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**Katarzyna Perez**

katarzyna.perez@ue.poznan.pl

Poznań University of Economics and Business

**Katarzyna Schmidt-Jessa**

Poznań University of Economics and Business

**Tomasz Kaczmarek**

Poznań University of Economics and Business

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# What Drives Profit Shifting? Evidence from Macroeconomic Cross-Country Data

Katarzyna Perez[a], Katarzyna Schmidt-Jessa[b], Tomasz Kaczmarek[c]

[a] ORCID: 0000-0003-3331-8456, corresponding author katarzyna.perez@ue.poznan.pl

[b] ORCID: 0000-0002-5310-1038

[c] ORCID: 0000-0003-1828-100X

[a, c] Investment and Financial Markets Department, Institute of Finance, Poznan University of Economics and Business, Poland
[b] Money and Banking Department, Institute of Finance, Poznan University of Economics and Business, Poland

**Abstract**

Profit shifting by multinational enterprises remains a central challenge for tax policy, yet the factors driving its cross-country variation are not fully understood. This paper provides new macro-level evidence on the structural determinants of profit shifting across 64 countries over the period 2009–2022, using a two-stage empirical approach that combines dynamic panel GMM estimations with cross-country regression analysis. The results show that profit shifting is not primarily driven by standard economic fundamentals such as market size, growth, or trade openness. Instead, it reflects a narrower set of institutional, regulatory, and cultural forces. Transparency-enhancing policies – most notably Country-by-Country reporting – are associated with significantly lower levels of profit shifting, underscoring the effectiveness of information-based policy tools. At the same time, higher government effectiveness is linked to greater profit shifting, pointing to a tension between enforcement capacity and the sophistication of tax-planning strategies in more advanced institutional environments. Cultural factors, proxied by dominant religious affiliation, show significant individual associations with profit shifting, suggesting that social norms and tax morale may shape corporate behavior alongside formal regulations, although these effects weaken in joint specifications. These findings are robust to alternative CIT rate assumptions, winsorization, and exclusion of outlier countries. The results suggest that policies aimed at curbing profit shifting should go beyond tightening tax rules and emphasize information disclosure, international coordination, and credible enforcement within a broader institutional framework.

**Key words**: profit shifting, multinational enterprises, tax avoidance, FDI, Country-by-Country reporting, institutional quality, BEPS

**JEL Codes**: H26, H25, F21, F23

**Highlights**

- Institutional, regulatory, and cultural factors drive profit shifting — not economic fundamentals.
- Country-by-Country reporting significantly reduces profit shifting across countries.
- Higher government effectiveness is linked to greater profit shifting intensity.
- Cultural factors proxied by religion shape cross-country profit shifting variation.
- Results are robust to alternative CIT rates, winsorization, and outlier exclusion.

**Contributions**

Perez: Conceptualization, Data Curation, Methodology, Writing – Original Draft Preparation, Project Administration, Writing – Review & Editing

Schmidt-Jessa: Conceptualization, Data Curation, Methodology, Writing – Original Draft Preparation, Writing – Review & Editing

Kaczmarek: Conceptualization, Data Curation, Formal Analysis, Methodology, Validation, Writing – Original Draft Preparation, Writing – Review & Editing

All authors reviewed the manuscript.

## Declarations

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# What Drives Profit Shifting? Evidence from Macroeconomic Cross-Country Data

## 1. Introduction

Profit shifting constitutes one of the most significant challenges to the integrity of corporate income taxation in the globalized economy. Recent estimates suggest that multinational enterprises (MNEs) relocate hundreds of billions of U.S. dollars in profits each year to low-tax jurisdictions, leading to annual revenue losses exceeding 100 billion USD worldwide (Janský & Palanský, 2019; Wier & Zucman, 2022). This large-scale reallocation of profits across borders undermines national fiscal systems, distorts fair competition, and may contribute to global inequality. By reducing the effective corporate tax bases of high-tax countries, profit shifting constrains their ability to finance public goods and welfare, while allowing a few jurisdictions – often small or specialized in financial intermediation – to accumulate significant fiscal benefits (Clausing, 2020; Cobham & Janský, 2018).

Despite its global nature, profit shifting exhibits substantial heterogeneity across countries and regions. Some economies, particularly small open financial centers, act as major conduits for profit transfers, while others, including large emerging markets, experience significant revenue losses despite relatively moderate statutory tax rates (Garcia-Bernardo et al., 2022; Garcia-Bernardo & Jansky, 2023; Tørsløv et al., 2022). While tax differentials are widely recognized as a key driver of profit shifting (Hines & Rice, 1994; Huizinga & Laeven, 2008), growing evidence suggests that cross-country variation cannot be explained by fiscal incentives alone. Institutional capacity, regulatory frameworks, and broader socio-economic and cultural factors also play an important role (Beer et al., 2019; Dharmapala, 2019).

Most existing empirical research on profit shifting relies on micro-level data – financial statements of multinational corporations or firm-level country-by-country reports(Beer et al., 2019; Beer & Loeprick, 2014). Microeconomic approaches allow for detailed analyses of transfer pricing, intra-firm lending, and the location of intangible assets, but they are limited in

geographical coverage and comparability. Access to firm-level data is often restricted, the accounting definitions of profits differ across jurisdictions, and data availability for developing economies is low (Bradbury et al., 2018). As a result, much of the existing literature focuses on a relatively narrow group of OECD countries or specific industries.[1]

An alternative strand of research employs a macroeconomic approach, which uses aggregate data from balance of payments and national accounts to estimate the scale and distribution of profit shifting (Bolwijn et al., 2018; Janský & Palanský, 2019; Tørsløv et al., 2022; UNCTAD, 2015a, 2015b). Although less granular, this method provides a comprehensive picture of global patterns, enabling comparisons across a wide set of countries. It also captures multiple channels of profit reallocation embedded in international investment structures and financial flows (Beer et al., 2019). Macro-based estimations are therefore particularly well suited for analyzing structural determinants of profit shifting across countries.

This paper adopts a macroeconomic perspective to examine how economic, institutional, regulatory, and cultural factors jointly shape cross-country differences in profit shifting. From a theoretical standpoint, several mechanisms can be identified. Economic characteristics such as market size and openness may expand opportunities for profit shifting, while macroeconomic instability may constrain complex tax-planning strategies. Institutional quality plays a dual role, as stronger governance may improve enforcement but also facilitate more sophisticated financial arrangements. Regulatory frameworks, including transparency-enhancing policies and anti-avoidance rules, directly affect the feasibility of profit shifting. Finally, cultural norms and social attitudes may influence compliance behavior through their impact on tax morale.

Building on these mechanisms, we formulate four hypotheses. First, economic characteristics are expected to condition the incentives and feasibility of profit shifting. Second, the effect of institutional quality is theoretically ambiguous, reflecting the interaction between

[1] For a review of the geographical and methodological limitations of firm-level profit shifting studies, see Bradbury et al. (2018) and Beer et al. (2019).

enforcement and financial sophistication. Third, regulatory measures are expected to reduce profit shifting, although their effectiveness may depend on enforcement capacity. Fourth, cultural factors are expected to be associated with cross-country variation in profit shifting through their influence on compliance norms.

To test these hypotheses, we construct a macro-level measure of profit shifting based on the relationship between offshore exposure and the rate of return on inward foreign direct investment (FDI), using balance-of-payments data covering up to 93 countries over the period 2009–2022. We then relate the estimated profit-shifting intensity to a comprehensive set of country-level characteristics capturing economic conditions, institutional quality, regulatory frameworks, and cultural factors using a common estimation sample of 840 observations across 64 countries.

