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THE EFFECT OF TRANSFER PRICING REGULATIONS IN INTRA-INDUSTRY TRADE

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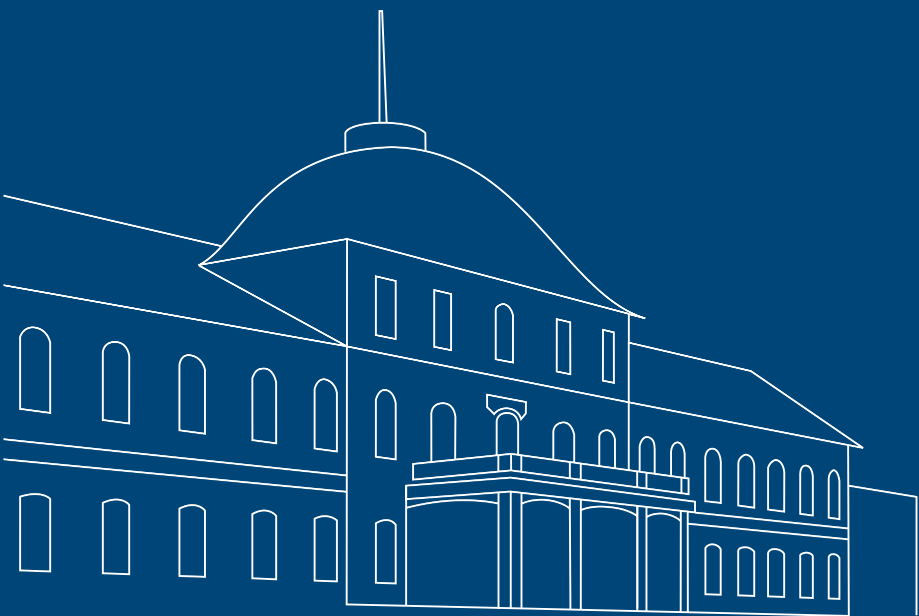

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The Effect of Transfer Pricing Regulations on Intra-Industry Trade *

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Abstract

We analyse the effect of transfer pricing regulations on trade flows. We base our estimation on a panel gravity model, where the transfer pricing regulations are modeled as trade costs. To abstract from any aggregate demand shocks, we focus on intermediate goods in the car industry. Our results suggest a significant volume effect on the exported quantity as a result of the introduction of transfer pricing laws in the exporting country. Exports to lower tax rate countries are reduced, whilst exports to higher tax rate countries are increased. In line with theory, transfer pricing regulations only play a role if a tax rate difference exists between the trading partners.

JEL Classification: F23, H25, H26

Keywords: Panel Gravity Model, Transfer Pricing Regulations, Intermediate Goods Trade, Corporate Tax

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1 Motivation

In October 2015, the OECD announced the Base Erosion and Profit Shifting (BEPS) action plan, which aims at taxing corporations at the location where production takes place and preventing MNEs to internationally shift profits. Multinational firms have several possibilities to shift profit to affiliates in low tax countries. One of the predominant tax planning strategies is the manipulation of intra-firm prices. Many countries have introduced transfer pricing regulations to keep corporate profits within their borders. Overall, these laws attempt to tie intra-firm prices to arm's-length equivalents. The empirical literature has shown that firms manipulate transfer prices for tax optimising purposes (Bartelsman and Beetsma, 2003; Huizinga and Laeven, 2008; Clausing, 2003; Cristea and Nguyen, 2013; Davies et al., 2015) and that they react sensitive to transfer pricing regulations (Lohse and Riedel, 2013). While the literature has provided evidence for the manipulation of intra-firm transfer prices exploiting the pricing mechanism, little is known about how trade volumes are affected.

The main objective of this paper is to analyse the quantity effects on trade flows that transfer pricing regulations might have. Under the premise that intra-firm prices did indeed deviate from their corresponding arm's-length prices, we assume that prices are adjusted towards the arm's-length price when transfer pricing regulations are introduced. Although this change in prices influences the profits and therefore the tax bases of firms in the respective countries, which on its own could lead to severe economic consequences, we argue that a change in trade volume could amplify this effect. In other words, only considering the pricing channel would lead to an underestimation of the effectiveness of transfer pricing regulations. In the extreme case, if an affiliate was only held for tax optimising purposes and intermediate goods were merely imported and reexported, reoptimisation by the multinational would lead to the abandonment of the affiliate in that country. An effect of transfer pricing regulations on traded quantities also hints at allocative inefficiencies that are induced by taxation.[1]

