Do Transfer Pricing Laws Limit International Income Shifting? Evidence from Europe

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Abstract

Empirical evidence suggests that multinational entities transfer income to low-tax countries by strategically distorting intra-firm transfer prices. The purpose of this paper is to investigate whether transfer pricing rules that aim to limit tax-motivated multinational mis-pricing activities are effective in reducing shifting behaviour. We collect information on the scope and evolution of national transfer pricing regulations in Europe and link it with rich panel data on multinational firms. Our findings suggest that the introduction and tightening of transfer pricing rules raises (lowers) reported operating profits of high-tax (low-tax) affiliates and reduces the sensitivity of affiliates' pre-tax profits to corporate tax rate changes, thus pointing to the effectiveness of the regulations in limiting tax-motivated profit shifting behaviour.

Keywords: corporate taxation, international profit shifting, transfer pricing laws

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1 Introduction

Tight government budgets in the wake of the global financial crisis and media reports on aggressive international tax avoidance by Google, Apple, Amazon and other big multinational enterprises (MNEs) have reinforced long-present concerns and public debates about multinational income shifting to tax haven economies (e.g. The Telegraph (2012), The Economist (2013), The Guardian (2013)). In response, several national and international initiatives have been launched to counter international tax avoidance. Most prominently, in 2013, the G20 mandated the OECD to develop an action plan to combat base erosion and profit shifting (BEPS, see OECD (2013)).

The economic literature has gone to great lengths to empirically identify and quantify multinational income shifting to low-tax countries (see e.g. Devereux and Maffini (2007) and Heckemeyer and Overesch (2013) for surveys). While MNEs may reduce their tax burden through various routes, recent evidence suggests that a major fraction of international shifting activities is related to the strategic distortion of prices for intra-firm trade (e.g. Heckemeyer and Overesch (2013), Clausing (2003), Cristea and Nguyen (2015), Davies et al. (2015)). To prevent related profit outflows from their borders, many countries augmented their tax laws by so-called transfer pricing regulations that aim to limit tax-motivated mis-pricing behaviour. Scope and design of the legislations differ significantly across countries. While some legislations only loosely acknowledge the arm's length principle (that requires intra-firm prices to correspond to prices that would have been chosen by unrelated parties), others ask firms to submit detailed transfer pricing reports which document compliance with prevailing transfer pricing laws. Detected mispricing behavior and the failure to provide adequate documentation often trigger non-negligible penalties.[1]

While the OECD aims to improve and coordinate the design of national transfer pricing legislations, critics oppose the laws due to their 'absurdly' (Avi-Yonah (2010)) high compliance and administration costs (see also European Communities (2004))[2]. They, in turn, advocate to replace arm's length pricing and transfer price documentation requirements by a formula apportionment regime, where profits are consolidated at the group level and apportioned to affiliates based on fixed allocation keys (see e.g. Avi-Yonah et al. (2009)). It is important for both, the current OECD's BEPS process and discussions about international tax principles, to understand whether (specific aspects of) prevailing transfer pricing laws are effective

[1] Anecdotal evidence suggests that transfer pricing laws are rigorously administered in most countries. In a number of prominent cases, tax authorities around the world seeked billions of additional tax revenues in transfer pricing cases (e.g. US Today (2006), New York Times (2011), The Globe and Mail (2011)). A recent survey among German inbound investors indicates that German tax auditors challenged transfer pricing in 75% of all tax audits (Deloitte (2010)).

[2] Around 40% of tax managers in large MNEs consider transfer pricing to be the most important tax issue for their group (Ernst and Young (2007)).

in limiting tax-motivated multinational mis-pricing and income shifting to low-tax affiliates. The aim of this paper is to contribute to answering this question.

For that purpose, we collect information on the scope and evolution of transfer pricing laws in 26 European countries (see Zinn et al. (2014)) and link it to data on multinational firms. To approximate the tightness of transfer pricing regimes, we identify host-countries in which multinational firms have to document intra-firm price-setting and must submit this documentation to tax authorities upon request or directly with their annual tax return. The data furthermore accounts for changes in transfer pricing rules and distinguishes between documentation provisions that are implemented in administrative tax authority guidelines and documentation requirements enacted into national tax law. The former may exert a less deterring effect on MNEs' mis-pricing activities as tax authorities cannot issue legally binding regulations, but only promulgate administrative practices based on the interpretation of statutory law (outside the transfer pricing realm) and court decisions such that they allow requesting transfer price documentation even in the absence of specific legal provisions (e.g. PWC (2013)). The data is furthermore complemented by information on penalty provisions related to the transfer pricing sphere.

In the empirical analysis, we rely on panel data methods to quantify the impact of transfer pricing rules on affiliates' reported pre-tax profits. The approach differentiates between high-tax and low-tax entities within multinational groups and hence resembles a difference-in-differences-in-differences analysis. In line with a reduction of tax-motivated mis-pricing and multinational income shifting, we find that the introduction of transfer price documentation requirements and penalties for late or misreporting significantly raises (reduces) the reported operating profitability of high-tax (low-tax) affiliates. Consistent with this result, transfer pricing rules are found to diminish the sensitivity of corporate pre-tax profits to changes in the corporate tax rate (which is commonly interpreted as evidence for tax-motivated multinational income shifting). Relative to countries without transfer pricing rules, the implementation of transfer price documentation regimes reduces the latter sensitivity by around 50%. We, in turn, do not find evidence for a significant link between affiliates' reported pre-tax profit and the availability of advance pricing agreements (APAs), where tax authorities and firms agree on future transfer prices in advance. These findings prevail in a number of robustness checks.

The paper contributes to a growing literature on tax-motivated multinational income shifting. While profit shifting strategies are well-documented, the literature is largely silent on the effectiveness of legislations which aim to limit international income shifting. Exceptions are Buettner et al. (2012), Overesch and Wamser (2010) and Blouin et al. (2014) who provide evidence that thin capitalization rules limit multinational debt shifting behaviour by restricting the deductibility of interest

payments from the corporate tax base. Ruf and Weichenrieder (2012, 2013) and Egger and Wamser (2015) moreover report evidence that controlled foreign company regulations are effective in reducing multinational (passive) investments in low-tax jurisdictions. Our paper complements these studies by showing that transfer pricing regulations are another effective anti-profit shifting regulation.

The rest of the paper is structured as follows: Section 2 presents a simple theoretical model and derives the hypotheses to be tested in the empirical part of the paper. Sections 3 and 4 describe our data and estimation strategy. Section 5 presents the estimation results and Section 6 concludes.

2 A Simple Theoretical Model

Consider a representative multinational group with two affiliates in countries a and b that produce and sell an output s_i, with $i \in \{a, b\}$. Affiliate a additionally produces an input good that is required for production by both affiliates and is sold to affiliate b at a transfer price q. For simplicity, the price of the final output good is normalized to 1 and we abstract from any costs related to the production of the goods. The affiliates' pre-tax profits thus read $\pi_a = s_a + q$ and $\pi_b = s_b - q$. Both countries levy tax rates on corporate earnings denoted by t_i, $i \in \{a, b\}$.

