TAXATION, ACCOUNTING, AND FINANCE
TAF WORKING PAPER

Is Consistency the Panacea? Inconsistent or Consistent Tax Transfer Prices with Strategic Taxpayer and Tax Authority Behavior

Diller, Markus / Lorenz, Johannes /
Schneider, Georg / Sureth-Sloane, Caren

Is Consistency the Panacea? Inconsistent or Consistent Tax Transfer Prices with Strategic Taxpayer and Tax Authority Behavior*

Markus Diller   Johannes Lorenz   Georg Schneider

Caren Sureth-Sloane

July 25, 2021

ABSTRACT

This study investigates how strategic tax transfer pricing of a multinational company (MNC) and two tax authorities in different countries affects production and tax avoidance decisions at the firm level and tax revenues at the country level. We employ a game-theoretical model to analyze the costs and benefits of two tax transfer pricing regimes (consistency vs. inconsistency) under asymmetric information. Though tax transfer pricing harmonization is considered a promising instrument to fight undesired tax avoidance, the implications are largely unclear. We find tax avoidance in equilibrium in both countries under inconsistency. Surprisingly, we identify conditions under which low-tax countries benefit from consistency while high-tax countries benefit from inconsistency. This explains how the strategic interaction of taxpayer and tax authorities under firm-level heterogeneity challenges the implementation of consistent regimes. Understanding the implications of (in)consistent transfer pricing rules is crucial when reforming transfer pricing regulations to fight tax avoidance and double taxation.

Keywords: transfer pricing; transfer pricing inconsistency; tax avoidance; tax harmonization; strategic behavior; real effects

JEL classification: H20, H26, C72, K34, F53

I. INTRODUCTION

This study investigates the effects of strategic transfer pricing of a multinational company (MNC) and two tax authorities on production, profit, and tax avoidance at the firm level and tax revenues at the country level. We employ a game-theoretical approach to examine the implications of consistent and inconsistent transfer pricing. Tax transfer price inconsistencies are a consequence of non-harmonized regulations across countries and differences in the interpretation and application of the arm's-length principle. Understanding the implications of more or less harmonized tax transfer prices is important in face of current efforts towards uniform tax transfer prices across countries as a way to fight base erosion and profit shifting (BEPS) and prevent double taxation effectively.

As transfer pricing is one of the most important ways of profit shifting to low-tax countries (Heckemeyer and Overesch, 2017), lately, intergovernmental forums like the OECD/G20 Inclusive Framework on BEPS promote consistent transfer pricing standards. As a step towards this aim and a uniform worldwide tax system, the OECD has already addressed the inconsistency issue in BEPS Action 13 "Transfer Pricing Documentation and Country-by-Country Reporting" (OECD, 2015). The main idea is to harmonize transfer pricing documentation by implementing a three-tiered standardized approach (master file, local file, country-by-country reports). The OECD expects that enhanced documentation and exchange of information "requires taxpayers to articulate consistent transfer pricing positions" (OECD, 2015, p. 9). Consistent tax transfer prices are expected to be less vulnerable to profit shifting and to prevent double taxation. In addition, tax administrations are expected to benefit from *more information* in a standardized, comparable, and thus *useful* format in terms of increased compliance and tax revenues. But do countries indeed benefit from consistency? What is the impact of transfer pricing consistency and inconsistency on MNCs' real decisions such as production decisions and in turn on MNCs' profit? How does the transfer pricing regime affect the incentives on allocation of functions and risks across divisions? In the light of present efforts to curb harmful tax practices via tax regulation harmonization, providing answers to these questions is imperative.

A stylized example helps to illustrate the tension in these questions. If tax transfer pricing rules are harmonized across a high-tax, importing country A and a low-tax, exporting country B to reduce profit shifting from A to B, one might suspect that country B would not be interested in participating in the harmonization project because it fears losing tax substrate as a consequence of generally lower tax transfer prices. Surprisingly, our model suggests that under specific conditions the low-tax country benefits from consistency even if this means accepting generally lower tax transfer prices whereas it is the high-tax country that may suffer from tax revenue losses and puts itself at risk of forgoing R&D investments. These results highlight that—due to the strategic interaction taking place—the effects of introducing tax transfer pricing consistency are not straightforward but rather deserve careful analysis.

Our analysis of the rational behavior of MNCs and tax authorities investigates both inconsistent and consistent tax transfer pricing regimes under strategic interdependence of MNCs' and tax authorities' actions. Based on this, we study the impact of the tax transfer pricing game on divisions' incentives, MNCs' optimal output and in turn the MNCs' profit as well as on the countries' tax revenues.

Our study is motivated by four streams of literature. First, prior theoretical literature provides a good understanding of inconsistent tax transfer pricing regimes being the result of a strategic interaction between different countries (Elitzur et al. 1996; Mansori et al. 2001; Haufler et al. 2000;[1] Møller et al. 2002). In line with these theoretical studies, inconsistent tax transfer pricing regulations are observed empirically (Rathke, Rezende, and Watrin, 2020). Furthermore, anecdotal evidence from semi-structured interviews and an online survey of transfer pricing experts we conducted in 2020 highlight the relevance of inconsistent transfer pricing.[2]

> *"So that also has nothing to do with what is an OECD country or not. This [transfer pricing inconsistency] is an issue for all tax authorities."*
> *—Tax transfer pricing expert, German tax advisory firm.*

---

[1] Even though Haufler and Schjelderup (2000) do not model transfer pricing explicitly, in their model countries compete over tax rates and the extent of deductibility of investment costs. The latter determines the tax base and thus is closely related and can be generalized to a transfer pricing setting.

[2] See Section II, as well as Appendix A.1, and A.2 for details.

The above-mentioned theoretical studies abstract from strategic tax authorities' behavior such as an endogenous transfer pricing audit strategy.

In a second stream of literature, tax enforcement and how it affects MNC behavior receives more attention. Horst (1971) studies MNC incentives in transfer pricing but abstracts from the costs of tax planning. Other studies account for penalties and concealment costs (Kant, 1988; Choe and Hyde, 2007; Baumann and Friehe, 2013; Blouin, Robinson, and Seidman, 2018; Davies, Martin, Parenti, and Toubal, 2018; Koethenbuerger, Mardan, and Stimmelmayr, 2019). However, the strategic actions of tax authorities, which for example may endogenously adjust their behavior in response to the MNC's behavior, are not addressed in these studies.

Third and to the best of our knowledge, De Waegenaere, Sansing, and Wielhouwer (2006) is the only study to investigate a setting with an MNC and two strategic tax authorities under tax transfer price rule inconsistencies. Assuming that transfer price rule inconsistency occurs with a specific probability, they find that tax authorities audit more heavily if the likelihood of inconsistency increases. They find ambiguous effects of increasing transfer price rule inconsistency on taxpayer's expected tax liability as well as deadweight loss from auditing. The rationale behind their way of modeling inconsistency is that both countries basically adhere to the (same) arm's length standard. They assume that a conflict on the allocation of tax income occurs with a specific probability leading to different transfer prices. In contrast to their approach, we model inconsistency as the presence of two distinct sets of rules for the two countries that do not necessarily have to be based on the arm's length principle. Therefore, our model also captures situations in which one country (e. g., Brazil) imposes tax transfer pricing rules that do not reflect the OECD's notion of arm's length pricing. Furthermore, De Waegenaere et al. (2006) abstract from MNC reactions to increased audit such as responses in output quantity (adjustment of production) that change the taxable profit. Hence, we generalize their work by modelling MNC's output decisions endogenously. In contrast to De Waegenaere et al. (2006), who allow for only two types, we allow for a continuum of MNCs characterized by different function and risk profiles. Moreover, not only does our model capture transfer pricing inconsistencies emerging from differences at country level which, for example,

materialize during an audit, we also allow for MNCs that have the opportunity to report different transfer prices to the tax authorities. If regulations on the appropriate arm's length price differ among countries, logic dictates that honest MNCs report *different* tax transfer prices to the respective tax authorities. This also reflects the conclusions we are able to draw from our survey evidence and interviews:

> *"The answer is that a number of taxpayers differentiate and set a different transfer price in anticipation of a discussion during the tax audit."*
> —Transfer Pricing Partner, German tax advisory firm.

> *"You also have to see that of course the audit documents are sometimes different in the different countries."*
> —Transfer Pricing Expert, German Federal Central Tax Office.

Supported by this anecdotal evidence, we account for different reported tax transfer prices, i.e, we assume that MNCs are allowed or required to file different tax transfer prices in the two countries.[3] While prior theoretical studies that MNCs report one single transfer price to both tax authorities, and that consistent (Horst, 1971; Kant, 1988; Haufler et al., 2000; Choe et al., 2007; Blouin et al., 2018; Davies et al., 2018; Koethenbuerger et al., 2019) or inconsistent (De Waegenaere et al., 2006) adaptions to the reported tax transfer prices emerge only later during tax negotiations and audits, we model reported inconsistencies as a real-world phenomenon, which allows us to further enhance the literature.

Fourth, we build on the theoretical model introduced by Baldenius, Melumad, and Reichelstein (2004). They use a two-tier structure of an optimizing MNC and show that if taxes are taken into consideration, a goal-congruent internal transfer price should exceed (be lower than) the marginal cost of production if the maximum allowable tax transfer price is higher (lower) than the marginal costs. While our focus is on tax transfer prices, we model the incentive structure via internal transfer prices in line with Baldenius et al. (2004).[4]

---

[3]However, our model can also be generalized towards inconsistencies that arise during tax audits; see fn. 5, 6, and 8.

[4]There is also ample literature on whether multinationals should keep one or two sets of books (i. e., whether or not to keep different transfer prices for internal incentive purposes and tax purposes) (see, e. g., Hyde and Choe, 2005; Dürr and Göx, 2011). Instead, we assume that there are either two sets of books (allowing the foreign division to be incentivized appropriately), or the MNCs headquarters has enough information to optimize profit on its own.

We set up a game between a multinational company and two countries of residence, referred to henceforth as "domestic" and "foreign." We assume the domestic country is a high-tax country while the foreign is low-tax. The MNC is informed about the functions, assets, and risk (FAR) profile associated with the foreign division and the specific product, which determines the arm's length prices (both of which are country-specific in the case of inconsistent transfer pricing rules). In a first stage, the MNC decides which quantity to produce. In a second stage, the MNC chooses the tax transfer price reports including FAR profile reports (transfer pricing documentation) that support this transfer price, given the country-specific transfer pricing rules.[5]

The tax authorities subsequently choose an audit probability conditional on the transfer pricing documentation. We construct a separating equilibrium as first shown in a model on tax evasion by Reinganum and Wilde (1986a). In our baseline setting we assume that transfer pricing rules are inconsistent across the two countries, which implies that the MNC reports different transfer prices to each country.[6,7] In the next step, we modify the model to cover consistent tax transfer pricing rules. Under transfer price consistency, the MNC reports a unique transfer price, i. e., the MNC reports a uniform FAR profile that applies in both jurisdictions. In this case, the MNC is

---

[5]Our model is not limited to a scenario with reported transfer pricing differences but also covers settings with a bargaining situation that occurs if a *uniform* tax transfer price were reported to both tax authorities but is challenged by one or both tax authorities in an audit. As MNCs would anticipate the outcome of the negotiation when choosing the production output, our analysis can be generalized to this setting. In this alternative interpretation of our model, the production decision is identical, but the MNC reports a single (arbitrary) tax transfer price to both authorities.

[6]If we apply the alternative interpretation (uniformly reported transfer prices that are challenged in the tax audit, ultimately leading to transfer pricing inconsistencies), tax authorities would always challenge the arbitrary single tax transfer price reported beforehand. During the tax audit, a bargaining in the following sense would take place: the MNC would propose a tax transfer price (which is identical to the "report" in the main text), which is rejected by the respective tax authority with a probability that is identical to the "audit probability" in the baseline setting. Rejecting the MNC's proposition is costly for the respective tax authority because it requires justification of the different assessment based on a FAR analysis. In this case, the tax authority can always enforce its judgement by assumption. Based on the insights into the institutional process obtained via survey and expert interviews, this seems an appropriate description of real-world situations. However, it would also be possible to assume that the tax authority cannot always enforce its judgement, but rather the dispute is settled by a court, in which case either party wins with an exogenously probability (c. f. Reinganum and Wilde, 1986b). We have not formally explored such an extension and leave it to future research to enrich the model in this respect.

[7]This scenario can also be interpreted as a situation where tax transfer pricing systems are consistent but there is no information exchange between the tax authorities.

prevented from reporting differing tax transfer prices/FAR profiles because the uniform report is made available to both tax authorities.[8]

We find that tax avoidance in equilibrium emerges in both countries under inconsistency. By contrast, consistent transfer pricing regimes indirectly reduce tax avoidance in the high-tax country through higher production and prevent tax avoidance in the low-tax country. Surprisingly, we identify specific settings in which the high-tax country benefits from inconsistency while the low-tax country benefits from consistency. Further, we find the profit-maximizing location of the entrepreneurial function is highly parameter-dependent under both regimes. Under inconsistency, the audit pressure is highest for firms with a hybrid functional profile, dampening their production and reducing their after-tax profit under inconsistent transfer prices. Moreover, we obtain a goal-congruent internal transfer price which accounts for strategically acting tax authorities. This result is in line with Choe et al. (2007) who show how a goal-congruent internal transfer price needs to be adjusted for expected (exogenous) penalties for misreporting.

Our contribution is threefold. First, we derive sufficient conditions for both consistency and inconsistency being beneficial from the viewpoint of each country and identify settings in which the two countries disagree on the implementation of consistent regimes. Second, we show the relationship between an MNC's FAR profile (i.e., the allocation of entrepreneurship) and its production decision and profit, and which functional profiles are advantageous given consistency or inconsistency. Finally, we confirm the main result of Choe et al. (2007) on the relationship between (internal) incentive transfer price and tax transfer pricing (including penalties) in a more general setting and show, that the goal congruent incentive transfer price is lower if tax transfer pricing rules are consistent.

Our results on consistent and inconsistent tax transfer pricing suggest that transfer pricing inconsistencies might not vanish in the short run.

---

[8]In the alternative interpretation, the ultimate outcome of the audit would need to be identical in both countries. E. g., this is the case if instruments like *joint audit* or *mutual agreement procedures* are in place.

II. INSTITUTIONAL BACKGROUND

The fundamental principle of tax transfer pricing demands a remuneration for functions, assets, and risks involved in the business, i. e., answering whether a group entity performs an entrepreneurial, routine, or hybrid function. Usually, routine functions can be priced easily (at a low level) and the entrepreneurial function results in a residual (high) income. Therefore, no matter which tax transfer pricing method is applied, the determination of a subsidiary's functions, assets, and risks is crucial and determines the arm's length price. Aside from the comparable uncontrolled price (CUP) method, which is usually only applicable in the case of commodities, all remaining transfer pricing methods are purely technical vehicles for implementing this fundamental principle. For example, in the case of cost based pricing (resale minus), the mark-up (mark-down) depends on the FAR analysis (since the database searches take into account the risk profile of comparable enterprises). The same is true regarding the transactional net margin method (TNMM). When using the profit-split method, which splits the combined profit on an economically valid basis, the FAR analysis is the only way to determine this basis. Further, the choice of tax transfer pricing method depends on the FAR analysis. Therefore, the tax authorities are not able to determine the arm's length price of a given product just by looking at its objective features. They have to conduct a costly in-depth audit of the FAR analysis, i. e., they have to examine the functions performed, assets used, and risks assumed by the different (producing or selling) units, which define the arm's length price. The exact same product can be assigned different arm's length prices depending on how much risk is involved in producing or selling it. Assume a product that is produced by one division in the foreign country and sold by another division in the domestic country. Two contrasting extreme scenarios are imaginable. Either the product was developed in the domestic country, all the risks are assumed there, and the unit in the foreign country acts as a mere toll manufacturer.[9] Or the product was developed in the foreign country and the unit in the domestic country is only a distribution company.[10] In the latter case the

---

[9]The tax transfer pricing method of choice in this case would be the cost plus method, and the price would result in the costs plus a (risk and function adjusted) markup.

[10]The transfer pricing method of choice in this case would be the resale price method, and the price would result in the resale price less a (risk and function adjusted) markdown.

Electronic copy available at: https://ssrn.com/abstract=3895611

arm's length price takes a value near the upper bound of possible transfer prices (sales price), while in the former case it takes a value near the lower bound (production cost). If the functions, assets and risks are distributed otherwise, the arm's length price is located within this range (c. f. Figure 1).