We base our estimation strategy on the workhorse model of international trade, the gravity model. First applied by Tinbergen in 1962, it shows that trade between two countries can be explained by their relative force of gravity, using GDP as the weight of the countries and distance between them as a negative correction. Baltagi et al. (2003) develop a panel data gravity model that we adopt here for the use of intermediate goods trade. Transfer pricing regulations enter the model as one form of trade costs. We estimate the model using UN COMTRADE data on bilateral exports of intermediate goods in the car industry for the period 1995 until 2012. The car industry is characterised by high specialisation and a low share of trade between unrelated third parties, thus

[1] The effect of taxation on intra-firm trade is documented in Egger and Seidel (2013).

providing ample opportunities to manipulate transfer prices. The approach taken in this paper allows us to analyse the effect at the level where the variation in regulations takes place. Because not all trade activities between countries can be attributed to profit shifting behaviour, it is important to keep in mind that we will not find results at the extensive margin of trade but rather at the intensive margin.

Our main findings are as follows: Under the assumption that transfer prices have been manipulated, the introduction of TPR reduce (increase) trade with countries that have a lower (higher) tax rate than the exporting country. The effect is driven by the size of the tax rate differential. In a back-of-the-envelope calculation utilising the value of trade, we can show that the pricing reaction in our data is in line with the literature and that the quantity effects found in our study amplify the reaction of firms to TPR, thus increasing the effectiveness of TPR from a host country perspective.

The rest of the paper is structured as follows: We first describe our data and derive our hypotheses, before explaining the estimation strategy. Section 5 presents and discusses the results. The final section concludes.

2 Data

The data used in this study comes from the UN COMTRADE database as harmonised by the CEPII in their BACI database. It provides bilateral trade data at a disaggregated, 6-digit HS goods classification level. We observe all intermediate goods, which enter the production for motorised vehicles weighing less than 3.5t.[2] Considering intermediate goods trade has an appealing advantage over trade in final goods: It allows us to abstract from demand shocks that are less pronounced compared to final goods. We focus on the car industry, which relies on highly specialised intermediate goods and is characterised by frequent trade between related parties. For example in 2012, the US exports to related parties accounted for 58.92% of all exports in that year in the car industry[3], which was second only to tobacco products (67.48%).[4] Therefore, the manipulation of transfer prices is relatively easier and we expect a significant reaction to transfer pricing regulations. The data were merged with information on corporate tax rates coming from Loretz (2008) as well as KPMG. Data on GDP and economic integration were taken from the World Bank and the EIA Database respectively.

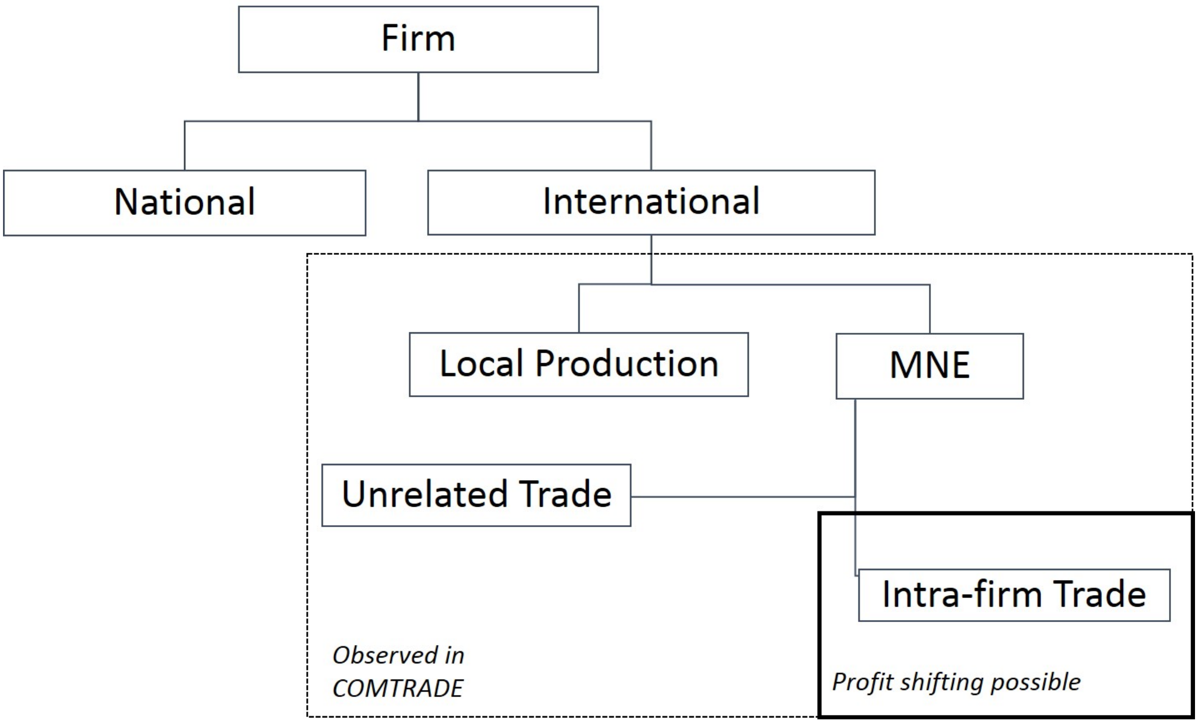
In order to interpret the effects measured on the country level, it is crucial to understand the type of data observed in the aggregated COMTRADE data. This is depicted in Figure 1. When a firm wants to sell its products, it has several possibilities regarding

