. It employs a reweighting technique that adjusts for imbalances in observable baseline characteristics between treated and untreated groups. By relying on the propensity score to balance covariates, this method accounts for systematic differences that could bias treatment effect estimates. This method is well-suited for studies like ours, where membership in the Global Forum is not randomly assigned. This identification strategy corrects for non-random selection by considering differences between member and non-member countries that may affect results. Notably, this approach does not rely on the strong assumption of conditional independence or require strict parallel trends, making it more robust in contexts where these assumptions are questionable. It is also more adapted to the panel data structure and helps mitigate unobserved, time-varying heterogeneity between early and late adopters, which is an important feature in our context, where countries joined the Global Forum at different points in time. Another key benefit of this method is its flexibility, as it does not require repeated observations for the same unit in every period and allows for parsimonious parametric estimation of the average treatment effect on the treated (ATT) as a function of selected covariates.

According to this method, the ATT is estimated in three steps:

- First, it calculates the evolution of outcomes over time for each unit.
- Second, it estimates the probability of being treated for each unit, which it uses to weigh each the units.
- Finally, it compares the weighted evolution over time between treated and untreated groups.

The Absid command developed by Houngbedji (2016) makes it possible to execute all these steps at once.

Following recent studies using this methodology (Wu et al., 2023; Muganyi et al., 2021; Nenavath, 2022; Beuchert et al., 2018) we then assess the effect of the global forum for transparency and exchange of information for tax purposes membership on tax revenue's mobilization in developing countries.

The average treatment effect (ATT) of participating in the Forum can then be expressed through the following equation:

$$ATT\{Y\} = E(Y_{1t}|GFA = 1) - E(Y_{0t}|GFA = 1) \quad (1)$$

Under key assumptions

$$E(Y_{0t} - Y_{0b}|GFA_t = 1, x_b) = E(Y_{0t} - Y_{0b}|GFA_t = 0, x_b) \quad (2)$$

$$P(GFA_t = 1) > 0 \qquad and \quad \pi(x_b) < 1 \quad (3)$$

According to equation 1, each unit (country) has two potential outcomes: Y_1t and Y_0t. Y_1t represents the tax revenue outcome if the country receives the treatment (i.e, becomes a member of the Forum) by time t and Y_0t is the country does not receive the treatment(i.e, remains a non-member) at time t. The variable GFA_t is a dummy indicating membership in the Global Forum, taking the value of 1 if the country is treated by time t and 0 otherwise. At baseline b, no country is treated.

We acknowledge that other factors may also affect tax revenues for both the treated and control groups, potentially influencing their trends. To mitigate this, the vector xb includes a range of control variables associated with both the likelihood of Global Forum membership and the evolution of tax revenue mobilization. These covariates account for time-varying confounders, allowing for a more accurate comparison between treated countries and their most similar counterparts. They include GDP per capita, tax burden, financial development, macroeconomic indicators (such as inflation), various anti-avoidance reforms (including Transfer Pricing legislation, the General Anti-Avoidance Rule, and the Thin Capitalization Rule), tax

administration reforms (such as the High Net-Worth Individuals Program, the Large Taxpayer Office program, the Simplified Income Tax Regime, Online tax payment services, the Cooperative Compliance Approach, and the Administrative Investigation Service), as well as institutional quality indicators (including Political Stability, Rule of Law, Regulatory Quality, Voice and Accountability, Control of Corruption, and Government Effectiveness).

The selection of these variables is essentially based on the literature. Bacchetta & Espinosa (2000) highlight that GDP per capita, income tax rates, and tax authority control encourage countries to sign information exchange agreements, which likely influence their decision to join the Global Forum for Transparency and Exchange of Information for Tax Purposes and their capacity for tax revenue mobilization. Similarly, Davoodi & Grigorian (2007) find that institutional quality enhances transparency, suggesting that countries with institutional improvements are more likely to join the Forum and improve tax collection. Voget (2009) argue that higher tax burdens and income tax rates increase the risk of tax evasion, which can implicitly motivate countries to engage in information exchange agreements and strengthen tax revenues.

Capasso & Jappelli (2013) show that financial development contributes to reducing tax evasion by improving access to taxpayer information, thereby supporting the implementation of EOIR and AEOI standards. Internal tax administration reforms, such as the modernization of systems, adoption of risk-based compliance approaches, and digitalization of tax services, can also influence a country's decision to join the Global Forum. They reflect a government's broader commitment to transparency and cooperation. Minea & Villieu (2009) add that effective inflation targeting fosters improved governance, which may also increase the likelihood of Forum membership. We mitigate selection bias by comparing treated and control countries with the most similar observed characteristics. To estimate the ATT, we construct the propensity score $\pi(xb)$ summarizing all relevant information from the covariates. This score is obtained via a first-stage regression of the dummy variable "GFA" on the vector X=x. Countries with higher propensity scores—indicating a higher likelihood of treatment—are given greater weight in the analysis. To respect the hypothesis given by equation 3, we discard any propensity scores lower than 0 and higher than 1.

The semiparametric difference-in-difference estimator can finally be rewritten as

$$\text{ATT} = \left(E \frac{Y_t - Y_b}{P(GFA_t=1)} . \frac{GFA_t - \pi_{(X_b)}}{1 - \pi_{(X_b)}} \right) \quad (4)$$

$$\text{ATT}\{\text{Y}\} \equiv E\{Y_{1t} - Y_{0t} | X = x, GFA\} \quad (5)$$

To verify the robustness of our results, we apply alternative methods of Difference-in-Differences with multiple time periods as proposed by Callaway & Sant'Anna (2021).

This approach is well-suited for analysis with staggered treatment adoption and varying treatment timings. It allows for more flexible identification in settings with staggered treatment adoption, accounting for treatment effect heterogeneity and enabling better control of temporal effects and the evaluation of dynamic treatment impacts over time. In addition, to test the stability and consistency of our findings, we also apply several matching methods, including Inverse Probability Weighting (IPW), Inverse Probability Weighting Regression Adjustment (IPWRA), Augmented Inverse Probability Weighting (AIPW), and Propensity Score Matching (PSM) which also reduce selection bias and strengthening causal inference. Unlike our semi-parametric approach that computes the ATT directly on Stata, these matching methods enable us to observe the main factors determining a country's likelihood to join the Global Forum. As detailed in table 12 in the Appendix, most factors are positively associated with Forum membership, while inflation and political stability appear to reduce the likelihood of joining. The counterintuitive result for political stability may reflect weaker reform incentives in stable regimes, where governments face less pressure to enhance credibility or attract international support. Alternatively, it may suggest institutional resistance to external scrutiny in politically entrenched systems (Cazdow et al., 2023). These reforms signal a commitment to transparency and improved governance, making forum membership a natural complement to domestic efforts. As noted by IMF (2023), countries that enhance their administrative capacities are better positioned to engage in international tax cooperation frameworks. We further conduct a placebo test to ensure that the observed effects are not driven by random fluctuations but truly reflect the impact of Forum membership. Moreover, extensive sensitivity analyses and heterogeneity analyses are performed to check the stability of

our results across different model specifications and sub-samples, which reinforces the credibility of our conclusions.

Estimation Results

Results of treatment effects on direct tax revenues excluding resource revenues

We estimate the treatment effect of Global Forum membership by comparing member countries to non-member countries. Tables 1 through 5 present the results across various model specifications. Column (1) reports the baseline specification, which includes country and year fixed effects but excludes control variables. Column (2) adds key control variables, Tax Burden, Transfer Pricing legislation, Thin Capitalization rules, and GDP per capita, without including fixed effects. Column (3) retains these variables while incorporating country-year fixed effects. Columns (4), (5), and (6) build on the specification in column (3) by sequentially adding the General Anti-Avoidance Rule, the Financial Development Index, and inflation, respectively.

Table 1 presents the ATT associated with membership in the Global Forum. The estimated ATT remains positive and statistically significant across all specifications, indicating that member countries can mobilize more tax revenue than non-member countries. The estimated gains range from 1.89 to 3.06 percentage points of tax revenue as a share of GDP. These findings support theoretical expectations and align with evidence from Global Forum progress reports and broader stylized facts. For example, African countries have identified substantial additional revenue since 2009 through improved tax compliance enabled by information exchange mechanisms. In Latin America, a significant amount of additional tax revenues has been reported from 2014 to 2020. These results underscore the tangible revenue gains achieved through commitment to international tax cooperation and further reinforce the credibility of our estimated treatment effects.

Several factors may explain the observed effect. Membership in the Forum enhances transparency through commitments to implement standards and participate in the peer review process, which may improve domestic legislative frameworks. Additionally, it strengthens the negotiating capacity of developing countries, enabling them to secure more favorable information exchange agreements.

Membership also provides a platform for participation in the Forum's decision-making processes, which are based on the consensus principle, and fosters a collaborative environment that allows the sharing of best practices and experiences among member countries. This, in turn, enhances their efficiency, enabling them to anticipate challenges and adopt solutions based on the experiences of others. Furthermore, membership offers support and guidance from the Forum's Secretariat and its partners, including training and tailored assistance.

Moreover, membership increases a country's international visibility and reputation, making it a more attractive jurisdiction for business and investment. This increased visibility can positively influence the economic environment, leading to further tax revenue mobilization. Another possible explanation is the deterrent effect of membership. By joining the Forum, countries signal their commitment to combating tax evasion and avoidance, which can discourage firms from engaging in such behaviors, due to the increased likelihood of scrutiny through information exchange agreements. It is also essential to note that the commitment to cross-border transparency and the related reforms may also strengthen tax compliance at the national level, thereby contributing to explain the observed results.

Table III.1: Effect of Global Forum Membership on Non-Resource Direct Tax Revenues

Treatment variable: GFA	Outcome: non-resource direct tax revenues in % of GDP					
	(1)	(2)	(3)	(4)	(5)	(6)
ATT	2.3951***	1.8960***	2.6819***	3.0232***	2.9913***	3.0602***
	(0.2253)	(0.2476)	(0.2864)	(0.2180)	(0.2370)	(0.2415)
Observations	660	814	566	456	454	433
Country FE	Yes	No	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	Yes	Yes	Yes

This table analyzes the effect of Global Forum membership on non-resource direct tax revenues. Each column presents estimates from a different specification. Column (1) presents the baseline model without control variables. Column (2) adds controls for Tax Burden, GDP per capita, Transfer Pricing Legislation, and Thin Capitalization Rule. Column (3) adds country and year fixed effects to the specification used in Column (2). Columns (4) to (6) sequentially add the General Anti-Avoidance Rule, Financial Development Index, and Inflation, respectively.
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Treatment effect of forum membership on disaggregated direct tax revenues

As highlighted in the stylized facts, a substantial portion of revenue losses in developing countries stems from income taxes. We therefore disaggregate direct tax revenues and estimate the ATT of Global Forum membership on corporate and personal income tax revenues as a share of GDP. As reported in Table 2, Forum membership is associated with an average increase of 2.49 percentage points in corporate income tax revenues and 0.94 percentage points in personal income tax revenues**.** The stronger effect on corporate taxes compared to personal income taxes can be attributed to several factors. Multinational corporations engage in complex tax avoidance strategies like profit-shifting and transfer pricing, which often span multiple jurisdictions, making them more susceptible to international information exchange efforts. These agreements provide transparency, helping tax authorities detect and combat tax avoidance. Personal income tax evasion, in contrast, tends to be more localized. Underreporting of income or over-claiming deductions are primarily addressed through internal audits, which are less influenced by international cooperation. Additionally, international frameworks, such as the BEPS project and the Global Forum on Transparency, have focused more on corporate tax compliance, introducing mechanisms like Country-by-Country Reporting that specifically target corporate tax evasion. Corporations are also more exposed to reputational risks and regulatory scrutiny, further incentivizing compliance with international tax standards. Voluntary disclosure programs have been particularly effective for corporations, as they often involve complex offshore operations that benefit from information exchange. Moreover, corporations are subject to audits by multiple tax authorities across different jurisdictions, making it easier for authorities to track financial activities and identify discrepancies. Personal income tax evasion is, however, harder to detect through such international mechanisms.

Table III.2: Effect of Global Forum Membership on Non-Resource Corporate Income Tax Revenues.

Treatment variable: GFA	Outcome: corporate income tax revenues in % of GDP					
	(1)	(2)	(3)	(4)	(5)	(6)
ATT	2.2087***	1.9887***	2.5548***	2.7072***	2.7051***	2.8276***
	(0.2498)	(0.3126)	(0.2516)	(0.2740)	(0.2763)	(0.2715)
Observations	504	641	432	342	342	342
Country FE	Yes	No	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	Yes	Yes	Yes

This table analyzes the effect of the global forum for transparency and exchange of information for tax purposes membership on non-resource corporate income tax revenues. Each column presents estimates from a different specification. Column (1) presents the baseline model without control variables. Column (2) adds controls for Tax Burden, GDP per capita, Transfer Pricing Legislation, and Thin Capitalization Rule. Column (3) adds country and year fixed effects to the specification used in Column (2). Columns (4) to (6) sequentially add the General Anti-Avoidance Rule, Financial Development Index, and Inflation, respectively.
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Table III.3: Effect of Global Forum Membership on Non-Resource Personal Income Tax Revenues

Treatment variable: GFA	Outcome: personal income tax revenues in % of GDP					
	(1)	(2)	(3)	(4)	(5)	(6)
ATT	0.8957***	0.4699**	1.0611***	1.0596***	1.0629***	1.0890***
	(0.1517)	(0.1884)	(0.1561)	(0.1678)	(0.1677)	(0.1772)
Observations	516	558	447	359	359	335
Country FE	Yes	No	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	Yes	Yes	Yes

This table analyzes the effect of the global forum for transparency and exchange of information for tax purposes membership on non-resource personal income tax revenues. Each column presents estimates from a different specification. Column (1) presents the baseline model without control variables. Column (2) adds controls for Tax Burden, GDP per capita, Transfer Pricing Legislation, and Thin Capitalization Rule. Column (3) adds country and year fixed effects to the specification used in Column (2). Columns (4) to (6) sequentially add the General Anti-Avoidance Rule, Financial Development Index, and Inflation respectively.
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Analysis of the effects according to the application of the main standards of the forum

Two primary standards govern the Global Forum for Transparency and the Exchange of Information for Tax Purposes: the EOIR and the AEOI. The Forum's global objective is to promote the widespread adoption of AEOI among all members. However, significant disparities exist across countries in the implementation of these standards. To assess the distinct impact of each standard, we evaluate them separately. Table 4 reports the effect of EOIR implementation,

revealing a positive and statistically significant average impact of approximately 5.5 percentage points on tax revenue as a share of GDP. In contrast, Table 5 presents more limited findings for AEOI, primarily due to the relatively small number of observations. This limitation stems from the early stage of AEOI implementation in many developing countries, which restricts the robustness of the empirical analysis for this standard. According to Global Forum statistics, from its establishment through 2020, a total of 5,606 information requests were received by African and Latin American countries, 58% of which benefited African countries and 42% Latin American countries. During the same period, 5,411 requests were initiated by these regions, with 27% originating from African countries and 73% from Latin American countries.