The MNE may shift income between the affiliates by choosing a transfer price q which deviates from the input's true value $\bar{q}$. Price distortions incur positive costs as aggressive mis-pricing would, if challenged by the tax authorities, have a lower probability of being sustained by courts or may require more resources to defend successfully. Moreover, the structure of the costs plausibly depends on the countries' transfer pricing laws. The stricter the laws, the higher the probability that mis-pricing is challenged which increases the concealment costs. Formally, we choose a simple multiplicative formulation of the cost function: $C = \phi(\gamma_a, \gamma_b) \cdot K(q - \bar{q})$, where $K(q - \bar{q})$ is assumed to be u-shaped in q, with a minimum at $\bar{q}$: $K(q = \bar{q}) = 0$, sign K_q = sign$(q - \bar{q})$ and $K_{qq} > 0$ (e.g. Haufler and Schjelderup (2000)). The function $\phi(\gamma_a, \gamma_b)$ captures how the scope of countries' transfer pricing laws γ_i affects the level of transparency in price setting behaviour and the costs of profit shifting. We assume $\phi \geq 0$ and $\phi_{\gamma_i} \geq 0$, $i \in \{a, b\}$ (where ϕ_{γ_i} may differ across countries).[3] The multiplicative structure implies that tighter transfer pricing legislations increase the MNE's absolute and marginal costs to engage in mis-pricing behaviour.[4]

[3] (Double) subscripts denote first (second) derivatives with respect to the indicated variables.

[4] In practice, some of the types of costs noted above may be tax-deductible, while others are not. For simplicity, it is assumed here that C is non-deductible. The results are not fundamentally affected if the costs are deductible. However, taking account of deductibility adds considerable complexity, as it is not entirely obvious in which country the costs would be incurred, and there would be an incentive to shift these deductions from the low-tax to the high-tax country.

The MNE maximizes its after-tax profit

$$\pi = (1 - t_a) \underbrace{(s_a + q)}_{\pi_a} + (1 - t_b) \underbrace{(s_b - q)}_{\pi_b} - C \tag{1}$$

by choosing the optimal transfer price q. The first order condition is given by

$$t_b - t_a = \phi K_q \tag{2}$$

The optimal transfer pricing choice is thus determined by international differences in corporate taxation. If $t_a > t_b$ ($t_a < t_b$), the MNE chooses a transfer price $q < \bar{q}$ ($q > \bar{q}$) and thus relocates income from high-tax country A (B) to low-tax country B (A) by underpricing (overpricing) the input good. Comparative statics read

$$\frac{dq}{dt_a} = -\frac{dq}{dt_b} = -\frac{1}{\phi K_{qq}}, \quad \frac{dq}{d\gamma_i} = -\frac{\phi_{\gamma_i} K_q}{\phi K_{qq}}, \quad \frac{d^2q}{dt_a d\gamma_i} = -\frac{d^2q}{dt_b d\gamma_i} = \frac{\phi_{\gamma_i}}{\phi^2 K_{qq}},$$

with $i \in \{a, b\}$. Transfer price distortions are thus reduced if the scope of a country's transfer pricing laws, as modelled by the parameter γ_i, rise. Formally, $\text{sign}(\frac{dq}{d\gamma_i}) = -\text{sign} K_q$, $\frac{dq}{dt_a} = -\frac{dq}{dt_b} < 0$, $\frac{d^2q}{dt_a d\gamma_i} = -\frac{d^2q}{dt_b d\gamma_i} > 0$ and, from Young's theorem, $\frac{d^2q}{d\gamma_i dt_i} = \frac{d^2q}{dt_i d\gamma_i}$. As a side remark, note that ϕ_{γ_i} and hence the quantitative effect of transfer pricing laws on profit shifting behaviour may differ across countries. Precisely, while the high-tax country benefits from less income shifting, the low-tax country loses in pre-tax profits and tax revenues. Consequently, the latter has no incentive to implement transfer pricing legislations in first place and, even if it has implemented them, authorities will have no incentive to challenge tax-motivated mis-pricing behaviour. However, transfer price documentation required by the low-tax country may nevertheless increase transparency in intra-firm price setting as the documentation results may have to be shared with authorities in the high-tax country, e.g. in the course of court disputes. Consequently, it plausibly holds that $0 \leq \phi_{\gamma_i} < \phi_{\gamma_j}$, with $t_i < t_j$, $i, j \in \{a, b\}$, $i \neq j$.

As the price q impacts on the affiliates' pre-tax profits, it follows

$$\frac{d\pi_i}{d\gamma_i} = \frac{\phi_{\gamma_i} K_q I}{\phi K_{qq}}, \quad \text{with} \quad \text{sign}\left(\frac{d\pi_i}{d\gamma_i}\right) = \text{sign}(t_i - t_j), \; I = \begin{cases} -1 & \text{if} \quad i = a \\ 1 & \text{if} \quad i = b \end{cases} \tag{3}$$

$$\frac{d\pi_i}{dt_i} = -\frac{1}{\phi K_{qq}} < 0, \quad \frac{d^2\pi_i}{dt_i d\gamma_i} = \frac{d^2\pi_i}{d\gamma_i dt_i} = \frac{\phi_{\gamma_i}}{\phi^2 K_{qq}} > 0, \quad i \in \{a, b\}, i \neq j \tag{4}$$

In the empirical analysis to come, we will test the hypotheses that emerge from Equations (3) and (4), namely that tighter transfer pricing laws raise (reduce) the pre-tax profits reported by multinational affiliates in high-tax (low-tax) countries (cf. Equation (3)) and lower the sensitivity of affiliates' pre-tax profits to changes

in the corporate tax rate (cf. Equation (4)).

3 Data

Our empirical analysis links firm-level information on multinational affiliates in Europe with detailed data on the host countries' corporate taxation system.

Firm Data

The firm data is drawn from Bureau van Dijk's AMADEUS database (version February 2011). The data comprises panel information on corporate balance sheets and profit & loss accounts for firms in 26 European countries between 1999 and 2009. The firms included in our analysis belong to multinational groups in the sense that either their parent company or one of their wholly owned subsidiaries is located in a foreign economy. The observational unit of the analysis is the multinational affiliate per year. In total, our sample comprises 150,214 observations from 31,854 affiliates for the years 1999 to 2009. Hence, we observe each affiliate for 4.7 years on average. A country distribution of the affiliates is presented in Table 1.[5]

Corporate Tax Rates and Transfer Price Legislations

We furthermore augment our firm level data by information on statutory corporate tax rates and the scope and evolution of transfer pricing rules in our European sample countries. The tax rate information was drawn from Ernst & Young's worldwide corporate tax guide. Data on transfer pricing regulations was collected from various sources, in particular the transfer pricing guides of Deloitte, Ernst & Young, KPMG, and PwC (Zinn et al., 2014). To approximate the scope of transfer pricing rules, our baseline analysis assigns countries in three categories.

Category 1 comprises countries without or with very limited transfer pricing legislations. At the beginning of our sample period, in 1999, most European countries already had implemented the arm's length principle in their national tax law. In the early sample years, legislations were often imprecise though and did not include any further details, e.g. regarding the applicability of the law, the methods prescribed to validate that intra-firm prices comply with the arm's length principle, and requirements for transfer price documentation. The legislations hence lacked the scope to restrict tax-motivated mis-pricing behaviour and the according country-year-cells are assigned to the first category.

[5]The firm distribution broadly corresponds to the observed aggregate distribution of economic activity across our sample countries. As Bureau von Dijk collects data from different sources, coverage varies across countries though. Conditional on inclusion in the data base, coverage of some variables (e.g. costs of employees) is poor in some countries (e.g. Ireland), leading to the exclusion of a considerable number of observations from the sample. We hence estimate specifications based on larger samples (dropping variables with poor coverage from the model), which yields comparable results to the ones reported in the paper (available upon request).