Our results yield four main findings. First, standard economic fundamentals – including market size, growth, and trade openness – do not show statistically significant effects, suggesting that profit shifting is not primarily driven by macroeconomic characteristics. Second, the implementation of CbC reporting is associated with a significant reduction in profit shifting, consistent with the role of transparency in curbing tax avoidance. Third, government effectiveness is positively related to profit shifting, suggesting that the sophistication channel dominates the enforcement channel in the cross-country setting. Fourth, cultural factors show significant individual associations with profit shifting, although these effects weaken in joint specifications and their interpretation requires caution given potential confounding factors and the absence of entity fixed effects.

This study contributes to the literature in three ways. First, it provides new macro-level evidence on the structural determinants of profit shifting using a broad cross-country dataset that encompasses the full post-BEPS implementation period (2009–2022), allowing for an assessment of recent policy reforms. Second, it integrates economic, institutional, regulatory,

and cultural dimensions within a unified empirical framework, systematically testing twelve explanatory variables across all four hypothesis groups. Third, it offers new evidence on the relative effectiveness of different anti-avoidance instruments, showing that transparency-based measures such as CbC reporting outperform rule-based instruments in reducing profit shifting at the aggregate level.

The remainder of the paper is organized as follows. Section 2 reviews the related literature. Section 3 presents the data and methodology. Section 4 discusses the empirical results, and Section 5 concludes with implications for policy and further research.

## 2. Literature Review and Hypotheses Formulation

### 2.1. Economic and Fiscal Determinants

The foundational literature on profit shifting emphasizes the role of international tax differentials in shaping multinational behavior. Seminal contributions by Hines and Rice (1994) and Huizinga and Laeven (2008) show that differences in statutory or effective corporate income tax (CIT) rates across countries create strong incentives for shifting reported profits from high- to low-tax jurisdictions. Empirical studies consistently document a negative semi-elasticity between corporate tax rates and reported profitability, often interpreted as a measure of profit shifting (Bartelsman & Beetsma, 2003; Clausing, 2016; Demirgüç-Kunt & Huizinga, 2001). Further studies demonstrate that even relatively small tax changes in low-tax jurisdictions can induce disproportionately large shifts in reported income, pointing to a non-linear response of multinational firms to tax incentives (Buettner & Wamser, 2013; Dowd et al., 2017).

However, tax differentials alone cannot fully explain the observed magnitude and cross-country variation of profit shifting. Recent research highlights the importance of broader macroeconomic characteristics, such as economic size, export orientation, and integration into global financial networks. Smaller and more open economies tend to attract a larger share of

inward FDI routed through offshore jurisdictions and often function as "conduit" countries within multinational structures (Crivelli et al., 2016; Lejour, 2021; Vasilakis & Vlachos, 2024). In contrast, larger and more diversified economies are typically less sensitive to tax differentials but may serve as final destinations for profits shifted from other jurisdictions (Tørsløv et al., 2022).

Taken together, these findings suggest that economic fundamentals shape both the incentives and the feasibility of profit shifting, although their overall effect may be heterogeneous and context-dependent. Since our macro-level measure of profit shifting already incorporates the effects of tax differentials through the offshore indicator, the CIT rate enters our second-stage analysis as a control variable rather than a primary explanatory factor.

H1. *Economic and fiscal determinants of profit shifting*: Economic fundamentals – including market size, trade openness, growth dynamics, and macroeconomic stability – are expected to be systematically associated with cross-country variation in profit shifting, as they shape both the incentives and the feasibility of cross-border profit reallocation.

### 2.2. Institutional and Governance Quality

Institutional and governance quality plays a central but theoretically ambiguous role in shaping profit shifting. On the one hand, stronger institutions – characterized by effective governance, low corruption, and credible enforcement – should reduce tax avoidance by increasing the expected cost of non-compliance (Luttmer & Singhal, 2014; Ullah & Khan, 2017). On the other hand, high-quality institutions may create stable and predictable environments that facilitate complex financial arrangements and sophisticated tax-planning strategies (Dharmapala & Hines, 2009).

Empirical research confirms both perspectives. Ullah & Khan (2017) and Peres et al. (2018) show that weak institutional environments are associated with more opportunistic and rent-

seeking forms of foreign investment. Conversely, Dharmapala & Hines (2009) demonstrate that many traditional tax havens score surprisingly high on governance indicators such as government effectiveness and regulatory quality. Similarly, Peralta et al. (2006) argue that administrative discretion and enforcement practices may substitute for statutory tax reductions.

These findings indicate that institutional quality affects both enforcement capacity and the sophistication of tax-planning strategies, implying an ambiguous overall relationship between governance and profit shifting. The Worldwide Governance Indicators (Kaufmann & Aart C. Kraay, 2024), which capture six distinct dimensions of institutional performance, provide a comprehensive framework for examining this dual role of governance in the context of profit shifting.

H2. *Institutional quality and profit shifting*: Higher institutional quality is associated with cross-country variation in profit shifting. The direction of this association is theoretically ambiguous, as stronger institutions may reduce profit shifting through improved enforcement capacity, but may also enable more sophisticated tax-planning strategies in stable and predictable institutional environments.

### 2.3. Legal and Regulatory Framework

Regulatory frameworks shape both the opportunities and constraints for profit shifting by multinational enterprises. Beyond statutory tax rates, the design and implementation of tax rules determine how easily firms can exploit cross-border differences in taxation. Among the most direct policy tools, transfer pricing regulations and thin capitalization rules restrict intra-group transactions and financing structures, thereby limiting firms' ability to reallocate profits across jurisdictions (Beer et al., 2019; Lohse & Riedel, 2013). At the multilateral level, the OECD's Base Erosion and Profit Shifting (BEPS) framework has established a comprehensive set of minimum standards and recommended practices aimed at curbing aggressive tax planning.

More recently, transparency-enhancing initiatives have become a central element of international tax policy. Country-by-Country (CbC) reporting, introduced under BEPS Action 13, increases the probability of detecting profit misalignment by providing detailed information on the global allocation of income and economic activity within multinational groups. Empirical studies suggest that greater transparency is associated with lower levels of profit shifting (Delis et al., 2025; Joshi, 2020; Overesch & Wolff, 2021; Tuinsma et al., 2023). However, the effectiveness of these measures depends on enforcement capacity, as regulations that exist formally may remain ineffective if not properly implemented (Beer et al., 2019).

Taken together, this literature suggests that regulatory measures – particularly those enhancing transparency – can constrain profit shifting, but their effectiveness is conditional on institutional capacity.

H3. *Regulatory framework and profit shifting*: The adoption of anti-avoidance regulations and transparency-enhancing measures is expected to reduce profit shifting, although their effectiveness depends on enforcement capacity.

### 2.4. Cultural and Religious Determinants

Beyond formal institutions and regulations, cultural norms and social attitudes may influence tax compliance behavior. The literature on tax morale suggests that individuals in societies with stronger ethical norms and higher levels of religiosity are less likely to engage in tax evasion (Luttmer & Singhal, 2014; McGee, 2006; Torgler, 2003). Early empirical studies show that individuals in more religious societies report higher tax morale and lower willingness to justify tax evasion (Torgler, 2003; Welch et al., 1991). These individual-level norms may also extend to corporate behavior, as religiosity embedded in governance structures can discourage aggressive tax strategies (Boone et al., 2013), and the social environment in which firms operate shapes managerial attitudes toward tax compliance. Cross-country evidence further indicates

that cultural and religious factors shape both the acceptability of tax avoidance and the likelihood of regulatory evasion (Sutrisno & Dularif, 2020).