Table III.4: Effect of Exchange of Information on Request on Non-Resource Direct Tax Revenues

Treatment variable: EOIR	Outcome: direct tax revenues in % of GDP					
	(1)	(2)	(3)	(4)	(5)	(6)
ATT	5.1657***	0.1722	5.7973***	5.6624***	5.5919***	5.6185***
	(0.4438)	(0.3576)	(0.3643)	(0.3877)	(0.3858)	(0.4372)
Observations	108	256	117	106	103	99
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

This table analyzes the effect of exchange of information on request application on non-resource direct tax revenues. Each column presents estimates from a different specification. Column (1) presents the baseline model without control variables. Column (2) adds controls for Tax Burden, GDP per capita, Transfer Pricing Legislation, and Thin Capitalization Rule. Column (3) adds country and year fixed effects to the specification used in Column (2). Columns (4) to (6) sequentially add the General Anti-Avoidance Rule, Financial Development Index, and Inflation respectively.
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Table III.5: Effect of Automatic Exchange of Information on Non-Resource Direct Tax Revenues

Treatment variable: AEOI	Outcome: direct tax revenues in % of GDP					
	(1)	(2)	(3)	(4)	(5)	(6)
ATT	-0.3741	4.8027***	-0.3833	-0.1886	-0.2421	-0.3295
	(0.9600)	(0.9962)	(0.9359)	(0.9528)	(0.9907)	(1.0816)
Observations	264	187	334	274	278	253
Country FE	Yes	No	Yes	Yes	Yes	Yes
Year FE	Yes	No	Yes	Yes	Yes	Yes

This table analyzes the effect of Automatic exchange of information application on non-resource direct tax revenues. Each column presents estimates from a different specification. Column (1) presents the baseline model without control variables. Column (2) adds controls for Tax Burden, GDP per capita, Transfer Pricing Legislation, and Thin Capitalization Rule. Column (3) adds country and year fixed effects to the specification used in Column (2). Columns (4) to (6) sequentially add the General Anti-Avoidance Rule, Financial Development Index, and Inflation respectively.
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Analysis of Sensitivity

To further assess the robustness of our baseline findings, Table 6 conducts a comprehensive sensitivity analysis by incorporating additional institutional and administrative controls. Each column introduces a distinct set of variables to test whether the positive association between Global Forum membership and non-resource direct tax revenues persists under alternative specifications. Columns (1) to (6) progressively include governance indicators, such as Political Stability, Rule of Law, Regulatory Quality, Voice and Accountability, Control of Corruption, and Government Effectiveness. These variables help to evaluate whether improvements in institutional quality, rather than Global Forum participation, might be driving the observed revenue gains. Columns (7) to (12) shift focus to tax administration reforms by sequentially introducing indicators capturing the presence of modernization tools and structural features within the tax system. These include the existence of a Large Taxpayer Office, a High Net Wealth Program, a Simplified Income Tax Regime, a Cooperative Compliance Framework, Online Payment systems, and specialized Investigation services. This allows us to test whether Forum membership effects are confounded by broader administrative reforms implemented concurrently. In all specifications, the estimated coefficient on Global Forum membership remains positive, statistically significant, and comparable in magnitude to the baseline results presented in Table 1. This consistency reinforces our interpretation that Forum membership contributes independently to stronger domestic revenue mobilization, beyond what can be attributed to institutional improvements or internal tax administration upgrades alone.These findings highlight the Forum's added value not only as a platform for international cooperation but also as a catalyst for broader reform and capacity-building in developing countries. They underscore the credibility of the main results and support the policy message that engagement with the Forum yields tangible fiscal benefits, even when accounting for underlying differences in institutional and administrative environments.

Table III.6: Sensitivity Analysis: Effect of Global Forum Membership on Non-Resource Direct Tax Revenues.

Treatment variable: GFA									Outcome: non-resource direct tax revenues in % of GDP				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
ATT	3.0602***	3.1049***	3.0582***	3.0998***	3.1316***	3.0844***	3.0580***	3.0480***	2.9953***	3.0635***	3.0147***	3.0453***	3.0563***
	(0.2476)	(0.2467)	(0.247)	(0.2467)	(0.2446)	(0.2479)	(0.2465)	(0.2442)	(0.2442)	(0.2381)	(0.2460)	(0.2497)	(0.2479)
Observations	433	425	421	423	424	424	424	244	244	242	245	243	239
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

We analyze the effect of Global Forum for Transparency and Exchange of Information for Tax Purposes membership on non-resource direct tax revenues. All specifications include controls for: Tax Burden, GDP per capita, natural resource rents, Financial Development Index, Inflation, and key anti-avoidance measures (Transfer Pricing Legislation, General Anti-Avoidance Rule, and Thin Capitalization Rule).To account for governance and institutional quality, Equations (2) to (7) sequentially add the following indicators: Political Stability, Rule of Law, Regulatory Quality, Voice and Accountability, Control of Corruption, and Government Effectiveness.To capture the role of tax administration structures and modernization tools, Equations (8) to (13) sequentially introduce binary indicators for: existence of a High Net Wealth Program, a Simplified Income Tax Regime, a Large Taxpayer Office, a Cooperative Compliance Approach, Online Payment systems, and Investigation Services in the Tax Administration.
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Control of Heterogeneity

While developing countries may share certain structural characteristics, institutional and socio-political differences can introduce important sources of heterogeneity in our analysis (Lin & Ye, 2009; Easterly, 2002; Guerguil et al., 2017). To address this, we investigate whether the impact of Global Forum membership on tax revenue mobilization varies across different country contexts. In Table 10, we investigate several potential sources of heterogeneity to determine whether countries that meet the preconditions for tax cooperation, perform better in terms of revenue mobilization. To this end, we split the sample based on the mean value of selected variables. For each dimension, we categorize the countries into two subgroups: those above the sample mean and those below it.We begin by analyzing macroeconomic factors. Columns (1) and (2) of Table 10 show that countries with higher GDP per capita experience a more substantial and statistically significant positive effect from Forum membership compared to those with lower income levels. Next, we explore the heterogeneous effect of Global Forum membership between countries with high and low levels of inward FDI. Columns (3) and (4) indicate that the impact is significantly stronger for low-FDI countries. These countries have fewer alternative revenue sources, making them more motivated to improve domestic tax collection. Their domestic businesses tend to use less sophisticated cross-border which makes international transparency measures more immediately effective. Moreover, They may be more committed to international norms and reforms, viewing information exchange as a way to enhance governance and attract external

support. In contrast, high FDI countries may prioritize maintaining favorable tax regimes to attract foreign investment. This can lead to a cautious or selective application of transparency reforms. Financial development is another source of heterogeneity. As shown in columns (7) and (8), countries with higher levels of financial development experience stronger positive effects on non-resource direct tax revenues. This suggests that financial system maturity may facilitate more effective implementation of transparency and exchange of information standards. Finally, we examine how the degree of corruption control moderates the treatment effect. Results indicate that member countries with stronger control of corruption show significantly greater improvements in tax revenue mobilization than those with weaker institutions. This may reflect their greater institutional capacity to enforce Global Forum standards. These findings are consistent with previous research by Davoodi & Grigorian (2007), who found that improvements in institutional quality enhance tax revenue performance.

Table III.7: Heterogeneity Analysis: Global Forum Membership and Non-Resource Direct Tax Revenues

Treatment variable: GFA	Outcome: non-resource direct tax revenues in % of GDP							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	High GDP	Low GDP	High FDI	Low FDI	High corruption control	Low corruption control	High Financial Development	Low Financial Development
ATT	4.0160***	2.1761***	2.5583***	3.5235***	4.0309***	2.0621***	4.8034***	1.8660***
	(0.3759)	(0.3153)	(0.5359)	(0.2885)	(0.3598)	(0.2393)	(0.3733)	(0.3064)
Observations	195	207	120	286	219	173	193	224
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

High GDP represents countries with a GDP per capita above the sample average and low GDP denotes those below the average. High rents represent countries with rents above the sample average and low rents denote those below the average. High corruption control represents countries with control of corruption above the sample average and low corruption control denotes those below the average. High FD represents countries with Financial development above the sample average and FD denotes those below the average.

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Impact on our main transmission channels

We assume that membership in the Global Forum affects tax revenues through several key transmission channels. While our results confirm that participation in information exchange initiatives positively impacts tax revenues, we also examine its influence on these underlying channels. Our analysis indicates that Forum membership has a favorable effect on transparency. In terms of FDI flows, our findings contrast with those of Blonigen and Davies, as we observe a relatively positive and statistically significant effect. This suggests that Global Forum membership helps reduce tax evasion without deterring FDI, thereby contributing to the development of recipient countries. These results are consistent with earlier studies by Lim(1983), Root & Ahmed (1979), and Wheeler & Mody (1992), which argue that taxation is a relatively weak determinant of foreign investment decisions. Furthermore, increased transparency may attract more compliant and long-term investors while discouraging those primarily motivated by tax avoidance. This rebalancing could lead to a net positive or neutral effect on FDI inflows. Participation in international tax cooperation frameworks may also strengthen a country's institutional reputation by signaling a stronger regulatory environment and lowering perceived investment risks. This, in turn, could improve the overall investment climate, particularly in countries with initially weaker governance. As highlighted through our administrative variables, many countries that implement EOI standards also undertake broader reforms, such as the digitization of tax systems and the simplification of procedures. These reforms not only support tax administration but also contribute to a more business-friendly environment, further increasing investment attractiveness.

Table III.8*:* Effect of Global Forum Membership on Inward FDI

Treatment variable: GFA	Outcome: Inward FDI in % of GDP					
	(1)	(2)	(3)	(4)	(5)	(6)
ATT	1.5893***	2.0271***	2.1772***	2.6715***	2.6715***	2.5151***
	(0.5128)	(0.5934)	(0.6002)	(0.6469)	(0.6469)	(0.6644)
Observations	877	769	759	628	629	584
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1.

Table III.9*:* Effect of Global Forum Membership on Transparency

Treatment variable: GFA	Outcome: Transparency index					
	(1)	(2)	(3)	(4)	(5)	(6)
ATT	0.8182***	-0.0217	0.9407***	1.1486***	1.1479***	1.1833***
	(0.0661)	(0.1341)	(0.1295)	(0.1296)	(0.1301)	(0.0661)
Observations	440	475	369	317	318	299
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses : *** p<0.01, ** p<0.05, * p<0.1.

Robustness checks

As a robustness check, we analyze the impact of membership in the Global Forum for Transparency and Exchange of Information for Tax Purposes on tax revenue using several alternative methods (see Table 10). We employ several matching methods to address potential concerns about the endogeneity of Global Forum membership, potentially influenced by political or economic pressures. First, we apply the inverse probability method, which does not require strong parametric assumptions and is robust to sample size and missing data bias. The propensity score-based weights generated by Inverse Probability Weighting form a pseudo-population in which treatment assignment is independent of observed covariates, addressing potential selection biases. Next, we use the inverse probability weighted regression adjustment, which is similarly robust to sample size variations and misspecification bias (Wooldridge, 2007). Third, we apply Augmented Inverse Probability Weighting, which combines the strengths of Inverse Probability Weighting and regression fitting, making it doubly robust (Robins, 1994). We also implement Propensity Score Matching, which matches treated and untreated units based on similar propensity scores, thereby improving the comparability of the groups and reducing selection bias (Rosenbaum & Rubin, 1983). Finally, we employ the staggered difference-in-differences method proposed by Callaway & Sant'Anna (2021), which is well-suited for estimating dynamic treatment effects and addressing endogeneity concerns. This approach accounts for variation in treatment timing and allows for conditioning on covariates, thereby strengthening causal identification in the presence of treatment effect heterogeneity. Across all methods, the estimated effect remains positive and statistically significant.

To further validate the robustness of our findings, we conduct a placebo test by randomly assigning false treatments to the control groups. The absence of significant results reinforces the credibility of our findings.

Table III.10: Placebo Test: Assessing the effect of Global Forum Membership through False Treatment Assignment

	(1)	(2)	(3)	(4)	(5)	(6)
ATT	0.1407	-0.0248	0.0685	0.1300	0.1137	0.1246
	(0.0925)	(0.1815)	(0.1114)	(0.1373)	(0.1373)	(0.1631)
Observations	1110	814	806	637	637	606
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

This table reports placebo estimates based on the false assignment of Global Forum membership to countries.
Robust standard errors in parentheses : *** p<0.01, ** p<0.05, * p<0.1.

Table III.11: Robustness Checks Using Alternative Estimation Methods

	Inverse Probability Weighting	Inverse Probability Weighted Regression Adjustment	Augmented Inverse Probability Weighting	Propensity Score Matching	Difference in Diffference
	(1)	(2)	(3)	(4)	(5)
ATT	0.4822**	0.7273***	0.7694***	1.2236***	0.9083*
	(0.2403)	(0.1790)	(0.1851)	(0.3353)	(0.4869)
Observations	614	612	612	612	791
Treated	231	231	231	231	
Controls	383	381	381	381	

This table reports the estimated effects of Global Forum membership on non-resource direct tax revenues using alternative estimation methods. These robustness checks complement the main results by assessing the consistency of treatment effects across different modeling approaches.
Robust standard errors in parentheses : *** p<0.01, ** p<0.05, * p<0.1.

Conclusion

Establishing the Global Forum on Transparency and Exchange of Information marks a significant step in the fight against tax evasion and illicit financial flows. However, its implementation is still in the early stages, with disparities in its application across countries. Not all members fully adhere to the Forum's standards, highlighting the need for further enforcement. This study examines the impact of Global Forum membership on domestic tax revenue mobilization in developing countries and finds a positive, significant effect using the semi-parametric difference-in-differences method. The largest impact is observed on corporate income tax revenues, with member countries outperforming non-members. These findings are robust across several alternative methods, including propensity score matching, inverse probability weighting, and difference-in-differences. Moreover, countries that fully comply with EOIR standards achieve higher revenues than those that fall short. This research contributes to the ongoing debate on global tax reform, particularly the OECD's BEPS initiatives and discussions surrounding minimum taxation for multinationals. Exchange of information is central to key international tax reforms, such as achieving a Minimum Global Tax and establishing beneficial ownership transparency. These reforms require reliable data collection and sharing to ensure effective implementation and compliance. Our results suggest that international cooperation through initiatives like the Global Forum is essential in limiting tax base erosion, particularly in developing countries. The policy implications are clear: developing countries can enhance revenue mobilization by adhering to and effectively implementing the Global Forum's standards. Membership also facilitates crucial reforms in tax administrations through peer review and mutual assistance. Countries should not delay participation until all administrative capacities are fully developed before joining the Forum. To maximize the benefits, countries must establish strong domestic institutions, enforce compliance, and ensure the effective exchange of information. Furthermore, it is essential for the Forum to implement dissuasive measures against non-compliance with tax declaration obligations or opacity from member countries, ensuring a high-quality exchange of information.