Categories 2 and 3 comprise countries in periods with more comprehensive transfer pricing rules, especially concerning the required transfer price documentation, which is the main regulatory instrument to increase the transparency of intra-firm price choices and to reduce the scope for strategic corporate mis-pricing behavior. Category 2 includes countries where transfer pricing laws are still weak but transfer price documentation requirements are included in tax authority guidelines and documentation may be requested from firms during audits.[6] Category 3, in turn, comprises countries which explicitly introduced transfer price documentation requirements into their national tax law and specified that documentation must either be available upon request or has to be handed in directly with the firm's annual tax return. See Table 2A for a classification of country-year-cells in our data. The table shows a trend towards tighter transfer pricing regulations during our sample period. While in 1999, the majority of countries are assigned to Categories 1 and 2, by 2009, the majority had moved up to Category 3.

Complementary to this measure, we collect information on countries' enforcement of transfer pricing rules. Specifically, we define a dummy variable, which indicates whether a country has implemented specific transfer pricing penalties or not, referring to both penalties for the wrong determination of taxable income and penalties for missing or incomplete transfer price documentation. Note that, in quantitative terms, legislations commonly allow for a wide range of penalties, depending on the particularity of the specific case (see Zinn et al. (2014)), which renders a quantitative comparison of the rules infeasible.[7] See Table 2B for a classification of our sample countries and years.

We furthermore collected information on whether countries offered the possibility to have advance pricing agreements, where tax payers and tax authorities negotiate a transfer price for a certain transaction and pre-determined time period in advance. From the tax payer's perspective, any risk related to possible transfer price adjustments in later audits is thus eliminated. It has hence been hypothesised in the literature that MNEs may reduce mis-pricing behavior in exchange for this risk reduction (e.g. Vollert (2013)). APAs can be structured as unilateral or bilateral agreement, with the former being entered by the tax payer and the host country's tax authority, while the latter also includes the tax authority of the foreign country affected by the transaction. Since agreements approved by both affected countries are much more favourable to tax payers, we, in the following, define a dummy vari-

[6] As tax authorities cannot issue legally binding regulations, these administrative practices have to be based on the interpretation of statutory law outside the transfer pricing realm and case law (see e.g. PWC (2013)).

[7] Beyond penalties for late submission of transfer price reports, the burden of proof with respect to the appropriateness of a transfer price commonly switches from the tax authorities to the tax payer if no or only insufficient documentation is provided.

able indicating whether tax authorities in the firm's host country offer bilateral APAs. In 1999, none of our sample countries allowed for APA procedures. By 2009, ten countries had started offering bilateral APAs (see Table 2C for details).

Transfer price documentation rules commonly also specify methods for tax payers to determine that their intrafirm transfer prices are in line with the arm's length principle. Most countries follow the OECD transfer pricing guidelines which allow for various methods, e.g. referring to prices, profit margins or profit splits of comparable uncontrolled transactions. As there is little variation in the allowed methods across countries and different methods do not systematically imply more or less leeway in the transfer pricing choice, the analysis to come will abstract from this aspect.[8]

Finally note that, in line with our brief discussion in Section 2, the scope of a country's transfer price rules tends to be correlated with its corporate tax rate. While, by the end of our sample period, many high-tax countries required transfer price documentation and charged specific transfer pricing penalties, tax haven economies like Ireland had not implemented according legislations.

Country Control Variables

We moreover augment our data by various other host country characteristics, including GDP as a proxy for the country's market size, GDP per capita as a proxy for a country's income and development level, the GDP growth rate and unemployment rate as a proxy for the state of a country's economy and the corruption index as a proxy for the state of a country's governance institutions. The corruption index is obtained from Transparency International. All other country data is retrieved from the World Development Indicator Database. See Table 3 for descriptive statistics.

4 Estimation Strategy

Following our considerations in Section 2, we implement an empirical model that tests the effect of introducing/tightening transfer pricing laws on multinational affiliates' reported pre-tax profits. Formally,

$$\ln\ EBIT_{ijt} = \beta_0 + \beta_1 \tau_{it} + \beta_2 (\tau_{it} \cdot TP_{it}) + \beta_3 TP_{it} + \beta_4 X_{it} + \rho_{jt} + \phi_i + \epsilon_{ijt} \qquad (5)$$

where $\ln\ EBIT_{ijt}$ stands for the natural logarithm of earnings before interest and tax of affiliate i in industry j at time t and TP_{it} captures the scope of transfer price

[8]The detection risk of transfer price distortions may also differ across asset types. For instance, transfer prices for firm-specific intangible assets are more difficult to assess and offer a greater scope for manipulation than tangible assets. This difference, however, is not specific to any particular country and is consequently not reflected in the construction of our transfer pricing variables.

regulations in affiliate i's host country at time t.[9] Since our theoretical considerations suggest that transfer pricing laws increase reported pre-tax profits at high-tax affiliates and lower reported pre-tax profits at low-tax affiliates, we augment the model by an interaction term between TP_{it} and the host country's corporate tax rate τ_{it}, expecting $\beta_2 > 0$ and $\beta_3 < 0$.

The model includes a full set of affiliate fixed effects, which nest country fixed effects, and absorb time-constant unobserved heterogeneity across entities and host countries. We also account for a vector of time-varying regressors X_{it}, comprising firm characteristics (fixed assets and costs of employees) and host country controls (GDP, GDP per capita, GDP growth rate, unemployment rate and TPI corruption index). All specifications moreover comprise a full set of one-digit industry-year fixed effects which control for industry-specific profitability shocks.

We moreover run models where the tax regressor τ_{it} is defined as the unweighted average corporate tax rate difference between affiliate i and all majority-owned foreign entities in the same multinational group, proxying for the affiliate's relative tax position within the group and related incentives to shift profits in or out.[10] We again expect $\beta_2 > 0$. The sign of β_3 depends on whether 'average-tax' affiliates are at the receiving or sending end of tax-motivated income shifting strategies.[11]

Note that the empirical approach resembles a difference-in-differences-in-differences analysis which compares changes in profit rates of multinational affiliates whose host countries introduce/tighten transfer price documentation rules (first difference) relative to unaffected multinational affiliates (second difference), differentiating between

[9] In line with earlier research (e.g. Huizinga and Laeven, 2008), we thus restrict the sample to affiliates with positive operating pre-tax profits, for which profit-shifting incentives are most relevant. Furthermore note that we employ EBIT - and thus operating profits - to measure firms' reported profitability, since strategic mis-pricing of goods and services mainly affects operating income. Our qualitative findings are robust to using other profitability measures though, see an earlier working paper version (Lohse and Riedel (2012)).

[10] For subsidiaries, the group structure is determined via the ultimate corporate owner (owning at least 50% of ownership shares in the firm). Specifically, τ_{it} is defined as the average corporate tax rate difference between the considered affiliate and all other majority-owned firms within the same MNE, which are located outside the affiliate's country (including the ultimate owner if located abroad) as determined by the subsidiary list of the ultimate owner. If ultimate owner information is missing, groups are constructed based on the subsidiary list of the immediate shareholder. If this information is also unavailable, recorded majority-owned subsidiaries of the firm itself are accounted for. For parent firms, τ_{it} is constructed as the average corporate tax rate difference between the firm and all foreign majority-owned subsidiaries. Furthermore note that we refrain from calculating size-weighted average tax rate differentials (but use uniform weights instead) since the AMADEUS data comprises subsidiary lists on a worldwide basis and often lacks reliable size information for affiliates outside Europe.