At the macro level, cultural factors such as dominant religious affiliation can be interpreted as proxies for broader social norms, trust, and ethical orientation that influence economic behavior. Although empirical evidence remains limited, existing studies suggest that religion affects both institutional quality and market outcomes through its impact on values and social norms (Bentzen & Gokmen, 2023; McCleary & Barro, 2006). In this context, religion may be viewed as part of a country's informal institutional environment that shapes attitudes toward taxation and compliance. However, since religious affiliation is time-invariant and correlated with other country characteristics, its effects are difficult to isolate from broader cross-country heterogeneity.

H4. *Cultural norms and profit shifting*: Cultural factors, proxied by dominant religious affiliation, may be associated with cross-country variation in profit shifting through their influence on tax morale and compliance norms.

## 3. Data and methodology

In this section, we describe the data sources and empirical methodology used to estimate the scale of profit shifting at the country level and to test the hypotheses derived in the previous section. Our approach follows a two-stage strategy. In the first step, we construct a macro-level measure of profit shifting based on international investment data. In the second step, we examine how institutional, regulatory, and cultural determinants shape cross-country variation in the estimated level of profit shifting.

Our empirical strategy builds on the macroeconomic approach developed by UNCTAD (2015b, 2015a) and subsequent studies (Janský & Palanský, 2019), which interpret the relationship between the share of inward FDI stock originating from offshore financial centers

(hereafter referred to as the Offshore Indicator) and the rate of return (RoR) on total inward FDI stock as indicative of profit shifting. The underlying intuition is that a higher share of investment routed through offshore financial centers may reduce the observed rate of return in the host economy, as part of the generated profits is shifted abroad rather than reported locally. Accordingly, a negative relationship between the Offshore Indicator and FDI returns is interpreted as evidence of cross-border profit shifting.

In the remainder of this section, we present the data sources used in both stages of the analysis and provide a detailed account of the estimation procedure.

### 3.1. Profit shifting estimations

Our macro-level analysis covers the period from 2009 to 2022. To estimate profit shifting at the country level, we rely on two primary data sources provided by the International Monetary Fund. The first source includes annual data on income from inward Foreign Direct Investment (FDI), available as total income as well as its equity and debt components. These data are taken from the IMF's Balance of Payments Statistics, specifically from the Current Account under the Primary Income category. We extract debit-side values, reported in US dollars, corresponding to total investment income, income on equity, and interest. The second source is the IMF's Coordinated Direct Investment Survey (CDIS), from which we obtain bilateral FDI stock data. For each year between 2009 and 2022, we download data from Table 6, which reports inward direct investment positions by host economy and by source country, again in US dollars.

A key variable in our estimation framework is the offshore indicator, which is defined as the share of inward FDI stock originating from offshore jurisdictions. To identify these jurisdictions, we follow a classification approach based on the methodology proposed by UNCTAD (2015a, 2015b). We group offshore countries into three categories: recognized tax havens, self-declared offshore financial centers, and empirically identified offshores. The first group consists of 37 jurisdictions labeled in the literature as tax havens. The second group

includes Austria, Hungary, Luxembourg, and the Netherlands, which officially declare offshore characteristics. The third group is derived using an empirical rule: we designate a country as offshore if its inward FDI stock exceeds its GDP and at the same time falls above the 75th percentile of the global distribution of inward FDI stocks in a given year. Based on these criteria, we expand the offshore list to include five additional countries – Hong Kong, Ireland, Singapore, Switzerland, and Belgium.

After identifying offshore jurisdictions, we estimate the offshore share of inward FDI for each host country and year. For the 37 tax havens, we assume that all FDI inflow originates from offshore capital. For the nine additional countries, we refine this assumption using data from the OECD's Foreign Direct Investment Statistics, which distinguish between investment channeled through Special Purpose Entities (SPEs) and that associated with real economic activity. In cases where this SPE breakdown is not available, such as for Hong Kong, Ireland, and Singapore, we estimate the offshore share indirectly. To do so, we apply a regression-based approach: first, we regress inward FDI positions on GDP for all countries reporting both variables, and then we compute the expected FDI levels. The difference between observed and predicted values is interpreted as excess FDI likely associated with SPE activity, and thus classified as offshore. This constructed offshore indicator serves as a proxy for the intensity of exposure to offshore financial structures and constitutes a key explanatory variable in the estimation of profit shifting.

Panel A of Table 1 presents descriptive statistics for the key variables used to estimate profit shifting, including the rate of return on FDI and its components, the offshore share of inward FDI, as well as the absolute levels of FDI income, FDI stocks, and GDP. The statistics highlight substantial variation across countries and years, both in economic fundamentals and in exposure to offshore capital.

### 3.2. Determinants of profit shifting

In the second stage of the analysis, we investigate the factors that may explain cross-country variation in estimated profit shifting. The explanatory variables are organized into four groups corresponding to the hypotheses formulated in Section 2.

The first group captures economic and fiscal characteristics. We include GDP (in logarithm), the statutory corporate income tax (CIT) rate, GDP growth, exports as a share of GDP, and consumer price inflation as macroeconomic controls in all specifications. These variables, drawn from the World Development Indicators (World Bank), account for differences in economic scale, openness, growth dynamics, and macroeconomic stability.

The second group captures institutional and governance quality using the six dimensions of the Worldwide Governance Indicators (WGI) published by the World Bank: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

The third group covers the legal and regulatory environment governing international taxation, including indicators for the adoption of Country-by-Country (CbC) reporting, participation in the OECD's Base Erosion and Profit Shifting (BEPS) framework, thin capitalization rules, and transfer pricing regulations.

The fourth group accounts for cultural factors proxied by dominant religious affiliation: Christianity and Islam. These variables capture broader social norms, ethical standards, and compliance expectations that may shape attitudes toward taxation.

To ensure comparability across specifications, we restrict the estimation sample to observations with non-missing values for all explanatory variables used in any specification. This yields a common sample of 840 observations across 64 countries covering the period 2009–2022. Panel B of Table 1 reports descriptive statistics for this common sample, organized by hypothesis group.

### 3.3. Procedure for estimating profit shifting

To quantify profit shifting, we estimate the sensitivity of the rate of return (RoR) on inward FDI to the share of investment originating from offshore jurisdictions. Following the UNCTAD methodology, we specify a dynamic panel model of the form:

$$RoR_{i,t} = \alpha \cdot RoR_{i,t-1} + \beta \cdot Offshore_{i,t-2} + \gamma X_{i,t} + \mu_i + \tau_t + \varepsilon_{i,t}, \qquad (1)$$

where $\mathrm{RoR}_{\mathrm{i,t}}$ denotes the return on inward FDI (total or equity-based) in country $i$ and year $t$, $\mathrm{Offshore}_{\mathrm{i,t-2}}$ is the offshore share of FDI stock lagged by two years, and $\mathrm{X}_{\mathrm{i,t}}$ is a vector of regional, income-group, and macroeconomic controls. Country fixed effects ($\mu_i$) and year dummies ($\tau_t$) capture unobserved heterogeneity and common shocks.

The model is estimated using the Arellano & Bond (1991) one-step system GMM estimator with collapsed instruments and robust standard errors. The lagged dependent variable is treated as endogenous and instrumented using its second to fourth lags. Offshore exposure is treated as predetermined, reflecting the assumption that it is correlated with past but not contemporaneous shocks, and is instrumented using its own lagged values. Regional dummies are included as exogenous instruments.