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Appendix A : Estimations results

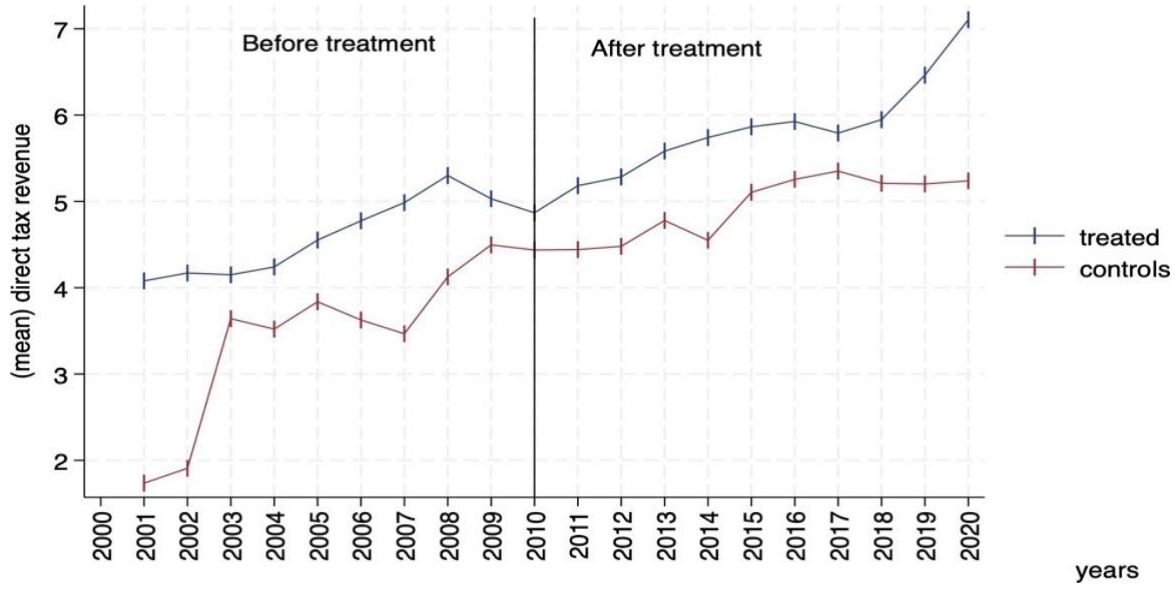
Table III.12: Factors Influencing the Probability of Global Forum Membership

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Tax Burden	0.016***	0.016**	0.015**	0.009	0.011*	0.016**	0.014**	0.015**	0.013	0.016**	0.016**	0.016**	0.018**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Transfer Pricing legislation	0.763***	0.711***	0.818***	0.864***	0.732***	0.763***	0.770***	0.278*	0.211	0.111	0.150	0.219	0.228
	(0.125)	(0.127)	(0.129)	(0.130)	(0.126)	(0.127)	(0.127)	(0.156)	(0.157)	(0.164)	(0.161)	(0.158)	(0.158)
Thin Capitalization rule	-0.002	-0.002	-0.064	-0.066	-0.002	-0.014	-0.032	0.448***	0.412***	0.422***	0.417***	0.424***	0.478***
	(0.103)	(0.104)	(0.105)	(0.105)	(0.104)	(0.104)	(0.104)	(0.137)	(0.139)	(0.141)	(0.141)	(0.139)	(0.138)
Log GDP per capita	0.332***	0.368***	0.294***	0.312***	0.343***	0.318***	0.279***	0.089	0.120	0.149*	0.161*	0.154*	0.154*
	(0.072)	(0.075)	(0.074)	(0.075)	(0.074)	(0.073)	(0.075)	(0.092)	(0.090)	(0.090)	(0.091)	(0.088)	(0.088)
General-Anti-avoidance	0.979***	1.004***	0.934***	1.009***	0.914***	0.964***	0.953***	1.197***	1.166***	1.108***	1.188***	1.185***	1.127***
	(0.114)	(0.117)	(0.116)	(0.118)	(0.117)	(0.116)	(0.116)	(0.146)	(0.147)	(0.150)	(0.148)	(0.147)	(0.148)
Financial Development Index	1.443***	1.650***	0.650	-0.348	0.651	1.162**	0.823	3.332***	3.200***	3.426***	3.347***	3.237***	3.106***
	(0.446)	(0.455)	(0.509)	(0.564)	(0.536)	(0.498)	(0.536)	(0.629)	(0.625)	(0.628)	(0.622)	(0.612)	(0.611)
Inflation	-0.068***	-0.068***	-0.069***	-0.059***	-0.065***	-0.068***	-0.066***	-0.071***	-0.069***	-0.066***	-0.068***	-0.063***	-0.068***
	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Political Stability		-0.136*											
		(0.073)											
Rule of Law			0.400***										
			(0.106)										
Regulatory Quality				0.641***									
				(0.118)									
Voice and Accountability					0.272***								
					(0.087)								
Corruption of Control						0.165*							
						(0.091)							
Government Effectiveness							0.295**						
							(0.120)						
High Net Wealth program existence								0.511***					
								(0.180)					
Simplified income tax regime									0.652***				
									(0.161)				
Large Tax Payer Office existence										0.799***			
										(0.138)			
Cooperative compliance approach											0.772***		
											(0.153)		
Online payment												0.655***	
												(0.169)	
Investigation in Tax administration													0.535***
													(0.161)
_cons	-5.595***	-5.949***	-4.796***	-4.411***	-4.977***	-5.320***	-4.693***	-3.902***	-3.917***	-4.551***	-4.570***	-4.552***	-4.610***
	(0.671)	(0.716)	(0.702)	(0.718)	(0.696)	(0.683)	(0.751)	(0.836)	(0.828)	(0.832)	(0.831)	(0.820)	(0.818)
Observations	920	898	898	898	898	898	898	604	604	604	604	604	604

Robust standard errors in parentheses : *** p<0.01, ** p<0.05, * p<0.1.

Appendix B : Figures

Figure III-4: Non-resource direct tax revenues evolution over time



Source: Author's construction

Figure III-5: Tax revenue losses in millions USD

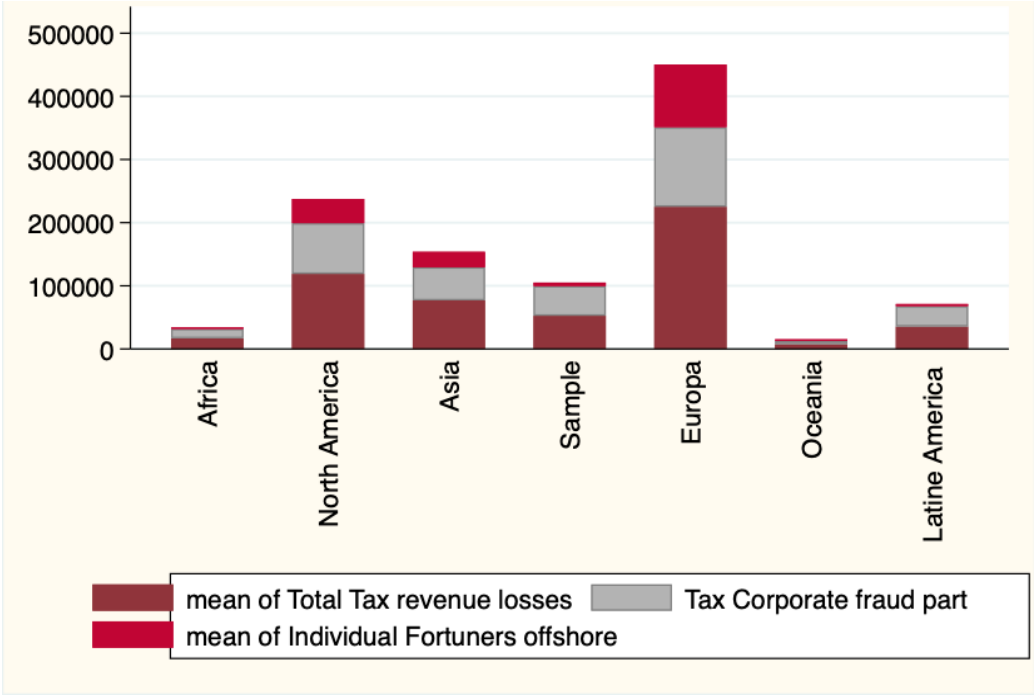


Figure III-6: Common Support for Propensity Score Matching

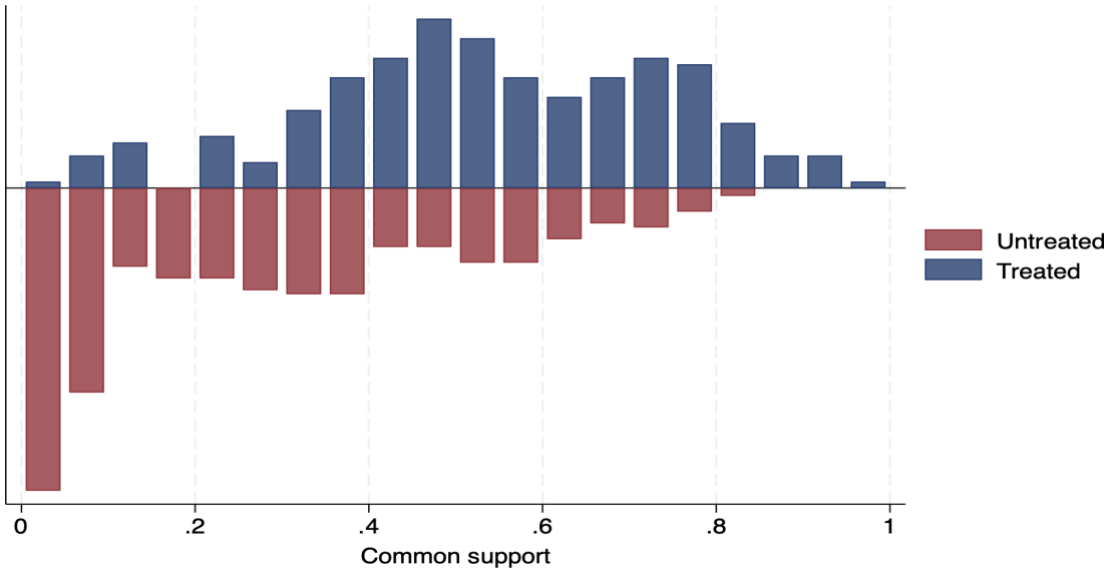


Figure III-7: Common support before and after matching

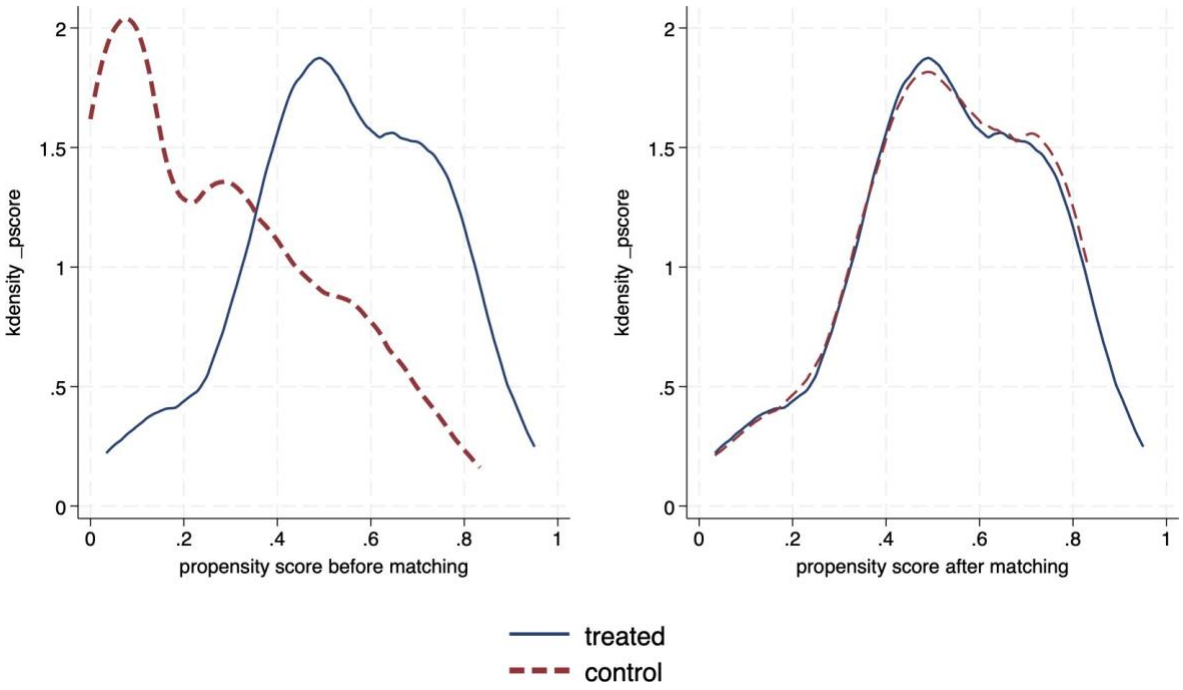
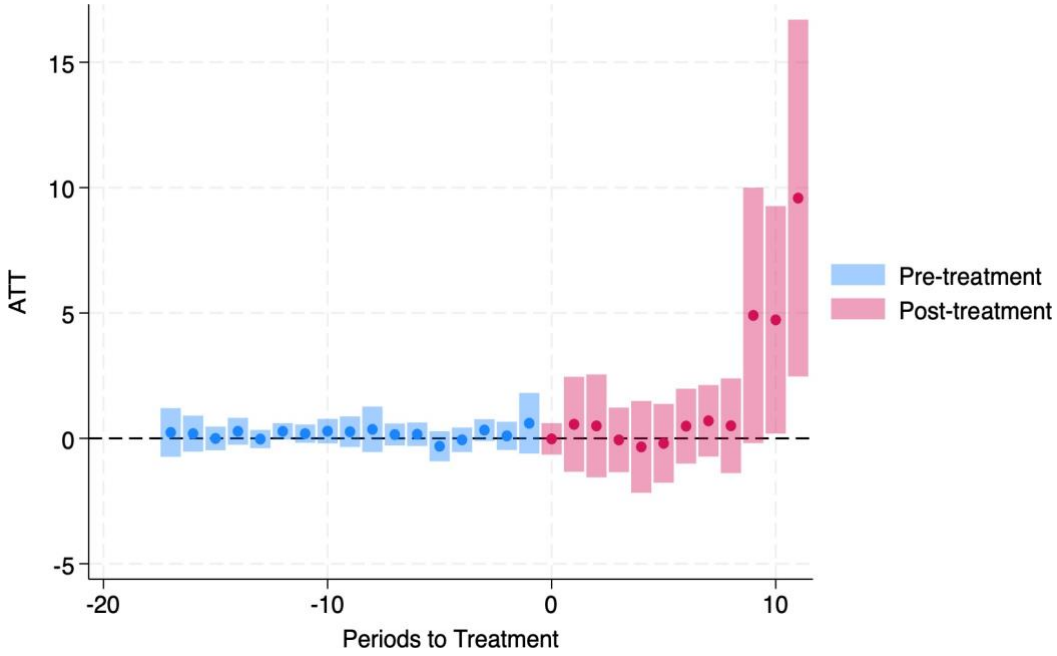