[11] As profit shifting strategies are not directly observable, our data does not allow identifying affiliates' roles in corporate mis-pricing and profit shifting schemes. Recent evidence suggests that the AMADEUS data systematically lacks information on tax haven affiliates, implying a downward bias in our calculated corporate tax differentials (see OECD (2015)). Affiliates with a zero-corporate tax rate differential, facing corporate tax rates of about 30%, are hence likely prone to outward shifting on average (implying $\beta_3 > 0$ if τ_{it} is modelled as the tax rate differential).

high-tax and low-tax affiliates within multinational groups (third difference).

A second prediction that emerges from the theoretical model in Section 2 is that transfer pricing rules reduce the sensitivity of affiliates' EBIT to changes in the corporate tax rate. Formally, $\beta_1 < 0$ and $\beta_2 > 0$. Following the existing literature, which interprets negative EBIT-sensitivities as proxy for the quantitative importance of tax-motivated multinational income shifting (see e.g. Dharmapala (2014) and Heckemeyer and Overesch (2013)), the ratio of the absolute coefficients ($0 \leq \beta_2/|\beta_1| \leq 1$) provides an indicator for the fraction of income shifting activities which is eliminated by the introduction and tightening of transfer pricing laws.

Finally, the construction of standard errors allows for clustering at the firm level in our baseline specifications, hence accounting for potential serial correlation of errors. As sensitivity checks, we also present models which allow for correlated errors at the country-year and industry-level. Since changes in transfer pricing and corporate tax policies impose a common shock to firms in the same country, clustering at the country level may appear warranted, but is tempered with the concern of a less than reasonable number of clusters in the context of our study. We thus follow Bertrand et al. (2004) and Cameron et al. (2011) and also present results which account for two-way clustering of errors at the country-year and firm level.

5 Results

The baseline results are presented in Table 4. Heteroscedasticity robust standard errors which account for clustering at the firm level are reported in parentheses. In Specification (1), transfer pricing rules are captured by a dummy variable for the existence of transfer price documentation requirements, either in tax authority guidelines or in national tax law (Categories 2 and 3 defined in Section 3). Following our discussion in the previous section, the log of affiliates' EBIT is regressed on the transfer pricing indicator, the host country's corporate tax rate and the interaction term between the two. The model furthermore includes affiliate fixed effects, industry-year fixed effects and the time-varying firm and host country characteristics described above. The results suggest a significant effect of transfer price documentation requirements on firms' reported operating income. For affiliates subject to the mean corporate tax rate of 30%, reported EBIT increases by 4.5% on average.[12] For affiliates in higher-tax (lower-tax) countries with corporate tax rates at the 75th and 90th (10th) percentile of our sample's corporate tax rate distribution (corresponding to tax rates of 34.5% and 37.25% (19%) respectively), reported EBIT is found to increase by 12.2% and 16.9% (decrease by 14.3%).

In line with our theoretical presumption, the results moreover suggest that the

[12] $= -0.468 + 1.709 \cdot 0.3$.

introduction of transfer price documentation requirements reduces the corporate tax-sensitivity of EBIT. Specifically, we find a negative coefficient estimate for the corporate tax variable (−3.43) and a positive coefficient estimate for the interaction term with the transfer pricing dummy (1.71). Note that the specifications control for a corporate-tax-time-trend-interaction in order to avoid the results to pick up common changes in tax-sensitivities of EBIT over time.[13] Evaluated at the tax elasticity for 1999, documentation requirements are found to lower the tax-sensitivity of EBIT by around 50% (= 1.71/(−3.43)).

Specification (2) refines the definition of transfer price documentation regimes, distinguishing between documentation requirements that are implemented into tax authority guidelines (Category 2) and documentation requirements that are enacted into national tax law (Category 3). Our results point to the effectiveness of both types of rules in limiting tax-motivated income shifting. The predicted EBIT-increase in response to documentation provisions does not significantly differ between the two regimes for affiliates in high-tax countries.[14] This suggests that administrative documentation requirements are not systematically less effective in limiting outward profit shifting than formal legal provisions. Predicted EBIT responses for affiliates in low-tax countries are, in turn, stronger if documentation requirements are enacted into national tax law, likely reflecting that low-tax countries have no incentive to use their administrative authority to limit inward profit shifting (while legal provisions may imply that required transfer price documentation at low-tax entities has to be shared with high-tax location's tax authorities, especially in the firm's parent country). Consistent with this finding, EBIT-sensitivities to corporate tax changes are reduced by both types of documentation rules, with a slightly stronger impact of statutory legal provisions in quantitative terms.

Specifications (3) and (4) reestimate the baseline model employing the logarithm of EBIT over fixed assets as the dependent variable (cf. Columns (3) and (4)), which leaves results qualitatively and quantitatively unchanged. Specifications (5) to (7) moreover account for clustering of errors at different levels (one-way clustering at the country-year and industry-level respectively in Columns (5) and (6), and two-way clustering at the country-year and firm level in Column (7)). The statistical significance of results remains unaffected.

Following our discussion in Section 4, we furthermore run specifications which measure corporate profit shifting incentives by the corporate tax rate difference

[13]Leaving out this control variable yields comparable results though.

[14]Note that for firms with a corporate tax rate at the 75th percentile of the corporate tax rate distribution, TP documentation requirements implemented in administration guidelines and tax law respectively increase EBIT by 12.3% and 13.9% (p-value of a Wald test for equality of these effects: 0.3994). For affiliates with corporate tax rates at the 90th percentile of the distribution, we find EBIT to increase by 18.9% and 19.2%. A Wald test again does not reject equality of the effects (p-value: 0.8785).

between the considered affiliate and foreign group entities. The results are presented in Columns (1) to (4) of Table 5 and resemble our baseline specifications, suggesting that TP documentation laws increase (lower) the reported EBIT at high-tax (low-tax) locations and reduce the EBIT sensitivity to corporate taxes.[15]

In Specifications (1) and (2) of Table 6, we moreover test the hypothesis that APAs reduce the prevalence of tax-motivated mis-pricing of intra-firm trade by adding a binary regressor for the availability of bilateral APAs in the affiliate's host country and its interaction term with the corporate tax rate (differential to foreign group affiliates). A role of APAs in limiting income shifting would imply a positive coefficient for the interaction term and a negative (undetermined) sign for the coefficient of the APA regressor if tax incentives are modelled by the statutory corporate tax rate in Specification (1) (the corporate tax rate differential to other group affiliates in Specification (2)). The coefficient estimate for the APA indicator and the interaction with the tax variables turn out statistically insignificant though, hence rejecting the hypothesis of systematic changes in tax-motivated corporate mis-pricing. There are two possible explanations for this result: Firstly, despite the introduction of bilateral APA procedures, the number of APAs concluded during our sample period was still small, hence reducing the power of the test. Secondly, as pointed out by Becker et al. (2014), even if firms are willing to give up profit shifting opportunities to insure against price adjustments in later tax audits, the overall APA-effect remains ambiguous as the tax payer and *both* tax authorities involved in the trade have to agree on a price and reduced TP distortions are not in the interest of the low-tax country's tax authority. Importantly, the baseline effect of transfer price documentation requirements on income shifting behaviour remains unaffected by the inclusion of the APA-regressors.