To obtain a stable benchmark coefficient, we estimate the model separately for total and equity-based FDI returns and average the resulting offshore coefficients. The estimated parameter $\hat{\beta}$ is then used to compute the implied "profitability gap" attributable to offshore exposure:

$$Gap_{i,t} = -\hat{\beta} \cdot Offshore_{i,t} \qquad (2)$$

which measures the reduction in the observed FDI return associated with offshore investment shares. Multiplying this gap by the FDI stock yields the estimated amount of shifted profits (after tax). To express results in pre-tax terms, we scale by an assumed average corporate income tax rate of 20%, consistent with the approach adopted in the macro literature on profit

shifting (e.g., UNCTAD, 2015a). The sensitivity of results to alternative CIT assumptions (15% and 25%) is tested in the robustness analysis.

This procedure yields annual country-level estimates of profit shifting relative to GDP (PSPT/GDP), which serve as the dependent variable in the second-stage analysis of the structural determinants of profit shifting.

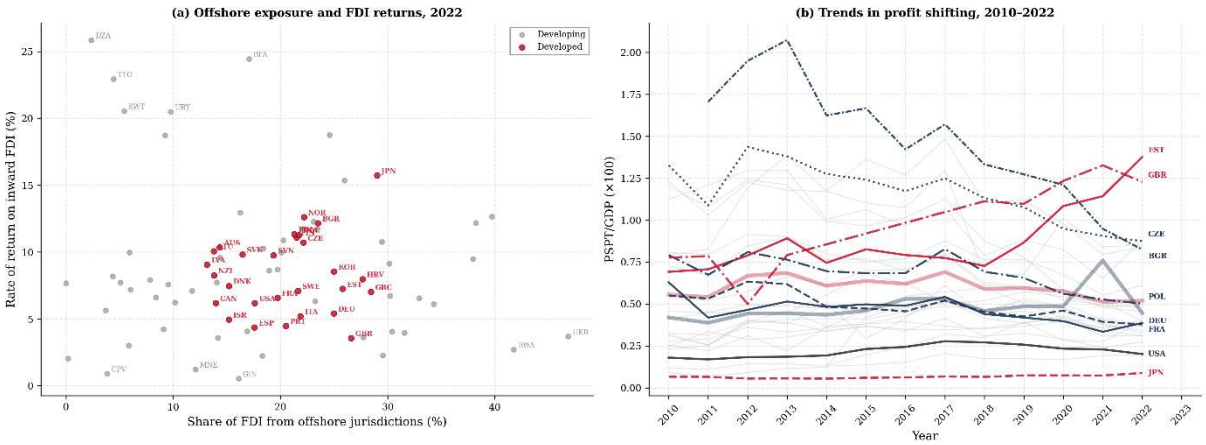
## 4. Results and Discussion

This section presents the empirical results in two parts. We first validate the macro-level profit-shifting measure derived from the dynamic GMM estimations (Section 4.1–4.2), and then examine the economic, institutional, regulatory, and cultural determinants of its cross-country variation (Section 4.3).

### 4.1. Estimating the latent variable: macro evidence on profit shifting

To begin, the descriptive patterns underscore substantial cross-country heterogeneity in both offshore exposure and the rate of return on inward FDI. This is illustrated by the broad dispersion of points in Figure 1 (panel a), which plots FDI profitability against offshore intensity for 2022. The overall pattern aligns with the theoretical expectation that higher offshore exposure is associated with lower reported returns. However, the distribution is far from uniform. Developing economies exhibit particularly wide dispersion, suggesting volatile investment structures and uneven reporting quality, while advanced economies cluster more tightly around the expected negative relationship. Several countries merit particular attention: Japan, Norway, and Bulgaria exhibit notably high rates of return, whereas Spain, Portugal, and the United Kingdom record comparatively low profitability levels in 2022. These differences likely reflect country-specific investment structures, sectoral composition, and the presence of SPE-type arrangements.

**Figure 1:** Cross-country patterns in profit shifting




*Note:* Panel (a) plots the share of inward FDI originating from offshore jurisdictions (horizontal axis) against the rate of return on total inward FDI (vertical axis) for 2022. Red markers denote developed economies, gray markers denote developing economies. Panel (b) presents annual trends in estimated profit shifting as a share of GDP (PSPT/GDP × 100) for developed countries between 2010 and 2022. Highlighted lines denote selected countries: red lines indicate economies with rising profit shifting (EST, GBR), dark blue lines indicate declining trends (BGR, CZE, DEU, FRA, POL), dark gray denotes the United States, and red dashed line denotes Japan, which remains at a consistently low level. Light gray lines represent remaining developed economies. Thick semi-transparent lines show group averages for developed (red) and developing (blue) economies. Country labels use ISO Alpha-3 codes.

A dynamic perspective reveals additional insights. The time-series patterns depicted in Figure 1 (panel b) show that profit shifting has followed markedly different trajectories across developed countries. Estonia and the United Kingdom exhibit steadily increasing levels of profit shifting throughout the period, consistent with the growing sophistication of multinational tax planning. By contrast, several Central-Eastern European countries – including Bulgaria and the Czech Republic – experience declining trends, suggesting improvements in enforcement or reduced reliance on offshore capital. Similar downward movements are visible for France and Germany. The United States remains at a relatively stable and moderate level throughout the period.

The summary statistics reported in Table 1 (panel a) corroborate this heterogeneity. FDI returns range from close to zero to above 30%, and the share of investment originating from offshore jurisdictions averages above 20%, underscoring the ubiquity of offshore structures across income groups. Institutional and regulatory characteristics – including governance

quality, CbC reporting adoption, and transfer pricing regulations – also vary widely across the sample, providing fertile ground for investigating the determinants of profit shifting intensity.