Figure III-8: Difference in difference with multiple time periods event study plot



Appendix C : Descriptive Statistics

Table III.13: Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
GFA	1,260	.2555556	.4363462	0	1
EOIR	1,260	.1761905	.3811334	0	1
AEOI	1,260	.0206349	.1422152	0	1
Tax_Burden	1,177	74.89856	10.41945	32.3	97.6
Transfer Pricing legislation	1,200	.55	.4977011	0	1
Thin capitalization rule	1,089	.4288338	.4951368	0	1
GDP per capita	1,237	6254.168	6479.002	420.2722	33261.87
General-Anti-avoidance	938	.6140725	.4870733	0	1
Financial Development Index	1,260	.1657495	.1219422	.0262936	.6622255
Inflation	1,172	7.861413	22.77383	-9.797647	513.9068
Political Stability	1,200	-.4621352	.8229468	-2.699193	1.283142
Rule of Law	1,200	-.6327941	.5898575	-1.88087	1.023956
Regulatory Quality	1,200	-.5644717	.6108267	-2.282205	1.196947
Voice and Accountabilty	1,200	-.4266028	.7386659	-2.226054	1.311339
Control of Corruption	1,200	-.4266028	.7386659	-2.226054	1.311339
Government Effectiveness	1,200	-.5670531	.6143284	-1.627693	1.420243
direct tax revenue	1,199	-.6501205	.5981503	-1.887359	1.16092
PIT revenue	998	4.493622	2.995084	.1678167	32.08401
CIT revenue	793	4.38764	2.999562	.128866	31.25838
FDI	1,249	2.122959	1.920864	0	11.55367
Transparency	608	4.254787	7.42218	-18.91777	103.3374
High Net Wealth program existence	819	2.802632	.6031436	1.5	4.5
Simplified income tax regime	819	.0952381	.2937229	0	1
Large Tax Payer Office existence	819	.1379731	.3450825	0	1
Cooperative compliance approach	819	.2307692	.4215825	0	1
Online payment	819	.1868132	.6488824	0	11
Investigation in Tax administration	819	.1159951	.3204147	0	1

Table III.14: Data description and sources

Variables	Description	Sources
GFA	Dummy taking 1 if a country *joins* Global forum and 0 otherwise	
EOIR	Dummy taking 1 if country apply Exchange of Information on Request and 0 otherwise	OECD
AEOI	Dummy taking 1 if country apply Automatic Exchange of Information and 0 otherwise	OECD
Tax_Burden	Tax burden index	Heritage foundation
Transfer Pricing legislation	Dummy taking 1 if country adopt Transfer Pricing legislation and 0 otherwise	ITI Database
Thin capitalization rule	Dummy taking 1 if country apply Transfer Pricing legislation and 0 otherwise	
General-Anti-avoidance	Dummy taking 1 if country adopt General Anti-avoidance rule and 0 otherwise	
FD	Financial Development index	IMF
CorruptionControl	Control of corruption index	WBGI
Gov-Effectiveness	Government effectiveness index	
PoliticalStability	Political stability and absence of violence index	
RuleofLaw	Rule of law index	
RegulatoryQuality	Regulatory quality index	
Voice and Accountabilty	Voice-and-Accountabilty index	
direct tax revenue	Direct taxes excluding social contributions and resource revenue % GDP	UNU WIDER
PIT revenue	Non-resource component of taxes on income(individuals)	
CIT revenue	Non-resource component of taxes on income, profits, and capital gains	
FDI	Foreign direct investment, net inflows (% of GDP)	WDI
GDP per capita	GDP per capita (current international $)	
Inflation	Inflation, consumer prices (annual %)	
Transparency	CPIA Transparency Accountability Corruption in Public Sector rating	
High Net Wealth program existence	Dummy variable indicating whether a country has a dedicated tax program for high net wealth individuals.	TADAT
Simplified income tax regime	Dummy variable capturing the existence of simplified income tax schemes.	
Large Tax Payer Office existence	Dummy variable reflecting whether the tax administration has a specialized unit for managing large taxpayers.	
Cooperative compliance approach	Numbers of cooperative compliance models launched to enhance voluntary tax compliance.	
Online payment	Dummy variable showing whether taxpayers can make income tax payments through online platforms.	
Investigation in Tax administration	Dummy variable representing the existence of dedicated investigative units within the tax authority to detect and address tax evasion or fraud.	

Table III.15: List of countries in the sample

Countries	Commitment	Countries	Commitment
Angola	No member	Dominican Republic	2013
Argentina	2009	Ecuador	No member
Benin	2017	Egypt	2016
Bolivia	No member	El Salvador	2011
Botswana	2011	Ghana	2011
Brazil	2009	Guatemala	2009
Burkina-Faso	2012	Guinea	No member
Burundi	No member	Guinea Bissau	No member
Cabo Verde	2018	Honduras	No member
Central African Republic	No member	Kenya	2010
Chad	2016	Lesotho	2013
Comoros	No member	Liberia	2009
Congo	No member	Libya	No member
Cote d'Ivoire	2016	Madagascar	2018
Democratic Republic of Congo	No member	Malawi	No member
Djibouti	2017	Mali	2020
Ecuador	No member	Mauritania	2012
Egypt	2016	Mauritius	2009
Equatorial Guinea	No member	Morocco	2011
Eritrea	No member	Mozambique	No member
Ethiopia	No member	Namibia	2019
Gabon	2012	Niger	2015
Nigeria	2011	Paraguay	2016
Panama	2009	Peru	2014
Rwanda	2017	Tunisia	2012
Sao Tome and Principe	No member	Uganda	2012
Senegal	2012	Uruguay	2009
Seychelles	2009	Zambia	No member
South Africa	2009	Sierra Leone	No member
Tanzania	2015	Sudan	No member
Togo	2016		

CHAPTER IV : How does Tax Information Exchange Implementation in developing countries affect investors' behavior in Offshore Centers?

Abstract: This study examines the impact of implementing the Exchange of Information (EOI) framework for tax purposes on investment flows from developing countries to offshore centers. Using data primarily from the Panama Papers, we apply a difference-in-differences approach to analyze how the adoption of EOI standards affects the use of offshore jurisdictions and cross-border investment decisions. Our findings indicate a significant decline in the number of active entities following the implementation of EOI, suggesting that increased transparency and compliance costs discourage the use of offshore jurisdictions. However, an analysis considering foreign direct investment (FDI) and portfolio investment data from the United Nations Conference on Trade and Development (UNCTAD) and the Coordinated Direct Investment Survey (CDIS) reveals that EOI does not significantly reduce these forms of cross-border capital flows from developing countries to offshore jurisdictions. This suggests that while EOI deters offshore entity formation, it does not necessarily curb all avenues of capital mobility. Moreover, our results indicate that investors may respond to EOI by reallocating assets to alternative tax-efficient instruments, underscoring the adaptability of offshore investment strategies and the complexity of behavioral responses to tax transparency measures. This study contributes to the literature on international tax cooperation by providing empirical insights into the effectiveness of EOI frameworks in mitigating illicit financial flows and giving policy recommendations for enhancing enforcement mechanisms in developing economies.

Keywords: Tax cooperation, exchange of information for tax purposes, Tax evasion, Investments, Offshore entities, tax havens, transparency, developing countries.

JEL Classification: F42, H26, H73, H77, H87.

Introduction

Over the past few decades, globalization has enabled businesses and individuals to exploit gaps in international tax laws, allowing them to evade tax obligations and shift profits across borders (Spicer, 1986; Allingham & Sandmo, 1972; Marrelli, 1984; Cowell, 1985; Zucman, 2015; Alstadsæter et al., 2022). One of the main techniques employed is the establishment of entities[18] in offshore jurisdictions and the relocation of investments to low-tax environments.

Offshore entities — including shell companies, trusts, and holding corporations — are frequently established in jurisdictions characterized by high levels of financial secrecy or low tax rates. These structures can serve legitimate purposes, such as facilitating cross-border trade, protecting assets, and managing estates. However, they are often associated with unethical and illegal activities, including tax evasion, money laundering, and the facilitation of illicit financial flows.

By exploiting the regulatory and tax advantages offered by offshore financial centers and tax havens, investors can obscure the ownership of assets, shift profits to low-tax jurisdictions, and reduce their tax liabilities. These practices not only erode domestic tax revenues but also undermine global efforts toward financial transparency and equity.

In recent years, international initiatives to enhance tax transparency, such as the EOI standards, have been implemented to combat tax evasion and curb illicit financial flows. This initiative requires countries to share financial data across borders, fostering greater transparency and accountability.

The primary objective is to establish a framework that facilitates the exchange of tax-related information between domestic financial institutions, domestic tax authorities, and their counterparts in other countries, particularly regarding the cross-border activities of taxpayers.

Under the leadership of the OECD, many developing countries have initiated the implementation of EOI standards, receiving support through the Global Forum for Transparency and Exchange of Information for Tax Purposes.

[18] They are legal structures—such as corporations, trusts, foundations, or limited liability companies that are established in jurisdictions outside the country where the beneficial owner resides.

However, the impact of these initiatives on the scale and nature of investments from developing countries into offshore jurisdictions remains largely underexplored. Despite the global scope of these frameworks, developing countries encounter unique challenges in implementing and benefiting from EOI mechanisms. These challenges result from limited administrative capacity and regulatory frameworks, as well as issues of trust in international cooperation (Chang et al., 2020b).

In this study, we assess the effectiveness of EOI frameworks by examining their influence on investor behavior. We employ the difference-in-differences method with multiple time periods, as proposed by Callaway & Sant'Anna, (2021), which offers better handling of dynamic contexts. Our sample comprises countries that began implementing EOI standards at different points in time. This staggered adoption of EOI mechanisms allows us to leverage variation in treatment start dates, corresponding to the implementation of EOI for tax purposes, across countries. Such variation helps account for unobserved and time-varying differences between early and late adopters that might otherwise confound our results. By mitigating biases arising from these differences, this approach strengthens the validity of our causal inference regarding the impact of EOI mechanisms on investor behavior in offshore jurisdictions. Our analysis aims to highlight the ways in which the EOI standards can alter investor behavior in offshore centers. Ultimately, we seek to assist policymakers in assessing the effectiveness of current tax policies and identifying areas that require reform.

The present research is based on the hypothesis that the EOI standards increase the likelihood of detection and elevate compliance costs for investors, potentially prompting significant changes in their investment behavior. While we contend that EOI initiatives may deter certain forms of investment in offshore centers, investors might still adopt alternative strategies to safeguard their wealth or transition to other financial instruments.

Our goal is to provide a comprehensive empirical analysis of how EOI frameworks influence investment behavior, particularly in developing countries. First, we aim to clarify the effectiveness of the EOI framework. By employing a robust methodology, this study delivers evidence of the capacity of EOI to deter offshore investments and shift investor behavior in response to increased transparency and compliance costs. Second, the research addresses a critical gap by specifically examining the effectiveness of this framework in developing countries, thereby enriching the theoretical understanding of Principal-Agent Theory, Capital Mobility, Tax Competition, and

Behavioral Economics. To our knowledge, this study is the first to investigate how EOI mechanisms influence investments originating from developing countries and flowing toward offshore financial centers. The findings will not only assist policymakers in developing countries but also contribute to the global discourse on international tax policy, identifying areas where reforms can enhance tax compliance and mitigate tax base erosion.

Our analysis reveals that the implementation of EOI frameworks in developing countries has led to a significant reduction in the number of entities located in offshore jurisdictions, but we observe no significant effect on FDI and portfolio investment. This trend suggests that increased transparency and the heightened risk of detection associated with EOI have discouraged individuals and corporations from utilizing offshore structures to evade taxes. A more detailed analysis reveals a stronger effect for countries with moderate levels of engagement in offshore jurisdictions compared to those with a significant presence. Robustness checks using gravity model (Tinbergen, 1963; Chaney, 2014; Baltagi & Egger, 2016), consistently support these findings.

Overall, these results indicate that EOI frameworks are effective in curbing tax avoidance strategies and reducing the use of offshore vehicles for illicit purposes. At the same time, they underscore that investors may resort to alternative tax-efficient instruments, indicating complex behavioral responses to the implementation of EOI policies. The findings also highlight the critical role of international cooperation in addressing tax base erosion, pointing to the need for expanding global frameworks such as the Common Reporting Standard to additional jurisdictions and financial assets.

Nevertheless, as investors may continue to explore new avenues for tax avoidance or employ sophisticated financial instruments, policymakers must remain vigilant and continuously adapt tax regulations to close potential loopholes. Strengthening domestic tax systems and enhancing tax information-sharing mechanisms will be essential for maintaining the progress of these reforms and ensuring the long-term success of global tax transparency efforts.

The structure of this paper is organized as follows: Section 2 introduces an overview on the literature, Section 3 presents analytical framework, section 4 describes data, section 5 outlines empirical methodology, Section 6 shows the results, and Section 7 offers concluding remarks.

Literature Review

While earlier research has explored the motivations for countries to engage in tax information exchange agreements, an expanding body of empirical work examines how these agreements influence capital mobility and offshore structures, and taxpayer behavior. Overall, the evidence remains mixed, reflecting differences in data coverage, institutional settings, and empirical strategies. Previous studies primarily focused on portfolio investments and firm-level responses to tax information exchange agreements. Using a difference and difference method, Hanlon et al., (2015), De Simone et al., (2020) show that U.S. portfolio investments in tax havens declined following the implementation of tax information exchange agreements. Similarly, Braun & Weichenrieder (2015) report a reduction in the number of German affiliates established in low-tax jurisdictions after the conclusion of tax information exchange agreements.

A second stream of research investigates cross-border bank deposits. Grilli (1989) first highlights that banking secrecy has a significant positive effect on deposit holdings in European financial centers. Along similar lines, Huizinga & Nicodème (2004), and Hemmelgarn & Nicodème (2009) find that EOIs and the European Savings Directive did not systematically reduce deposits in participating countries.

However, more recent analyses provide contrasting results. Johannesen (2010) shows that the European Savings Directive led to a substantial relocation of deposits from Switzerland to jurisdictions that are not subject to tax information exchange. Extending this line of inquiry, Johannesen & Zucman (2014) demonstrate that tax exchange information agreements prompted fraudsters to shift funds toward less cooperative havens, still maintaining secrecy advantages. Similarly, Beer et al., (2019) estimated that the implementation of the Exchange of Information led to a 25% reduction in offshore deposits among developed economies. Spengel et al., (2018) find that cross-border deposits fell by roughly 11.5% following the first wave of AEOI agreements, while also noting substantial relocation toward non-cooperative jurisdictions.