Following our discussion in Sections 3 and 4, we furthermore run robustness checks which add information on transfer pricing penalties to the definition of the transfer price regime variables: specifically, we subdivided country-year cells with transfer price documentation laws (Category 3) into country-years where transfer pricing laws were and were not backed by specific transfer pricing penalties (related to late submission of transfer pricing reports and/or mis-reporting of transfer prices). Estimation results based on this refined definition are presented in Table 7. In line with the previous estimates, the results point to a reduction in tax-motivated profit shifting activities when documentation rules are introduced. Quantitatively, Specifications (1) and (2) suggest that TP legislations exert a quantitatively stronger impact on report EBIT of multinational affiliates if specific TP penalties do exist.[16]

[15]Note that the coefficient estimate for the interaction term between the corporate tax rate difference and the time trend is close to zero and statistically insignificant.

[16]For affiliates in high-tax countries with a corporate tax rate of 37.25%, the introduction of TP regulation combined with penalty regimes is predicted to raise EBIT by around 18.6%, while the

Moreover, consistent with this finding, the estimates again point to a significant reduction in the EBIT-sensitivity to corporate tax rate changes in the presence of transfer price documentation requirements.

Table 8 reports a number of further robustness checks. Specifications (1) to (4) re-run the baseline model, allowing the EBIT sensitivity to corporate tax rate changes to vary in other host country characteristics. This helps assessing whether observed adjustments in the tax-responsiveness of EBIT when transfer pricing rules change may pick up effects related to other correlated country determinants. Specifically, we add interaction terms between the corporate tax variable and all host country controls described in Section 4 (GDP, GDP per capita, corruption, unemployment rate, GDP growth as well as the common time trend). The model also accounts for other host country anti-profit shifting provisions, namely controlled foreign company (CFC) rules and thin-capitalisation provisions, and their interaction with the corporate tax variable as these provisions may, obviously, impact on shifting activities and may correlate with the emergence of transfer pricing laws.[17] Note that the control variables are defined as deviation from their sample mean to facilitate interpretation (the reported corporate tax coefficient hence captures the EBIT-sensitivity for firms in host countries with average legislations). The results are comparable to our baseline estimates, suggesting a major decline in the corporate tax rate sensitivity of operating income when transfer pricing rules are tightened.

In a second set of robustness checks, we assess whether our results are prone to reverse causality concerns. Specifically, one may worry that countries that encounter negative shocks on the firm profit base may be inclined to introduce or tighten transfer price documentation requirements to expand the corporate tax base. The recovery from the transitory EBIT-shock would then be captured in the analysis and lead to biased estimates. Following the existing literature, we address this problem by augmenting the set of regressors with a control variable for the lag of the average EBIT profitability of firms in a given country.[18] This modification leaves our baseline

introduction of TP documentation requirements in tax law or administration guidelines without specific penality regimes is predicted to raise EBIT by 10.6% and 12.4% respectively. Wald tests reject equality of the effects (p-values of 0.009 and 0.068 respectively).

[17]The CFC variable is a dummy coded 1 if a firm is the parent of the multinational group (or a subsidiary located in the parent country) and CFC legislations are enacted in its home country or if the considered firm is a subsidiary of a multinational group whose parent country has enacted CFC legislations which are binding with respect to the subsidiary's host country (i.e. the subsidiary's host country is considered to be a tax haven by the home country's CFC legislations). While the baseline definition does not account for the weakening of CFC legislations in Europe after the Cadbury-Schweppes decision of the European Court of Justice in November 2006, the findings are robust to recoding the CFC dummy in the sense that CFC rules are assumed to not apply within the European Economic Area after 2006. The thin-capitalisation variable captures safe-harbor-debt-to-equity ratios above which interest deductions may be denied. The rules refer to total (intra-firm and extra-firm) debt. Augmenting the set of regressors by these additional control variables leaves our qualitative and quantitative results unaffected.

[18]While the simultaneous inclusion of firm fixed effects and a lagged dependent variable leads to

estimates largely unchanged. Along the same lines, Specifications (9)-(12) augment the set of regressors by control variables indicating periods prior to the introduction of transfer price documentation rules (either in tax administration guidelines or national tax law) and their interaction with the corporate tax variable. This allows for the fact that transfer pricing reforms may be implemented when EBIT is low and/or the EBIT-sensitivity to corporate tax rate changes is large. Again, our prior findings are robust to this modification.[19]

Concluding, the results thus point to the effectiveness of transfer price documentation laws and related penalty regimes in limiting profit shifting behaviour. Specifically, we find that the introduction of transfer pricing rules has a mild positive effect on reported EBIT at affiliates with an average corporate tax rate and significantly raises (lowers) reported operating profits at high-tax (low-tax) entities. Moreover, the results point to a substantial decline in the tax responsiveness of EBIT when transfer price documentation requirements are introduced.

6 Conclusion

The aim of this paper was to assess the impact of transfer price documentation rules on international profit shifting. Profit shifting activities related to the mispricing of intra-firm trade are well documented and are widely perceived to belong to the most important strategies of MNEs to relocate income to low-tax affiliates. Policy makers have been raising concerns about the implied corporate tax base losses for many years (see e.g. Heinemann and Janeba (2011)), culminating in the launch of the G20/OECD BEPS report and action plan against corporate profit shifting and base erosion in 2013, whose results have just recently been published and endorsed by G20 finance ministers. Several of the OECD's BEPS-action items center around transfer price documentation provisions and aim to streamline and harmonise existing legislations. Our analysis offers a positive view on this process, suggesting that transfer price documentation provisions have some effectiveness in limiting mispricing behaviour. Their welfare effects may hence be positive despite the high compliance and administrative burden they impose on firms and tax authorities.

biased estimates (Nickell (1981)), our lagged variable is the average EBIT-profitability of all firms in the same country, making this a negligible concern in our context.

[19]Note, moreover, that firm fixed effects absorb underlying time-constant determinants of affiliate profitability in a given country, including the average propensity of firms in a given country to engage in outward profit shifting.

7 Disclosures

The authors have no financial arrangements that might give rise to conflicts of interest with respect to the research reported in this paper.

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9 Appendix

Table 1: Country Statistics	
Country	**Firm Number**
Austria	294
Belgium	2,134
Bulgaria	639
Croatia	370
Czech Republic	555
Denmark	1,687
Estonia	280
Finland	558
France	2,900
Germany	1,461
Great Britain	4,188
Hungary	34
Ireland	33
Italy	2,318
Luxembourg	16
Latvia	8
Netherlands	2,199
Norway	1,037
Poland	941
Portugal	337
Romania	4,718
Slovak Republic	77
Spain	2,811
Sweden	1,991
Switzerland	135
Ukraine	133
Sum	**31,854**

Table 2A: Transfer Price Documentation Requirements											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria	.	.	2	2	2	2	2	2	2	2	2
Belgium	2	2	2	2	2	2	2	2	2	2	2
Bulgaria	1	1	1	1	1	1	1	1	.	.	2
Croatia	1	1	1	1	1	1	.	.	.	.	3
Czech Republic	.	.	2	2	2	2	2	2	2	2	2
Denmark	.	.	3	3	3	3	3	3	3	3	3
Estonia	.	.	.	.	.	.	.	.	3	3	3
Finland	.	.	.	.	2	2	2	2	3	3	3
France	.	.	2	2	2	2	2	2	2	2	2
Germany	.	.	2	2	3	3	3	3	3	3	3
Hungary	.	.	2	2	3	3	3	3	3	3	3
Ireland	1	1	1	1	1	1	1	1	1	1	1
Italy	.	.	2	2	2	2	2	2	2	2	2
Latvia	.	.	.	.	.	.	.	.	2	2	2
Luxembourg	.	.	.	.	.	.	2	2	2	2	2
Netherlands	1	1	1	3	3	3	3	3	3	3	3
Norway	.	.	.	.	.	2	2	2	2	3	3
Poland	.	.	3	3	3	3	3	3	3	3	3
Portugal	1	1	1	3	3	3	3	3	3	3	3
Romania	.	.	.	.	2	2	2	2	3	3	3
Slovak Republic	.	.	.	.	.	.	2	2	2	2	3
Spain	.	.	2	2	2	2	2	2	3	3	3
Sweden	.	.	2	2	2	2	2	2	3	3	3
Switzerland	.	.	2	2	2	2	2	2	2	2	2
Ukraine	1	1	1	1	1	1	1	1	1	1	1
United Kingdom	3	3	3	3	3	3	3	3	3	3	3