While many countries basically adhere to the arm's length standard as described above, the local legal implementation differes among countries; also, some countries do not adhere to the arm's length principle at all (Rathke et al., 2020). Therefore, whenever local regulation produces different tax transfer prices, consequently, MNCs would need to file different reports in those countries. This may seem odd at first sight, as there is only one payment and invoice per transaction. Nevertheless, it is possible to report different tax transfer prices. In the same way the tax transfer price is adjusted ex post by only one country to a price above or below the actual payment (price on the invoice), the taxpayer can make these (expectable) adjustments in advance (primary adjustments). In both cases secondary transactions are usually carried out in order to make the actual allocation of profits (actual payment) consistent with the primary adjustment; these often take the form of constructive dividends, constructive equity contributions, or constructive loans (c. f. OECD, 2017, Glossary). Imagine a company (country A) paying too high a price for a product from its subsidiary (country B) from the viewpoint of country A; the primary adjustment of country A's tax authorities would be to disallow the expenses (equivalent to the difference between the actual price and the transfer price of country A) and the secondary adjustment would be to requalify this difference as constructive equity. Thus, it is possible to report tax transfer prices that differ from the actual payment without committing fraud or tax evasion; in fact, knowing in advance that the countries' arm's length prices differ, it is even necessary to do so.

Since previous literature assumes that taxpayers report just a single tax transfer price, we conducted an online survey of transfer pricing practitioners and several expert interviews to back up our deviation from the state of research with respect to this basic assumption. To obtain reliable data we reached out to highly qualified and experienced senior tax managers in major German multinational companies. The invitation to the survey was distributed via two channels. First, the

9

Taxation Committee of the German Chemical Industry Association[11] distributed the link to more than 20 tax managers of multinational companies in the chemical industry which represent about 30 percent of the DAX companies, as well as several M-DAX companies and multinational family businesses. Second, we distributed the survey via the Transfer Pricing working group of the German Consortium for Economic Management,[12] which covers all industries. In total, 45 individuals participated anonymously in our survey, 23 of whom fully completed the survey.[13] Of these, 82.6 percent indicated that they have worked at least ten years in the field of tax transfer pricing, while the majority stated they had worked in this area for more than 15 years. Most hold a Master's degree (or equivalent), 26.1 percent even a PhD (or equivalent). On average, they report spending roughly 70 percent of their working time on tax transfer pricing. Based on this information we conclude that the statements made by the participants provide a valid picture of the reporting behavior of the respective companies. 78.3 percent of the participants stated that they have reported different tax transfer prices in two countries (43.5 percent stated this occurs occasionally or more often), which supports our conjectures. Also, we conducted six semi-structured expert interviews with representatives of multinational companies, tax advisory firms (Big4), and the German Federal Central Tax Office (Bundeszentralamt für Steuern, BZSt)[14] that further corroborate the real-world relevance of both transfer pricing regime inconsistency and inconsistencies in transfer pricing reports.

III. INCONSISTENT TAX TRANSFER PRICING RULES

The first part of our model set-up follows Baldenius et al. (2004) and Choe et al. (2007). We consider a multinational with a headquarters (HQ) and divisions in two countries referred to as "domestic"

---

[11]German: Verband der Chemischen Industrie e.V. (VCI).

[12]The German Consortium for Economic Management (Arbeitsgemeinschaft für wirtschaftliche Verwaltung e.V.) is a non-profit association funded by the German Federal Ministry for Economic Affairs and Energy. The purpose of the association is to improve business-to-government (B2G) relationships. The Transfer Pricing working group prepares issues of international tax law with reference to transfer pricing with close practical relevance, and scrutinizes and comments on current developments and discusses and exchanges experiences on recent development in transfer pricing.

[13]For an overview, refer to Table 1 in Appendix A.1

[14]See Appendix A.2.

and "foreign," given a setting with two sets of books. The foreign division produces an intermediary product of quantity q at constant marginal costs of production c which is sold in the domestic country.[15] The domestic division earns revenue $R(q)$ with $R'(q) > 0$ and $R''(q) < 0$.[16] The tax rate in the foreign country is given by τ_f whereas the tax rate in the domestic country is denoted by τ_d. In the following, we assume that $\tau_d > \tau_f$. Since the HQ is not aware of $R(q)$, the domestic division (which is informed) needs to be incentivized appropriately using an internal transfer price (e. g., Baldenius et al., 2004), denoted by s. Given s, the domestic division then chooses the optimal output q.[17] When making the production decision, the MNC is informed about the arm's length price[18] that is correct from the viewpoint of domestic and foreign jurisdiction, respectively, according to the FAR profile. This well-known procedure is referred to as *Stage 1*.

The subsequent game between the MNC and both tax authorities is called *Stage 2*. In the next step, the HQ submits its reports on taxable income accompanied by appropriate tax transfer pricing documentation that support the chosen tax transfer prices to the tax authorities. The transfer pricing documentation informs the tax authorities about the (reported) tax transfer prices and quantity q.[19] In case of *inconsistent* transfer pricing rules, multinationals are required to prepare individual documentation for both countries, each addressing the legal specifics. This opens up the possibility to individually optimize the reports to an extent that is justifiable within the uncertainties and

---

[15]If the foreign division also sells intermediary products of quantity q_f in the foreign market, earning $R_f(q_f)$, the optimal quantity would be determined by the condition $R'_f(q_f) = c$. The optimal internal or tax transfer prices would not be affected (Choe et al., 2007). Thus, in order to keep the notation simple, we ignore this case in the following analysis.

[16]In detail, see Assumption 1.

[17]We study a decentralized setting (i. e., decentralized with respect to the choice of quantity). However, our results also hold when regarding a *centralized* setting. In this case, headquarters would directly choose the optimal quantity.

[18]Below, the term "arm's length price" is used to describe the tax transfer price implied by the "true" FAR profile in compliance with the law of the respective country. By contrast, the term "reported transfer price" is the price implied by the *reported* FAR profile (which is not necessarily the true FAR profile). That is, the multinational chooses to report a particular FAR profile that supports the chosen transfer price, while the respective tax authority identifies the "true" FAR profile which then leads to the arm's length price.

[19]Action 13 of OECD's BEPS action plan develops a three-tiered standardized approach to transfer pricing documentation. Tier two *"requires that detailed transactional transfer pricing documentation be provided in a "local file" specific to each country, identifying material related party transactions, the amounts involved in those transactions, and the company's analysis of the transfer pricing determinations they have made with regard to those transactions"* (OECD, 2015, p. 9). Still, if the transfer pricing requirements of a particular country do not comply with the cited OECD-requirements, the tax authorities can observe the quantity, for example, through VAT returns. Since VAT returns are submitted on a monthly basis, tax authorities should be aware of the quantity prior to a potential audit. Even more easily, the quantity can be learned from the multinational's profit and loss statement.

interpretative discretion that are inherent in any legal system. That is, in contrast to prior literature (e. g., Baldenius et al., 2004; De Waegenaere et al., 2006; Choe et al., 2007), but as a direct consequence of inconsistent transfer pricing rules, we allow for the multinational to report different tax transfer prices to the tax authorities of the respective jurisdictions. Still, the MNC's position may be rejected in an audit. While the tax authorities are not able to determine the arm's length price of a given product just by looking at its obvious features, they can conduct a costly in-depth audit of the FAR analysis, i. e., they can examine the functions performed, risks assumed, and assets used by the different (producing or selling) units, which determine the arm's length price. In this case, deviations from the arm's length standard may incur penalties (e. g., Choe et al., 2007; Blouin et al., 2018; Davies et al., 2018; Koethenbuerger et al., 2019).

Arm's length prices in country i are denoted by p_i, where $i \in \{d, f\}$ refers to the domestic and foreign country, respectively; they are distributed on the interval $[\underline{p_i}, \overline{p_i}]$ according to the probability density function $f_i(p_i)$.[20] In accordance with common transfer price regulations we assume that $\underline{p_i} \geq c$. Low arm's length prices which are close to $\underline{p_i}$ emerge and are appropriate if the foreign division has a routine function; they are typically a result of cost-based pricing rules. By contrast, high arm's length prices close to $\overline{p_i}$ typically emerge from a resale price minus method and are applied if the foreign division has an entrepreneurial function, leaving the domestic division with a routine function (e. g., distribution unit). Consequently, intermediate p_i-values generally point to a hybrid functional profile of both divisions (Figure 1).[21]

Figure 1 about here

The firm's reported transfer price in the domestic country $t_d = r_d(p_d)$, and in the foreign country $t_f = r_f(p_f)$, respectively, is a function of the observed arm's length prices.

---

[20]Without loss of generality, we abstract from the fact that in reality there may be an interval of accepted tax transfer prices rather than a single arm's length price. If there were a range of feasible arm's length prices, the multinational would always report at the upper or lower boundary (Baldenius et al., 2004; Choe et al., 2007). Namely, the multinational would report at the upper boundary in the domestic country and at the lower boundary in the foreign country. Therefore, $f_d(p_d)$ can be thought of as a distribution of upper boundaries and $f_f(p_f)$ as a distribution of lower boundaries.

[21]This could also be formalized by making p_i dependent on cost and resale price: $p_i = (1 - \gamma_i)c + \gamma_i R(q)/q$. For a stylized solution of the second stage see Appendix D.

The domestic tax authority audits with probability $a_d(t_d)$. Since $\tau_d > \tau_f$, the multinational's headquarters has an incentive to report a high transfer price t_d in order to shift profits to the foreign low-tax country. To avoid taxes in the foreign country, in turn, the multinational wants to report a low transfer price $r_f(p_f)$, facing an audit probability $a_f(t_f)$. If the tax authority disagrees during an audit, we assume a linear penalty, that is, $\theta_d \geq 1$ (domestic country) or $\theta_f \geq 1$ (foreign country) times the underpaid tax (Yitzhaki, 1974).[22] Following Choe et al. (2007) we assume that the subsequent payment of taxes including penalties is divided between the domestic division and the multinational's headquarters, with headquarters' bargaining power denoted by $v, v \in [0,1]$. $v = 1$ indicates that the domestic division has to bear the total subsequent payment whereas $v = 0$ implies that headquarters bears the full amount. As noted by Choe et al. (2007), it is necessary to make the domestic division bear a share of the penalty even though it is not in control of $r_d(p_d)$. This is because the domestic division is in control of q, which in turn is has an impact on the penalty. As described above, with inconsistent transfer pricing rules, tax avoidance may emerge in the foreign country too. The foreign division, however, is in control of neither q nor $r_f(p_f)$. Thus, it is not necessary to make the foreign division bear a share of possible subsequent (penalty) payments.

The foreign division's after-tax profit is given by

$$\Pi_f = (s - c)q - \tau_f(r_f(p_f) - c)q \tag{1}$$

and the domestic division's after-tax profit is given by

$$\Pi_d = (1 - \tau_d)R(q) - sq + \tau_d r_d(p_d)q - v a_d(r_d(p_d))\theta_d \tau_d (r_d(p_d) - p_d)q. \tag{2}$$

The structure of the penalty component (last term) is highly relevant to our analysis. Choe et al. (2007) represent the expected penalty by an exogenously given convex function which takes

---

[22]We introduce a penalty for the sake of generality; in many countries, reported transfer prices which differ from the respective arm's length prices are simply corrected by the tax authorities without incurring a penalty. This can be captured by setting θ_d and/or θ_f equal to 1; our results do not change qualitatively in these cases. Even if there is no penalty, the correction may take place several years after the initial transaction. Then, $\theta_d - 1$ and $\theta_f - 1$ can be interpreted as interest rates.

underpaid tax as the only argument. As they are not interested in the strategic relationship between multinational and tax authority, they abstract from the fact that a penalty only arises after an audit has taken place. Here, we specify the expected penalty component as detection probability times the penalty due, where the detection probability (audit function) is determined endogenously.

The multinational's total after-tax income is given by

$$\Pi(r_d, r_f, a_d, a_f) = R(q) - cq - \tau_d \left(R(q) - qr_d(p_d)\right) - \tau_f \left(r_f(p_f) - c\right)q$$
$$- a_d(t_d)\theta_d\tau_d q\left(r_d(p_d) - p_d\right) - a_f(t_f)\theta_f\tau_f q\left(p_f - r_f(p_f)\right). \qquad (3)$$

Finally, the domestic and foreign tax authorities' expected net tax revenues are given by

$$T_d(t_d, a_d, \mu_d) = \tau_d(R(q) - t_d q) + a_d(t_d)\tau_d\theta_d(t_d - \mu_d(t_d))q - k_d(a_d(t_d)) \qquad (4)$$

$$T_f(t_f, a_f, \mu_f) = \tau_f q(t_f - c) + a_f(t_f)\tau_f\theta_f q(\mu_f(t_f) - t_f) - k_f(a_f(t_f)), \qquad (5)$$

where $k_i(a_i)$ with $k_i' > 0, k_i'' \geq 0$ denotes the audit costs, and $\mu_i(t_i)$ is the belief about the arm's length price p_i upon observing a report t_i of tax authority i (see the following subsection). It is standard in the literature on tax transfer pricing to assume that the government maximizes net tax revenues (Graetz, Reinganum, and Wilde, 1986; Reinganum et al., 1986a; Beck and Jung, 1989; Mills and Sansing, 2000; Sansing, 1993; Elitzur and Mintz, 1996; Mansori and Weichenrieder, 2001; De Waegenaere et al., 2006; De Waegenaere, Sansing, and Wielhouwer, 2007). Also, it is common to assume that the penalty is part of the tax authorities' revenues (e. g., Graetz et al., 1986; Beck et al., 1989). However, the results of our model would not change qualitatively, when assuming that the tax authorities do not benefit from the penalty payment.[23]

Figure 2 depicts the timing of the game and Figure 3 shows the game tree.

Figure 2 about here

ASSUMPTION 1. *The revenue function $R(q)$ satisfies*

---

[23]In this case, θ_i would be set to one in the tax authorities' objective functions but remain in the MNC's objective function.

Figure 3 about here

a) $R'(q) > 0, R''(q) < 0$,

b) $R''(0) \leq - \left(\frac{\theta_d \tau_d^2 (\overline{p_d} - \underline{p_d})^2}{b_d} + \frac{\theta_f \tau_f^2 (\overline{p_f} - p_f)^2}{b_f} \right) / (1 - \tau_d)$,

c) $R'''(q) \leq 0$.

Condition a) is a standard assumption. Conditions b) and c) are curvature conditions that ensure the MNC's profit function is globally concave. Condition c) is made for the sake of mathematical convenience; it is a sufficient but not necessary condition for global concavity of the MNC's profit function and can therefore be relaxed depending on the chosen revenue function and on chosen parameters.

Second Stage

The game is solved via backwards induction. In the second stage of the game, the multinational and both tax authorities strategically determine reported tax transfer prices $t_i = r_i(p_i)$ and the audit probabilities $a_i(t_i)$,[24] both depending on the quantity q.

For this kind of game, there exists a separating equilibrium which was first shown by Reinganum et al. (1986a; 1986b) and used to study tax evasion and tax avoidance by Reinganum et al. (1986a), Erard and Feinstein (1994), and Diller and Lorenz (2015). As noted in these analyses, also pooling and partially pooling equilibria emerge. While Erard et al. (1994) show that (partially) pooling equilibria can be ruled out by introducing a portion of "honest" taxpayers that always report their true income, Reinganum et al. (1986b) show that (partially) pooling equilibria do not survive the universally divine equilibrium concept introduced by Banks and Sobel (1987). In Appendix E we elaborate on possible (partially) pooling equilibria and show that they can be ruled out by applying the universally divine equilibrium concept. Furthermore, pooling would require that MNCs also

---

[24]These audit probabilities can be thought of as the tax authorities imposing a specific effort in investigating the transfer price report. Higher effort is then associated with a higher probability of detecting an error. See also Reinganum et al. (1986a, p. 742). Henceforth, $a_d(t_d)$ and $a_f(t_f)$ are referred to as "audit probabilities" or "audit functions."

choose the optimal production level of the type they imitate, since production quantities are visible to the tax authorities. We therefore focus on the separating equilibrium.

Upon observing a reported transfer price t_i the tax authority i needs to be equipped with a belief concerning the arm's length price associated with this report. Since we are interested in a separating equilibrium, we define point beliefs: Upon observing t_i the tax authorities' prior estimation of the arm's length price is given by $\mu_i(t_i)$.

We define a separating equilibrium as established by Reinganum et al. (1986a):

DEFINITION 1. *Between the multinational and tax authority i, a separating equilibrium is given by a triple* $(\mu_i(t_i), a_i(t_i), r_i(p_i))$ *such that*

a) $a_i(t_i)$ *maximizes T_i, given the beliefs $\mu_i(t_i)$;*

b) $r_i(p)$ *maximizes Π, given the audit probability $a_i(t_d)$;*

c) *The tax authorities' beliefs correspond to the multinational's equilibrium strategy:* $\mu_i(t_i) = r_i^{-1}(t_i) = p_i.$

Note that the consistency requirement c) involves that in equilibrium the tax authorities in both countries can infer the arm's length price after observing the reported transfer price. Thus, they aware that profit shifting exists even without auditing. It has been noted that this feature of the separating equilibrium may seem odd (Erard et al., 1994). Keep in mind, however, that claiming back taxes (and possibly imposing an additional penalty) requires providing proof. Hence, the tax authorities still need to perform a costly audit even though they know beforehand that reported taxable income is too low from their perspective. For expositional clarity we develop the model for linear audit costs $k_i(a_i) = b_i a_i$, i.e., tax authority i's marginal audit cost is given by b_i.