More recent contributions have expanded the focus beyond deposits to ownership networks and corporate structures. Using firm-level data, Garcia-Bernardo et al., (2017) reveal that global corporate ownership is highly concentrated within a small network of intermediary jurisdictions

that channel investments between onshore and offshore centers. Petkova et al., (2020) apply network analysis to the global structure of double tax treaties, showing that countries occupying central positions in the treaty network tend to attract higher levels of foreign direct investment.

An essential gap in the existing literature is the limited focus on developing countries. Our study seeks to fill this gap by examining how the exchange of information agreements influences the behavior of investors from developing countries in offshore jurisdictions. Specifically, we assess the impact of the EOI framework on the number of offshore entities created by investors from developing countries, as well as on other types of capital and investment. We adopt a difference-in-differences method to evaluate the impact. Additionally, we employ alternative methods that combine a gravity-type bilateral model with network-based indicators that capture the structural and relational position of offshore jurisdictions, namely, their centrality and connectivity within the global financial network. This framework also enables us to investigate whether the deterrent effect of exchange of information agreements depends on the connectivity and influence of the offshore jurisdiction within the network of information exchange agreements.

Analytical Framework

International tax cooperation, particularly through the exchange of information for tax purposes, aims to enhance transparency and curb illicit financial flows by limiting the secrecy advantages historically offered by certain jurisdictions. By facilitating systematic information sharing between tax authorities, EOI initiatives are expected to raise the perceived risk of detection, increase compliance costs, and ultimately deter the use of opaque offshore structures. The central theoretical expectation is that when countries commit to exchanging tax information, the expected cost of concealment rises, thereby reducing the incentives to channel funds through offshore entities. However, this relationship also depends on domestic institutional capacity and enforcement effectiveness.

Several complementary theoretical perspectives can help to explain why and how the behavior of entities and investors might change in response to tax transparency initiatives (Arrow, 1974; Stiglitz, 1969).

Drawing on Game Theory, we assume that taxpayers act strategically by comparing the benefits of tax evasion (in terms of reduced tax liabilities) against its potential costs, such as the risk of

detection and penalties (Alm & McKee, 2004; Becker et al., 1974). The implementation of EOI mechanisms alters this cost–benefit calculation by increasing the likelihood of detection. Yet, in developing countries where enforcement capacity is limited, the perceived cost of evasion may remain low, affecting the deterrent effect of EOI.

This reasoning naturally extends to Principal-Agent Theory, which emphasizes the role of information asymmetry between taxpayers (agents) and tax authorities (principals) (Reinganum & Wilde, 1985). EOI mechanisms reduce such information asymmetry by improving cross-border tax information sharing. However, strong tax administrations, technological infrastructure, and effective legal frameworks are necessary to process and act on exchanged information. In their absence, the benefits of EOI may be limited, as developing countries struggle to turn information into actionable tax enforcement.

From a broader macroeconomic perspective, Globalization and Capital Mobility Theory posits that capital flows respond to changes in tax policy and enforcement (Bretschger & Hettich, 2002). The enhanced transparency resulting from the implementation of EOI mechanisms reduces the attractiveness of tax havens, yet capital remains highly mobile, continuously seeking alternative opportunities. As tax havens become less appealing due to sanctions and reputational risks (e.g., blacklisting), offshore investments may shift toward more compliant and legitimate strategies. A complementary insight from Behavioral Economics Theory (Casey & Scholz, 1991; Molodykh & Rubezhnoy, 2017) suggests that EOI mechanisms alter the perceived risks and benefits of utilizing offshore entities. Greater transparency heightens the psychological cost of non-compliance by increasing the likelihood of detection and penalties, thereby encouraging a behavioral shift toward adherence to tax regulations.

Building on these theoretical insights, this paper hypothesizes that the introduction of EOI frameworks should lead to observable behavioral adjustments among investors and entities engaged in offshore activities. However, the magnitude and persistence of these effects are expected to depend on the enforcement and institutional capacities of adopting countries.

Based on these theoretical foundations, we test the following hypotheses:

- H1: The introduction of EOI results in a significant decrease in the number of entities established

in tax havens.

- H2: Developing countries that adopt EOI experience a greater decline in active entities in offshore jurisdictions compared to other jurisdictions.
- H3: EOI mechanisms can lead to a reduction of foreign direct investment (FDI) and Portfolio investment flows from developing countries to offshore jurisdictions.

Data

For our analysis, we use bilateral data on offshore entities originating from developing countries[19] and directed toward offshore financial centers. The selection of these countries was based on their level of development and limited by data availability (see Table 8). We focus on developing countries located in Africa and Latin America, as these regions predominantly comprise nations that are relatively new to implementing the EOI framework. Most of these countries have engaged in the EOI process under the auspices of the Global Forum on Transparency and Exchange of Information for Tax Purposes. The sample includes 25 developing countries that adopted the EOI framework at different times following directives from the Global Transparency Forum and 28 countries that had not committed to the EOI standards until 2020.

Our dependent variable represents the cumulative number of entities from developing countries held in offshore jurisdictions, measured annually. This cumulative approach accounts for the intensity and historical characteristics of bilateral relationships between developing countries and offshore financial centers over earlier periods.

We compiled our database on offshore entities in developing countries using information from the Panama Papers and Pandora Papers. These sources offer the advantage of providing detailed data on entities in offshore jurisdictions, including the countries of origin of their investors, as well as information on their creation, suspension, and closure dates. Our original database comprises 814,471 offshore entities. For each entity, we have information on its place of establishment and the countries of origin of all associated stakeholders. However, due to the concealed nature of offshore entities, it is not always possible to identify all stakeholders.

To simplify and facilitate the analysis, we organized the data to specify, for each entity, the country

[19]It is important to note that the jurisdiction of origin reflects the immediate source of incorporation or registration of the entity, which may not coincide with the ultimate nationality or residence of the beneficial owners.

of the investor and the offshore center (or offshore jurisdiction) receiving the investment. We also recorded details such as creation and closure dates where available. Unidentified investor countries and offshore centers are labeled as “unidentified.”

To initiate our analysis, we compute the cumulative number of entities opened, suspended, and closed annually in offshore centers, categorized by the investor's country of origin. To maintain relevance and accuracy, the database excludes countries of origin for unidentified investors but includes unidentified offshore centers (i.e., recipient countries of investments).

The final dataset comprises 53 origin countries for offshore entities and 25 recipient countries, including a category for unidentified destinations, covering the period from 2000 to 2020.

Our primary variable of interest is a binary indicator equal to 1 from the year a country becomes effectively integrated into the EOI framework through the implementation of bilateral information exchange mechanisms, namely Tax Information Exchange Agreements or Double Tax Agreements incorporating Article 26 provisions, and 0 otherwise. Data for this variable are compiled from national sources, OECD, and the United Nations Treaty Collection.

To enhance our analysis, we further investigate the impact of EOI intensity by examining the extent of a country's EOI network. Countries with extensive EOI networks are categorized as "treated," while those with limited or no networks are assigned to the control group.

Data on the control variables are sourced from various databases (see Table 7), including the World Development Indicators, the World Bank’s World Governance Index, the International Center for Tax and Development (ICTD), the Heritage Foundation database, and the International Tax Institutions (ITI) Database from the Research School of International Taxation (Wamser et al., 2024). Table 6 presents the descriptive statistics of the variables used in the analysis.

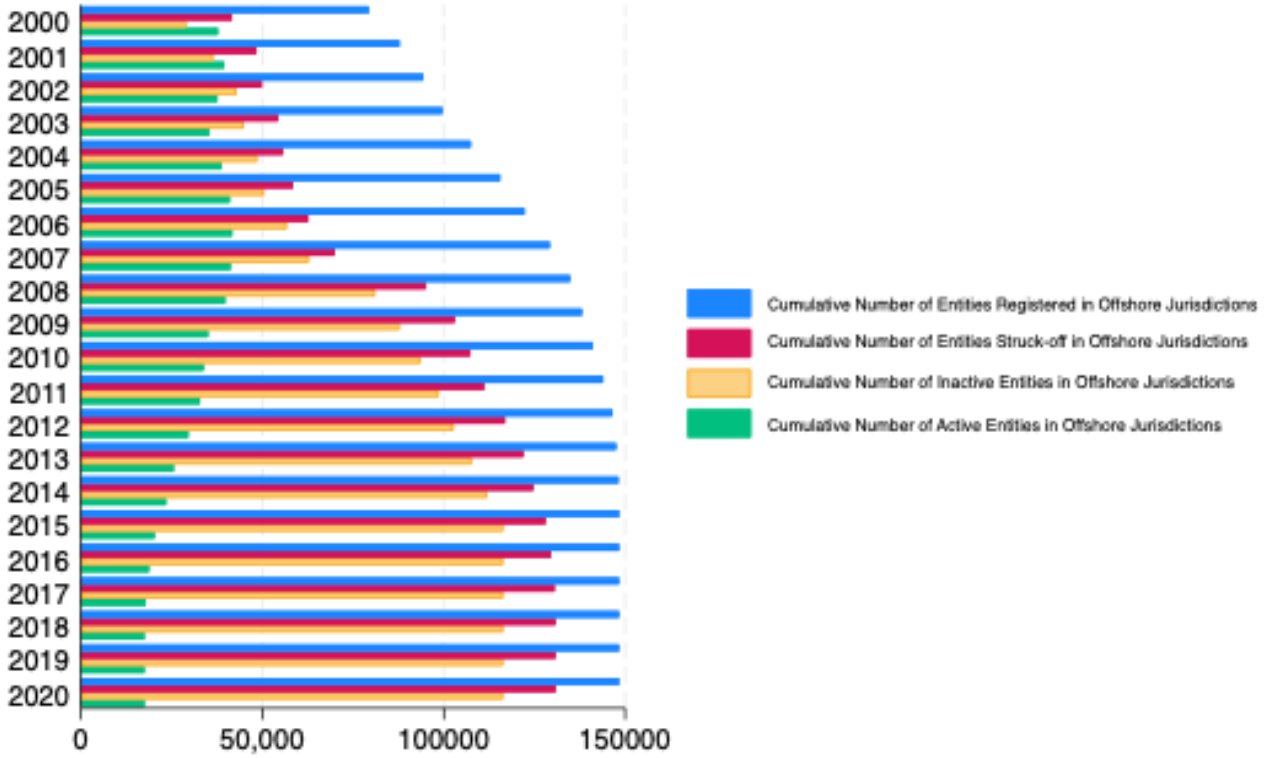
Stylized facts

Figure 1 highlights several notable trends regarding offshore entities originating from developing countries and directed toward offshore jurisdictions. The cumulative number of inactive[20] and

[20] Inactive status represents a situation of suspension, which may be temporary. It may lead to deletion or reactivation of the offshore entity.

struck-off[21] offshore entities demonstrates a steady increase over time. In contrast, the creation of new offshore entities has stabilized since 2010, indicating a potential leveling off in their attractiveness or utility. This shift may be attributed to stricter regulations and heightened scrutiny of tax havens. Additionally, the number of active offshore entities has significantly declined since 2010, likely reflecting the impact of global initiatives to curb tax avoidance and promote transparency, including international regulatory reforms. Together, these trends signal a transformation in the offshore landscape, shaped by external regulatory pressures and evolving economic and political dynamics.

Figure IV-1: Entities trends from Developing Countries to Offshore Jurisdictions: Evolution over time



[21] Struck-off status corresponds to total closure.

Empirical Approach

Our identification strategy relies primarily on a staggered difference-in-differences (DID) approach that exploits the progressive implementation of bilateral EOI agreements across pairs of countries (*investor i – offshore j*) over time. Specifically, the model compares the evolution of offshore entity creation between treated dyads (countries linked by an EOI agreement) and untreated dyads (countries without such agreements) before and after the adoption of the EOI framework.

This empirical design follows recent contributions assessing the causal impact of international transparency measures on cross-border financial behavior. For instance, Hanlon et al.,(2015), De Simone et al. (2020), Braun & Weichenrieder (2015), Beer et al., (2019) Johannesen & Zucman (2014) employed Difference-in-Differences models to analyze the impact of bilateral information exchange agreements.

In its classic form, the Difference-in-Differences method compares two groups across two periods: a pre-treatment period, during which no bilateral EOI agreement has been implemented, and a post-treatment period, during which some country pairs have adopted such agreements (treated group) while others have not (control group). The validity of this estimator relies on the parallel trends assumption, that is, in the absence of EOI, offshore entities would have evolved similarly across treated and control dyads. This assumption ensures that any post-treatment divergence can be causally attributed to the introduction of EOI agreements. However, in our setting, the adoption of EOI framework is staggered over time and across pairs of countries. This staggered treatment adoption creates additional econometric challenges, which may biased estimates when treatment timing differs across units. To address this, we employ the Difference-in-Differences estimator proposed by Callaway & Sant'Anna, (2021), which extends the conventional Difference-in-Differences approach to accommodate heterogeneous treatment effects and staggered policy implementation. This method allows for a more flexible and robust identification of dynamic treatment effects, ensuring valid inference on how EOI agreements influence offshore entities creation and investments over time.

Formally, the baseline specification is given by:

$$Y_{ijt} = \alpha + \beta \text{EOI}_{ijt} + \partial X_{ijt} + \gamma_i + \delta_j + \theta_t + \epsilon_{ijt} \ (1)$$

where:

Y_{ijt} denotes the (log of) number of offshore entities recorded as originating from a developing country i and registered in an offshore jurisdiction j during year t.

EOI_{ijt} equals 1 if a bilateral EOI between i and j exists in year t, and 0 otherwise;

ν_{ij} are country-pair fixed effects capturing time-invariant bilateral characteristics;

δ_t are year fixed effects capturing global shocks and common trends.

The coefficient of interest, β, measures the average treatment effect of EOI implementation on offshore entity creation.

X_{ijt} is a vector of control variables.