Notes:
The table indicates the existence and scope of national transfer price documentation requirements.
Category 1 comprises countries without or with very limited transfer price legislations.
Category 2 indicates countries where transfer price documentation is required by tax authority guidelines. In the following, this category will be denoted **TP Documentation Requirements, Admin. Guidelines**.
Category 3 comprises countries which explicitly introduced transfer price documentation requirements into their national tax law and specified that documentation must either be available upon request or has to be handed in directly with the firm's annual tax return. In the following, this category will be denoted **TP Documentation Requirements, Tax Law**.
'.' indicates that we were unable to obtain consistent information on the transfer price documentation requirements.

Table 2B: Specific Transfer Pricing Penalties									
1 height	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria	0	0	0	0	0	0	0	0	0
Belgium	0	0	0	0	0	0	0	0	0
Czech Republic	0	0	0	0	0	0	0	0	0
Denmark	0	0	0	0	0	1	1	1	1
Finland	0	0	0	0	0	0	0	0	0
France	1	1	1	1	1	1	1	1	1
Germany	0	0	0	1	1	1	1	1	1
Hungary	0	0	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0	0	0
Italy	0	0	0	0	0	0	0	0	0
Luxembourg	0	0	0	0	0	0	0	0	0
Netherlands	0	0	0	0	0	0	0	0	0
Norway	0	0	0	0	0	0	0	0	0
Poland	0	0	0	0	0	0	0	0	0
Portugal	0	0	0	0	0	0	0	0	0
Romania	0	0	0	0	0	0	0	1	1
Slovak Republic	0	0	0	0	0	0	0	0	0
Spain	0	0	0	0	0	0	0	0	1
Sweden	0	0	0	0	0	0	0	0	0
Switzerland	0	0	0	0	0	0	0	0	0
Ukraine	0	0	0	0	0	0	0	0	0
United Kingdom	0	0	0	0	0	0	0	0	0

Notes: The table indicates whether a country does (= 1) or does not (= 0) levy specific penalties related to the transfer pricing sphere.

Table 2C: Possibility to enter into a bilateral advance pricing agreement											
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Austria	0	0	0	0	0	0	0	0	0	0	0
Belgium	0	0	0	0	0	0	0	0	0	0	0
Bulgaria	0	0	0	0	0	0	0	0	0	0	0
Croatia	0	0	0	0	0	0	0	0	0	0	0
Czech Republic	0	0	0	0	0	0	0	0	0	0	0
Denmark	.	.	.	1	1	1	1	1	1	1	1
Estonia	0	0	0	0	0	0	0	0	0	0	0
Finland	0	0	0	0	0	0	0	0	0	0	0
France	.	.	1	1	1	1	1	1	1	1	1
Germany	0	0	0	0	0	0	0	1	1	1	1
Hungary	0	0	0	0	0	0	0	0	1	1	1
Ireland	0	0	0	0	0	0	0	0	0	0	0
Italy	0	0	0	0	0	0	0	0	0	0	0
Latvia	0	0	0	0	0	0	0	0	0	0	0
Luxembourg	0	0	0	0	0	0	0	0	0	0	0
Netherlands	0	0	1	1	1	1	1	1	1	1	1
Norway	0	0	0	0	0	0	0	0	0	0	0
Poland	0	0	0	0	0	0	0	1	1	1	1
Portugal	0	0	0	0	0	0	0	0	0	0	1
Romania	0	0	0	0	0	0	0	0	1	1	1
Slovak Republic	0	0	0	0	0	0	0	0	0	0	0
Spain	.	.	1	1	1	1	1	1	1	1	1
Sweden	0	0	0	0	0	0	0	0	0	0	0
Switzerland	.	.	.	.	.	.	.	.	.	.	.
Ukraine	0	0	0	0	0	0	0	0	0	0	0
United Kingdom	.	.	1	1	1	1	1	1	1	1	1

Notes: The table indicates whether a country's tax authorities do (= 1) or do not (= 0) offer bilateral advanced pricing agreements. '.' indicates that we were unable to obtain consistent information.

Table 3: Descriptive Statistics

Variable	*Obs*	*Mean*	*Std.Dev.*	*Min*	*Max*
Earnings Before Interest and Taxes (EBIT)★	150,214	17,086.5	255,592.8	.0011	3.54e+07
Fixed Assets★	150,214	145,626.5	2,021,979	.0014	2.36e+08
Costs of Employees★	150,214	27,599.77	217,973.7	.0003	2.26e+07
Corporate Tax Rate	150,214	.3020	.0632	0.1	.4025
Corporate Tax Rate Differential▼	87,152	.0097	.0626	-0.303	0.314
TP Documentation Requirements	150,214	.9577	.2013	0	1
Transfer Price Documentation Requirements, Admin. Guidelines	150,214	.5353	.4988	0	1
Transfer Price Documentation Requirements, Tax Law	150,214	.4223	.4939	0	1
Bilateral APA Procedures	146,321	.5243	.4994	0	1
GDP per Capita▲	150,214	20.4671	9.6650	.594	56.6
GDP*	150,214	.7291	.6352	.0082	2.1
GDP growth rate□	150,214	2.2025	3.0371	-18	12.1
Unemployment♦	150,214	7.3968	2.9989	2.1	20.5
Corruption Index■	150,214	6.8711	1.9966	1.5	9.7

Notes:
Firm data is exported from the AMADEUS database provided by Bureau van Dijk, version: February 2011. 'TP Documentation Requirements' stands for a dummy variable indicating country-years in which a firm's host country required documentation of transfer prices, either in the context of tax authority guidelines or in national tax law. 'Transfer Price Documentation Requirements, Admin. Guidelines' and 'Transfer Price Documentation Requirements, Tax Law' take on the value 1 if transfer price documentation is required by tax authorities' administration guidelines or tax law respectively. See also Section 3 for details. 'Bilateral APA Procedures' is a dummy that takes on the value 1 if tax authorities in the firm's host country offer bilateral APA procedures.