[2] HS-codes ranging from 870600 to 870899.

[3] As measured by NAICS4 code: 3361 Motor vehicles

[4] Data taken from: `https://relatedparty.ftd.census.gov/`, last accessed 12.10.2017.

Figure 1: Overview of Trade Data



Notes: The figure shows the types of firms that are observable in the COMTRADE data. Due to the aggregation, we are not able to differentiate between the types of firms. The solid rectangle represents the type of firm that is targeted by TPR.

which markets to serve. The smallest option is to remain national and only serve the local market. As an example, think of your local bakery. These type of firms do not engage in international trade and are therefore not observed in our data. Given that the firm has made a decision to export, it faces two choices: produce local and sell abroad or produce and sell abroad. The former case is a firm that only has production within one country. These firms are observed in our data but are not able to utilise tax rate differences, because all profits accrue within a countries borders.[5] Once the firm decides to produce and sell abroad, it turns into an MNE. The MNE can either trade with unrelated third parties or intra-firm. Only the latter trade flow can be susceptible to transfer mis-pricing and could show a reaction to the introduction of TPR. Keeping this in mind, any reaction found in the data is a lower bound of the real reaction for the relevant subgroup (intra-firm trade of MNE), given that we also observe trade between unrelated parties that should not react to TPR.

We hand collected data on introduction of transfer pricing regulations from Deloitte (2015); Ernst&Young (2014); KPMG (2014) and PWC (2016). For some countries, the publications offer different years of enactment of transfer pricing regulations and we chose the most common. When several dates were offered in one publication, we chose the point in time where mandatory documentation requirements came into place. Table (1) shows the years in which the exporting countries in our sample introduced transfer pricing regulations.

We concentrate on data from 1995 until 2012, a period in which many countries introduced transfer pricing regulations, which gives us the variation for identification. We focus on the 14 most important exporting countries with the largest car industries as measured by production in 1995 and assess their trade with all other countries of the world. This gives us confidence that our model captures a great share of worldwide intermediate goods trade in the car industry.[6] The BACI data provides us with information on actual trade flows, but omits zero trade flows. For our analysis however, it is important to also account for trade flows that did not take place, as these could potentially be caused by the existence of transfer pricing regulations. Therefore we rectangularise our data set so that we have observations for each exporter-importer-year combination. All new observations are assigned a quantity and a value of zero, assuming that if we do not observe a trade flow, there was none. In an extension, we could explore the possibility of misreporting by the exporting country by analysing imports of the partner country,

[5]We are abstracting from within-country differences in corporate taxation that appear in a few federal countries like Germany, the US and Switzerland, where taxation rights lie with a lower than national authority.

[6]The 14 countries had a share in excess of 95% of total car production in 1995(`https://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_statistics/html/table_01_23.html_mfd`. Last accessed 18.06.2017).