PROPOSITION 1. *In a game between the domestic tax authority and the multinational, a separating equilibrium is given by the following strategies and beliefs:*

a) The domestic tax authority audits with probability

$$a_d(t_d) = \begin{cases} 0 & t_d \le \underline{t_d} \\[2mm] \frac{1}{\theta_d}\left(1 - e^{1 - \frac{\theta_d \tau_d q}{b_d}\left(t_d - \underline{p_d}\right)}\right) & \underline{t_d} \le t_d \le \overline{t_d} \; ; \\[2mm] 1 & t_d > \overline{t_d} \end{cases}$$

b) the multinational reports

$$r_d(p_d) = p_d + \frac{b_d}{\tau_d \theta_d q};$$

c) the equilibrium and out-of-equilibrium beliefs are given by

$$\mu_d(t_d) = \begin{cases} \underline{p_d} & t_d \le \underline{t_d} \\[2mm] r_d(p_d) & \underline{t_d} \le t_d \le \overline{t_d} \; , \\[2mm] \overline{p_d} & t_d > \overline{t_d} \end{cases}$$

where $\underline{t_d} = \underline{p_d} + \frac{b_d}{\tau_d \theta_d q}$ and $\overline{t_d} = \overline{p_d} + \frac{b_d}{\tau_d \theta q}$.

Proof. See Appendix B.1. □

The game between the MNC and the foreign tax authority is inverse in the sense that the MNC tries to push the tax transfer price down instead of up. As a consequence, the foreign audit function is sloped downwards instead of upwards.

PROPOSITION 2. *In a game between the foreign tax authority and the multinational, a separating equilibrium is given by the following strategies and beliefs:*

17

a) The foreign tax authority audits with probability

$$a_f(t_f) = \begin{cases} 1 & t_f < \underline{t_f} \\ \frac{1}{\theta_f}\left(1 - e^{1-\frac{\theta_f \tau_f q}{b_f}\left(\overline{p_f} - t_f\right)}\right) & \underline{t_f} \leq t_f \leq \overline{t_f} \; ; \\ 0 & t_f \geq \overline{t_f} \end{cases}$$

b) the multinational reports

$$r_f(p_f) = p_f - \frac{b_f}{\tau_f \theta_f q};$$

c) the equilibrium and out-of-equilibrium beliefs are given by

$$\mu_f(t_f) = \begin{cases} \underline{p_f} & t_f < \underline{t_f} \\ r_f(p_f) & \underline{t_f} \leq t_f \leq \overline{t_f} \; . \\ \overline{p_f} & t_f \geq \overline{t_f} \end{cases}$$

Proof. See Appendix B.1. □

Propositions 1 c) and 2 c) imply that the domestic (foreign) tax authority believes that any report $t_d < \underline{t_d}$ ($t_f > \overline{t_f}$) comes from type $\underline{p_d}$ ($\overline{p_f}$) (cf. Reinganum et al., 1986a).[25]

If the equilibrium tax transfer price reports r_d, r_f given by Propositions 1 b) and 2 b) are inserted into the equilibrium audit functions given by Propositions 1 a) and 2 a), both functions directly depend on p_i. For notational convenience, we write $a_i^{\text{inc}}(p_i) \equiv a_i(t_d)$; throughout this paper, we

---

[25]For details concerning the derivation of this kind of separating equilibrium, see also Reinganum et al. (1986b) and Erard et al. (1994). Erard et al. (1994) note that if the audit costs were to decrease or increase slightly after the report was filed, the tax authority would alter its strategy to audit either all or no taxpayers. This characteristic does not arise, however, when including a budget constraint for the tax authority (as introduced by Erard et al., 1994), or when audit costs are assumed to be strictly convex (as shown by Reinganum et al., 1986a).

Figure 4 about here

use the superscript inc (con) to indicate optimal values for the inconsistency (consistency) setting. Figure 4 depicts the audit functions depending on the arm's length price p_i.[26]

The following lemma is straightforward and follows directly from inserting the equilibrium reporting policies into the equilibrium audit functions as stated in Propositions 1 and 2 and taking the respective derivatives; it is useful for the later analysis.

LEMMA 1. $\frac{\partial a_d^{\text{inc}}}{\partial q} > 0, \frac{\partial^2 a_d^{\text{inc}}}{\partial q^2} < 0, \frac{\partial a_f^{\text{inc}}}{\partial q} > 0, \frac{\partial^2 a_f^{\text{inc}}}{\partial q^2} < 0.$

Both tax authorities increase their audit efforts with increasing quantity, which is an intuitive result since both tax and penalty revenue depend on the volume of production whereas the audit cost is fixed. However, when regarding the equilibrium reports, it becomes evident that an increasing production volume *reduces* the extent of profit shifting in both countries.

First Stage

Given the equilibrium of the second stage of the game as shown in Propositions 1 and 2, the domestic division's problem in the first stage is to choose the quantity such as to maximize

$$\Pi_d^{\text{inc}}(q) = R(q) - sq - \tau_d \left(R(q) - q r_d(p_d) \right) - v a_d^{\text{inc}} \theta_d \tau_d q \left(r_d(p_d) - p_d \right)$$
$$= (1 - \tau_d) R(q) - sq + \tau_d p_d q - v a_d^{\text{inc}} b_d + \frac{b_d}{\theta_d}. \tag{6}$$

This produces the first-order condition

$$\frac{\partial \Pi_d^{\text{inc}}(q)}{\partial q} = (1 - \tau_d) R'(q) + p_d \tau_d - b_d v \frac{\partial a_d^{\text{inc}}}{\partial q} - s = 0. \tag{7}$$

Intuitively, the marginal after-tax revenues plus the marginal tax savings has to equate the marginal incentive transfer price plus the share of the marginal expected penalty. Headquarters, however,

---

[26]Notice that the audit functions also depend on q, which is determined in the following subsection. The graphs shown in Figure 4 account for this dependence.

wants to choose the quantity such as to maximize

$$\Pi^{\text{inc}}(q) \equiv \Pi\left(r_d, r_f, a_d^{\text{inc}}, a_f^{\text{inc}}\right) = R(q) - cq - \tau_d\left(R(q) - qp_d\right) - \tau_f(p_f - c)q$$
$$- a_d^{\text{inc}} b_d + \frac{b_d}{\theta_d} - a_f^{\text{inc}} b_f + \frac{b_f}{\theta_f}, \tag{8}$$

Note that—given the equilibrium in the second stage of the game—the MNC's gain from profit shifting equals $\frac{b_d}{\theta_d}$ in the domestic country and $\frac{b_f}{\theta_f}$ in the foreign country. If audited, the MNC's fine corresponds exactly to the respective tax authority's audit cost.

Maximizing with respect to q gives the first-order condition

$$\frac{\partial \Pi^{\text{inc}}(q)}{\partial q} = R'(q) - c - \tau_d\left(R'(q) - p_d\right) - \tau_f(p_f - c) - b_d\frac{\partial a_d^{\text{inc}}}{\partial q} - b_f\frac{\partial a_f^{\text{inc}}}{\partial q} = 0. \tag{9}$$

In the first stage, headquarters sets the incentive transfer price such as to make the domestic division choose q according to its own first-order condition. The incentive transfer price that achieves goal congruence between the domestic division and headquarters is found by setting equal (7) and (9):[27]

$$s^{\text{inc}} = (1 - \tau_f)c + \tau_f p_f + (1 - v)b_d\frac{\partial a_d^{\text{inc}}}{\partial q} + b_f\frac{\partial a_f^{\text{inc}}}{\partial q}. \tag{10}$$

The last two terms of the optimal incentive transfer price account for the marginal penalty in both countries. As shown in Lemma 1, the derivatives of the audit rates with respect to the quantity are positive but decreasing. As described by Choe et al. (2007) the domestic division would choose too high a quantity were it not responsible for potential costs of tax avoidance. To account for this effect, headquarters needs to increase the incentive transfer price in order to reach an overall optimal outcome. As for the marginal penalty in the domestic country, if the domestic division were to bear the whole penalty (i. e., $v = 1$), the multinational would not have to increase the incentive transfer price to prevent the domestic division from ordering too much. For $0 < v < 1$, headquarters will increase the incentive transfer price with a decreasing share of penalty borne by the domestic

---

[27]This procedure is well established in the literature, see, e. g., Hirshleifer (1956).

division. This confirms the finding of Choe et al. (2007) in a more general setting. In contrast to Choe et al. (2007), however, we find that this penalty related markup on the internal transfer price *decreases* with increasing quantity since $\frac{\partial^2 a_i^{\text{inc}}}{\partial q^2} < 0$ (c. f. Lemma 1). The differing result in Choe et al. (2007) is driven by the (exogenous) convex penalty function assumed there. Furthermore, since the domestic division is not responsible for penalties charged by the foreign tax authority, headquarters has to increase the incentive transfer price to make the domestic division account for the whole share of the marginal penalty so the division is prevented from ordering too much.

If headquarters sets a goal-congruent incentive transfer price, the optimal quantity denoted by q^{inc} satisfies both (7) and (9). Note from (9) that MNC's first-order condition would be identical in a setting without profit shifting except for the two last terms that capture the marginal cost of an audit. That is, since the gain from profit shifting is constant, it does not enter the MNC's calculus when determining the optimal output. The MNC has to take into account the audit probabilities, however, which increase in q.

Headquarters' second-order condition for an optimal output is given by

$$SOC \equiv -b_d \frac{\partial^2 a_f^{\text{inc}}}{\partial q^2} - b_f \frac{\partial^2 a_f^{\text{inc}}}{\partial q^2} + (1-\tau_d)R''(q) \le 0. \tag{11}$$

The second order condition (SOC) is fulfilled at $q = 0$ since, by part b) of Assumption 1, $\frac{\theta_d \tau_d^2 (\overline{p_d} - \underline{p_d})^2}{b_d} + \frac{\theta_f \tau_f^2 (\overline{p_f} - \underline{p_f})^2}{b_f} \le -(1-\tau_d)R''(0)$ ("condition a)"). Given $q = 0$, condition a) is *necessary and sufficient* for the extreme case $p_d = \overline{p_d} \wedge p_f = \underline{p_f}$ and *sufficient* $\forall \{p_d \in [\underline{p_d}, \overline{p_d}] \wedge p_f \in (\underline{p_f}, \overline{p_f}]\} \veebar \{p_d \in [\underline{p_d}, \overline{p_d}) \wedge p_f \in [\underline{p_f}, \overline{p_f}]\}$. Given condition a), the SOC also holds $\forall q > 0$ if $\frac{\partial SOC}{\partial q} \le 0 \Longleftarrow$ $\frac{\theta_d^2 \tau_d^3 (\underline{p_d} - p_d)^3 e^{\frac{\theta_d q \tau_d (\underline{p_d} - p_d)}{b_d}}}{b_d^2} + \frac{\theta_f^2 \tau_f^3 (p_f - \overline{p_f})^3 e^{\frac{q \theta_f \tau_f (p_f - \overline{p_f})}{b_f}}}{b_f^2} + (1-\tau_d)R'''(q) \le 0$. Note that the fractions are negative. Therefore, this condition is fulfilled since, by part c) of Assumption 1, $R'''(q) \le 0$ ("condition b)"). Condition b) is sufficient. E. g., for the simple revenue function $R(q) = q(k - lq/2)$, condition a) translates to $\left(\frac{\theta_d \tau_d^2 (\overline{p_d} - \underline{p_d})^2}{b_d} + \frac{\theta_f \tau_f^2 (\overline{p_f} - \underline{p_f})^2}{b_f} \right) / (1-\tau_d) < l$, and condition b) is always fulfilled.

III.1. Relationship between FAR Profile and Firm Level Decisions

To discuss the relationship between the arm's length price and the optimal quantity as well as the MNC's profit we have to focus on the relationship between p_d and p_f. Since the foreign country's tax base increases in p_f, it generally has an incentive to create tax transfer price regulations that lead to higher arm's length prices (e. g., Mansori et al., 2001). However, while the regimes are inconsistent, it seems reasonable to assume that higher arm's length prices in the domestic country tend to coincide with higher arm's length prices in the foreign country. We capture this idea by making the following

ASSUMPTION 2. *With inconsistent transfer pricing rules, the foreign tax arm's length prices are generally higher than the domestic arm's length prices:* $p_f = p_d + \delta$, *where* $\delta \geq 0$.

Assumption 2 can be interpreted as caputuring the case where both countries basically adhere to the arm's length principle. By contrast, completely independent p_d and p_f reflect a situation where one country (e. g., Brazil) or both countries use a transfer pricing system which is not based on the arm's length principle. We show the results for this case (i. e., when relaxing Assumption 2) in Appendix C. To simplify the notation, we write $p \equiv p_d$ (thus, $p_f = p + \delta$) below where possible.[28]

PROPOSITION 3. *If transfer pricing rules are inconsistent and the foreign arm's length price is given by* $p_f = p + \delta$,

a) *the optimal quantity decreases in p for (low) arm's length prices close to $\underline{p}$ and increases in p for (high) arm's length prices close to $\overline{p}$, and*

b) *the MNC's profit is convex in the arm's length price p with an interior minimum at $\check{p}$ that satisfies* $\tau_d \theta_d a_d^{\text{inc}}(\check{p}) = \tau_f \theta_f a_f^{\text{inc}}(\check{p})$;

---

[28]Note that, since the transfer pricing regimes are legally inconsistent, it is necessary for the MNC to submit individual transfer pricing documentation. We assume that the foreign tax authority is not aware of the documentation submitted to the domestic tax authority (e. g., lack of information exchange), and/or the domestic documentation is not usable by the foreign tax authority because of the inconsistent regimes. Otherwise, if the foreign tax authority were perfectly informed about the reports submitted in both countries as well as about the relationship between domestic and foreign rules, the foreign tax authority could infer $p_f = p_d + \delta$ upon observing t_d, which would force the MNC to report $t_f = t_d + \delta$ in the foreign country, and, as a consequence, the foreign tax authority would stop auditing. If this is the case, the transfer pricing regimes are *quasi consistent* and therefore the results obtained in Section IV apply analogously.

Figure 5 about here

c) *both optimal quantity and MNC's profit decrease if arm's length prices in the foreign country are generally increased (i. e., if δ is increased).*

Proof. See Appendix B.2. □

Intuitively, if p is close to $\underline{p}$, the domestic audit function disappears and the foreign audit function approaches a value close to $\frac{1}{\theta_f}$. As p increases, the domestic audit function increases rather fast, whereas the foreign audit function decreases rather slowly (Figure 4). Therefore, overall audit pressure increases along with p in the proximity of $\underline{p}$, and, accordingly, quantity decreases. The same is true vice versa for arm's length prices close to $\overline{p}$. As a second effect, however, higher arm's length prices allow for more tax deductions in the domestic (high-tax) country; because of this tax shield, quantity by trend increases with increasing arm's length prices. Therefore, generally, little can be said about the evolution of q^{inc} for intermediate arm's length prices $p \in \left(\underline{p}, \overline{p}\right)$. The stylized example displayed in Figure 5 below suggests that production reaches a global minimum for a rather low arm's length price, a global maximum is given for the highest arm's length price $p = \overline{p}$, and there is no internal local maximum.[29]

As to Proposition 3 b), note that in a model with (only) honest reporting, profit increases linearly with the arm's length price at a rate of $\Pi_p^{\text{"honesty"}} = q(\tau_d - \tau_f)$. In our model, the changing audit probabilities have to be taken into account. Intuitively, audit pressure is highest for divisions with a hybrid functional profile, which dampens profits. A hybrid functional profile implies that p is neither close to $\underline{p}$ nor $\overline{p}$. From the viewpoint of the domestic tax authority, if p is high (i. e., the difference to $\underline{p}$ is large), the exponential term in the domestic tax authority's audit function approaches zero and therefore the audit probability approaches its maximum at $\frac{1}{\theta_d}$, whereas, from the viewpoint of the foreign tax authority, if the difference between p and $\overline{p}$ is large, the audit rate approaches its maximum at $\frac{1}{\theta_f}$. Hence, if the difference of p to both $\underline{p}$ and $\overline{p}$ is large, which implies a hybrid functional profile, both tax authorities audit with a high probability, which dampens MNC's profit.

---

[29]This shape is not general, however. E. g., if the tax rate differential is small enough, q reaches a local maximum at an intermediate arm's length price.

Notably, profit is lowest in case of a hybrid FAR profile. That is, if MNCs are able to choose the (actual) FAR allocation,[30] they would prefer to allocate the entrepreneurial FAR completely to the foreign country. As the profit is convex in the arm's length price, this incentive increases if most entrepreneurial FAR are already allocated there. If some need to be allocated in the domestic country for non-tax reasons, MNC may prefer a complete allocation in the domestic country over a hybrid allocation.

Proposition 3 c) is not surprising, as c. p. higher arm's length prices in the foreign country (i. e., higher δ) always represent higher marginal costs and thus lower quantity and lower profit.