We use multiple control variables, including GDP, geographical proximity (distance) between the offshore entity's origin country and the offshore center country, corruption, linguistic proximity, tax burden, population growth, a binary variable capturing the existence of Controlled Foreign company rule, the share of income held by the richest 10% and natural resources exploitation. The choice of these variables is based on the literature and their ability to capture key factors influencing the use of offshore jurisdictions. For example, GDP reflects the size and wealth of the origin countries, which can influence the establishment of offshore structures in two opposing ways. On one hand, greater wealth may enhance the capacity of individuals and companies to create offshore entities. On the other hand, a wealthier economy might also possess the resources to invest in reforms and improve institutional quality, potentially reducing the need for offshore arrangements. Regarding offshore jurisdictions, the size of their economies could signify opportunities for businesses, increasing their attractiveness for the establishment of offshore entities.The distance between the origin and destination countries influences transaction costs and familiarity with offshore jurisdictions, making closer destinations more attractive. Corruption in the origin country may push investors to seek safer havens for their assets, while some offshore jurisdictions also offer protection against corrupt environments (Ledyaeva et al., 2013). A common language reduces linguistic barriers and facilitates navigation through offshore legal and financial systems. The tax burden motivates tax avoidance through offshore entities, particularly in high-tax countries (Bacchetta & Espinosa, 2000). Population growth reflects a growing demand for

financial services and can exacerbate economic inequalities, leading to capital flight toward offshore destinations. Finally, the share of income held by the richest 10% captures economic inequality, where the wealthiest individuals, the main users of offshore entities, seek to protect their wealth and optimize their tax liabilities (Zucman, 2015). Natural resource rents capture the economic dependence of a country on extractive industries, which can influence capital movements toward offshore jurisdictions. Resource-rich countries often experience higher rent-seeking behavior and weaker institutional controls, increasing the incentives for elites to transfer wealth abroad to secure assets from domestic instability (Mehlum et al., 2006). The resource curse hypothesis suggests that large natural resource revenues can lead to corruption, poor governance, and capital flight as elites seek offshore solutions to evade scrutiny and taxation(Collier & Hoeffler, 2005). Moreover, high resource rents may reduce the urgency for tax collection, fostering loopholes and facilitating illicit financial flows through offshore channels.

While our model includes a comprehensive set of control variables, a potential concern is that observed effects in offshore jurisdictions could be driven by global transparency shocks, such as the Panama Papers, Paradise Papers, or blacklisting, rather than the adoption of EOI itself.

A potential concern is that observed reductions in offshore entities could be driven by global transparency shocks, such as leaks, media revelations, or blacklisting rather than the adoption of EOI itself. Our empirical design addresses this by focusing on the differential change in offshore activity between countries that adopted EOI and those that did not. Year fixed effects absorb global shocks affecting all countries simultaneously, while country fixed effects account for persistent differences in institutional capacity and offshore exposure. Since global shocks affect all countries simultaneously, their common effect is absorbed. This ensures that only the additional change observed in EOI adopters can be attributed to the policy.

To ensure the robustness of our baseline findings, we complement the analysis with a gravity-type regression framework. This model combines the explanatory power of the gravity model with insights from network theory to capture the structural position of each offshore jurisdiction within the global Exchange of Information network. Specifically, we compute annual measures of degree, closeness, and betweenness centrality from the network of bilateral EOI agreements, reflecting each jurisdiction's level of connectivity and influence within the international tax transparency system. Integrating these network indicators helps account for heterogeneity in jurisdictions' exposure to global transparency norms. Highly central jurisdictions, connected to many partners

and embedded in dense treaty networks, may continue to attract investments despite EOI agreements, while more peripheral jurisdictions could experience sharper declines once EOI relationships are established. Additionally, we explore the effect of EOI on other forms of investments, such as FDI and portfolio investments.

Estimation Results

Figure 2 reports the Average Treatment Effect on the Treated (ATT) following the implementation of EOI. The horizontal axis aligns the timing of EOI adoption across countries, allowing for a comparison of pre- and post-treatment dynamics. Table 1 shows that pre-treatment differences are statistically insignificant, which supports the parallel trends assumption and indicates the absence of anticipation effects prior to EOI implementation. Following adoption, we observe a gradual and persistent decline in the number of active entities originating from developing countries in offshore financial centers. The reduction becomes particularly pronounced around five years after implementation. Consistent with this, the post-treatment estimates confirm a significant negative effect of EOI on the number of active offshore entities.

More specifically, EOI adoption is associated with an average decrease of approximately 18,882 active entities, alongside an increase of 46,588 suspended entities and 46,253 inactive entities. While we also observe a rise in newly registered entities, this increase is smaller than the number of closures, resulting in a net decline in active offshore presence.

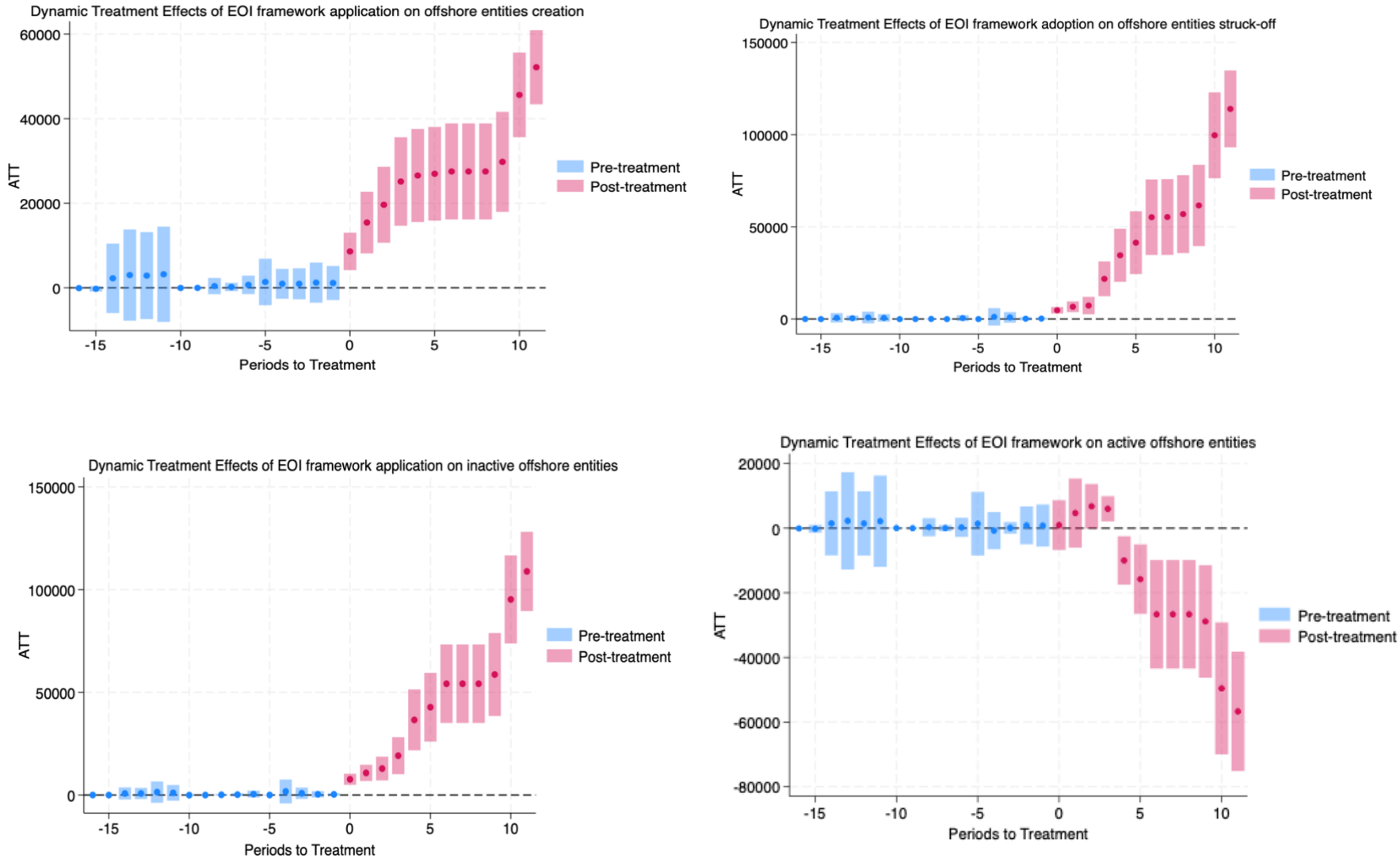
These patterns indicate that the observed changes reflect adjustments in organizational strategies rather than a complete exit from offshore engagement. Investors appear to respond to EOI by closing or suspending entities primarily associated with tax evasion or wealth concealment, while maintaining or establishing entities linked to legitimate financial or commercial activities. Accordingly, the effect of EOI is not a reduction in the overall presence offshore but a reshaping of offshore activity, shifting it toward more transparent and compliant structures.

Table IV.1: ATT by periods post and pre-treatment event study: Dynamic effects of EOI framework adoption on the trend of entities present in offshore jurisdictions.

	Registered Offshore entities	Struck-off Offshore entitites	Inactive Offshore entities	Active offshore entities
ATT(Pre_average)	1114.9 (1.13)	338.0 (0.80)	484.8 (0.82)	630.2 (1.13)
ATT(Post_average)	27705.8*** (7.76)	46588.3*** (9.10)	46253.4*** (9.13)	-18882.5*** (-10.19)
Observations	3573	3573	3573	3573

t statistics in parentheses $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Figure IV-2: Impact of EOI framework implementation in developing countries on the trend of entities present in offshore jurisdictions. .



Note: The figures represent estimated average treatment effect on the treated (ATT) for EOI framework using a difference-in-difference model with multiple treatment time periods following Callaway and Sant'Anna (2021)

In Table 2, we conduct the analysis by focusing solely on the countries of origin, omitting the bilateral dimension of the relationships. This approach allows us to verify whether the observed effects of EOI are robust to the exclusion of partner-country characteristics, which could otherwise influence bilateral outcomes. The ATT estimates for pre-treatment periods are small and statistically insignificant, supporting the parallel trends assumption. We observe the same trends and effects as those presented in Table 1. Post-treatment estimates show a significant decline in active offshore entities and corresponding increases in struck off and inactive entities. Newly registered entities also rise, though to a lesser extent than closures. These results confirm that the main patterns observed in the bilateral analysis persist in the unilateral setting, providing additional support for the robustness of our findings.

Table IV.2 :ATT by periods post and pre-treatment event study: Dynamic effects of EOI adoption on the trend of entities present in offshore jurisdictions: unilateral data.

	Registered entities	Struck-off entitites	Inactive entities	Active entities
ATT(Pre_average)	6789.6	1996.9	2900.3	1925.0
	(1.43)	(1.27)	(1.36)	(0.89)
ATT(Post_average)	68015.4*	113112.6**	110456.4*	-155553.6*
	(2.51)	(2.58)	(2.57)	(-2.50)
Observations	884	884	884	884

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In Table 3, we analyze the effect of EOI on other types of investments to better understand the broader behavioral responses of investors. While offshore entity creation is primarily aimed at tax avoidance or asset concealment, investors may also channel capital through portfolio investments or foreign direct investments in offshore jurisdictions. Portfolio investment refers to financial assets, such as stocks, bonds, or other securities, held by individuals or institutions in a foreign country, but without acquiring significant control or influence over the companies or entities involved. It just focuses on returns from capital gains or interest income. In contrast,

foreign direct investment involves direct ownership and control through the acquisition of a significant stake in a company, often linked to productive or operational activities.

Our empirical analysis does not reveal a statistically significant effect on average outcomes; a graphical inspection (Figure 3) highlights a downward trend in portfolio investments during the first five years following the implementation of the EOI. This is subsequently followed by a volatile, saw-toothed pattern in later years, particularly for flows originating from developing countries and directed towards offshore jurisdictions.

Several reasons may explain these different results. A first explanation could lie in the characteristics of the different types of investment. Indeed, Offshore entities are often created primarily to evade taxes, hide assets, or engage in illicit financial flows. These entities do not necessarily reflect productive investments but instead serve as vehicles for tax avoidance or money laundering. Therefore, the EOI, which increases transparency and the likelihood of detection, directly targets and reduces these activities (Johannesen & Zucman, 2014). Portfolio investments are, in general, easily bought and sold, making it easier to move funds quickly across borders. Ownership of these securities can be structured through offshore accounts, making it difficult to trace the real owner. This can be complexified the tracking of doubtful portfolio investments.

Unlike FDI is generally linked to long-term investments in productive sectors. Investors opting for this type of investment may be motivated by reasons other than tax advantages, including market access, resource acquisition, or strategic positioning. As a result, the implementation of an EOI framework may not alter investor behavior if economic motivations like political stability, market size, and labor costs outweigh fiscal ones (Blonigen & Piger, 2014). When EOI is implemented, investors may not reduce their holdings in tax havens but instead move them to alternative jurisdictions where information exchange is less effective or slower to implement. In their study Alstadsæter et al., (2022) found that even though EOI led to a reduction in wealth held in some tax havens, much of the capital was transferred to other opaque financial centers, indicating that capital mobility dampens the impact of EOI on global asset distribution.

In addition, Investors may respond to increased scrutiny under EOI by shifting away from offshore entities but continuing to use more sophisticated or harder-to-detect strategies, such as portfolio investments in jurisdictions that are not fully compliant with EOI standards (Hanlon et al., 2015). While EOI has improved transparency for some financial flows, certain jurisdictions still provide loopholes or limited cooperation. Investors may move their assets to those

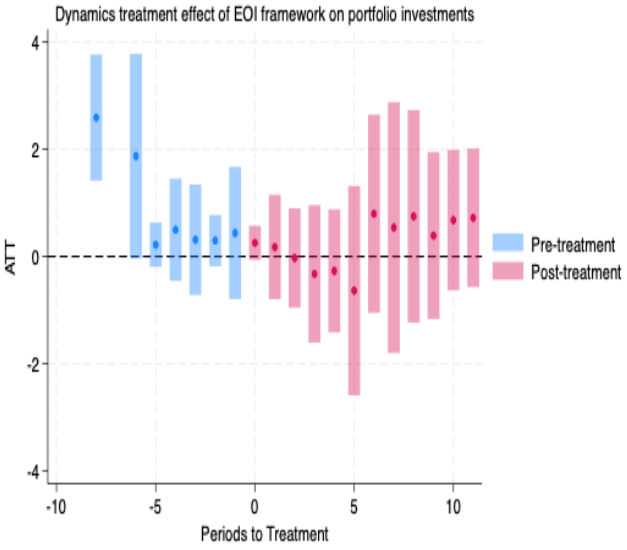
jurisdictions or transition from using offshore entities to using complex financial products, such as derivatives or anonymous ownership structures, which are harder to track. Another explanation could lie in the shortcomings of the EOI framework in place in countries, particularly developing ones. Weak regulatory frameworks limit administrative capacity, and a lack of confidence in international cooperation may reduce the effectiveness of these frameworks. Some countries can just implement the EOI framework due to international constraints or reputation reasons, but are not very committed to improving transparency. While the number of offshore entities may decrease due to increased fear of detection, the effective application of EOI provisions on FDI flows may be less effective. Indeed, OECD's Global Forum on Transparency and Exchange of Information for Tax Purposes has noted that many developing countries struggle to fully implement and benefit from EOI frameworks due to limited resources and technical expertise (*Rapport annuel du Forum mondial* 2022).