Table 1: Transfer Pricing Regulations

Country	**TP Regulations**
Brazil	1997
Canada	1998
China	2008
France	1996
Germany	2003
India	2001
Italy	2010
Japan	1986
Mexico	1997
Russia	–
South Korea	1996
Spain	2006
United Kingdom	1999
United States	1994

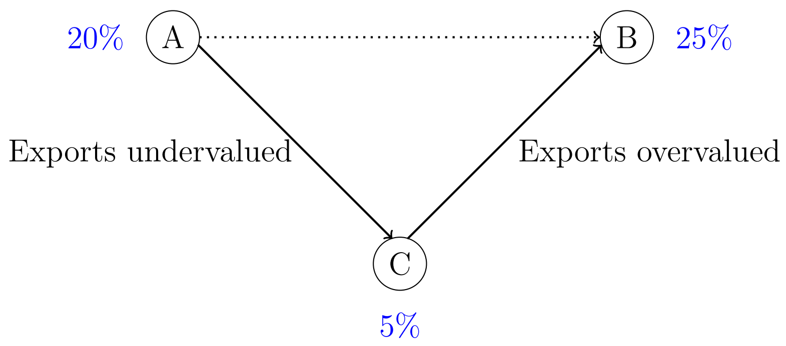
which we can use to verify our procedure. We are left with a total of 153 importing countries for which we have obtained all variables.

3 Hypotheses

To stress the quantity effect and why allocative distortions could exist, consider a representative MNE active in the three countries A, B and C. To produce the final good, only trade in intermediaries from A to B is required. In the absence of taxation or in the case that all countries set the same corporate tax rate, we would only observe trade from country A to country B, with country C playing no role. In the presence of tax rate differences, however, intermediate goods are exported from A to C and then from C to B for tax optimising purposes. The existence of more intra-firm trade in the presence of differences in the corporate tax rate is also shown theoretically in Egger and Seidel (2013). Figure 2 shows such a situation. In order to minimise the tax burden, the MNE would like profits to accrue in country C. This can be facilitated by undervaluing exports from A to C and overvaluing exports from C to B.

Now suppose country A introduces transfer pricing regulations. Because C has a lower tax rate, the exports from country A to country C are undervalued to minimise profits in A and maximise profits in C. The regulations will force companies in A to increase their prices, therefore again making the trade via C relatively more expensive. This is the

Figure 2: Three Country Model with Tax Rate Differences



situation that is analysed in the empirical application of this paper.[7] This simple illustration shows that no matter which country imposes transfer pricing regulations, there are incentives for firms to alter the volumes traded between countries, given sufficiently high trade costs.

A priori, we would expect MNEs to utilise tax rate differences and therefore export more to countries that have a lower tax rate than the home country. This would indicate that we should see a negative coefficient for the tax rate difference, when it is non-positive and a positive coefficient when the tax rate difference is positive. The introduction of transfer pricing regulations should bring the effects closer together and we expect this to be strongly driven by the size of the tax rate difference. This corresponds to a positive coefficient on the interaction of tax rate difference and transfer pricing regulations for non-positive tax rate differences and a negative effect for this interaction for importers with a lower tax rate than the exporting country.

4 Estimation Strategy

The gravity model of trade was first introduced by Tinbergen (1962). It applies Newton's law of gravity from physics to economics and explains trade between two countries as proportional to their economic size (GDP) and inversely proportional to the distance between the two countries. Although the gravity model in its simplest form is able to explain a substantial amount of trade already, several extensions to the base model exist, most notably the introduction of trade costs as a second deterring factor of trade and the inclusion of multilateral resistance terms (Anderson and Van Wincoop, 2003). In

[7]Transfer pricing regulations in B will require the company in B to pay an arm's-length price for the intermediate good imported from C. This will increase profits in B and decrease profits in C, which also lowers the attractiveness of exporting via country C. Country C benefits from the manipulation of transfer prices and therefore has no incentive to introduce TPR.

empirical applications, these are controlled for by adding country fixed effects to the estimation.

We analyse the relationship between transfer pricing regulations and trade flows using a gravity-type model of the following form:

$$X_{ijt} = \alpha l_{it}^{\lambda} m_{jt}^{\mu} t_{ijt}^{\beta}, \tag{1}$$

which follows Baltagi et al. (2014) and where X_{ijt} denotes the exports (quantity or value) from country i to country j at time t. Baltagi et al. (2014) define l_{it} and m_{jt} as exporter-time-specific and importer-time-specific factors respectively. t_{ijt} broadly reflects trade costs that can possibly vary across all dimensions and λ, μ andβ are measures for the partial elasticity of trade flows with respect to the respective parameters.