IV. CONSISTENT TAX TRANSFER PRICING RULES

In this section we assume that transfer pricing rules are consistent among the two countries, namely, $p_d = p_f \equiv p, f_d(\cdot) = f_f(\cdot) \equiv f(\cdot)$. This implies that multinationals have to submit identical tax transfer pricing documentation to both countries.[31] If a multinational reports different transfer prices $t_d \neq t_f$ in both jurisdictions, it is evident that at least one of the reports is incorrect. While the equilibrium of the inconsistency setting involves that the tax authorities are aware of the amount of profit shifting, the tax authorities still need to perform a costly audit to provide proof regarding the true arm's length price. Here, a firm that reports two different prices where there is only one "true" price incriminates itself.[32] Thus, as part of an equilibrium, the multinational will report a common tax transfer price $t_d = t_f \equiv t$. Since $\tau_d > \tau_f$ by assumption, the multinational will report $t > p$ in order to shift profits to the low-tax country. The foreign tax authority anticipates this and consequently never audits. Therefore, it is sufficient to search for an equilibrium in a game between the MNC and the domestic tax authority as described in Definition 1. The construction of

---

[30]Recall that the actual FAR allocation determines the arm's length price p_i.

[31]When assuming that there is an accepted interval rather than one correct arm's length price (see footnote 20), the MNC would choose to report at the *upper* boundary of an accepted interval, as $\tau_d > \tau_f$. Consequently, $f(p)$ can be interpreted as a distribution of upper boundaries.

[32]Formally, this could be implemented by integrating a penalty that occurs with probability one whenever $t_d \neq t_f$. As long as the marginal penalty from reporting different transfer prices is higher than the marginal tax savings from profit shifting, the multinational will always report a common transfer price. This is always the case as long as the marginal penalty is higher than the marginal tax rate.

the equilibrium is analogous to the inconsistency setting. For convenience, we omit the subscripts that refer to the domestic country where possible, i. e., we write $a(t), \theta, b$ instead of $a_d(t), \theta_d, b_d$.

Second Stage

In the second stage of the game the MNC chooses its report $t = r(p)$ to maximize

$$\Pi(r,a) = R(q) - cq - \tau_d\left(R(q) - qr(p)\right) - \tau_f\left(t-c\right)q - a(t)\theta\tau_d q\left(r(p)-p\right). \tag{12}$$

The domestic tax authority's objective function is quite similar to (4). With constant marginal audit costs, one has

$$T_d(t,a,\mu) = \tau_d(R(q)-tq) + a(t)\tau_d\theta(t-\mu(t))q - a(t)b, \tag{13}$$

where in the setting with consistent transfer pricing regimes we denote with $\mu(t)$ the domestic tax authority's (point-)belief upon observing t.

PROPOSITION 4. *Given consistent transfer pricing regimes, in a game between the domestic tax authority and the multinational, a separating equilibrium is given by the following strategies and beliefs:*

a) *The domestic tax authority audits with probability*

$$a(t) = \begin{cases} 0 & t \leq \underline{t} \\ \frac{\tau_d - \tau_f}{\theta\tau_d}\left(1 - e^{1 - \frac{\theta\tau_d q}{b}(t-\underline{p})}\right) & \underline{t} \leq t \leq \bar{t} \, ; \\ 1 & t > \bar{t} \end{cases}$$

b) *the multinational reports*

$$r(p) = p + \frac{b}{\theta\tau_d q};$$

c) the equilibrium and out-of-equilibrium beliefs are given by

$$\mu(t) = \begin{cases} \underline{p} & t \leq \underline{t} \\ r(p) & \underline{t} \leq t \leq \bar{t} \\ \bar{p} & t > \bar{t} \end{cases},$$

where $\underline{t} = \underline{p} + \frac{b}{\theta \tau_d q}$ and $\bar{t} = \bar{p} + \frac{b}{\theta \tau_d q}$.

Proof. The proof of Proposition 4 is analogous to the proof of Proposition 1 shown in Appendix B.1. Again, by inserting $p = \mu(t)$ as determined from the domestic tax authority's first-order condition obtained from (13) into the MNC's first-order condition obtained from (12), together with the boundary condition $a(\underline{t}) = 0$, one obtains the differential equation shown in Proposition 4 a). $\square$

Note that $r(p)$ is also reported to the foreign tax authority, implying a tax overpayment in the foreign jurisdiction. Again we write $a^{\mathrm{con}}(p) \equiv a(t)$. Somewhat surprisingly, although any profit that is shifted to the foreign country is taxed at τ_f, the level of profit shifting does *not* depend on the foreign tax rate. However, the audit function depends on the tax rate differential. If the foreign tax rate increases (or the domestic tax rate decreases), the probability of an audit decreases. That is, the domestic tax authority can maintain the same level of profit shifting with less audit activity. The audit rate vanishes as the tax rate differential approaches zero. For $\tau_d = \tau_f$ the tax authority never audits; however, the equilibrium no longer holds in this case, for profit shifting is simply no longer beneficial.

First Stage and Relationship between FAR Profile and Firm Level Decisions

Inserting a^{con} and $r(p)$ from Proposition 4 into (12) one obtains

$$\Pi^{\mathrm{con}}(q) \equiv \Pi(r, a^{\mathrm{con}}) = R(q) - cq - \tau_d(R(q) - qp) - \tau_f q(p - c) - ba^{\mathrm{con}} + \frac{b}{\theta} \frac{\tau_d - \tau_f}{\tau_d}. \qquad (14)$$

26

Differentiating with respect to q delivers the first-order condition for an optimal quantity of output in the first stage:

$$\frac{\partial \Pi^{\text{con}}(q)}{\partial q} = R'(q) - c - \tau_d \left(R'(q) - p \right) - \tau_f(p - c) - ba_q^{\text{con}} = 0, \tag{15}$$

where the subscript q denotes the respective partial derivative. The domestic division, however, orders a quantity of products from the foreign division such as to maximize

$$
\begin{aligned}
\Pi_d^{\text{con}}(q) &= R(q) - sq - \tau_d(R(q) - qr(p)) - va^{\text{con}}\theta\tau_d q(r(p) - p) \\
&= R(q)(1 - \tau_d) - sq + \tau_d pq - vba^{\text{con}} + \frac{b}{\theta},
\end{aligned} \tag{16}
$$

which gives the first-order condition $R'(q)(1 - \tau_d) + p\tau_d - vba_q^{\text{con}} - s = 0$. Goal congruence is achieved by setting

$$s^{\text{con}} = (1 - \tau_f)c + \tau_f p_f + (1 - v)ba_q^{\text{con}}. \tag{17}$$

Let q^{con} denote the solution to (15). The second-order condition is given by

$$S \equiv (1 - \tau_d)R(q)'' - b_d a_{qq}^{\text{con}} \leq 0. \tag{18}$$

If $R(q)$ is chosen such that the second-order condition for the inconsistency setting holds (i. e., given Assumption 1), (18) is fulfilled as well.[33]

PROPOSITION 5. *With consistent transfer pricing regimes,*

a) *the quantity produced in equilibrium is an increasing function of the arm's length price with* $\left. \frac{\partial q^{\text{con}}}{\partial p} \right|_{p=\underline{p}} = 0$ *and* $\left. \frac{\partial q^{\text{con}}}{\partial p} \right|_{p>\underline{p}} > 0$;

b) *MNC's profit is convex in the arm's length price with a maximum at* $p = \bar{p}$.

---

[33] At $q = 0$, we have $\frac{\theta\tau_d(\underline{p}-p)^2(\tau_d-\tau_f)}{b} \leq -(1-\tau_d)R''(0)$. Furthermore, $\frac{\partial S}{\partial q} = \frac{\theta^2\tau_d^2(\underline{p}-p)^3(\tau_d-\tau_f)e^{\frac{\theta q\tau_d(\underline{p}-p)}{b}}}{b^2} + (1-\tau_d)R'''(q) \leq 0$.

Proof. See Appendix B.3. □

The gray line in Figure 5 (left-hand side) depicts the evolution of *q* as *p* increases. While higher arm's length prices (more entrepreneurial functions in the foreign country) are associated with higher audit probabilities in the domestic jurisdiction, they also allow for higher tax deductions in the domestic country, which reduces the marginal (tax-related) cost of production and thus induces the multinational to increase its output.

The same reasoning applies to the MNC's profit generated in equilibrium (Proposition 5 b)). As profit increases with an increasing entrepreneurial function in the foreign country, MNCs have an incentive to allocate these functions in the foreign country. Since the relationship is convex, the more entrepreneurial functions are already localized in the foreign country, the more this incentive increases (Figure 5, right-hand side).

V. EFFECTS OF CONSISTENT TAX TRANSFER PRICING RULES

In investigating the effects of consistency, we focus on the case where Assumption 2 holds and therefore $p_d \equiv p, p_f = p + \delta$: Comparing a setting with identical arm's length prices to a setting with completely independent arm's length prices delivers little insight because there exists an infinite number of combinations of p_d and p_f.

Figures 4 and 5 suggest that consistent transfer pricing rules lead to a higher volume of production and are thus preferable from the viewpoint of both tax authorities because the domestic tax authority's audit costs are much lower and the foreign tax authority has no audit costs at all since it never audits. However, the graphs show the equilibrium for exemplarily chosen parameters. The depicted context may thus not be general. For example, the audit function for consistent transfer pricing is reduced by the tax rate differential in the numerator. However, according to Lemma 1, it increases with increasing quantity. Since the quantity may be higher in the consistency setting, the overall effect is unclear. In the following, we analyze how quantity, audit rates, profit, and expected net tax revenues change after introducing consistent transfer pricing rules.

28

Decisions at Firm Level

PROPOSITION 6. *Compared to the setting with inconsistent tax transfer pricing rules, with consistent tax transfer pricing rules*

a) *the MNC produces more output for any arm's length price;*

b) *tax avoidance is reduced;*

c) *the MNC sets a lower incentive transfer price.*

Proof. Part a): see Appendix B.4; parts b) and c): see below. □

Intuitively, with inconsistent transfer pricing rules, the multinational needs to account for the marginal audit probability in both countries, whereas with consistent transfer pricing rules only the domestic marginal audit probability enters the multinational's calculus. While the MNC benefits from inconsistency as it can individually optimize the transfer price report in both countries, this gain is constant and therefore is not taken into account when choosing the optimal output.

As described above, the multinational needs to report a common transfer price in the consistency setting. Thus, there is no more tax avoidance in the foreign country and consequently the foreign tax authority will stop auditing. In the domestic country, the multinational overreports the transfer price by $b_d/(\theta_d \tau_d q^{\text{con}})$. While the structure of this formula is similar to the inconsistency setting, the transfer price will be overstated by less since the quantity in the consistency setting q^{con} is higher than the quantity q^{inc} in the inconsistency setting, according to Proposition 6 a).

Finally, when switching to the consistency setting, the (internal) incentive transfer price is affected by three drivers:

$$s^{\text{inc}} > s^{\text{con}}$$

$$\Longleftrightarrow (1-v)b_d \frac{\partial a_d^{\text{inc}}(q^{\text{inc}})}{\partial q} + b_f \frac{\partial a_f^{\text{inc}}(q^{\text{inc}})}{\partial q} > (1-v)b_d \frac{\tau_d - \tau_f}{\tau_d} \frac{\partial a_d^{\text{inc}}(q^{\text{con}})}{\partial q}. \tag{19}$$

First, with consistent tax transfer pricing (right-hand side), it is not necessary to account for the marginal penalty in the foreign country, which reduces the internal price. Second, marginal penalties decrease with increasing quantity (Lemma 1). Therefore, as quantity is higher with consistent tax transfer pricing (Proposition 6 a)), $\frac{\partial a_d^{\text{inc}}(q^{\text{con}})}{\partial q}$ (right-hand side) is smaller than $\frac{\partial a_d^{\text{inc}}(q^{\text{inc}})}{\partial q}$ (left-hand side). Finally, the derivative with respect to q of the domestic tax authority's audit function under consistency is scaled down by the relative tax rate differential compared to the same derivative under inconsistency (formally, $\frac{\partial a^{\text{con}}}{\partial q} = \frac{\tau_d - \tau_f}{\tau_d} \frac{\partial a^{\text{inc}}}{\partial q}$)[34]. Hence, the right-hand side of (19) is always smaller than the left-hand side and thus the internal transfer price is lower under consistency.

Expected Net Tax Revenues

Both tax authorities' expected net tax revenues depend on the optimal quantity for a given arm's length price. Introducing the MNC's equilibrium reporting policy into the tax authorities' objective functions (4) and (5), respectively, expected net tax revenues are calculated as

$$\text{E}(T_d)^{\text{inc}} = \int_{\underline{p}}^{\overline{p}} \left(\tau_d \left(R(q^{\text{inc}}) - q^{\text{inc}} p \right) - \frac{b_d}{\theta_d} \right) f(p) \, dp, \tag{20}$$

$$\text{E}(T_d)^{\text{con}} = \int_{\underline{p}}^{\overline{p}} \left(\tau_d \left(R(q^{\text{con}}) - q^{\text{con}} p \right) - \frac{b_d}{\theta_d} \right) f(p) \, dp, \tag{21}$$

$$\text{E}(T_f)^{\text{inc}} = \int_{\underline{p}}^{\overline{p}} \left(\tau_f q^{\text{inc}} (p + \delta - c) - \frac{b_f}{\theta_f} \right) f(p) \, dp, \tag{22}$$

$$\text{E}(T_f)^{\text{con}} = \int_{\underline{p}}^{\overline{p}} \left(\tau_f q^{\text{con}} (p - c) + \tau_f \frac{b_d}{\theta_d \tau_d} \right) f(p) \, dp. \tag{23}$$

PROPOSITION 7. *a) The foreign tax authority benefits from* consistent *transfer pricing rules if* $\delta < \min_p(p - c) \frac{(q^{\text{con}} - q^{\text{inc}})}{q^{\text{inc}}} + \left(\frac{b_d}{\tau_d \theta_d} + \frac{b_f}{\tau_f \theta_f} \right) / q^{\text{inc}}$ *(sufficient condition).*

b) The domestic tax authority benefits from inconsistent *transfer pricing rules if* $\tau_f \delta < (1 - \tau_f)(E(p) - c) - b_d \int_{\underline{p}}^{\overline{p}} \frac{\partial a_d^{\text{inc}}}{\partial q} f(p) dp - b_f \int_{\underline{p}}^{\overline{p}} \frac{\partial a_f^{\text{inc}}}{\partial q} f(p) dp$ *(sufficient condition).*

Proof. Part a): see below; part b): see Appendix B.5. □

---

[34]See also Proof of Proposition 6 a) in Appendix B.4.

Figure 6 about here

Proposition 7 implies that implementing consistent tax transfer prices may be difficult because—in terms of net tax revenues—situations are possible where the domestic country prefers inconsistency while the foreign country benefits from consistency. As a consequence, if unanimity about the introduction of transfer pricing regimes of both countries is required, consistency can often not be agreed. Our analysis indicates that such disagreement can occur especially if the tax transfer pricing systems are sufficiently similar (i.e., if δ is sufficiently small). Figure 6 provides a numerical example of the development of domestic and foreign countries' net tax revenue depending on δ.

In Figure 6 we see for the given numerical example for all $\delta < 20.3164$ that the domestic country benefits from inconsistency as $E(T_d)^{\text{inc}} > E(T_d)^{\text{con}}$. While we are able to show analytically that $\delta < 9.2244$ is sufficient for the domestic country to prefer inconsistency (δ in the shaded gray interval), the numerical example clarifies that preference for inconsistency arises more often in the domestic country than analytically predicted by the sufficient condition. Not only under very similar transfer pricing regimes ($\delta < 9.2244$) but also under loosely related regimes ($\delta < 20.3164$) is the domestic country better off under inconsistency. By contrast, under the given set of parameters, the foreign country prefers a consistent transfer pricing regime for all δ, i.e., for all displayed levels of similarity. Even though we are unable to derive a respective analytical solution for $\delta > 9.2244$, the numerical example highlights the relevance of such a scenario of disagreement between the two countries.

As to the economic intuition, regard first the foreign tax authority (Equations (22) and (23)). When introducing consistent transfer pricing rules, the foreign tax authority benefits from two effects. First, tax revenues increase because of a higher quantity in the consistency setting (Proposition 6 a)). Second, the foreign tax authority not only cuts down on its own audit costs but also gains tax on the "overreport" which is determined by the domestic tax authority's audit cost, the domestic penalty rate, and the domestic tax rate (second term within the brackets in (23)). However, the foreign tax authority can no longer install its own (generally higher) transfer pricing rules ($\delta > 0$). The foreign tax authority overall benefits from consistency if the positive effects outweigh the negative effects

31

Figure 7 about here

for all p (sufficient condition, Proposition 7 a)).[35] In particular, the foreign tax authority always benefits from consistency if $\delta = 0$.