★ unconsolidated accounts, in thousands, US dollars.
▼ difference between the host country's corporate tax rate and the unweighted average tax rate of other foreign majority-owned affiliates in the same corporate group (ownership >50%)
▲ in thousands, US Dollars, constant prices, year 2000 (Source: World Development Indicator Database)
* in trillions, US Dollars, constant prices, year 2000 (Source: World Development Indicator Database)
□ in % (Source: World Development Indicator Database, World Bank)
■ index ranges from 1 (high level of corruption) to 10 (no corruption) (Source: Transparency International)
♦ in % of total labor force (Source: World Development Indicator Database)

Table 4: Baseline Results
Dep. Variable: Log EBIT (Columns (1)-(2), (5)-(7)), Log EBIT/Fixed Assets (Columns (3)-(4))

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Corporate Tax Rate	-3.425***	-2.942***	-4.530***	-3.837***	-3.425***	-3.425***	-3.425***
	(0.409)	(0.412)	(0.527)	(0.530)	(0.638)	(0.365)	(0.679)
TP Documentation Requirements,	1.709***		1.977***		1.709***	1.709***	1.709***
Admin. G. or Tax Law X Corporate Tax Rate	(0.363)		(0.476)		(0.624)	(0.324)	(0.660)
TP Documentation Requirements,		1.789***		2.181***			
Admin. Guidelines X Corporate Tax Rate		(0.366)		(0.479)			
TP Documentation Requirements,		2.494***		3.040***			
Tax Law X Corporate Tax Rate		(0.396)		(0.513)			
TP Documentation Requirements,	-0.468***		-0.585***		-0.468**	-0.468***	-0.468**
Admin. Guidelines or Tax Law	(0.124)		(0.163)		(0.221)	(0.111)	(0.233)
TP Documentation Requirements,		-0.478***		-0.607***			
Admin. Guidelines		(0.124)		(0.163)			
TP Documentation Requirements,		-0.737***		-0.958***			
Tax Law		(0.135)		(0.175)			
Fixed Assets	0.0832***	0.0835***			0.0832***	0.0832***	0.0832***
	(0.00538)	(0.00538)			(0.00506)	(0.0155)	(0.00616)
Cost of Employees	0.437***	0.437***			0.437***	0.437***	0.437***
	(0.0118)	(0.0118)			(0.0203)	(0.0163)	(0.0217)
GDP	-0.0948	-0.189	0.235	0.0808	-0.0948	-0.0948	-0.0948
	(0.134)	(0.135)	(0.181)	(0.181)	(0.152)	(0.223)	(0.176)
GDP per Capita	0.0791***	0.0759***	0.165***	0.159***	0.0791***	0.0791***	0.0791***
	(0.00810)	(0.00811)	(0.0108)	(0.0108)	(0.0118)	(0.0102)	(0.0129)
Unemployment Rate	-0.00993***	-0.00708***	-0.0167***	-0.0116***	-0.00993***	-0.00993***	-0.00993***
	(0.00235)	(0.00239)	(0.00294)	(0.00302)	(0.00356)	(0.00297)	(0.00383)
Corruption	0.00466	0.0143	-0.0478***	-0.0348***	0.00466	0.00466	0.00466
	(0.00989)	(0.00993)	(0.0130)	(0.0130)	(0.0139)	(0.00977)	(0.0152)
GDP Growth	0.00552***	0.00552***	0.000809	0.000442	0.00552*	0.00552**	0.00552*
	(0.00200)	(0.00201)	(0.00241)	(0.00242)	(0.00297)	(0.00213)	(0.00308)
Corporate Tax Rate X	0.185***	0.0871**	0.462***	0.319***	0.185***	0.185***	0.185***
Time	(0.0341)	(0.0370)	(0.0456)	(0.0484)	(0.0537)	(0.0306)	(0.0582)
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Firm	Firm	Firm	Firm	Ctry-Year	Industry	Two-Way
# Observations	150,214	150,214	150,214	150,214	150,214	150,214	150,214
Within R-Squared	0.1578	0.1582	0.0126	0.0132	0.1578	0.1578	0.1578

Notes: Heteroscedasticity robust standard errors adjusted for one-way clustering at the firm level in Specifications (1)-(4), country-year level in Specification (5) and industry-level in Specification (6). Specification (7) accounts for two-way clustering at the country-year and firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% level. Observational unit is the multinational affiliate per year. The dependent variable is the natural logarithm of the firm's earnings before interest and taxes (EBIT) in Columns (1)-(2) and (5)-(7) and the natural logarithm of EBIT over fixed assets in Specifications (3) and (4). The tax variable is the affiliate's host country corporate tax rate in all specifications. See the notes to Table 3 for a definition of the variables. Industry-year-effects are constructed based on one-digit NACE-codes.

Table 5: Robustness Checks and Extensions I - Corporate Tax Rate Differential Dependent Variable: Log EBIT (Columns (1)-(2)), Log EBIT/Fixed Assets (Columns (3)-(4))				
	(1)	**(2)**	**(3)**	**(4)**
Corporate Tax Difference	-1.427***	-1.436***	-1.581***	-1.560***
	(0.363)	(0.367)	(0.434)	(0.440)
TP Documentation Requirements,	1.054***		1.551***	
Admin. G. or Tax Law X Corporate Tax Difference	(0.385)		(0.474)	
TP Documentation Requirements,		1.079***		1.489***
Admin. Guidelines X Corporate Tax Difference		(0.410)		(0.508)
TP Documentation Requirements,		1.032***		1.606***
Tax Law X Corporate Tax Difference		(0.399)		(0.494)
TP Documentation Requirements,	0.105***		0.0966**	
Admin. Guidelines or Tax Law	(0.0320)		(0.0411)	
TP Documentation Requirements,		0.102***		0.107**
Admin. Guidelines		(0.0370)		(0.0476)
TP Documentation Requirements,		0.106***		0.0957**
Tax Law		(0.0321)		(0.0412)
Corporate Tax Rate Difference X	0.0312	0.0320	0.0152	0.0131
Time	(0.0304)	(0.0306)	(0.0418)	(0.0422)
Industry-Year FE	Yes	Yes	Yes	Yes
Ctry and Firm Controls	Yes	Yes	Yes	Yes
# Observations	87152	87152	87152	87152
Within R-Squared	0.1790	0.1790	0.0103	0.0103

Notes: Heteroscedasticity robust standard errors adjusted for firm clusters in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level. Observational unit is the multinational affiliate per year. The dependent variable is the logarithm of EBIT (Columns (1)-(2)) and the logarithm of EBIT over fixed assets (Columns (3)-(4)) respectively. See the notes to Tables 3 and 4 for a definition of the regressors.

Table 6: Robustness Checks and Extensions II - APAs Dep. Variable: Log EBIT		
	(1)	**(2)**
Corporate Tax Measure	-2.401***	-1.479***
	(0.431)	(0.382)
TP Documentation Requirements,	1.689***	1.191***
Admin. Guidelines X Corporate Tax Measure	(0.373)	(0.423)
TP Documentation Requirements,	1.837***	1.256***
Tax Law X Corporate Tax Measure	(0.417)	(0.431)
TP Documentation Requirements,	-0.459***	0.0723*
Admin. Guidelines	(0.126)	(0.0385)
TP Documentation Requirements,	-0.528***	0.0721**
Tax Law	(0.142)	(0.0341)
Bilateral APA Procedures X Corporate	0.231	-0.116
Tax Measure	(0.231)	(0.239)
Bilateral APA Procedures	-0.156**	-0.00567
	(0.0735)	(0.0274)
Industry-Year FE	Yes	Yes
Ctry and Firm Controls	Yes	Yes
Corporate Tax Measure Used	Tax Rate	Tax Diff
# Observations	146,321	85,415
Within R-squared	0.1575	0.1776

Notes: Heteroscedasticity robust standard errors adjusted for firm clusters in parentheses. ***, **, and *indicate significance at the 1%, 5%, and 10% level. Observational unit is the multinational affiliate per year. The dependent variable is the logarithm of the affiliate's EBIT. See the notes to Tables 3 and 4 for a definition of the regressors. 'Bilateral APA Procedures' is a dummy variable indicating whether the affiliate's host country offers the possibility to enter into bilateral advance pricing agreements. 'Bilateral APA Procedures x Corporate Tax Measure' depict the interaction term of this variable with the corporate tax rate (difference). The tax measure used is the corporate tax rate in Specification (1) and the corporate tax rate differential to other group affiliates in Specification (2).