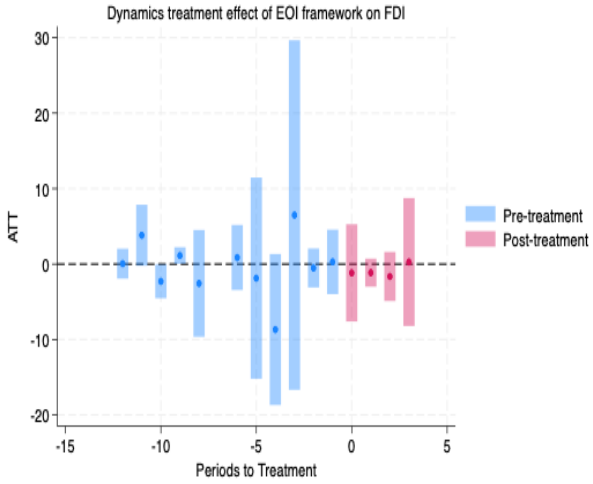
Table IV.3 :Dynamics treatment effect of EOI framework on other types of investments

	FDI	Portfolio Investment
ATT(Pre_average)	-0.2994	0.6809
	(0.3665)	(0.1254)
ATT(Post_average)	0.9241	0.2249
	(1.0592)	(0.3210)
Observations	3273	3273

t statistics in parentheses * p < 0.05, ** p < 0.01, *** p < 0.001

Figure IV-3: Impact of EOI framework implementation in developing countries on other types of investments





Robustness checks

To assess the robustness of our results, we conduct a supplementary analysis using gravity models. Following Tinbergen (1963); Chaney, (2014); Baltagi & Egger (2016), we assess the effect of EOI agreements within a gravity-type framework capturing bilateral economic and institutional linkages between developing and offshore economies.

In addition to standard gravity covariates such as economic size, geographic distance, and cultural proximity, we incorporate the number of bilateral EOI agreements held by each offshore jurisdiction, measured as degree centrality, to account for jurisdictions' integration within the global transparency network. Offshore centers with high degree centrality are more connected and thus more exposed to potential information sharing, whereas less connected jurisdictions remain relatively opaque and attractive for secrecy-driven activities.

Consistent with our baseline results, the gravity-based results indicate that bilateral EOI agreements are associated with a significant reduction in the creation of offshore entities and a decline in active entities originating from developing countries. Importantly, the inclusion of degree centrality highlights a nuanced effect. The deterrent impact of EOI is more pronounced in less connected jurisdictions, while highly connected offshore centers allow capital to be redirected through alternative channels, mitigating the overall effect of transparency measures. This finding

underscores that the effectiveness of international tax transparency initiatives depends not only on the existence of bilateral agreements but also on the structural embeddedness of jurisdictions within the global EOI network.

The analysis of control variables provides additional insights. Larger investor-country GDPs and closer cultural or linguistic ties with offshore centers increase entity formation, consistent with higher financial capacity and lower transaction costs. Stronger governance and institutional quality in the investor country reduce offshore activity, reinforcing the deterrent role of domestic oversight alongside EOI. Tax burden influences behavior, as expected. Higher tax rates in the origin country motivate offshore structures, whereas legal anti-avoidance measures partially mitigate this effect. Distance and economic size of offshore centers behave consistently with standard gravity expectations.

Overall, these estimates corroborate the main findings of our study and reinforce the conclusion that EOI adoption significantly influences investor behavior in offshore jurisdictions (Table 4).

Table IV.4 : Effect of EOI framework on Investments originating from developing countries to Offshore centers: gravity model estimates.

	Registered entities			Active entities			FDI			Portfolio Investment		
Log gdp(investor country)	-0.3400	0.4502	0.7132	-0.1584	0.0964	0.2022	1.6416***	2.2981	2.5770	0.5753	11.6796	12.717
	(0.2954)	(1.1536)	(1.1480)	(0.2704)	(1.0214)	(1.0112)	(0.3107)	(1.9441)	(1.9105)	(0.3726)	(17.1400)	(16.3003)
Log gdp(offshorer country)	0.3167***	0.5234***	0.4099***	0.2635***	0.3986***	0.2569***	0.5337***	0.7278***	0.8981***	0.4170***	0.6089***	0.6842***
	(0.0460)	(0.0634)	(0.0694)	(0.0421)	(0.0561)	(0.0611)	(0.0677)	(0.1370)	(0.1403)	(0.0484)	(0.1109)	(0.1086)
Log distance	-1.1981***	-1.1180***	-1.0964***	-1.2557***	-1.2172***	-1.1941***	-1.2164***	-1.6749***	-1.7476***	-1.3830***	-1.3212***	-1.2289***
	(0.0595)	(0.0772)	(0.0766)	(0.0545)	(0.0684)	(0.0675)	(0.0988)	(0.1743)	(0.1729)	(0.0773)	(0.1476)	(0.1481)
Common official language	0.7448***	1.6211***	1.6760***	1.1506***	1.9030***	1.9608***	0.4970*	0.6921	0.9692**	0.3523**	0.1538	0.2695
	(0.1360)	(0.1831)	(0.1817)	(0.1245)	(0.1621)	(0.1600)	(0.2598)	(0.4630)	(0.4652)	(0.1429)	(0.2485)	(0.2402)
Control of Corruption (investor country)	-0.2626*	-1.2895***	-0.9104***	-0.743***	-1.434***	-0.995***	-1.0758***	-0.3515	0.2042	-0.7223***	-0.9865***	-0.8692**
	(0.1392)	(0.2030)	(0.2199)	(0.1274)	(0.1798)	(0.1937)	(0.1486)	(0.3195)	(0.3416)	(0.1679)	(0.3541)	(0.3630)
Control of Corruption (offshore country)	0.3040	-0.3052	-0.5085	-0.3857	-0.1821	-0.3500	0.0589	2.6215	2.4896	-4.8215**	-3.9511	-4.4009
	(0.6561)	(1.6011)	(1.5860)	(0.6007)	(1.4176)	(1.3971)	(0.6299)	(2.0993)	(2.0534)	(2.3175)	(16.8248)	(15.9964)
Tax Burden (investor country)	0.0664***	0.0318**	0.0305**	0.0505***	0.0118	0.0127	-0.0396***	-0.0326	-0.0352	-0.0095	0.0718***	0.0597***
	(0.0070)	(0.0126)	(0.0126)	(0.0064)	(0.0112)	(0.0111)	(0.0092)	(0.0258)	(0.0263)	(0.0082)	(0.0222)	(0.0213)
Tax Burden (offshore country)	-0.0229	0.0461	0.0499	-0.0281	0.0369	0.0364	0.0291*	0.0014	0.0035	0.0288	1.0154	1.0627
	(0.0195)	(0.0572)	(0.0567)	(0.0179)	(0.0507)	(0.0500)	(0.0165)	(0.0671)	(0.0661)	(0.0641)	(1.2750)	(1.2120)
Rents (investor country)	0.0742***	0.0057	0.0039	-0.049***	0.0438**	0.0411**	-0.0682***	-0.175***	-0.165***	-0.006	0.0274	0.0236
	(0.0104)	(0.0202)	(0.0200)	(0.0095)	(0.0179)	(0.0176)	(0.0140)	(0.0473)	(0.0465)	(0.0097)	(0.0309)	(0.0294)
Rents (offshore country)	-0.1832	-0.1043	-0.1205	-0.1699	-0.1321	-0.1441	0.0887	0.5867	0.6052	0.2044	-8.8868	-10.5739
	(0.1150)	(0.2129)	(0.2108)	(0.1053)	(0.1885)	(0.1857)	(0.2381)	(0.6621)	(0.6477)	(1.1488)	(9.1511)	(8.7138)
Government Effectiveness (investor country)	-0.8653***	-0.9717***	-0.6267*	0.1629	-1.0382***	-0.5792*	1.7274***	0.7157	-0.0549	-0.2293	-0.5546	-0.7069
	(0.1863)	(0.3253)	(0.3376)	(0.1705)	(0.2880)	(0.2974)	(0.2038)	(0.4816)	(0.5094)	(0.2048)	(0.5075)	(0.4959)
Government Effectiveness (offshore country)	0.3105	0.3641	0.1688	0.7292	0.4442	0.2162	0.2221	-0.2199	-0.2072	0.8928	-0.4489	1.5201
	(0.3419)	(0.6666)	(0.6617)	(0.3130)	(0.5903)	(0.5829)	(0.3222)	(0.8712)	(0.8511)	(0.8055)	(4.4647)	(4.3058)
Consumer Price Index (investor country)	-0.0018	-0.0040	-0.0061	-0.0013	-0.0028	-0.0052	0.0090*	0.0134	0.0182	0.0140	-0.5290	-0.6491
	(0.0049)	(0.0103)	(0.0103)	(0.0045)	(0.0092)	(0.0090)	(0.0052)	(0.0128)	(0.0126)	(0.0198)	(0.4556)	(0.4344)
Consumer Price Index (offshore country)	-0.0006	-0.0013*	-0.0012	-0.0011	-0.0016**	-0.0015**	0.0173***	0.0053	0.0077	0.0016	-0.0036	-0.0035
	(0.0010)	(0.0008)	(0.0008)	(0.0009)	(0.0007)	(0.0007)	(0.0046)	(0.0060)	(0.0059)	(0.0023)	(0.0031)	(0.0030)
Wealth Inequality	-8.9679***	-3.6332**	-1.8414	-7.3025***	-4.6965***	-2.4405*	3.4382***	9.2187***	5.3654*	4.1921***	11.3900***	9.1141***
	(0.9927)	(1.4119)	(1.5358)	(0.9140)	(1.2456)	(1.3522)	(1.2692)	(2.6528)	(3.0693)	(1.1220)	(2.2691)	(2.3485)
EOI	**-1.2002*****		**-1.1328*****	**-0.6012*****		**-0.8964*****	**-0.5809*****		**1.1150****	**-1.3951*****		**-1.2439****
	(0.1971)		(0.3163)	(0.1831)		(0.2786)	(0.1901)		(0.4351)	(0.2794)		(0.6069)
Degree of centrality		**22.6462*****	**19.8467*****		**18.2550*****	**15.7396*****		**3.8179*****	**6.4249*****		**7.4617*****	**6.9136*****
		(0.8828)	(1.0825)		(0.7817)	(0.9535)		(1.2169)	(1.3911)		(1.4773)	(1.9431)
EOI*degree of centrality			**8.0791*****			**8.2308*****			**-9.5700*****			**-1.8094**
			(1.7532)			(1.5444)			(2.4684)			(3.0938)
constant	14.0539*	-6.5505	-8.2510	11.9604*	3.4371	4.7791	-28.4206***	-51.6131	-61.5127	-2.934	-240.1101	-250.458
	(7.2513)	(19.4856)	(19.3901)	(6.6381)	(17.2534)	(17.0807)	(5.5652)	(49.4438)	(48.6363)	(7.5323)	(366.8300)	(348.7209)
Observations	3137	1000	1000	3137	1000	1000	969	321	321	713	287	287
Pseudo R2	0.6676	0.b728	0.6748	0.8462	0.6579	0.6687	0.6778	0.7131	0.7284	0.6639	0.7438	0.7714
Country-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes Yes	Yes	Yes	Yes	Yes

Dependent variables are expressed in (log+1). t statistics in parentheses: ∗ p < 0.05, ∗∗ p < 0.01, ∗∗∗ p < 0.005

Conclusion

This study provides empirical evidence that the implementation of the Exchange of Information framework significantly impacts investor behavior, particularly in the use of entities for tax evasion. Using a difference-in-differences approach with multiple periods, the findings indicate that increased transparency and the heightened risk of detection associated with EOI frameworks have led to a substantial decline in active entities within offshore centers. These results suggest that the EOI framework influences investment behavior, prompting investors to either restructure their activities for compliance or adapt to new tax avoidance strategies. However, while the EOI framework effectively reduces the number of entities in offshore jurisdictions, its influence on foreign direct investment and broader portfolio investments appears limited. This mixed response underscores the complexity of investor behavior, as some investors may reallocate assets to alternative tax-efficient instruments or shift funds to jurisdictions less affected by EOI mechanisms. These findings highlight the ongoing need for international cooperation and comprehensive tax reforms to close loopholes and ensure that EOI frameworks extend their effectiveness to all forms of cross-border investments. The results remain robust across alternative methodological approaches. Policymakers, particularly in developing countries, should focus on strengthening institutional capacity to maximize the benefits of EOI and enhance oversight of investments flowing through their economies. Additionally, it is crucial to implement and enforce strong deterrents against non-compliance or opacity among member countries while ensuring the reliability and quality of information exchange. Future research should further investigate these behavioral shifts, assessing their long-term implications for global tax compliance and capital mobility. Moreover, examining less transparent and emerging financial instruments, such as cryptocurrencies, could provide valuable insights into how investors adapt to evolving regulatory frameworks.

The study aims to examine how the implementation of EOI affects the creation of offshore entities registered as originating from developing countries. The central hypothesis is that the adoption of EOI increases transparency and compliance cost, thereby reducing the incentive to establish or maintain entities in offshore jurisdictions.

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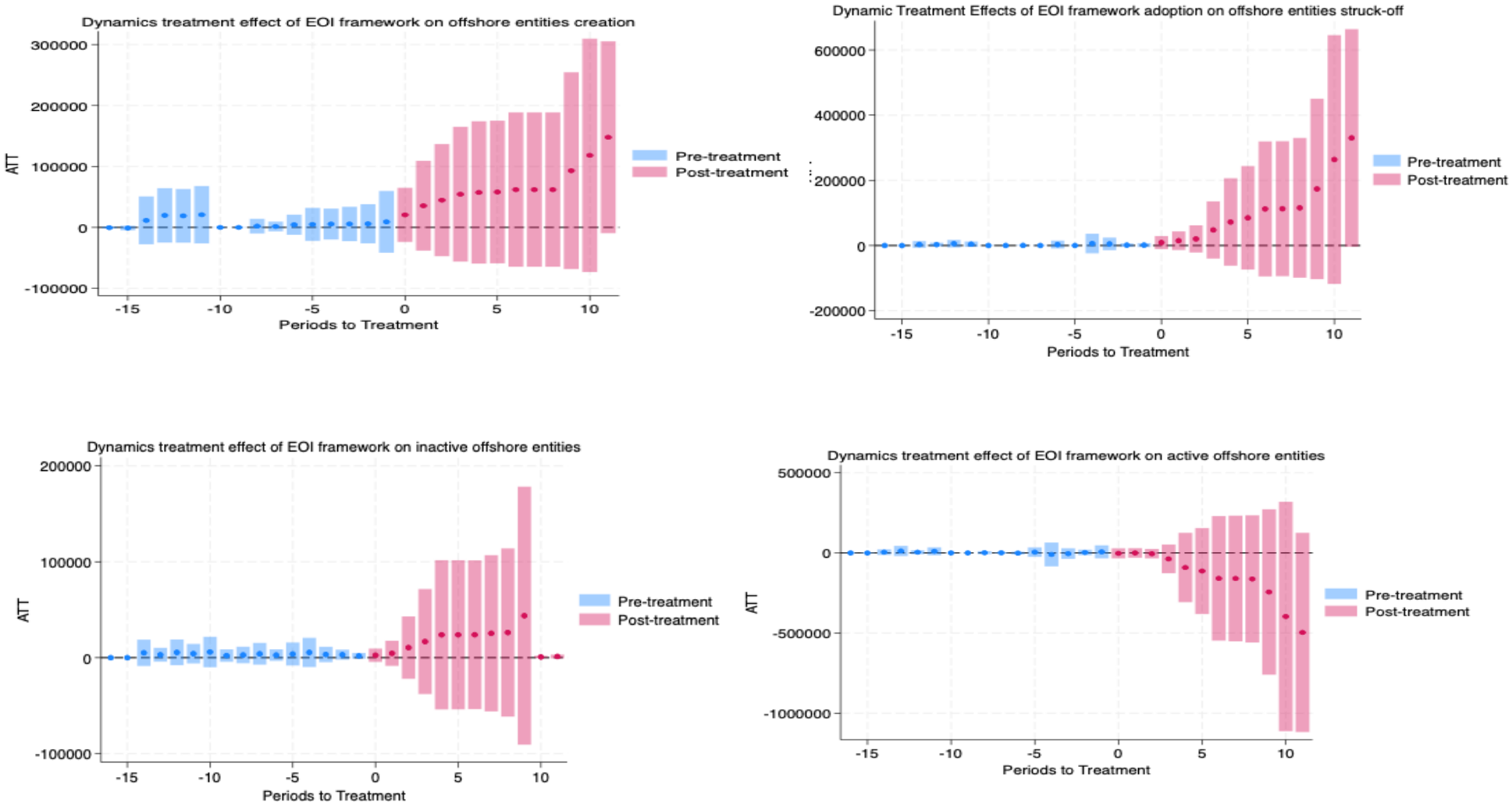
Appendix A : Estimation results