**Table 1:** Descriptive statistics of the used variables

| | Count | Mean | Std | Min | 25% | 50% | 75% | Max |
|---|---|---|---|---|---|---|---|---|
| **Panel A. Variables used for estimating profit shifting** | | | | | | | | |
| Rate of return on FDI (%) | 1078 | 7.90 | 4.73 | 0.13 | 4.73 | 7.09 | 9.97 | 33.47 |
| Rate of return on FDI – equity component (%) | 1071 | 7.34 | 4.77 | -0.80 | 4.07 | 6.55 | 9.49 | 31.91 |
| Share of FDI from tax havens | 1078 | 21.65 | 11.26 | 0.00 | 13.42 | 20.76 | 30.01 | 59.16 |
| GDP (USD billion) | 1071 | 716,184.55 | 2,328,692.08 | 236.00 | 19,804.00 | 69,651.00 | 379,009.00 | 26,006,900.00 |
| Inward FDI stock (USD billion) | 1078 | 180,192.29 | 480,272.86 | 132.16 | 7,556.18 | 24,294.08 | 150,510.71 | 5,167,142.00 |
| FDI income total (USD billion) | 1078 | 11,005.28 | 27,231.82 | 1.23 | 476.26 | 1,899.48 | 10,702.18 | 319,342.00 |
| FDI income – equity component (USD billion) | 1071 | 9,380.54 | 22,666.95 | -554.95 | 416.09 | 1,771.33 | 9,658.65 | 281,936.00 |
| **Panel B Variables used for explaining cross-country variation in profit shifting** | | | | | | | | |
| **H1: Economic and fiscal determinants** | | | | | | | | |
| GDP (log) | 840 | 11.79 | 1.94 | 8.31 | 10.11 | 11.68 | 13.04 | 17.07 |
| CIT rate (%) | 840 | 23.30 | 7.60 | 0.00 | 18.00 | 24.25 | 30.00 | 48.32 |
| GDP growth (annual %) | 840 | 2.70 | 4.15 | -28.76 | 1.35 | 3.04 | 4.98 | 17.29 |
| Exports (% of GDP) | 840 | 39.01 | 19.38 | 5.12 | 26.47 | 34.78 | 49.45 | 99.30 |
| Inflation, consumer prices (%) | 840 | 4.27 | 9.06 | -3.75 | 1.22 | 2.81 | 5.19 | 171.21 |
| **H2: Institutional and governance quality** | | | | | | | | |
| Voice and Accountability | 840 | 0.31 | 0.78 | -1.66 | -0.30 | 0.22 | 1.01 | 1.69 |
| Political Stability and Absence of Violence | 840 | -0.02 | 0.84 | -2.81 | -0.57 | 0.07 | 0.64 | 1.56 |
| Government Effectiveness | 840 | 0.28 | 0.88 | -1.46 | -0.51 | 0.12 | 1.02 | 2.24 |
| Regulatory Quality | 840 | 0.40 | 0.83 | -1.33 | -0.26 | 0.29 | 1.07 | 2.08 |
| Rule of Law | 840 | 0.21 | 0.93 | -1.33 | -0.58 | -0.02 | 1.00 | 2.12 |
| Control of Corruption | 840 | 0.14 | 0.98 | -1.36 | -0.63 | -0.14 | 0.74 | 2.44 |
| **H3: Legal and regulatory framework** | | | | | | | | |
| CbC Reporting | 840 | 0.51 | 0.50 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| BEPS participation | 840 | 0.62 | 0.49 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Transfer Pricing regulations | 840 | 0.81 | 0.39 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Thin Capitalization Rules | 840 | 0.51 | 0.50 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| **H4: Cultural and religious determinants** | | | | | | | | |
| Christianity | 840 | 0.69 | 0.46 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 |
| Islam | 840 | 0.17 | 0.37 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 |

*Note*: This table reports descriptive statistics for the variables used in the empirical analysis. Panel A summarizes the variables employed to estimate profit shifting at the country level, including rates of return on total FDI and its equity component (in percent), the share of FDI from tax havens, and macroeconomic aggregates such as GDP, inward FDI stock, and FDI income (total and equity component), all expressed in USD billions. Panel B reports descriptive statistics for the variables used to explain cross-country variation in profit shifting, based on the common estimation sample of 840 observations across 64 countries. Variables are grouped by hypothesis. H1 covers economic and fiscal determinants, including macroeconomic controls drawn from the World Development Indicators (World Bank). H2 captures institutional and governance quality using the six dimensions of the Worldwide Governance Indicators (WGI). H3 includes legal and regulatory variables related to anti-avoidance measures and international tax transparency initiatives. H4 accounts for cultural factors proxied by dominant religious affiliation. For each variable, we report the number of observations (count), mean, standard deviation (std), minimum (min), first quartile (25%), median (50%), third quartile (75%), and maximum (max) values.

## 4.2. Validating the macro profit-shifting measure

A key step of the analysis is assessing whether offshore exposure systematically depresses FDI profitability, as implied by the UNCTAD (2015a, 2015b) and Janský & Palanský (2019)

frameworks. The dynamic panel regressions summarized in Table 2 provide support for this mechanism.

**Table 2:** Impact of Offshore Exposure on Total and Equity FDI Returns

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| **Dependent variable** | **RoR Total** | **RoR Total** | **RoR Total** | **RoR Total** | **RoR Equity** | **RoR Equity** | **RoR Equity** | **RoR Equity** |
| L1 RoR total | 0.0061 | 0.0078 | -0.0249 | 0.0047 | 0.0396 | 0.0341 | 0.0065 | 0.0342 |
| | (0.0435) | (0.0406) | (0.0478) | (0.0460) | (0.0421) | (0.0392) | (0.0466) | (0.0449) |
| L1 Offshore indicator | **0.0659*** ** | | | **0.0571*** ** | **0.0606*** ** | | | **0.0558*** ** |
| | (0.0191) | | | (0.0219) | (0.0185) | | | (0.0208) |
| L2 Offshore indicator | | **-0.0469*** ** | | -0.0262 | | **-0.0456*** ** | | -0.0222 |
| | | (0.0136) | | (0.0165) | | (0.0134) | | (0.0168) |
| L3 Offshore indicator | | | 0.0170 | 0.0235 | | | 0.0277 | **0.0343*** |
| | | | (0.0188) | (0.0184) | | | (0.0184) | (0.0182) |
| Region effects | Y | Y | Y | Y | Y | Y | Y | Y |
| Time effects | Y | Y | Y | Y | Y | Y | Y | Y |
| # of observations | 839 | 736 | 638 | 638 | 839 | 736 | 638 | 638 |
| Hansen test | (0.190) | (0.066) | (0.088) | (0.171) | (0.246) | (0.090) | (0.097) | (0.176) |
| Arellano-Bond test for AR(1) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| Arellano-Bond test for AR(2) | (0.830) | (0.659) | (0.109) | (0.196) | (0.985) | (0.722) | (0.100) | (0.215) |

*Note*: We report the results of dynamic panel regressions examining the relationship between offshore exposure and foreign direct investment (FDI) returns. The dependent variables are total FDI return (RoR total) and equity FDI return (RoR equity), indicated in the table header. The models are estimated with one- to three-period lags of both the dependent variable and the offshore indicator. All regressions include fixed effects for world regions and time. For each specification, we report the estimated coefficients with robust standard errors in parentheses. Significance levels are indicated by asterisks: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The number of observations, Hansen test statistic (p-value in parentheses), and Arellano-Bond test p-values for first- and second-order autocorrelation [AR(1) and AR(2)] are reported at the bottom of the table.

The offshore indicator enters with a negative and statistically significant coefficient at the two-period lag in the baseline specifications, both for total FDI returns (−0.0469, $p < 0.01$) and equity-based returns (−0.0456, $p < 0.01$). This pattern suggests that the impact of offshore exposure on reported profitability materializes with a delay, reflecting the time needed for multinational profit-reallocation strategies to affect measured income flows. However, this significance weakens in the full specification that includes all three lags simultaneously, indicating some sensitivity to the dynamic structure.

The one-period lagged offshore indicator is positive and statistically significant across specifications where it is included, which may reflect short-term capital inflow effects that precede the profit-shifting channel captured by the second lag. The three-period lag is generally insignificant, with one exception in the equity-return model. Overall, the results validate the

existence of a profitability gap driven by offshore exposure and support its interpretation as a macro-level measure of profit shifting. This finding is consistent with previous macro-level studies, including UNCTAD (2015a, 2015b), Bolwijn et al. (2018), and Janský & Palanský (2019).

Diagnostic statistics confirm that the GMM estimations are well specified. Hansen test p-values do not reject the null hypothesis of valid overidentifying restrictions at conventional significance levels, while the Arellano–Bond tests reject first-order but not second-order serial correlation in the differenced residuals, consistent with correct model specification.

A natural question is whether this relationship differs across levels of economic development. The evidence presented in Table 3 shows that the negative association between offshore exposure and FDI returns is stronger and more precisely estimated in developed economies. For developed countries, the offshore indicator is negative and statistically significant for both total ($-0.1056$, $p < 0.01$) and equity-based returns ($-0.0862$, $p < 0.01$). In developing economies, the coefficients remain negative but fail to reach statistical significance in either specification, suggesting that structural volatility, data limitations, and institutional heterogeneity blur the profit-shifting signal in emerging markets.