For the domestic tax authority, the *structure* of the equilibrium tax revenues (20) does not change after introducing consistent transfer pricing rules (21). The only variable that changes is the quantity of production, which is higher in the consistency setting (Proposition 6 a)). The first term inside the brackets of equation (21), $R(q) - qp$, is the *tax base* (revenue minus expenses) whereas the second term measures the (fixed) losses due to profit shifting. Whether or not an increase in q is beneficial for the domestic tax authority depends on the initial value of q, since $R(q)$ is concave whereas the expenses qp increase linearly. This can be explained graphically by regarding the tax base $R(q) - qp$ and marginal tax base $(R'(q) - p)$ for an individual arm's length price p, depending on q (Figure 7). Since quantity is higher in the consistency setting it follows that the marginal tax base is *lower* in this case. Also, we know that the marginal tax base for all p is negative under consistency (see Appendix B.5, Equation 37). Thus, marginal *expected* net tax revenues are also lower (for any given distribution f). Since the marginal tax base is negative, we are in the decreasing branch of the tax base curve (implying that a further increase in q reduces the tax authority's tax revenues. This situation is indicated by $q^{\text{con}}(p_x)$ in Figure 7. If, for the inconsistency setting, the expected marginal tax base is already zero or negative, a further increase in q (i.e., introducing consistency) would definitely decrease domestic country's net tax revenues (Proposition 7 b)). This situation is indicated by $q^{\text{inc}}(p_3)$. However, depending on the shape of the revenue function, the distribution of arm's length prices, and the dissimilarity between the tax transfer pricing systems δ, it is also possible that the marginal tax base is positive under inconsistency (indicated by $q^{\text{inc}}(p_1)$ and $q^{\text{inc}}(p_2)$ in Figure 7), implying that the domestic tax authority may benefit from an increase in q (i.e., from introducing consistency).

---

[35] A necessary and sufficient condition can be derived from comparing (22) and (23); however, since it depends on the distribution of arm's length prices, it does not allow for general insights.

VI. CONCLUSIONS

We study a setting with a multinational company with two divisions, one in the low-tax foreign country (production of product) and one in the high-tax domestic country (sale of product). The MNC is exclusively informed about the functions, assets, and risks profile which is fundamental to the arm's length price of its product. Based on this information, the MNC can choose a tax transfer price report. Both tax authorities strategically determine audit probabilities, given the tax transfer price documentation submitted by the MNC. We construct a separating equilibrium in which the MNC's tax transfer price report is a function of the arm's length price and the audit rates are functions of the tax transfer price reports. The MNC chooses its production quantity in anticipation of the outcome of the tax audit.

Investigating a setting in which tax transfer pricing rules are inconsistent, we find that, in equilibrium, tax avoidance emerges in both countries. Further, we find MNC's production and profit depend on the underlying FAR profile. It turns out that the MNC makes less profit if the foreign division exhibits a hybrid FAR profile than in cases where entrepreneurial FAR are completely assigned to either the foreign or the domestic division.

By contrast, under consistent tax transfer pricing regulation we find increases in MNC's production. Moreover, consistency prevents tax avoidance in the foreign country and reduces tax avoidance in the domestic country. We find that MNC's profit is highest if entrepreneurial FAR are located entirely in the foreign division. Surprisingly, consistency is not always beneficial for both tax authorities. Rather, we identify specific conditions under which the high-tax country benefits from inconsistency while the low-tax country benefits from consistency, preventing an unanimous implementation of consistent transfer pricing regimes; i.e., this applies if tax transfer pricing systems are sufficiently similar. Finally, we establish a goal-congruent internal transfer price which accounts for strategically acting tax authorities and show that inconsistency requires the MNC to set a higher internal transfer price than under consistency.

Our contribution is threefold. First, we derive sufficient conditions for both inconsistency to be beneficial from the viewpoint of the domestic country and for consistency to be beneficial from the

viewpoint of the foreign country and identify settings of disagreement between the two countries on the implementation of consistent regimes. Second, we show how an MNC's profit depends on its FAR profile under consistency and inconsistency. Finally, we show that the goal-congruent internal transfer price is lower under consistent tax transfer pricing rules, implying that consistency in many settings effectively attenuates frictions that arise if tax effects are not taken into account in internal transfer prices.

Our findings suggest that successfully installing consistent tax transfer pricing rules is likely more successful between countries with tax transfer pricing regulations that are relatively similar.

Furthermore, while under both inconsistency and consistency, those MNCs whose entrepreneurial FAR are bundled at the foreign country come off best in terms of profit, we find that with inconsistency, locating the entrepreneurial FAR in the domestic country can be second best. By contrast, when introducing consistency, bundling the entrepreneurial FAR in the domestic country is always worst. This suggests that consistent tax transfer pricing systems may create an incentive for MNCs to move entrepreneurial FAR out of the domestic country. On the other hand, consistency eliminates the pressure towards extreme FAR allocations that come with inconsistency. Ongoing legislative initiatives such as Information Exchange Agreements and Country by Country Reporting combined with technological innovations such as blockchain, which are all deemed to ensure consistency via enhanced transparency through standardized or simplified information sharing, clearly represent a trend towards the consistency setting. While this is desirable with regard to preventing double taxation and undertaxation and in turn to ensuring the ability-to-pay approach, decision makers should be aware of its side effects and be prepared to take counter measures. Future research should extend extant models with strategic taxpayer and tax authority behavior with respect to measures of enhanced transparency, endogenize MNC's FAR allocation decision, and test the derived predictions empirically with respect to occurrence and economic significance.

REFERENCES

Baldenius, T., N. D. Melumad, and S. Reichelstein. 2004. Integrating Managerial and Tax Objectives in Transfer Pricing. *The Accounting Review* 79.3, 591–615.

Banks, J. S. and J. Sobel. 1987. Equilibrium Selection in Signaling Games. *Econometrica* 55.3, 647–661.

Baumann, F. and T. Friehe. 2013. Profit Shifting Despite Symmetric Tax Rates? A Note on the Role of Tax Enforcement. *International Economic Journal* 27.1, 97–108.

Beck, P. J. and W.-O. Jung. 1989. Taxpayers' Reporting Decisions and Auditing under Information Asymmetry. *The Accounting Review* 64.3, 468–487.

Blouin, J. L., L. A. Robinson, and J. K. Seidman. 2018. Conflicting Transfer Pricing Incentives and the Role of Coordination. *Contemporary Accounting Research* 35.1, 87–116.

Choe, C. and C. E. Hyde. 2007. Multinational Transfer Pricing, Tax Arbitrage and the Arm's Length Principle. *The Economic Record* 83.263, 398–404.

Davies, R. B., J. Martin, M. Parenti, and F. Toubal. 2018. Knocking on Tax Haven's Door: Multinational Firms and Transfer Pricing. *The Review of Economics and Statistics* 100.1, 120–134.

De Waegenaere, A., R. Sansing, and J. L. Wielhouwer. 2006. Who Benefits from Inconsistent Multinational Tax Transfer-Pricing Rules? *Contemporary Accounting Research* 23.1, 103–131.

— 2007. Using Bilateral Advance Pricing Agreements to Resolve Tax Transfer Pricing Disputes. *National Tax Journal* 60.2, 173–191.

Diller, M. and J. Lorenz. 2015. Tax Aggressiveness of Taxpayers with Heterogenous Income and Uncertainty about Taxable Income. *FinanzArchiv / Public Finance Analysis* 71.4, 506–530.

Dürr, O. M. and R. F. Göx. 2011. Strategic Incentives for Keeping One Set of Books in International Transfer Pricing. *Journal of Economics & Management Strategy* 20.1, 269–298.

Elitzur, R. and J. Mintz. 1996. Transfer pricing rules and corporate tax competition. *Journal of Public Economics* 60.3, 401–422.

Erard, B. and J. S. Feinstein. 1994. Honesty and Evasion in the Tax Compliance Game. *Rand Journal of Economics* 49 (Supplement), 70–89.

Graetz, M. J., J. F. Reinganum, and L. L. Wilde. 1986. The Tax Compliance Game: Toward an Interactive Theory of Law Enforcement. *Journal of Law, Economics, and Organization* 2.1, 1–32.

Haufler, A. and G. Schjelderup. 2000. Corporate tax systems and cross country profit shifting. *Oxford Economic Papers* 52, 306–325.

Heckemeyer, J. H. and M. Overesch. 2017. Multinationals' profit response to tax differentials: Effect size and shifting channels. *Canadian Journal of Economics* 50.4, 965–994.

Hirshleifer, J. 1956. On the Economics of Transfer Pricing. *The Journal of Business* 29.3, 172–184.

Horst, T. 1971. The Theory of the Multinational Firm: Optimal Behavior under Different Tariff and Tax Rates. *Journal of Political Economy* 79.5, 1059–1072.

Hyde, C. E. and C. Choe. 2005. Keeping Two Sets of Books: The Relationship Between Tax and Incentive Transfer Prices. *Journal of Economics & Management Strategy* 14.1, 165–186.

Kant, C. 1988. Endogenous Transfer Pricing and the Effects of Uncertain Regulation. *Journal of International Economics* 24, 147–157.

Koethenbuerger, M., M. Mardan, and M. Stimmelmayr. 2019. Profit Shifting and Investment Effects: The Implications of Zero-Taxable Profits. *Journal of Public Economics* 173, 96–112.

Mansori, K. S. and A. J. Weichenrieder. 2001. Tax Competition and Transfer Pricing Disputes. *FinanzArchiv / Public Finance Analysis* 58.1, 1–11.

Mills, L. F. and R. Sansing. 2000. Strategic Tax and Financial Reporting Decisions: Theory and Evidence. *Contemporary Accounting Research* 17.1, 85–106.

Møller, P. R. and K. Scharf. 2002. Transfer pricing rules and competing governments. *Oxford Economic Papers* 54.2, 230–246.

OECD. 2015. Transfer Pricing Documentation and Country-by-Country Reporting – Action 13: 2015 Final Report.

— 2017. *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations 2017*. Paris: OECD Publishing.

Rathke, A. A., A. J. Rezende, and C. Watrin. 2020. Classification of transfer pricing systems across countries. *International Economics* 164, 151–167.

Reinganum, J. F. and L. L. Wilde. 1986a. Equilibrium Verification and Reporting Policies in a Model of Tax Compliance. *International Economic Review* 27, 739–760.

— 1986b. Settlement, litigation, and the allocation of litigation costs. *Rand Journal of Economics* 17.4, 557–566.

Sansing, R. 1993. Information Acquisition in a Tax Compliance Game. *The Accounting Review* 68.4, 874–884.

Yitzhaki, S. 1974. A Note on Income Tax Evasion: A Theoretical Analysis. *Journal of Public Economics* 3, 201–202.

<center>**APPENDIX**</center>

<center>## A. EVIDENCE ON TAX TRANSFER PRICING INCONSISTENCY</center>

A.1. Anecdotal Evidence from an Online Survey

To collect anecdotal evidence on when different transfer prices occur, we performed an online survey. We asked participants whether they anticipate the problem and already report different transfer prices in their tax returns, or whether they rather experience deviations as a result of a tax audit. The survey was distributed via the Transfer Pricing working group of the German Consortium for Economic Management (Arbeitsgemeinschaft für wirtschaftliche Verwaltung e.V., AWV) and the Tax Committee of the German Chemical Industry Association (Verband der Chemischen Industrie e.V., VCI). The survey ran from Dec. 10, 2020 to Jan. 20, 2021. The invitation was sent to around 60 transfer pricing experts in German multinational companies. While it is not representative, it does fulfill our aim of reaching highly qualified and specialized experts who hold relevant decision-making positions in the companies. More than two thirds (70%) of participants have a master's degree (or equivalent) and more than a quarter (26%) hold a doctorate. 83% have worked in transfer pricing for more than ten years.

Table 1 shows the number of participants, excluded observations, and demographics of the sample participants.

<center>Table 1 about here</center>

We asked participants to indicate how often they witnessed different transfer pricing regulations being used when filing the tax return (Table 2). 43.5% state that they have experienced different tax transfer prices occasionally or more frequently. By contrast, all participants have experienced transfer pricing inconsistencies as a result of an audit; 87% say they have experienced this (very) often. Also, double taxation seems a common consequence of different tax transfer prices. Undertaxation, by contrast, is experienced rarely.[36]

---

[36]Note, however, that representatives of MNCs may be reluctant to indicate that undertaxation occurs.

Table 2 about here

According to the participants, double taxation can be avoided in many – but by no means all – cases by means of a mutual agreement procedure (Table 3).

Table 3 about here

Finally, participants observed a (strong) increase in double taxation as a result of different transfer pricing in the last five years. Moreover, they expect a further increase in transfer pricing-induced double taxation issue in the next five years. Participants neither observed nor expect a "decrease" or "strong decrease" (Table 4).

Figure 4 about here

A.2. Anecdotal evidence from semi-structured interviews

Given our interest in tax practitioners' view on the relevance of inconsistent transfer prices, we chose to conduct a few semi-structured interviews to accompany our theoretical findings. We prepared specific questions but the interviewees were free to deviate from these during the course of the interview to pursue any upcoming interesting ideas, returning to the planned interview questions after a while. This semi-structured approach allowed us to obtain a comprehensive overview. We found that it encouraged interviewees to further contextualize their responses. This open form generated some differences in topics across the interviews, including a variety of follow-up questions from the interviewer. As the purpose of these interviews was to collect some anecdotal evidence we had anticipated and indeed found that this was a very fruitful way to obtain a deeper insight into experienced tax managers' reasoning on this topic.

We asked the interviewees to agree to an interview on transfer pricing, respective audits, and transfer pricing inconsistencies so we could obtain some practitioners' views on the topic. The interviewees were asked to commit to a 30-minute time slot, yet most interviews were approximately 35 minutes in length, while one took 95 minutes. All were conducted by the same author by telephone. We did not share the prepared questions upfront. The interviewees were told that their

Table 5 about here

responses would be confidential and that neither their name nor their company's or institution's name nor any other identifying information would be published. Given the specificity of the responses we received, we believe the interviewees were very candid.

We conducted six interviews. All interviewees are experienced German experts in transfer pricing, working either for multinationals or consultancies (DAX30-listed or Big4 companies) or as tax officers in the German Federal Central Tax Office. All of them have occupied their positions and dealt with transfer pricing issues for many years.

Table 5 summarizes the respective quotes and displays them by topic.

B. PROOFS

B.1. Proof of Propositions 1 and 2

The proof of Propositions 1 and 2 is similar to that presented by Reinganum et al. (1986a, p. 750) in the case of linear audit costs. Based on this separating equilibrium (in the second stage) we study the MNC's quantity decision and choice of internal transfer price (in the first stage).

The tax authorities' first-order conditions with linear audit costs $k_i(a_i(t_i)) = b_i a_i(t_i)$ are given by

$$\frac{\partial T_d}{\partial a_d(t_d)} = \tau_d \theta_d q(t_d - \mu_d(t_d)) - b_d = 0, \tag{24}$$

$$\frac{\partial T_f}{\partial a_f(t_f)} = \tau_f \theta_f q(\mu_f(t_f) - t_f) - b_f = 0, \tag{25}$$

and headquarters' first-order conditions with respect to profit-maximizing tax transfer prices in the domestic and the foreign country are given by

$$\frac{\partial \Pi}{\partial t_d} = -q\theta_d \tau_d (t_d - p_d) a'_d(t_d) - q\theta_d \tau_d a_d(t_d) + q\tau_d = 0, \tag{26}$$

$$\frac{\partial \Pi}{\partial t_f} = -q\theta_f \tau_f (p_f - t_f) a'_f(t_f) + q\theta_f \tau_f a_f(t_f) - q\tau_f = 0. \tag{27}$$

A separating equilibrium is found by obtaining $p_i = r_i^{-1}(t_i) = \mu_i(t_i)$ from (24) and (25). Inserting $p_i = \mu_i(t_i)$ into (26) and (27) one obtains two differential equations which can be solved to obtain the audit functions depicted in Propositions 1 and 2. The differential equations are determined by the boundary conditions $a_d(\underline{t_d}) = 0$ and $a_f(\overline{t_f}) = 0$. These boundary conditions are justified by the domestic (foreign) tax authority's belief that any report $t_d < \underline{t_d}$ ($t_f > \overline{t_f}$) comes from type $\underline{p_d}$ ($\overline{p_f}$).

The MNC's second-order conditions are given by

$$\frac{\partial^2 \Pi}{\partial t_d^2} = -q\theta_d\tau_d\left(t_d - p_d\right)a_d''(t_d) - 2q\theta_d\tau_d a_d'(t_d) = -\frac{\theta_d q^2 \tau_d^2 e^{-\frac{\theta_d q \tau_d\left(p_d - \underline{p_d}\right)}{b_d}}}{b_d} < 0, \qquad (28)$$

$$\frac{\partial^2 \Pi}{\partial t_f^2} = -q\theta_f\tau_f\left(p_f - t_f\right) + 2q\theta_f\tau_f a_f'(t_f)a_f''(t_f) = -\frac{q^2\theta_f\tau_f^2 e^{-\frac{q\theta_f\tau_f\left(\overline{p_f} - p_f\right)}{d}}}{d} < 0 \qquad (29)$$

(note that, in the second step, $t_i = r_i(p_i)$ was used).