Table 7: Robustness Checks and Extensions III - Transfer Pricing Penalties Dep. Variable: Log EBIT (Columns (1), (3)), Log EBIT/Fixed Assets (Columns (2), (4))				
	(1)	**(2)**	**(3)**	**(4)**
Corporate Tax Measure	-2.941***	-3.502***	-1.003***	-0.762**
	(0.419)	(0.542)	(0.316)	(0.384)
TP Documentation Requirements,	1.985***	1.724***	0.977***	0.787*
Admin. Guidelines X Corporate Tax Measure	(0.350)	(0.467)	(0.342)	(0.433)
TP Documentation Requirements,	2.518***	2.195***	0.974***	0.957**
Tax Law, No TP Penalty X Corporate Tax Measure	(0.378)	(0.496)	(0.342)	(0.433)
TP Documentation Requirements,	3.038***	2.754***	1.070**	0.680
Tax Law, TP Penalty X Corporate Tax Measure	(0.418)	(0.547)	(0.311)	(0.391)
TP Documentation Requirements,	-0.615***	-0.456***	0.00462	0.0575
Admin. Guidelines	(0.114)	(0.153)	(0.0348)	(0.0436)
TP Documentation Requirements,	-0.832***	-0.681***	-0.00361	0.0483
Tax Law, No TP Penalty	(0.123)	(0.163)	(0.0294)	(0.0365)
TP Documentation Requirements,	-0.945***	-0.866***	0.0317	0.0365
Tax Law, TP Penalty	(0.132)	(0.174)	(0.0392)	(0.0488)
Time X Corporate Tax Measure	0.0630*	0.333***	-0.00923	-0.00136
	(0.0383)	(0.0502)	(0.0326)	(0.0467)
Industry-Year FE	Yes	Yes	Yes	Yes
Ctry and Firm Controls	Yes	Yes	Yes	Yes
Corporate Tax Measure Used	Tax Rate	Tax Rate	Tax Diff	Tax Diff
# Observations	150,214	150,229	87,152	87,154
Within R-Squared	0.1583	0.0130	0.1789	0.0102

Notes: Heteroscedasticity robust standard errors adjusted for firm clusters in parentheses. ***, **, and *indicate significance at the 1%, 5%, and 10% level. Observational unit is the multinational affiliate per year. The dependent variable is the logarithm of the affiliate's EBIT (Columns (1) and (3)) and the logarithm of EBIT over fixed assets (Columns (2) and (4)). See the notes to Tables 3 and 4 for a definition of the regressors. 'TP Documentation Requirements, Tax Law, TP Penalty' ('TP Documentation Requirements, Tax Law, **No** TP Penalty') depicts an indicator variable for country-years where transfer price documentation requirements are implemented into national tax laws and there are (but there are no) specific transfer pricing penalties implemented in the law respectively. The tax measure used is the corporate tax rate in Specifications (1)-(2) and the corporate tax rate differential to other group affiliates in Specifications (3)-(4).

Table 8: Robustness Checks and Extensions IV - Heterogeneity in EBIT-Sensitivity to Corporate Taxes and Lagged Profitability Rates
Dependent Variable: Log Earnings Before Interest and Tax

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Corporate Tax Measure	-2.371***	-2.259***	-1.536***	-1.560***	-2.358***	-2.148***	-1.621***	-1.650***	-2.806***	-1.404***	-2.111***	-1.890***
	(0.455)	(0.487)	(0.386)	(0.390)	(0.455)	(0.457)	(0.433)	(0.437)	(0.424)	(0.397)	(0.553)	(0.512)
TP Documentation Requirements,	1.807***		1.058***		1.240***		1.387***					
Admin. Guides or Tax Law X Corp. Tax M.	(0.440)		(0.400)		(0.404)		(0.444)					
TP Documentation Requirements,		1.850***		1.139***		1.325***		1.466***	1.554***	1.027**	1.506***	1.639***
Admin. Guidelines X Corporate Tax Measure		(0.444)		(0.433)		(0.409)		(0.466)	(0.389)	(0.446)	(0.525)	(0.558)
TP Documentation Requirements,		1.633***		0.997**		1.784***		1.322***	2.239***	0.975**	1.214**	1.337**
Tax Law X Corporate Tax Measure		(0.527)		(0.418)		(0.441)		(0.461)	(0.419)	(0.440)	(0.605)	(0.556)
TP Documentation Requirements	-0.536***		0.124***		-0.312**		0.0982***					
Admin. Guidelines or Tax Law	(0.151)		(0.0325)		(0.138)		(0.0349)					
TP Documentation Requirements,		-0.549***		0.118***		-0.331**		0.0939**	-0.384***	0.113**	-0.412**	0.132**
Admin. Guidelines		(0.153)		(0.0384)		(0.138)		(0.0403)	(0.131)	(0.0468)	(0.178)	(0.0551)
TP Documentation Requirements,		-0.480***		0.124***		-0.498***		0.0983***	-0.637***	0.117***	-0.322	0.141***
Tax Law		(0.179)		(0.0325)		(0.150)		(0.0349)	(0.142)	(0.0430)	(0.203)	(0.0506)
Lag, Avg. EBIT/Fixed Assets					0.139***	0.114***	0.0564	0.0585*			0.0290	0.0563
					(0.0266)	(0.0270)	(0.0353)	(0.0352)			(0.0313)	(0.0372)
Prior Period X Corporate Tax Measure									-0.590	-0.490	-0.170	-0.0604
									(0.376)	(0.561)	(0.408)	(0.608)
Prior Period									0.225*	0.0243	0.0921	0.0431
									(0.116)	(0.0431)	(0.123)	(0.0486)
Corporate Tax Measure Used	Tax Rate	Tax Rate	Tax Diff	Tax Diff	Tax Rate	Tax Rate	Tax Diff	Tax Diff	Tax Rate	Tax Diff	Tax Rate	Tax Diff
Interactions Corporate Tax Measure Other Country Controls	Yes	Yes	Yes	Yes								
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ctry and Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	134,481	134,481	86,621	86,621	130,971	130,971	76,159	76,159	150,214	87,152	116,596	75,658
Within R-squared	0.1706	0.1706	0.1792	0.1792	0.1391	0.1392	0.1617	0.1617	0.1582	0.1790	0.1514	0.1619

Notes: Heteroscedasticity robust standard errors adjusted for firm clusters in parentheses. ***, **, and *indicate significance at the 1%, 5%, and 10% level. Observational unit is the multinational affiliate per year. The dependent variable is the logarithm of the affiliate's EBIT. See the notes to Tables 3 and 4 for a definition of the regressors. The vector of control variables in Specifications (1) to (4) include interaction terms between the corporate tax rate (differential) and various (demeaned) host-country characteristics, see main text for details. 'Lag, Avg. EBIT/Fixed Assets' moreover depicts the lag of the unweighted average pre-tax profitability, as measured by the logarithm of EBIT over fixed assets, of all firms in a given country and year. 'Prior Period' moreover indicates periods before the introduction of transfer price documentation requirements. The tax measure used is the corporate tax rate in Specifications (1)-(2), (5)-(6), (9) and (11) and the corporate tax rate differential to other group affiliates in Specifications (3)-(4), (7)-(8), (10) and (12).