A plausible explanation is that stronger tax enforcement and more comprehensive financial disclosure requirements in developed economies limit the scope for underreporting domestic profits. As a result, multinational firms rely more heavily on cross-border income reallocation through offshore structures, making offshore exposure a more effective channel of profit shifting. Taken together, these results indicate that while offshore exposure depresses reported profitability across countries, the clarity of this relationship depends critically on the level of economic and institutional development. This, in turn, leads to a clearer and more robust negative relationship between offshore exposure and reported returns.

**Table 3:** Offshore Exposure and FDI Returns: GMM Estimates for Developed, Developing, and All Countries

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| **Dependent variable** | **RoR Total** | **RoR Total** | **RoR Total** | **RoR Equity** | **RoR Equity** | **RoR Equity** |
| **Development status** | **all** | **developed** | **developing** | **all** | **developed** | **developing** |
| L1 RoR | 0.0078 | **-0.1563**** | 0.0413 | 0.0341 | **-0.1819**** | 0.0449 |
| | (0.0406) | (0.0769) | (0.0571) | (0.0392) | (0.0756) | (0.0570) |
| L2 Offshore indicator | **-0.0469***** | **-0.1056***** | -0.0094 | **-0.0456***** | **-0.0862***** | -0.0029 |
| | (0.0136) | (0.0243) | (0.0177) | (0.0134) | (0.0234) | (0.0171) |
| Region Effects | Y | Y | Y | Y | Y | Y |
| Time Effects | Y | Y | Y | Y | Y | Y |
| # Obs | 736 | 273 | 463 | 736 | 273 | 463 |
| Hansen | (0.066) | (0.424) | (0.438) | (0.090) | (0.305) | (0.303) |
| AR(1) | (0.000) | (0.044) | (0.000) | (0.000) | (0.030) | (0.000) |
| AR(2) | (0.659) | (0.443) | (0.370) | (0.722) | (0.396) | (0.408) |

*Note*: This table presents dynamic panel GMM estimations examining the relationship between offshore capital exposure and foreign direct investment (FDI) returns. The dependent variable is the return on FDI, measured either in total (columns 1–3) or equity form (columns 4–6). The main explanatory variable is the lagged offshore indicator (L2), reflecting a country's exposure to offshore financial structures. Specifications are estimated separately for all countries, developed countries, and developing countries, as indicated. All models control for regional and year fixed effects. Standard errors are robust to heteroskedasticity and reported in parentheses. Hansen J-test p-values assess the validity of overidentifying restrictions, while AR(1) and AR(2) p-values correspond to the Arellano–Bond test for first- and second-order serial correlation in the residuals. Asterisks denote statistical significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

### 4.3. Finding determinants of cross-country variation in profit shifting

Having established a credible macro-level measure of profit shifting, we next investigate the economic, institutional, regulatory, and cultural factors that explain cross-country variation in the extent of shifted profits. The regression results presented in Table 4 test all twelve explanatory variables individually, alongside macroeconomic controls, and reveal that profit shifting is not driven by a broad set of observable country characteristics but rather by a limited number of key structural factors.

First, the macroeconomic controls – GDP, the statutory CIT rate, GDP growth, exports as a share of GDP, and consumer price inflation – do not show statistically significant effects across specifications. Contrary to both theoretical expectations and prior empirical findings (Buettner & Wamser, 2013; Crivelli et al., 2016; Dowd et al., 2017; Vasilakis & Vlachos, 2024), these variables do not appear to influence profit shifting in a consistent manner. This suggests that, at the macroeconomic level, structural economic characteristics may condition the broader environment for multinational activity but are not the primary drivers of cross-country

differences in profit shifting. This finding is consistent with recent literature emphasizing that profit shifting is more closely linked to financial structures and institutional arrangements than to real economic fundamentals (Beer et al., 2019).

Turning to institutional factors, among the six dimensions of the Worldwide Governance Indicators, only Government Effectiveness emerges as statistically significant, with a positive association with profit shifting (significant at the 10% level individually, and at the 5% level in the combined specification). The remaining five WGI dimensions – Voice and Accountability, Political Stability, Regulatory Quality, Rule of Law, and Control of Corruption – do not yield significant effects. While the positive sign of Government Effectiveness may appear counterintuitive, it is consistent with the theoretically ambiguous relationship highlighted in the literature (Dharmapala, 2019; Dharmapala & Hines, 2009). Countries characterized by higher institutional quality tend to provide stable and predictable environments that may facilitate more sophisticated and legally compliant forms of tax planning. In this context, stronger institutions do not necessarily eliminate profit shifting but may instead redirect it toward more complex and less easily detectable channels.

Third, regulatory factors exhibit heterogeneous effects. The adoption of Country-by-Country (CbC) reporting is consistently associated with lower levels of profit shifting, both individually (significant at the 5% level) and in the combined model with Government Effectiveness (significant at the 1% level). This result is in line with previous empirical studies (Delis et al., 2025; Joshi, 2020; Overesch & Wolff, 2021; Tuinsma et al., 2023) and confirms the importance of BEPS Action 13 in reducing informational asymmetries between multinational firms and tax authorities. By contrast, other anti-avoidance instruments – participation in the broader BEPS framework, transfer pricing regulations, and thin capitalization rules – do not yield statistically significant effects. This suggests that the effectiveness of regulatory measures depends not only