Low transfer price reports $t_d \leq \underline{t_d}$ lead the domestic tax authority to believe that $\underline{p_d}$ is on hand. Thus, $\frac{\partial}{\partial a_d}T_d(t_d, a_d, \underline{p_d}) = \tau_d\theta_d q(t_d - \underline{p_d}) - b_d \leq 0$ and, hence, $a_d(t_d) = 0$. For high reports $t_d > \overline{t_d}$ we have $\mu_d(t_d) = \overline{p_d}$, thus, $\frac{\partial}{\partial a_d}T_d(t_d, a_d, \overline{p_d}) = \tau_d\theta q(t_d - \overline{p_d}) - b_d > 0$, which implies $a_d(t_d) = 1$. For $\underline{t_d} < t_d < \overline{t_d}$ the tax authority is indifferent since $\frac{\partial}{\partial a_d}T_d(t_d, a_d, r_d(p_d)) = 0$, $a_f(t_f)$ is thus a best reply.

Any report $t_d^\dagger > \overline{t_d}$ is dominated by $\overline{t_d}$ since $\frac{\partial}{\partial t_d^\dagger}\Pi(t_d^\dagger, t_f, a_d^{\text{inc}}, a_f) = \tau_d q(1 - \theta_d) < 0$. Similarly, reporting $t_d^\ddagger < \underline{t_d}$ is dominated by $\underline{t_d}$ since $\frac{\partial}{\partial t_d^\ddagger}\Pi(t_d^\ddagger, t_f, a_d^{\text{inc}}, a_f) = \tau_d q > 0$. Reporting $r_d(p_d)$ for $\underline{t_d} < t_d < \overline{t_d}$ satisfies (26).

For high reported transfer prices $t_f \geq \overline{t_f}$ the foreign tax authority believes $\mu_f(t_f) = \overline{p_f}$. It will thus audit with probability zero: $\frac{\partial}{\partial a_f}T_f(t_f, a_f, \overline{p_f}) = \tau_f\theta_f q(\overline{p_f} - t_f) - b_f \leq 0$, and, hence, $a_f(t_f) = 0$. For low reported transfer prices $t_f < \underline{t_f}$ we have $\frac{\partial}{\partial a_f}T_f(t_f, a_f, \underline{p_f}) = \tau_f\theta_f q(\underline{p_f} - t_f) - b_f > 0$, and, hence, $a_f(t_f) = 1$.

Reports $t_f^\dagger < \underline{t_f}$ are dominated by $\underline{t_f}$ since $\frac{\partial}{\partial t_f^\dagger}\Pi(t_d, t_f^\dagger, a_d, a_f^{\text{inc}}) = \tau_f q(\theta_f - f) > 0$, and all reports $t_f^\ddagger > \overline{t_f}$ are dominated by $\overline{t_f}$ since $\frac{\partial}{\partial t_f^\ddagger}\Pi(t_d, t_f^\ddagger, a_d, a_f^{\text{inc}}) = -q\tau_f < 0$, while reporting $r_f(p_f)$ satisfies the first-order condition(26).

B.2. Proof of Proposition 3

a) Setting $p_f = p_d + \delta$ and implicitly differentiating (9) with respect to p_d delivers

$$\frac{\partial q^{\text{inc}}}{\partial p} = \left(\underbrace{\tau_d - b_d \frac{\partial^2 a_d^{\text{inc}}}{\partial q \partial p_d}}_{\equiv A} \underbrace{- \tau_f - b_f \frac{\partial^2 a_f^{\text{inc}}}{\partial q \partial p_d}}_{\equiv B} \right) (-SOC)^{-1} \tag{30}$$

with

$$\frac{\partial^2 a_d^{\text{inc}}}{\partial q \partial p_d} = \frac{\tau_d}{b_d} e^{-\frac{q \theta_d \tau_d (p_d - \underline{p_d})}{b_d}} \left(1 - \frac{q \theta_d \tau_d (p_d - \underline{p_d})}{b_d} \right), \tag{31}$$

$$\frac{\partial^2 a_f^{\text{inc}}}{\partial q \partial p_d} = -\frac{\tau_f}{b_f} e^{-\frac{q \theta_f \tau_f (\overline{p_d} - p_f)}{b_f}} \left(1 - \frac{q \theta_f \tau_f (\overline{p_d} - p_d)}{b_f} \right).$$

and *SOC* given by (11).

i. For $p_d = \underline{p_d}$ one has $\frac{\partial^2 a_d}{\partial q \partial p_d} = \frac{\tau_d}{b_d}$, and, therefore, $A = 0$.

ii. For $p_d = \underline{p_d} + \frac{b_d}{q \theta_d \tau_d}$ the cross partial derivative vanishes and one obtains $A = \tau_d$. If $p_d > \underline{p_d} + \frac{b_d}{q \theta_d \tau_d}$, the cross partial derivative takes negative values, and, therefore, $A > 0$.

iii. Finally, we need show that the cross partial derivative is smaller than $\frac{\tau_d}{b_d}$ for $p_d \in \left(\underline{p_d}, \underline{p_d} + \frac{b_d}{q \theta_d \tau_d} \right)$. In this region, both the exponential function and the factor in brackets take values between zero and one. Hence, $A > 0$.

The procedure regarding B is analogous. For $p_d = \overline{p_d}$, $B = 0$; for $p_d = \overline{p_d} - \frac{b_f}{q \theta_f \tau_f}$, the cross partial derivative is zero and $B = -\tau_f$; and, for $p_d < \overline{p_d} - \frac{b_f}{q \theta_f \tau_f}$ the cross partial derivative is positive, making B negative. If $p_d \in \left(\overline{p_d} - \frac{b_f}{q \theta_f \tau_f}, \overline{p_d} \right)$ the absolute value of the cross partial derivative is smaller than $\frac{\tau_f}{b_f}$, thus, B is also negative. Hence, we know that the A is always non-negative, and B is always non-positive. Furthermore, we know that

for $p_d = \underline{p_d}$, $\qquad A = 0 \qquad B < 0$;

for $p_d = \overline{p_d}$, $\qquad A > 0 \qquad B = 0$.

Therefore, $\frac{\partial q^{\text{inc}}}{\partial p}$ is negative for p_d close to $\underline{p_d}$ and positive for p_d close to $\overline{p_d}$.

b) Let $p_d \equiv p$ and define the value function $V^{\text{inc}}(p, \delta) \equiv \Pi^{\text{inc}}\left(q^{\text{inc}}(p); p, \delta\right)$. Making use of the envelope theorem, the condition for an extremum $\frac{\partial V^{\text{inc}}}{\partial p} = 0$ gives $q^{\text{inc}}(\tau_d - \tau_f) - b_d \frac{\partial a_d^{\text{inc}}}{\partial p} - b_f \frac{\partial a_f^{\text{inc}}}{\partial p} = 0$. Introducing $\frac{\partial a_d^{\text{inc}}}{\partial p} = \frac{q^{\text{inc}} \tau_d}{b_d} - a_d^{\text{inc}} \frac{q^{\text{inc}} \tau_d \theta_d}{b_d}$ and $\frac{\partial a_f^{\text{inc}}}{\partial p} = -\frac{q^{\text{inc}} \tau_f}{b_f} + a_f^{\text{inc}} \frac{q^{\text{inc}} \tau_f \theta_f}{b_f}$ delivers the equation stated in Proposition 3. Furthermore, $\frac{\partial^2 \Pi^{\text{inc}}\left(q^{\text{inc}}(p); p, \delta\right)}{\partial p^2} = \Pi_{pp}^{\text{inc}} + (q^{\text{inc}})'' \Pi_q^{\text{inc}} + (q^{\text{inc}})' \Pi_{qp}^{\text{inc}} + (q^{\text{inc}})' \left(\Pi_{qp}^{\text{inc}} + (q^{\text{inc}})' \Pi_{qq}^{\text{inc}}\right)$, where subscripts denote partial derivatives. From the first-order condition we know that $\Pi_q^{\text{inc}}\big|_{q=q^{\text{inc}}} = 0$; implicitly differentiating the first-order condition with respect to p gives $(q^{\text{inc}})' = -\frac{\Pi_{qp}^{\text{inc}}}{\Pi_{qq}^{\text{inc}}}$. Using these results gives $\frac{\partial^2 \Pi^{\text{inc}}}{\partial p^2} = \Pi_{pp}^{\text{inc}} - \frac{\left(\Pi_{qp}^{\text{inc}}\right)^2}{\Pi_{qq}^{\text{inc}}}$. If the second-order condition (11) holds, $\Pi_{qq}^{\text{inc}} < 0$, hence, the second term is always positive. Finally, $\Pi_{pp}^{\text{inc}} = \frac{\theta_d q^2 \tau_d^2}{b_d} e^{-\frac{\theta_d q \tau_d (p - \underline{p})}{b_d}} + \frac{q^2 \theta_f \tau_f^2}{b_f} e^{-\frac{q \theta_f \tau_f (\overline{p} - p)}{b_f}} > 0$. Hence, $V^{\text{inc}}(p, \delta)$ is convex in p, and, therefore, $\check{p}$ is unique. Also, $\check{p}$ is interior since $\frac{\partial V^{\text{inc}}}{\partial p}\Big|_{p=\underline{p}} = -\tau_f q^{\text{inc}}(\underline{p}) \times \left(1 - e^{\frac{\theta_f \tau_f (\underline{p} - \overline{p}) q^{\text{inc}}(\underline{p})}{b_f}}\right) < 0$, and, $\frac{\partial V^{\text{inc}}}{\partial p}\Big|_{p=\overline{p}} = \tau_d q^{\text{inc}}(\overline{p}) \left(1 - e^{\frac{\theta_d \tau_d (\underline{p} - \overline{p}) q^{\text{inc}}(\overline{p})}{b_d}}\right) > 0$.

c) Again using the envelope theorem, $\frac{\partial V^{\text{inc}}(p, \delta)}{\partial \delta} = -q^{\text{inc}} \tau_f < 0$, which proves part c) of Proposition 3, regarding the MNC's *profit.* Regarding *optimal quantity,* implicitly differentiating (9) with respect to δ yields $\frac{\partial q^{\text{inc}}}{\partial \delta} = -\tau_f(-SOC) < 0$.

B.3. Proof of Proposition 5

a) Implicitly differentiating (15) with respect to p gives

$$\frac{\partial q^{\text{con}}}{\partial p} = \frac{\tau_d - \tau_f - b a_{qp}^{\text{con}}}{-S}$$

with

$$a_{qp}^{\text{con}} = \frac{\tau_d - \tau_f}{b} e^{-\frac{\theta q \tau_d (p - \underline{p})}{b}} \left(1 - \frac{(p - \underline{p}) q \theta \tau_d}{b}\right).$$

Evidently, the denominator is non-negative if the second-order condition (18) is fulfilled (and thus S is nonpositive).

i. For $p = \underline{p}$ one has $a_{qp} = \frac{\tau_d - \tau_f}{b}$, and, therefore, $\frac{\partial q^{\mathrm{con}}}{\partial p} = 0$.

ii. For $p = \underline{p} + \frac{b}{q\theta\tau_d}$ the cross partial derivative vanishes and one obtains $\frac{\partial q^{\mathrm{con}}}{\partial p} = (\tau_d - \tau_f)(-SOC)^{-1} > 0$. If $p > \underline{p} + \frac{b}{q\theta\tau_d}$, the cross partial derivative takes negative values, and, therefore, $\frac{\partial q^{\mathrm{con}}}{\partial p}$ is positive.

iii. Finally, for $p \in \left(\underline{p}, \underline{p} + \frac{b}{q\theta\tau_d}\right)$, both the exponential function in a_{qp}^{con} and the factor in brackets take values between zero and one. Therefore, the cross partial derivative is smaller than $\frac{\tau_d - \tau_f}{b}$, and $\frac{\partial q^{\mathrm{con}}}{\partial p}$ is positive.

This proves Proposition 5 a).

b) Define the value function $V^{\mathrm{con}}(p) = \Pi^{\mathrm{con}}(q^{\mathrm{con}}(p); p)$. Applying the envelope theorem, one obtains $\frac{dV^{\mathrm{con}}}{dp} = q^{\mathrm{con}}(\tau_d - \tau_f)\left(1 - e^{-\frac{\theta q\tau_d(p - \underline{p})}{b}}\right) > 0$, which implies that $V^{\mathrm{con}}(p)$ is maximized at the boundary $p = \overline{p}$. From the proof of Part b) of Proposition 3 we know that $\frac{d^2\Pi^{\mathrm{con}}}{dp^2} = \Pi_{pp}^{\mathrm{con}} - \frac{(\Pi_{qp})^2}{\Pi_{qq}}$, the second term of which is always positive if the second-order condition holds. Here, we have $\Pi_{pp}^{\mathrm{con}} = -ba_{pp}^{\mathrm{con}}$ with $a_{pp}^{\mathrm{con}} = -\frac{\theta q^2\tau_d(\tau_d - \tau_f)e^{-\frac{\theta q\tau_d(p - \underline{p})}{b}}}{b^2} < 0$. Thus, $V^{\mathrm{con}}(p)$ is convex in p.

B.4. Proof of Proposition 6 a)

Implicitly differentiating (9) with respect to δ gives $\frac{\partial q^{\mathrm{inc}}}{\partial \delta} = -\frac{\tau_f}{SOC}$ (note that the audit function of the foreign tax authority does not directly depend on δ). Thus, production decreases with generally increasing higher arm's length prices in the foreign country. Therefore, it suffices to show that consistency increases production for $\delta = 0$. First, notice from Propositions 1 and 4 (and by taking the respective derivatives) that

$$a^{\mathrm{con}} = \frac{\tau_d - \tau_f}{\tau_d}a_d^{\mathrm{inc}}, \qquad \frac{\partial a^{\mathrm{con}}}{\partial q} = \frac{\tau_d - \tau_f}{\tau_d}\frac{\partial a_d^{\mathrm{inc}}}{\partial q},$$

where a^{con} denotes the domestic tax authority's audit probability in the consistency setting whereas a_d^{inc} denotes its audit probability in the inconsistency setting. Given $\delta = 0$, the MNC's first-order

conditions with respect to the quantity in the two settings, (9) and (15), can be written as

$$\text{inconsistency:} \qquad \Lambda(q) = b_d \frac{\partial a_d^{\text{inc}}(q)}{\partial q} + b_f \frac{\partial a_f^{\text{inc}}(q)}{\partial q}, \qquad (32)$$

$$\text{consistency:} \qquad \Lambda(q) = \frac{\tau_d - \tau_f}{\tau_d} b_d \frac{\partial a_d^{\text{inc}}(q)}{\partial q}, \qquad (33)$$

where $\Lambda(q) \equiv (1 - \tau_d)R'(q) - c + \tau_d p - \tau_f(p - c)$ decreases in q. The derivatives of the audit functions also decrease in q, however, if the second-order condition holds, they fall at a lower rate.[37] Assume $q^\dagger$ solves the first-order condition for the consistency setting. Apparently, given $q^\dagger$, the right-hand side of (33) is lower than the right-hand side of (32) ($q^\dagger$ does not solve (32), the right-hand side is too high). Starting from $q^\dagger$, as q decreases, both the right-hand and left-hand side of (32) increase, however the left-hand side increases at a higher rate until eventually Equation (32) is satisfied at some $q^\ddagger < q^\dagger$. Starting again from $q^\dagger$, if q increases, both the right-hand and left-hand side of (32) decrease, however, the left-hand side decreases faster. As the right-hand side is already too high at $p = p^\dagger$, there can be no $q > q^\dagger$ that solves Equation (32). Hence, the optimal quantity must be lower with inconsistent transfer pricing rules for $\delta = 0$. As shown above, for $\delta > 0$ quantity is even lower in the inconsistency setting.

B.5. Proof of Proposition 7 b)

One way to derive the statement in Proposition 7 b) is to study the volume of production that the domestic tax authority would prefer. If the domestic tax authority could determine the MNC's production, it would choose q such that

$$\frac{\partial \mathrm{E}(T_d)^s}{\partial q^s} = 0$$

$$\iff \int_{\underline{p}}^{\overline{p}} R'(q^s) f(p) \, dp = E(p), \qquad (34)$$

---

[37]Recall that $SOC = (1 - \tau_d)R''(q) - b \frac{\partial^2 a_d^{\text{inc}}(q)}{\partial q^2} - d \frac{\partial^2 a_f^{\text{inc}}(q)}{\partial q^2} < 0 \iff (1 - \tau_d)R''(q) < b \frac{\partial^2 a_d^{\text{inc}}(q)}{\partial q^2} + d \frac{\partial^2 a_f^{\text{inc}}(q)}{\partial q^2}.$

where $E(p)$ is the expected arm's length price. However, the MNC chooses q according to the first-order conditions (9, inconsistency) or (15, consistency). Therefore, the MNC is expected to choose quantity according to

$$\int_{\underline{p}}^{\overline{p}} R'(q)f(p)\,dp = \underbrace{\int_{\underline{p}}^{\overline{p}} \frac{c(1-\tau_f)-(\tau_d-\tau_f)p+\tau_f\delta+b_d\frac{\partial a_d^{\text{inc}}}{\partial q}+b_f\frac{\partial a_f^{\text{inc}}}{\partial q}}{1-\tau_d}f(p)\,dp,}_{\equiv A} \quad (35)$$

for the inconsistency setting, and according to

$$\int_{\underline{p}}^{\overline{p}} R'(q)f(p)\,dp = \underbrace{\int_{\underline{p}}^{\overline{p}} \frac{c-\tau_d p+\tau_f(p-c)+b_d\frac{\partial a^{\text{con}}}{\partial q}\partial q}{1-\tau_d}f(p)\,dp,}_{\equiv B} \quad (36)$$

for the consistency setting.