Figure IV-4: Impact of EOI framework implementation in developing countries on Entities in Offshore jurisdictions (network consideration)



Note: *The figures represent estimated average treatment effect on the treated (ATT) of wide EOI network use on the trend of entities in offshore centers using a difference-in-difference model with multiple treatment periods following Callaway and Sant'Anna (2021)*

Appendix B : Descriptive statistics

Table IV.5: Descriptive statistics

Variables	Obs	Mean	Std. dev.	Min	Max
log(number of registered offshore entities)	4,788	2.652057	3.243773	0	15.07488
log(number of struck-off offshore entities)	4,788	1.917088	3.098362	0	14.7481
log(number of inactive offshore entities)	4,788	1.872905	3.087789	0	14.69241
log(number of active offshore entities)	4,788	2.060946	2.954027	0	14.50442
number of registered offshore entities	4,788	21903.22	201241.8	0	3523184
number of struck-off offshore entities	4,788	11326.25	113811.8	0	2541084
number of active offshore entities	4,788	11324.13	113969.4	0	2403429
number of inactive offshore entities	4,788	10576.97	97699.22	0	1991535
log(gdp_investor_country)	4,114	18.12179	1.752995	12.92147	21.63019
log(gdp_offshore_center)	2,972	16.91017	2.753381	12.50254	23.78537
log(distance)	4,116	8.738153	.8229136	4.836282	9.868999
common langue official	4,095	.2871795	.4525013	0	1
Control of Corruption (investor country)	4,560	-.336923	.7004659	-1.581135	1.543591
Control of Corruption (offshore_center)	4,560	-.2746665	.6898465	-1.581135	1.543591
Governement Effectivenes (investor country)	4,559	-.3258513	.5735642	-1.841436	1.192902
Governement Effectivenes (offshore_center)	4,537	.6403408	.4706613	-1.791944	1.192902
Tax Burden(investor country)	4,709	76.84674	8.862993	44.1	97.6
Tax Burden(offshore center)	4,656	77.77841	8.568032	44.1	97.6
population growth(investor country)	4,788	1.571205	.9099562	-.4017359	5.785413
population growth(offshore center)	4,788	1.559377	.9024366	-2.628656	5.785413
Rents(investor country)	4,788	6.659295	7.319139	.022789	59.68387
Rents(offshore center)	3,041	.5434819	1.879576	0	34.17767
Portfolio Investment	749	826.7166	3759.662	0	34741
FDI_ijt	924	321.2598	1210.131	0	14226
Wealth Inequality	4,788	.5279839	.066695	.3789	.7155
Consumer Price Index (investor country)	5,767	2725.313	2.909082	73.04989	105.0733
Consumer Price Index (offshore country)	4,039	98.07035	21.89215	37.35754	37.35754
EOI	4,725	.3566138	.4790501	0	1
degree_of centrality	1,689	.1259306	.0966713	.0136986	.4027778

Table IV.6: Data sources

Variable	Description	Sources
Registered Entities	Number of Registered Entities	ICIJ Panama and Pandorra papers
Inactive Entities	Number of Inactive Entities	
Struck off Entities	Number of Struck off Entities	
Active Entities	Number of Active Entities	
EOI	Exchange Of Information on Request equal 1 if in place otherwise 0	OECD, UN Treaty Collection
Wealth inequality	Top 10% Income Share	World Development Indicators
Population growth	Population growth (annual%)	
Control of corruption	Control of Corruption, Estimate	
Governement Effectivenes	Government Effectiveness, Estimate	
Rents	Total natural resources rents (% of GDP)	
Portfolio Investments	Bilateral Outflows Portfolio Investments in millions of dollars	Coordinated Direct Investment Statistics
FDIij	Bilateral outflows FDI in millions of dollars	United Nations Conference on Trade and Development
Tax burden	Tax burden index	Heritage foundation
Log_gdp	Log of Gross Domestic product in dollars	Centre d'études prospectives et d'informations internationales (CEPII)
distance	Distance in km2	
Common official language	Common official or primary language	
Consumer Price Index	Consumer Price Index	International Financial Statistics

Table IV.7: List of countries in the sample

Investor countries		Offshore centers
Algeria	Kenya	Anguilla
Angola	Lesotho	Bahamas
Argentina	Liberia	Barbados
Benin	Madagascar	Belize
Bolivia	Malawi	Bermuda
Botswana	Mali	British Virgin Islands
Brazil	Mauritania	Cayman Islands
Burkina-Faso	Mexico	Costa Rica
Cabo Verde	Morocco	Cyprus
Cameroon	Namibia	Hong Kong
Chad	Niger	Isle of Man
Chile	Nigeria	Liberia
Colombia	Paraguay	Liechtenstein
Congo	Peru	Malta
Cote d'Ivoire	Rwanda	New Zealand
Democratic Republic of Congo	Senegal	Niue
Djibouti	Sierra Leone	Panama
Dominican Republic	South Africa	Saint Kitts
Ecuador	Swaziland	Samoa
Egypt	Tanzania	Seychelles
El Salvador	Togo	Singapore
Gabon	Tunisia	Undetermined
Gambia,The	Uganda	Uruguay
Ghana	Uruguay	Delaware
Guinea	Zambia	South Dakota
Guinea Bissau	Zimbabwe	Wyoming
Honduras		

Conclusion Générale

Synthèse des travaux

Cette thèse a étudié les mécanismes d'érosion de la base fiscale dans les pays en développement et évalué l'efficacité des réponses institutionnelles internationales mises en œuvre pour y faire face. Elle s'inscrit dans un contexte où la mobilisation des ressources domestiques est placée au centre des stratégies de développement, comme le souligne l'Agenda d'Addis-Abeba (2015) sur la réduction de la dépendance à l'aide extérieure et le renforcement de l'autonomie fiscale. Cependant, cette ambition se heurte à des défis structurels et institutionnels qui limitent l'efficacité des systèmes fiscaux nationaux. Les systèmes fiscaux des pays en développement restent vulnérables à des fuites de ressources, via des mécanismes traditionnels (optimisation des multinationales, concurrence fiscale) et émergents (digitalisation des transactions, nouveaux moyens de paiement).

Le présent travail adopte une démarche empirique, fondée sur des cadres théoriques, pour examiner l'érosion des bases fiscales et l'efficacité des dispositifs institutionnels actuels. Elle offre une lecture intégrée de l'érosion fiscale, qui dépasse la dimension économique pour inclure les aspects juridiques, politiques et de gouvernance internationale. Les résultats obtenus montrent ainsi que la lutte contre l'érosion de la base fiscale ne peut se réduire à des mesures techniques ou administratives, mais qu'elle nécessite une remise en question des rapports de force qui structurent l'architecture fiscale internationale.

Le premier constat majeur de cette thèse est que l'érosion des bases fiscales est structurellement liée à la globalisation de l'économie. L'intégration des marchés de capitaux, l'externalisation productive et la mobilité croissante des entreprises multinationales transforment profondément l'assiette fiscale des pays.

La thèse a également montré que bien que les mécanismes classiques d'érosion des bases fiscales restent centraux et continuent d'expliquer l'essentiel des pertes de recettes, de nouveaux canaux émergent, complexifiant davantage la capacité des administrations fiscales à tracer les flux et à établir la valeur imposable réelle.

Plus précisément, les analyses empiriques réalisées dans les deux premiers chapitres ont permis de le mettre en évidence.

D'une part, l'étude sur les conventions fiscales bilatérales a révélé que, si celles-ci peuvent favoriser l'IDE productif, elles sont également associées à une augmentation significative des investissements fantômes, confirmant leur rôle comme instrument d'optimisation

agressive. Les pays en développement, en quête d'attractivité, se trouvent souvent contraints de signer des conventions aux effets ambivalents, faute de marges de négociation suffisantes et d'évaluations ex ante des effets redistributifs. D'autre part, l'analyse portant sur l'argent mobile montre que son utilisation massive accroît les risques de blanchiment, en raison de la facilité des transferts et du manque de mécanismes de contrôle adaptés. Cela met en lumière un risque important : les innovations inclusives peuvent aussi devenir des vecteurs de malversations s'il n'existe pas de régulation adaptée.

La seconde partie de la thèse a évalué l'efficacité des mécanismes de coopération, notamment l'échange de renseignements à des fins fiscales. Ces dispositifs ont permis des progrès réels en termes de mobilisation de revenus et de réduction des entités offshores déclarées, mais pas de toutes les autres formes d'investissement, faisant penser à une restructuration. Toutefois, leur efficacité demeure très inégale selon les pays. Les contraintes identifiées sont de nature technique (capacité à traiter l'information), institutionnelle (qualité des administrations fiscales), juridique (droits et confidentialité), politique (inégalités de représentation dans les instances normatives).

Plusieurs recommandations politiques découlent de ces travaux. Elles proposent notamment de corriger les failles des conventions fiscales bilatérales afin de favoriser des investissements réellement productifs et durables. Cela inclut l'intégration de clauses anti-abus telles que le Test du but principal (Principal Purpose Test) et la clause de limitation des avantages (Limitations on Benefits), le renforcement des mécanismes de transparence, notamment par l'échange automatique d'informations et la publication rigoureuse des bénéficiaires effectifs, ainsi que le contrôle strict des flux transitant par des entités spécialisées (Special Purposes Entities) ou des paradis fiscaux. Ces mesures doivent garantir que les avantages fiscaux ne s'appliquent qu'aux investissements générant de l'emploi, des infrastructures ou favorisant le transfert de technologie.

Les analyses proposent également de renforcer la régulation du secteur du mobile money pour prévenir les abus. Cela passe par l'harmonisation des standards de conformité entre prestataires, la limitation de la détention de multiples comptes par une même personne, et la formation ainsi que la supervision des agents, qui constituent la première ligne de détection des transactions suspectes. Une collaboration étroite entre opérateurs de mobile money et autorités nationales est également essentielle pour améliorer la surveillance, le signalement des

irrégularités et le suivi des flux financiers. En dernier lieu, elles soulignent l'importance pour les pays en développement de renforcer les capacités techniques et institutionnelles nécessaires pour mettre en œuvre ces mesures, tout en participant activement et équitablement aux discussions internationales, afin d'éviter qu'ils ne soient désavantagés par les nouvelles normes fiscales mondiales.

Contributions et valeur ajoutée de la thèse

Ce travail contribue à la littérature de plusieurs manières :

Premièrement, il répond à un déficit important dans la littérature, largement centrée sur les économies avancées. Les pays en développement restent peu étudiés, principalement en raison du manque de données fiables et régulièrement disponibles. En plaçant ces pays au cœur de l'analyse, cette thèse propose une lecture plus inclusive des enjeux fiscaux mondiaux et contribue à réduire le biais structurel qui oriente la recherche vers les pays développés.

Deuxièmement, il apporte une contribution significative sur le plan économique et quantitatif, en mobilisant des approches empiriques là où les travaux existants restent majoritairement théoriques, juridiques ou fondés sur des analyses normatives. Alors que la fiscalité internationale est souvent abordée sous l'angle des cadres réglementaires, les analyses quantitatives appliquées aux pays en développement demeurent limitées. En recourant à des méthodes économétriques rigoureuses et à des sources de données rarement exploitées pour ces pays, cette thèse enrichit une littérature encore limitée et propose des résultats fondés sur l'observation empirique plutôt que sur des raisonnements analytiques ou des simulations.

Troisièmement, il fournit des preuves empiriques contextualisées pour les pays en développement, mettant en lumière les asymétries de pouvoir dans la gouvernance fiscale internationale.

Enfin, il se distingue par son orientation résolument opérationnelle. Au-delà du diagnostic empirique, elle formule des recommandations directement exploitables par les décideurs publics, les administrations fiscales et les instances internationales.

Limites et perspectives

Les principales limites de cette thèse sont liées aux contraintes de l'analyse empirique de la fiscalité internationale dans les pays en développement. Elles concernent d'abord la disponibilité et la qualité des données, qui restreignent la précision des estimations et imposent le recours à des approximations. Elles tiennent également à la sensibilité et à l'opacité des informations à caractère fiscal limitant l'accès aux données détaillées sur les pratiques d'évasion et d'optimisation. Enfin, l'évolution rapide des stratégies d'évitement, souvent catalysée par l'innovation technologique et financière, complique l'analyse et crée un décalage entre les pratiques des contribuables et les instruments de mesure disponibles.

Ces limites ouvrent plusieurs perspectives de recherche. Un premier axe pourrait concerner l'amélioration et l'harmonisation des statistiques fiscales et financières, indispensables pour mieux identifier les flux transfrontaliers et affiner les estimations de pertes fiscales. Un second axe porte sur l'étude des nouvelles formes d'érosion liées aux actifs numériques, notamment les cryptomonnaies dans les économies émergentes. Enfin, un troisième axe concerne l'analyse approfondie des réformes fiscales internationales, en particulier les règles du Pilier 1 et du Pilier 2, dont les effets différenciés sur les pays en développement restent encore mal connus.

Un second axe pourrait porter sur l'étude des nouvelles formes d'érosion liées aux actifs numériques tels que les cryptomonnaies dans les économies émergentes. Un troisième axe pourrait être l'analyse approfondie des réformes internationales en cours, en particulier les règles du Pilier 1 et du Pilier 2, dont les effets différenciés sur les pays en développement demeurent encore largement méconnus.

Pour finir, la thèse montre que la coopération fiscale peut constituer une réponse efficace, mais seulement si elle s'accompagne d'un renforcement des capacités administratives et d'une réforme de la représentation internationale au sein des instances de décision.