**Table 4:** Determinants of profit shifting across countries

| Dependent variable: PSPT/GDP (×100) | (1) Voice & Acc. H2 | (2) Pol. Stability H2 | (3) Gov. Effect. H2 | (4) Reg. Quality H2 | (5) Rule of Law H2 | (6) Contr. Corrupt. H2 | (7) CbC Report H3 | (8) BEPS H3 | (9) Transfer Pricing H3 | (10) Thin Cap. H3 | (11) Christianity H4 | (12) Islam H4 | (13) CbC + GovEff Combined | (14) Christ. + Islam Combined |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Voice and Accountability** | -0.458 | | | | | | | | | | | | | |
| | (0.630) | | | | | | | | | | | | | |
| **Political Stability** | | -0.436 | | | | | | | | | | | | |
| | | (0.421) | | | | | | | | | | | | |
| **Government Effectiveness** | | | 0.179* | | | | | | | | | | 0.221** | |
| | | | (0.097) | | | | | | | | | | (0.092) | |
| **Regulatory Quality** | | | | -0.412 | | | | | | | | | | |
| | | | | (0.422) | | | | | | | | | | |
| **Rule of Law** | | | | | -0.452 | | | | | | | | | |
| | | | | | (0.676) | | | | | | | | | |
| **Control of Corruption** | | | | | | -0.145 | | | | | | | | |
| | | | | | | (0.256) | | | | | | | | |
| **CbC Reporting** | | | | | | | -0.296** | | | | | | -0.320*** | |
| | | | | | | | (0.123) | | | | | | (0.117) | |
| **BEPS** | | | | | | | | 0.014 | | | | | | |
| | | | | | | | | (0.135) | | | | | | |
| **Transfer Pricing** | | | | | | | | | 0.518 | | | | | |
| | | | | | | | | | (0.318) | | | | | |
| **Thin Capitalization Rules** | | | | | | | | | | 0.639 | | | | |
| | | | | | | | | | | (0.484) | | | | |
| **Christianity** | | | | | | | | | | | 0.231* | | | 0.078 |
| | | | | | | | | | | | (0.120) | | | (0.169) |
| **Islam** | | | | | | | | | | | | -0.361*** | | -0.296 |
| | | | | | | | | | | | | (0.121) | | (0.183) |
| **GDP (log)** | -0.057 | 0.197 | -0.078 | 0.007 | 0.063 | -0.008 | -0.024 | -0.043 | -0.266 | -0.043 | -0.062 | -0.069 | -0.065 | -0.068 |
| | (0.324) | (0.168) | (0.295) | (0.267) | (0.196) | (0.261) | (0.299) | (0.309) | (0.411) | (0.287) | (0.041) | (0.042) | (0.289) | (0.042) |
| **CIT Rate** | 0.004 | 0.000 | 0.000 | -0.004 | -0.001 | -0.001 | -0.002 | -0.001 | -0.003 | -0.002 | 0.012 | 0.010 | -0.000 | 0.011 |
| | (0.012) | (0.009) | (0.006) | (0.005) | (0.007) | (0.007) | (0.007) | (0.007) | (0.006) | (0.006) | (0.012) | (0.012) | (0.007) | (0.012) |
| **GDP Growth** | -0.002 | -0.002 | -0.003 | -0.004 | -0.003 | -0.003 | -0.002 | -0.003 | -0.001 | -0.001 | -0.001 | -0.002 | -0.001 | -0.001 |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.008) | (0.008) | (0.005) | (0.008) |
| **Exports (% GDP)** | 0.004 | 0.002 | 0.004 | 0.005 | 0.005 | 0.004 | 0.005 | 0.004 | 0.004 | 0.002 | 0.010*** | 0.009*** | 0.004 | 0.009*** |
| | (0.006) | (0.005) | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) | (0.006) | (0.006) | (0.005) | (0.003) | (0.003) | (0.007) | (0.003) |
| **Inflation** | -0.001 | 0.001 | 0.000 | -0.002 | -0.001 | -0.000 | -0.000 | -0.000 | -0.001 | 0.001 | -0.001 | -0.001 | 0.001 | -0.001 |
| | (0.003) | (0.002) | (0.003) | (0.004) | (0.003) | (0.002) | (0.002) | (0.003) | (0.003) | (0.002) | (0.002) | (0.002) | (0.003) | (0.002) |
| **Entity FE** | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | N | Y | N |
| **Time FE** | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| **Control variables** | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| **Adjusted $R^2$** | 0.008 | 0.041 | -0.001 | 0.012 | 0.011 | 0.003 | 0.003 | 0.000 | 0.052 | 0.052 | 0.106 | 0.116 | 0.002 | 0.117 |
| **F-stat** | 1.37 | 4.89 | 0.46 | 1.26 | 1.13 | 0.39 | 1.04 | 0.22 | 5.89 | 5.80 | 16.79 | 18.58 | 1.20 | 16.11 |
| **# of obs** | 840 | 840 | 840 | 840 | 840 | 840 | 840 | 840 | 840 | 840 | 840 | 840 | 840 | 840 |

*Note:* This table reports panel regression results examining the determinants of profit shifting, measured as the ratio of pre-tax shifted profits to GDP, expressed in percentage points (×100). Columns (1)–(6) test institutional quality dimensions from the Worldwide Governance Indicators (H2) with entity and time fixed effects. Columns (7)–(10) test regulatory determinants (H3) with entity and time fixed effects. Columns (11)–(12) test cultural determinants (H4) without entity fixed effects, as religious affiliation is time-invariant. Column (13) combines the two individually significant institutional and regulatory variables (CbC Reporting and Government Effectiveness) with entity fixed effects. Column (14) includes both cultural variables without entity fixed effects. All models include macroeconomic controls (log GDP, CIT rate, GDP growth, exports as % of GDP, and consumer price inflation) and year fixed effects. Standard errors are clustered at the country level and reported in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

on their formal adoption but also on their design, implementation, and enforcement capacity (Beer et al., 2019).

Finally, cultural factors proxied by dominant religious affiliation show significant associations with profit shifting when tested individually: predominantly Christian countries exhibit higher levels of estimated profit shifting (significant at the 10% level), while countries with a dominant Islamic affiliation display lower levels (significant at the 1% level). However, both variables lose statistical significance when included jointly in the same specification, suggesting some degree of collinearity. These findings should be interpreted with caution, as religious affiliation serves as a proxy for broader social norms, ethical standards, and compliance expectations rather than as a direct causal mechanism (Luttmer & Singhal, 2014; McGee, 2006; Torgler, 2003). Previous studies suggest that religious and cultural contexts influence economic behavior through their effects on trust, governance, and moral constraints (Bentzen & Gokmen, 2023; Boone et al., 2013; McCleary & Barro, 2006).

Taken together, these results provide differentiated support for the hypotheses formulated in Section 2. The economic and fiscal determinants do not exhibit robust effects, suggesting that H1 receives limited empirical support. The positive association between Government Effectiveness and profit shifting is consistent with the theoretically ambiguous relationship proposed in H2, indicating that the sophistication channel may dominate the enforcement channel. The negative and statistically significant effect of CbC reporting provides support for H3, although other regulatory measures do not show equally consistent effects. The significance of cultural variables is consistent with H4, although their interpretation requires caution given the absence of entity fixed effects and the loss of significance in joint specifications.

Overall, the findings indicate that profit shifting is primarily shaped by institutional, regulatory, and cultural factors, while economic fundamentals play a more limited role. This multidimensional perspective is consistent with recent meta-analyses emphasizing that no

single factor can explain global patterns of profit shifting, which instead emerge from the interaction of fiscal incentives, institutional environments, and social norms (Beer et al., 2019).

To assess the robustness of the main findings, we conduct a series of sensitivity checks, reported in Table 5. Panel A examines alternative specifications of the key variables. Replacing CbC Reporting with its one-year lag yields virtually identical results (coefficient: −0.296, $p < 0.05$), supporting the direction of causality from policy adoption to reduced profit shifting. The interaction between CbC Reporting and Government Effectiveness is not statistically significant, suggesting that the two channels operate independently rather than conditionally. Panel B tests the sensitivity of the combined model to alternative constructions of the dependent variable. The negative effect of CbC Reporting and the positive effect of Government Effectiveness remain statistically significant under alternative assumed CIT rates (15% and 25%), winsorization of the dependent variable at the 1st and 99th percentiles, and exclusion of countries in the top 5% of estimated profit shifting. These results confirm that the main findings are not driven by outliers, extreme observations, or specific parametric assumptions.