From Proposition 6 a) (quantity is higher in the consistency setting) it follows that the term inside the integral of B is smaller then the term inside the integral of A. As this is true $\forall p$, it follows that $B < A$. As $R'(q)$ decreases in q, the domestic tax authority benefits from consistency (which implies a *higher* quantity) if

1) $E(p) < B < A$,

and it benefits from inconsistency (which implies a *lower* quantity) if

2) $E(p) > A > B$.

We will show that $E(p) > B$, therefore case 1) can be excluded:

$$E(p) > \int_{\underline{p}}^{\overline{p}} \frac{c-\tau_d p+\tau_f(p-c)+b_d\frac{\partial a^{\text{con}}}{\partial q}\partial q}{1-\tau_d}f(p)\,dp$$

$$\iff (1-\tau_f)(E(p)-c) > (\tau_d-\tau_f)\int_{\underline{p}}^{\overline{p}} (p-\underline{p})e^{-\frac{\theta q\tau_d(p-\underline{p})}{b_d}}f(p)\,dp. \quad (37)$$

Inequality (37) is always fulfilled since the exponential term is not greater than one for all p, and, by assumption, $c \leq \underline{p}$.

However, it can also be that $A > E(p) > B$. In this case, whether or not the domestic country benefits from consistency depends on the distribution of arm's length prices and on the shape of the revenue function and is, therefore, not distinct. A necessary condition that the domestic country does *not* benefit from consistency is given by $E(p) > A$, which gives the condition stated in Proposition 7 b).

C. INCONSISTENT AND INDEPENDENT ARM'S LENGTH PRICES

If the arm's length prices p_d and p_f in both countries are completely independent, one obtains the following results.

PROPOSITION 8. *If transfer pricing rules are inconsistent and uncorrelated, the optimal quantity increases in the domestic arm's length price and decreases in the foreign arm's length price.*

Proof. The proof is analogous to the proof of Proposition 3 a) (see Appendix B.2).

a) Implicitly differentiating (9) with respect to p_d yields

$$\frac{\partial q^{\text{inc}}}{\partial p_d} = \left(\tau_d - b_d \frac{\partial^2 a_d^{\text{inc}}}{\partial q \partial p_d} \right) (-SOC)^{-1} \text{ with}$$

$$\frac{\partial^2 a_d^{\text{inc}}}{\partial q \partial p_d} = \frac{\tau_d}{b_d} e^{-\frac{q \theta_d \tau_d (p_d - \underline{p_d})}{b_d}} \left(1 - \frac{q \theta_d \tau_d (p_d - \underline{p_d})}{b_d} \right),$$

and *SOC* given by (11).

  i. For $p_d = \underline{p_d}$ one has $\frac{\partial^2 a_d}{\partial q \partial p_d} = \frac{\tau_d}{b_d}$, and, therefore, $\frac{\partial q^{\text{inc}}}{\partial p_d} = 0$.

  ii. For $p_d = \underline{p_d} + \frac{b_d}{q \theta_d \tau_d}$ the cross partial derivative vanishes and one obtains $\frac{\partial q^{\text{inc}}}{\partial p_d} = \tau_d (-SOC)^{-1}$. If $p_d > \underline{p_d} + \frac{b_d}{q \theta_d \tau_d}$, the cross partial derivative takes negative values, and, therefore, $\frac{\partial q^{\text{inc}}}{\partial p_d}$ is positive.

  iii. Finally, we need show that the cross partial derivative is smaller than $\frac{\tau_d}{b_d}$ for $p_d \in \left(\underline{p_d}, \underline{p_d} + \frac{b_d}{q \theta_d \tau_d} \right)$. In this region, both the exponential function and the factor in brackets take values between zero and one. Hence, $\frac{\partial q^{\text{inc}}}{\partial p_d}$ is positive.

b) Implicitly differentiating (9) with respect to p_f yields

$$\frac{\partial q^{\text{inc}}}{\partial p_f} = \left(-\tau_f - b_f \frac{\partial^2 a_f^{\text{inc}}}{\partial q \partial p_f}\right)(-SOC)^{-1} \text{ with}$$

$$\frac{\partial^2 a_f^{\text{inc}}}{\partial q \partial p_f} = -\frac{\tau_f}{b_f} e^{-\frac{q \theta_f \tau_f (\overline{p_f} - p_f)}{b_f}} \left(1 - \frac{q \theta_f \tau_f (\overline{p_f} - p_f)}{b_f}\right).$$

The proof is analogous to part a). For $p_f = \overline{p_f}$, $\frac{\partial q^{\text{inc}}}{\partial p_f}$ is zero; for $p_f = \overline{p_f} - \frac{b_f}{q \theta_f \tau_f}$, the cross partial derivative is zero and $\frac{\partial q^{\text{inc}}}{\partial p_f} = -\tau_f (-SOC)^{-1}$; and, for $p_f < \overline{p_f} - \frac{b_f}{q \theta_f \tau_f}$ the cross partial derivative is positive, making $\frac{\partial q^{\text{inc}}}{\partial p_f}$ negative. If $p_f \in \left(\overline{p_f} - \frac{b_f}{q \theta_f \tau_f}\right)$ the absolute value of the cross partial derivative is smaller than $\frac{\tau_f}{b_f}$, thus, $\frac{\partial q^{\text{inc}}}{\partial p_f}$ is also negative.

$\square$

The intuition behind this result is as follows. High arm's length prices in the domestic country allow the MNC to make higher transfer price reports there, resulting in lower tax payments. These constant marginal tax savings equate to the domestic tax rate, τ_d. The profit shifted to the foreign country has no effect: since the amount is constant, it does not enter the MNC's calculus. Then, lower taxes increase the optimal amount of production. There is a secondary effect, however, since more production comes at the cost of a marginally increasing audit probability (cf. Lemma 1). For $p_d > \underline{p_d} + \frac{b_d}{q \theta_d \tau_d}$, this marginal audit probability in turn *decreases* with higher arm's length prices. Overall, the linearly increasing tax savings that come with higher arm's length prices dominate. Analoguous reasoning applies to the arm's length price in the foreign country. There, taxes are lower with lower arm's length prices, which increases production.

PROPOSITION 9. *If transfer pricing rules are inconsistent and uncorrelated, the MNC's profit generated in equilibrium increases in the domestic arm's length price and decreases in the foreign arm's length price.*

Proof. Define the value function $V^{\text{inc}}(p_d, p_f) \equiv \Pi^{\text{inc}}\left(q^{\text{inc}}(p_d, p_f); p_d, p_f\right)$. Making use of the envelope theorem, one obtains $\frac{\partial V^{\text{inc}}(p_d, p_f)}{\partial p_d} = q^{\text{inc}} \tau_d \theta_d a_d^{\text{inc}} > 0$ and $\frac{\partial V^{\text{inc}}(p_d, p_f)}{\partial p_f} = -q^{\text{inc}} \tau_f \theta_f a_f^{\text{inc}} < 0$.

$\square$

Intuitively, the MNC profits from higher domestic arm's length prices and lower foreign arm's length prices. In an "honesty" setting without audits, the MNC's increase (decrease) in profit from a marginal increase in the domestic (foreign) arm's length price would be equal to $q^{\text{inc}}\tau_p$ ($q^{\text{inc}}\tau_f$). In our setting, this marginal profit is lower due to the tax authorities' audit activities, but it is still positive (negative).

D. PARTIALLY ENDOGENOUS ARM'S LENGTH PRICES

If the arm's length price is located somewhere between the marginal costs of production c and the revenue $R(q)$, it (also) depends on the endogenous variable q. Assume $p_d = (1-\gamma_d)c + \gamma_d R(q)/q$, where γ_d measures the foreign division's (exogenously given) degree of entrepreneurship (according to the domestic transfer pricing rules; $\gamma_d = 1 \rightarrow$ entrepreneur; $\gamma_d = 0 \rightarrow$ toll manufacturer). We only stylize the modeling partially endogenous arm's length prices. Replacing p_d by $(1-\gamma_d)c + \gamma_d R(q)/q$ one obtains from the domestic tax authority's first-order condition $t_d = \frac{b_d}{\theta_d q \tau_d} + (1-\gamma_d)c + \gamma_d R(q)/q$ (note that the overreported amount is identical to our above model). Solving for γ_d, together with the multinational's first-order condition and the boundary condition $a_d(\underline{t_d}) = 0$, one obtains a differential equation with solution $a_d(t_d) = \frac{1}{\theta_d}\left(1 - e^{1 - \frac{\theta_d q \tau_d}{b_d}(t_d - c)}\right)$, which is identical to the equation presented in Proposition 1 iff $\underline{p_d} = c$. The procedure is analogous for the foreign transfer pricing report and for the case of consistent transfer pricing regimes.

E. A NOTE ON POOLING EQUILIBRIA

Reinganum et al. (1986b) have shown how the universally divine equilibrium concept introduced by Banks et al. (1987) can rule out pooling equilibria in their settlement game. Below, we show the procedure for the case with consistent transfer pricing rules, however, the idea is similar for the inconsistency case.

Consider a (fully) pooling equilibrium where all MNCs report $\hat{t}$ and are audited with probability zero. This requires that $\hat{t} \geq \overline{p}$ because otherwise all types $\hat{t} \leq p < \overline{p}$ would prefer reporting p over

reporting $\hat{t}$. Also, it requires that

$$\tau_d(R(q) - \hat{t}q) + \tau_d\theta(\hat{t} - E(p))q - b \leq \tau_d(R(q) - \hat{t}q) \iff \hat{t} \leq E(p) + \frac{b}{\tau_d\theta q},$$

because, otherwise, the tax authority would prefer to audit with probability 1. In total, it is required that $\overline{p} \leq \hat{t} \leq E(p) + \frac{b}{\tau_d\theta q}$.

First, consider the following pooling equilibrium:

- All MNC types report the same $\hat{t} = E(p) + \frac{b}{\tau_d\theta q}$;

- the tax authority's equilibrium and out-of-equilibrium beliefs are given by $\mu(p|t) = E(p)$;

- The tax authority audits with probability $z = \begin{cases} 1, & t > \hat{t} \\ 0, & t \leq \hat{t} \end{cases}$.

Since

$$\frac{d}{dz}[z(\tau_d(R(q) - tq) + \tau_d\theta(t - E(p))q - b) + (1 - z)(\tau_d(R(q) - tq))]$$

$$= \tau_d(R(q) - tq) + \tau_d\theta(t - E(p))q - b - \tau_d(R(q) - tq) \gtreqless 0$$

$$\iff t \gtreqless \underbrace{E(p) + \frac{b}{\tau_d\theta q}}_{\hat{t}},$$

the tax authority will audit all reports $t > \hat{t}$ with probability 1, while all reports $t < \hat{t}$ are never audited. As a best response, all MNCs will report $\hat{t}$.

Second, there is a class of pooling equilibria where

- all MNC types report the same $\hat{t} < E(p) + \frac{b}{\tau_d\theta q}$;

- the tax authority's equilibrium and out-of-equilibrium beliefs are given by

$$\begin{cases} \mu(p|t) = E(p), & t \leq \hat{t} \\ \mu(p|t) \leq t - \frac{b}{\tau_d\theta q}, & t > \hat{t} \end{cases};$$

51

- The tax authority audits with probability $z = \begin{cases} 1, & t > \hat{t} \\ 0, & t \leq \hat{t} \end{cases}$.

Now, consider some pooling equilibrium $\hat{t}$ and a deviating report $t^\star > \hat{t}$. The MNC of type p is indifferent between reporting $\hat{t}$ and $t^\star$ if the tax authority audits with probability $z(p;t^\star)$ such that

$$q\hat{t}(\tau_d - \tau_f) = qt^\star(\tau_d - \tau_f) - z(p;t^\star)\theta q\tau_d(t^\star - p)$$

$$\Longleftrightarrow z(p;t^\star) = \frac{(t^\star - \hat{t})(\tau_d - \tau_f)}{\tau_d\theta(t^\star - p)}.$$

Since $z'(p;t^\star) = \frac{(t^\star - \hat{t})(\tau_d - \tau_f)}{(t^\star - p)^2\theta\tau_d} > 0$, when reporting $t^\star$, the MNC of type $\overline{p}$ is associated with the highest audit probability. Reciprocally, this means that $\overline{p}$ is the type most likely to deviate to $t^\star$. The universal divinity criterion requires that the tax authority beliefs that the out-of-equilibrium report $t^\star$ comes from the type most likely to deviate, i. e., $\overline{p}$; formally, $\mu(p|t^\star) = \overline{p}$. Given this belief, the tax authority's best response is to audit a report $t^\star$ with probability zero:

$$\frac{d}{dz}\left[z\left(\tau_d(R(q) - t^\star q) + \tau_d\theta(t^\star - \overline{p})q - b\right) + (1-z)\left(\tau_d(R(q) - t^\star q)\right)\right]$$

$$= \tau_d(R(q) - t^\star q) + \tau_d\theta(t^\star - \overline{p})q - b - \tau_d(R(q) - t^\star q) < 0$$

$$\Longleftrightarrow t^\star < \overline{p} + \frac{b}{\tau_d\theta q}.$$

This implies that type $\overline{p}$ always prefers to report $t^\star$ over reporting $\hat{t}$. Hence, $\hat{t}$ is not supported by the out-of-equilibrium belief $\mu(p|t^\star) = \overline{p}$, and, therefore, is not universally divine.

There also exist partially pooling equilibria such that there is some pooling point $\check{t}, \underline{p} < \check{t} < \overline{p}$, with all types $p \leq \check{p}$ report $\check{t}$ (and all other types stick to the separating equilibrium). Similar reasoning applies to these partially pooling equilibria. Universal divinity requires that the tax authority believes that any deviating report comes from the MNC most likely to deviate (which is $\check{p}$). But then the tax authority would choose not to audit this deviating report. Therefore, type $\check{p}$ would prefer to deviate.

Figure 1: FAR analysis of the foreign division
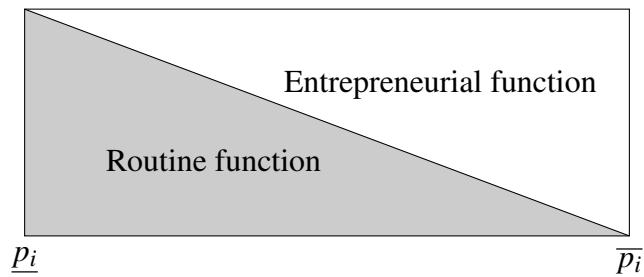
Note: A high (low) degree of entrepreneurship determines an arm's length price close to $\overline{p_i}$ ($\underline{p_i}$). The arm's length price lies in the middle of the interval if the foreign division exhibits routine as well as entrepreneurial functions.
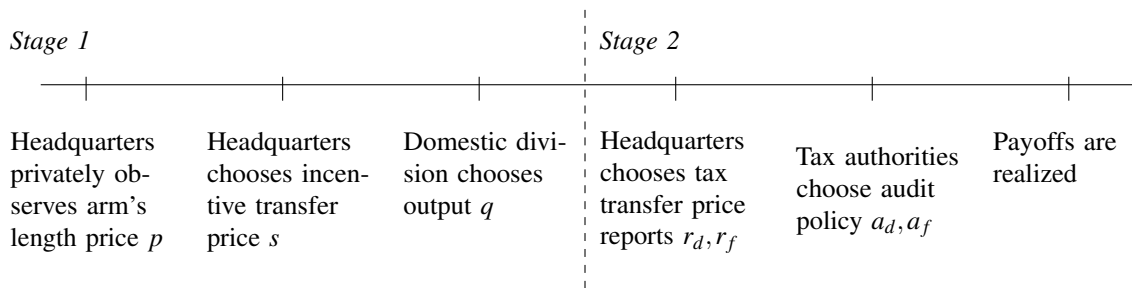
Figure 2: Timeline of events

Stage 1

Stage 2

Headquarters privately observes arm's length price p

Headquarters chooses incentive transfer price s

Domestic division chooses output q

Headquarters chooses tax transfer price reports r_d, r_f

Tax authorities choose audit policy a_d, a_f
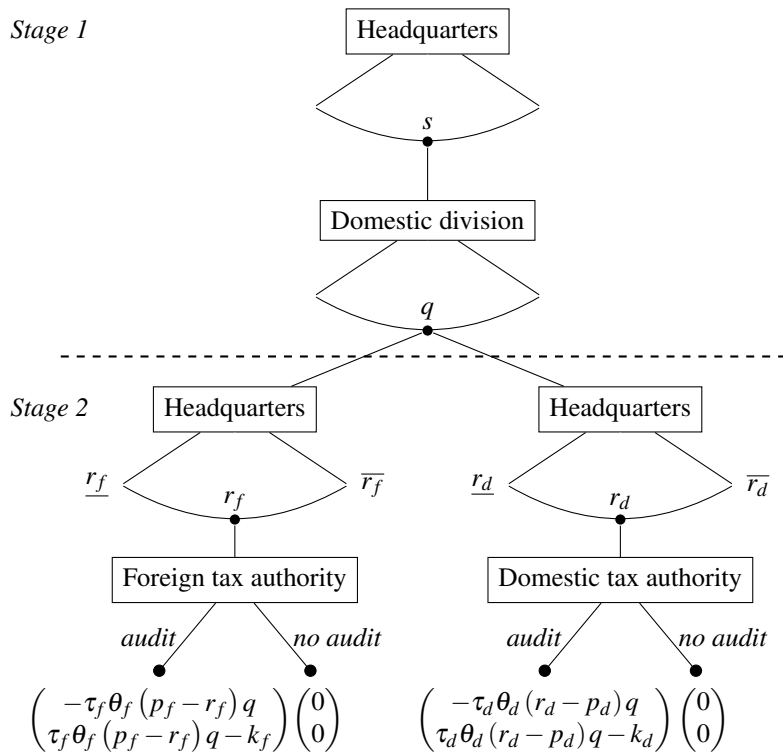
Payoffs are realized

Figure 3: Game tree

Note: First, the multinational's headquarters sets the incentive transfer price. The domestic division then decides on the quantity to be sold in the domestic market. The determination of the optimal quantity is referred to as *stage one.* Second, headquarters sets the tax transfer price and submits an income report alongside with a transfer pricing documentation, which informs the tax authorities about the (reported) functional profile (i. e., $t_d = r_d(p_d)$ and $t_f = r_f(p_f)$) and quantity q. Subsequently, both tax authorities decide about the audit probability. This process is referred to as *stage two.* Any penalties are then divided between the domestic division and headquarters according to v. For simplicity, we only depict the "excess payoffs" that are directly determined by the tax authorities' audit decisions.

Figure 4: Audit functions of the domestic and foreign tax authority depending on the arm's length price p_i
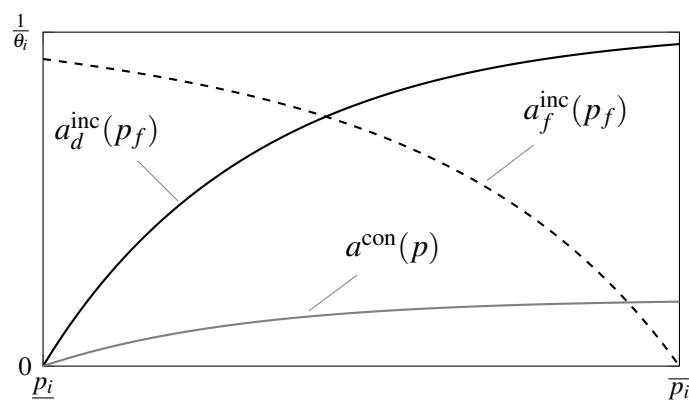

Note: The black solid (dashed) line depicts the domestic (foreign) tax authority's audit function under inconsistency. The gray solid line depicts the domestic tax authority's audit function for the consistency setting (see Section IV).

Figure 5: Optimal production (left) and profit (right) depending on the arm's length price p.
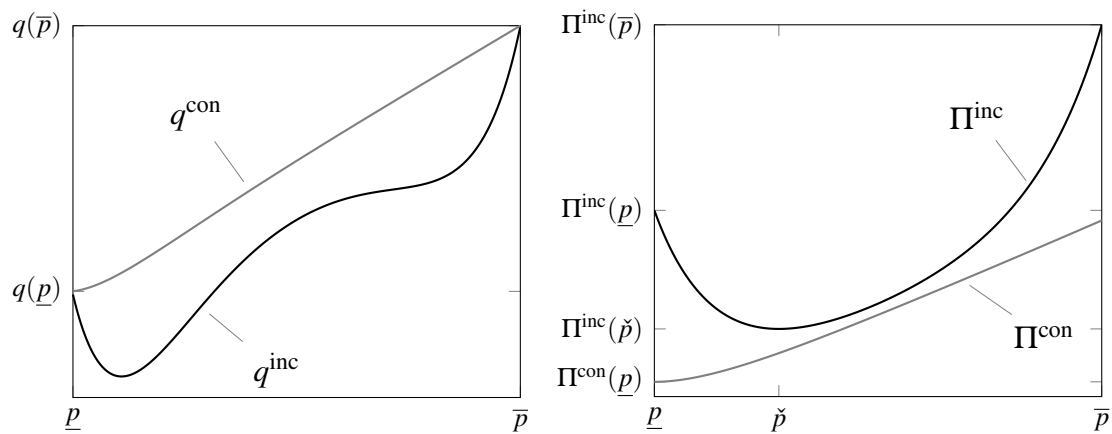

Note: δ is set to zero. The black (gray) lines depict the setting with inconsistent (consistent) transfer pricing rules (Section IV).

Figure 6: Domestic country's expected net tax revenue under inconsistency and consistency: numerical example
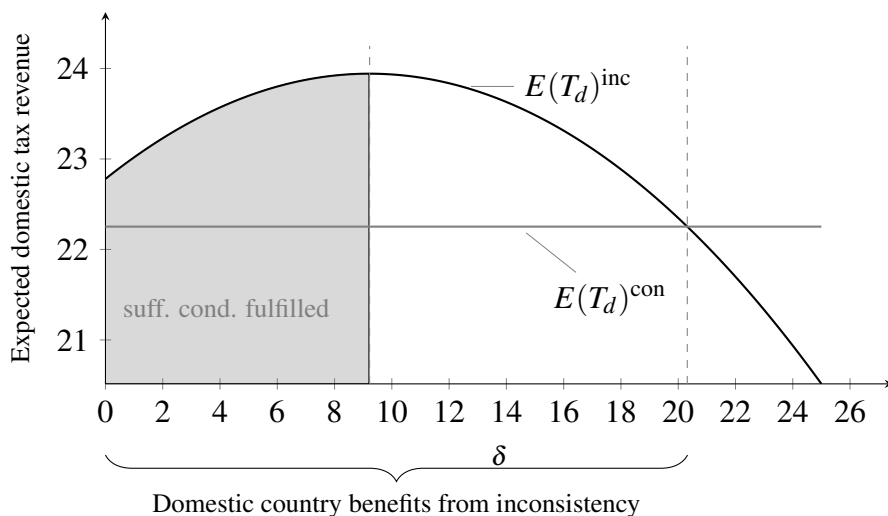
Note: The graph numerically exemplifies the following setting: $\tau_d = .4, \tau_f = .35, c = 1, \theta_d = \theta_f = 2, b_d = b_f = 2, f(p) = 1/(\overline{p} - \underline{p})$ with $\overline{p} = 12, \underline{p} = 2, R(q) = q(k - lq/2)$ with $k = 32, l = 5$. With these parameters, the sufficient condition shown in Proposition 7 b) is given by $\delta < 9.2244$. Hence, for $\delta < 9.2244$ we are able to show analytically that the domestic country benefits from inconsistency (δ in the shaded gray interval). However, the numerical example clarifies that also for higher values of δ the domestic country benefits from inconsistency as $E(T_d)^{\mathrm{inc}} > E(T_d)^{\mathrm{con}}$. As illustrated, under the given set of parameters, the domestic country prefers inconsistency for $\delta < 20.3164$, while the foreign country prefers consistency throughout the entire plotted domain.

Figure 7: Tax base (black line) and marginal tax base (gray line), depending on the quantity q, for a linear demand function
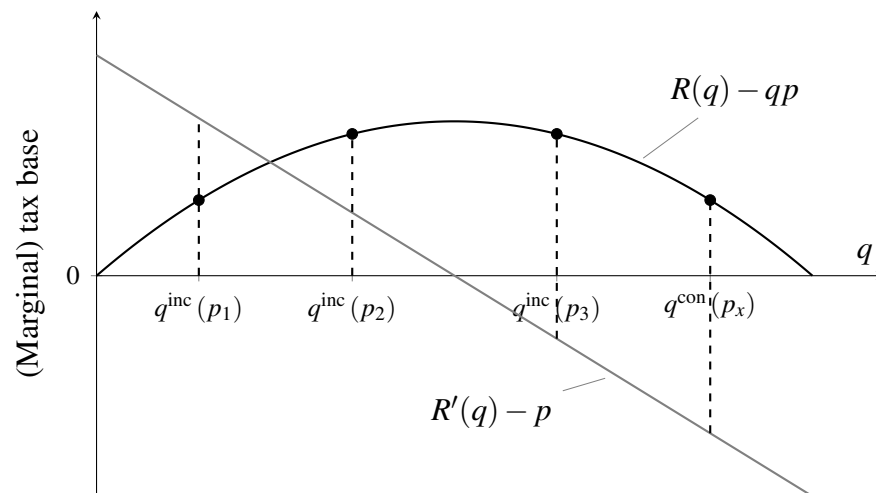
Note: Given p_1 and p_2, the domestic country may benefit from consistency; given p_3, the domestic country benefits from inconsistency. p_x indicates an an arbitrary arm's length price; under consistency, the marginal tax base is negative for all arm's length prices.

Table 1: Number of participants and demographics

Number of participants				45
Excluded (survey not completed)				22
Resulting sample				23
Years worked in transfer pricing	<5	5–10	10–15	>15
	1	3	7	12
Highest degree		Bachelor*	Master*	PhD*
		1	16	6

Note: The non-representative online survey ran from Dec. 10, 2020 to Jan. 20, 2021. The invitation was sent to tax transfer pricing experts working in German multinational companies.
*or equivalent

Table 2: Experience with inconsistent tax transfer prices.

	Very often	Often	Occasionally	Seldom	Never
Inconsistent tax transfer prices were ...					
... *reported*	4.3 %	.0 %	39.1 %	34.8 %	21.7 %
... *result of an audit*	30.4 %	56.5 %	13 %	.0 %	.0 %
Inconsistent tax transfer prices led to ...					
... *double taxation*	19.0 %	47.6 %	23.8 %	9.5 %	.0 %
... *undertaxation*	.0 %	4.8 %	9.5 %	23.8 %	61.9 %
If the sets of feasible domestic and foreign tax transfer prices intersect ...					
... *a single price is chosen*	43.5 %	21.7 %	26.1 %	4.3 %	4.3 %
... *different prices are chosen*	8.7 %	4.3 %	8.7 %	30.4 %	47.8 %
If the sets of feasible domestic and foreign tax transfer prices are disjunct ...					
... *a single price is chosen*	7.2 %	18.8 %	29.0 %	20.3 %	24.6 %
... *different prices are chosen*	4.3 %	8.7 %	17.4 %	26.1 %	43.5 %

Note: The table shows percentage shares of a total of 23 answers, with the exception of the question on the effects (double taxation, undertaxation), where we have a total of 21 answers. Regarding questions 3 and 4, participants were provided two examples. To simulate a situation with intersecting sets, the range of acceptable arm's length prices was 2–4 from a domestic perspective and 3–5 from a foreign perspective (possible answers: "4 in both countries"; "4 in Germany, 3 in the foreign country"). In the situation with disjunct sets, the range of acceptable arm's length prices was 2–4 from a domestic perspective and 6–8 from a foreign perspective (possible answers: "4 in both countries", "5 in both countries", "6 in both countries", "4 in Germany, 6 in the foreign country"). Participants were then asked to choose what price would be employed in the domestic and foreign country, respectively. Participants were not provided with tax rates and the direction of the transaction.

Table 3: Experience with mutual agreement procedures.

Always	Very often	Often	Occasionally	Seldom	Never
Double taxation was avoided by means of a mutual agreement procedure					
10.0 %	20.0 %	20.0 %	30.0 %	10.0 %	10.0 %

Note: The table shows percentage shares of a total of 20 answers.

Table 4: Perceived and expected development of double taxation.

	Strong increase	Increase	No significant change	Decrease	Strong decrease
	Assessment of the development over time of the problem of double taxation				
Past five years	35.0 %	60.0 %	5.0 %	.0 %	.0 %
Next five years	61.9 %	28.6 %	9.5 %	.0 %	.0 %

Note: The table shows percentage shares of a total of 20 answers (past five years) and 21 answers (next five years).

Table 5: Interviewees' quotes by topic

Question / topic	Topic-specific responses of six tax transfer pricing experts of major German multinational corporations, Big4 companies, or German Federal Central Tax Office
	MNCs / Tax Advisory Companies
Transfer pricing inconsistencies in tax filing	Well, the issue doesn't start in the documentation, but in the pricing. And that is simply a very difficult issue. There are already some large corporations . . . that say, for example, Brazil, there are simply unilateral regulations that prevent you from charging a license for certain things. . . . that is actually what many people do, [they] wait and see what will happen during the audit; but inconsistent pricing is dangerous in that you ultimately lose credibility in any other country.
Are there any country combinations for which you/taxpayers expect that the tax authorities will have different ideas about the level of transfer prices for a specific product or service when you/the taxpayer file your/their tax return?	The answer is that a number of taxpayers differentiate and set a different transfer price in anticipation of a discussion during the tax audit.
	In other words, we are applying different transfer prices for the same business model and are thus responding to the differences in the local tax audits.
	We have said that transfer pricing is not an exact science, we have a bandwidth and we have some space to move around within that bandwidth.
	It's actually always the BRICS countries, plus countries like Italy.
	Italy, Brazil are certainly such countries. China, too. Especially when it comes to something like licenses, for example.
	You have already mentioned Brazil. In fact, there is no other way, because there is no double taxation agreement and because of the very specific regulations there is no other way to handle it.
	Tax Administration
	Of course, they now have room to maneuver and they assess individual countries differently. I am firmly convinced of that.
	MNCs / Tax Advisory Companies
Transfer pricing inconsistencies after tax audit	But now you have to realize that there are a few countries that always prefer to pursue their own approach, they are the usual suspects, namely China and India when it comes to service billing. So, in India no one manages to push through their normal transfer pricing system with the normal markup. At least, I don't know of anyone who can do it. It's [the markup is] much higher than almost anywhere else.
For which country combinations have you/taxpayers experienced different transfer prices for a particular product or service as a result of an audit?	And what I'm also noticing at the moment, so besides countries, that are the usual suspects, Brazil, Argentina and co., is Russia strangely enough.
	In principle, this can happen in all country combinations. I've seen it happen in all country combinations, and it always depends very much on the facts of the case, and you can't put it down to a specific transaction; it's simply because transfer prices are not black or white, but gray, so to say.
	I think all country combinations are possible now. It's more a question of materiality, whether you then say you're going to take this a step further. So we see many issues in Eastern Europe, because the tax authorities there take a very formalistic approach.
	So that also has nothing to do with what is an OECD country or not. This is an issue for all tax authorities.
	Well, Brazil is a special case, they have different regulations anyway.

. . . you also have to see that of course the audit documents are sometimes different in the different countries.

MNCs / Tax Advisory Companies

Reason for inconsistencies *What was the reason for the difference?* • *Different interpretation of the same transfer pricing method (e. g., different markup for "cost plus"; due to different data basis, different interval widths, etc.)?* • *Application of different methods?* • *Stronger evaluation of the role of the market in the context of the location of value creation?* • *Other?*	Unfortunately it is not possible to trace it back to one thing. It starts when they develop an appetite, they poke around everywhere, then they want to see the function and risk profile a little differently and question that.
	. . . you practically have to choose between a rock and a hard place; then you have a problem in Italy if you include the three percent, because the Italians then say, listen, you know very well that we don't recognize that. ... If you then say, if you cave in on the advance payment, and Italy actually only charges two percent, then you have problems in Germany, because from the point of view of the German auditor, you are foregoing one percent royalty income from Italy for reasons of proximity, and you are doing that on purpose again. And this takes us back to this issue of criminal law, and the German auditor will always say that you have to proactively show this, you voluntarily include this one percent as income in your tax return, even though you didn't receive it.
	[Europe:] . . . this is rather about technical details, such as the database studies that are used, for example, to determine the profitability that third parties could determine or achieve. The Eastern European countries are very formalistic in this respect.

Tax Administration

So, if you look at transfer pricing documentation and specifically at the decisive points, namely functions and risks, you often only have pages of checkboxes where certain functions are listed and then you have three crosses, four crosses, five crosses. But the other company only has two crosses or one cross. This is sometimes handled differently and what is then lacking is really the facts on both sides. What are really the functions and risks that are performed by the two companies? And if I only see one side of things, that's often not enough.

And then, of course, there is always the tendency of every financial administration to pull in as much as possible into their own country. This means that we often do not have a solution to the double taxation cases and therefore have to carry out a mutual agreement procedure.

TRR 266 Accounting for Transparency

Contact:
Prof. Dr. Caren Sureth-Sloane
Paderborn University
Faculty of Business Administration and Economics
Department of Taxation, Accounting and Finance
Warburger Str. 100, 33098 Paderborn, Germany

trr266@mail.upb.de
www.accounting-for-transparency.de