**Table 5:** Robustness Tests

| **Panel A: Additional specifications** | | | | | |
|---|---|---|---|---|---|
| | **Baseline: CbC** | **Baseline: CbC + GovEff** | **Lagged CbC (L1)** | **Lagged CbC + GovEff** | **Interaction CbC × GovEff** |
| **CbC Reporting** | -0.296** | -0.320*** | | | -0.305** |
| | (0.123) | (0.117) | | | (0.129) |
| **CbC Reporting (lagged)** | | | -0.296** | -0.319*** | |
| | | | (0.121) | (0.116) | |
| **Government Effectiveness** | | 0.221** | | 0.217** | 0.102 |
| | | (0.092) | | (0.089) | (0.191) |
| **CbC × Gov. Effectiveness** | | | | | 0.252 |
| | | | | | (0.305) |
| **GDP (log)** | -0.024 | -0.065 | -0.238 | -0.270 | -0.076 |
| | (0.299) | (0.289) | (0.337) | (0.334) | (0.300) |
| **CIT Rate** | -0.002 | -0.000 | -0.001 | 0.001 | -0.000 |
| | (0.007) | (0.007) | (0.007) | (0.007) | (0.007) |
| **GDP Growth** | -0.002 | -0.001 | -0.001 | -0.001 | -0.002 |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| **Export (% GDP)** | 0.005 | 0.004 | 0.005 | 0.005 | 0.004 |
| | (0.007) | (0.007) | (0.008) | (0.008) | (0.007) |
| **Inflation** | -0.000 | 0.001 | -0.002 | -0.001 | -0.000 |
| | (0.002) | (0.003) | (0.003) | (0.003) | (0.003) |
| **Entity FE** | Y | Y | Y | Y | Y |
| **Time FE** | Y | Y | Y | Y | Y |
| **$R^2$** | 0.003 | 0.002 | -0.002 | -0.004 | 0.001 |
| **F-stat** | 1.04 | 1.20 | 1.33 | 1.40 | 1.21 |
| **# obs** | 840 | 840 | 776 | 776 | 840 |
| **Panel B: Alternative dependent variable specifications** | | | | | |

| | Baseline (CIT=20%) | CIT = 15% | CIT = 25% | Winsorized (1%-99%) | Excl. top 5% PS |
|---|---|---|---|---|---|
| **CbC Reporting** | -0.320*** | -0.301*** | -0.341*** | -0.252*** | -0.163*** |
| | (0.117) | (0.110) | (0.125) | (0.087) | (0.055) |
| **Government Effectiveness** | 0.221** | 0.208** | 0.236** | 0.200** | 0.195*** |
| | (0.092) | (0.087) | (0.098) | (0.097) | (0.069) |
| **GDP (log)** | -0.065 | -0.062 | -0.070 | 0.113 | 0.098 |
| | (0.289) | (0.272) | (0.309) | (0.127) | (0.075) |
| **CIT rate** | -0.000 | -0.000 | -0.001 | -0.004 | -0.004 |
| | (0.007) | (0.006) | (0.007) | (0.004) | (0.004) |
| **GDP Growth** | -0.001 | -0.001 | -0.002 | -0.002 | -0.003 |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.002) |
| **Export (% GDP)** | 0.004 | 0.004 | 0.004 | 0.001 | -0.002 |
| | (0.007) | (0.006) | (0.007) | (0.004) | (0.003) |
| **Inflation** | 0.001 | 0.001 | 0.001 | 0.003** | 0.002** |
| | (0.003) | (0.002) | (0.003) | (0.001) | (0.001) |
| **Entity FE** | Y | Y | Y | Y | Y |
| **Time FE** | Y | Y | Y | Y | Y |
| **$R^2$** | 0.002 | 0.002 | 0.002 | 0.054 | 0.098 |
| **F-stat** | 1.20 | 1.20 | 1.20 | 6.85 | 12.10 |
| **# obs** | 840 | 840 | 840 | 840 | 790 |

*Note:* This table reports robustness checks for the main results presented in Table 4. Panel A examines the sensitivity of the key findings to alternative specifications. Column 1 reproduces the baseline CbC Reporting result, and Column 2 the baseline combined model (CbC Reporting and Government Effectiveness). Columns 3 and 4 replace the contemporaneous CbC Reporting variable with its one-year lag to address potential reverse causality. Column 5 introduces an interaction term between CbC Reporting and Government Effectiveness to test whether the effectiveness of transparency policies depends on institutional capacity. Panel B examines the robustness of the combined model (CbC Reporting and Government Effectiveness) to alternative constructions of the dependent variable. Columns 1–3 vary the assumed average corporate income tax rate used to convert after-tax shifted profits to pre-tax estimates (baseline 20%, alternatives 15% and 25%). Column 4 winsorizes the dependent variable at the 1st and 99th percentiles. Column 5 excludes countries in the top 5% of estimated profit shifting intensity. All models include entity and time fixed effects, with macroeconomic controls (log GDP, CIT rate, GDP growth, exports as % of GDP, and consumer price inflation). Standard errors are clustered at the country level and reported in parentheses. The dependent variable is the ratio of pre-tax shifted profits to GDP, expressed in percentage points (×100). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

## 5. Conclusion

This paper investigates the structural determinants of profit shifting using a macroeconomic framework based on balance-of-payments data for a large cross-country sample over the period 2009–2022. By combining a macro-level measure of profit shifting with a broad set of economic, institutional, regulatory, and cultural variables, the analysis provides new evidence on the factors that shape the global distribution of shifted profits. Importantly, the macroeconomic perspective adopted in this study allows for consistent cross-country comparisons and captures systemic patterns that are not observable in firm-level analyses.

The results indicate that profit shifting is primarily shaped by institutional, regulatory, and cultural factors, while economic fundamentals play a more limited role. In particular, transparency-enhancing measures, most notably Country-by-Country reporting, are associated

with lower levels of profit shifting, highlighting the importance of information-based policies in reducing tax avoidance. At the same time, the positive relationship between Government Effectiveness and profit shifting points to the dual role of institutions, which may simultaneously strengthen enforcement and enable more sophisticated forms of tax planning. The significance of cultural variables in individual specifications suggests that informal institutions, such as social norms and tax morale, may play a role in shaping cross-country differences in profit shifting, although these results require cautious interpretation. These findings are robust to alternative specifications, including the use of lagged policy variables, alternative CIT rate assumptions, winsorization, and exclusion of outlier countries.

The policy implications of these findings are threefold. First, policymakers should prioritize the development of tax systems that are transparent, coherent, and internationally coordinated. Strengthening participation in global initiatives – such as the OECD/G20 BEPS framework – and expanding the use of transparency tools can reduce informational asymmetries and limit opportunities for profit shifting. Second, the effectiveness of tax policy cannot be fully separated from the broader institutional environment. Fair, consistent, and predictable enforcement enhances compliance and reinforces social norms that discourage aggressive tax behavior, thereby contributing to the protection of national tax bases. Third, the absence of significant effects for standard macroeconomic variables suggests that profit shifting is not effectively addressed through conventional economic policy instruments, but rather requires targeted regulatory and institutional interventions.

Despite these contributions, the study has several limitations. The macroeconomic approach relies on indirect measures of profit shifting, which may be sensitive to data quality, modeling assumptions, and the classification of offshore jurisdictions. While the analysis captures cross-country variation, it abstracts from within-country heterogeneity and does not distinguish between different firm-level strategies of profit shifting. Moreover, while the use of lagged

policy variables partially addresses concerns about reverse causality, the analysis does not employ a fully exogenous source of variation in regulatory adoption, and the results should therefore be interpreted as associations rather than causal effects. These limitations are inherent to macro-level analyses but do not diminish their value in identifying broad structural patterns.

These limitations point to several directions for future research. Further work could refine macro-level measurement strategies and explore alternative proxies for offshore exposure and profit shifting. The suggestive role of cultural variables indicates that informal institutions constitute a promising avenue for further investigation; future studies could examine more granular dimensions of culture, social norms, and institutional trust, as well as their interaction with formal regulatory frameworks. Finally, the implementation of the OECD/G20 global minimum tax (Pillar Two) and the increasing importance of intangible assets and digital business models may fundamentally reshape the geography of profit shifting, warranting continued empirical analysis using both macro- and micro-level data.

## Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this work the authors used Claude (Anthropic) in order to assist with code debugging, statistical verification, and manuscript editing. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

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