To estimate the model, we impose a logarithmic transformation on Equation (1) and follow Baltagi et al. (2014) in defining the following set-up for our estimation equation:

$$ln(X_{ijt}) = \alpha + \mathbf{t'_{ijt}}\beta + \lambda l_{it} + \mu m_{jt} + u_{ij} + \delta_t + \varepsilon_{ijt}, \tag{2}$$

where u_{ij} are country-pair fixed effects, δ_t represent time fixed effects and ε_{ijt} is an error term. To avoid endogeneity problems, it is important that the equation consists of some components that are exporter-time-specific and importer-time-specific, i.e. l_{it} and m_{jt} from Equation (1) respectively. Baltagi et al. (2003) propose a generalised model that accounts for this endogeneity by adding exporter-time and importer-time fixed effects instead of the simple year fixed effects in Equation (2). A drawback from this approach, however, is that it does not allow to separately identify the effect of time-invariant variables. In our application, the variable of interest - transfer pricing regulations - varies at the exporter-year or importer-year level, that is it would drop from the estimation due to collinearity. We account for exporter-time-specific and importer-time-specific factors by including control variables that are either independent of the i dimension, representing importer-year-specific factors, or the j dimension, representing exporter-year-specific factors. Furthermore, trade costs are represented by the tax rates and a transfer pricing regulation dummy, as well as an interaction term between the two. Our estimation equation thus takes on the following form:

$$\begin{aligned} ln(X_{ijt}) =& \alpha + \beta_1 \ln \tau_{it} + \beta_2 \ln \tau_{jt} + \beta_3 TPR_{it} + \beta_4 \ln \tau_{it} \cdot TPR_{it} + \\ & EIA_{ijt} + \lambda \ln GDP_{it} + \mu \ln GDP_{jt} + u_{ij} + \delta_t + \varepsilon_{ijt}, \end{aligned} \tag{3}$$

where τ_{it} and τ_{jt} represent the statutory corporate tax rates in country i and j at time t, respectively, TPR_{it} is a dummy indicating whether transfer pricing regulations were in place in the exporting country at time t and EIA_{ijt} controls for the strength of economic integration between i and j through a set of dummies. GDP_{it} and GDP_{jt} are GDP in the exporting and importing country at time t.[8]

A regression of Equation (3) using the full sample could be problematic, because the incentives to shift profits (and possibly quantities) differ depending on the sign of the tax rate difference between two trading partners. If a positive tax rate difference exists, firms in country i will have an incentive to shift profits to country j by manipulating the transfer price downwards, whilst in the case that a negative tax rate difference exists, the transfer prices should be manipulated upwards. Looking at both cases together could cancel out any effects of transfer pricing regulations, as we expect opposite reactions depending on the sign of the tax rate difference. We therefore split the sample into cases where $\tau_i > \tau_j$ (positive tax difference) and cases where $\tau_i < \tau_j$ (negative tax difference) and explicitly exclude the case where the tax rates are equal, as profit shifting opportunities only arise, when a tax rate difference can be utilised.

When analysing worldwide trade, the number of country pair fixed effects to be estimated increases rapidly. Also, log-linearisation of the model that is common in the literature could lead to biased estimates, for example through the mishandling of zero trade flows. Silva and Tenreyro (2006) propose a Poisson Pseudo Maximum Likelihood (PPML) estimator that incorporates the multilateral resistance terms and circumvents the problems arising from log-linearising the model. The results suggest some fundamental differences with parameters estimated using the traditional fixed effects method on log-linearised data. For example, the effect of GDP is not close to one but significantly lower and the effect of geographical distance as well as colonial ties are greatly exaggerated in the classical log-linearised model. We will therefore report results of estimating a traditional fixed effects log-linear gravity model as well as a PPML model and discuss potential differences between the models.

5 Results

5.1 Effect on Quantities

The baseline results of estimating Equation (3) are shown in Table 2. The observational unit is a bilateral trade flow from exporting country i to importing country j. In total, we observe $N = 26,419$ such pairs. In the first two columns, we regress the logarithm of quantity only on the logarithm of the tax rates in i and j as well as the control variables.[9]

[8] We do not include distance or other time-invariant country pair characteristics that are familiar from earlier gravity models, because they are collinear to the country pair fixed effect u_ij.

[9] Throughout all estimations in this section, the coefficients for $\ln GDP_{i/j}$ are positive and significant, as suggested by economic theory. We cannot report estimates for other common control variables in the trade literature such as distance, common language or contiguity, because they are captured

Column (1) shows the results for all country pairs, where the exporting country i has a higher tax rate than the importing country j. The positive and significant coefficient on the own tax rate indicates on the one hand that countries with higher tax rates tend to export more and on the other hand also shows that ceteris paribus i.e. for a given tax rate of the importing country, an increase in the exporting country's tax rate leads to more trade. From an economic point of view, this is a plausible result, because as we are looking at the sample where $\tau_i > \tau_j$, any increase in τ_i will ultimately increase the tax difference and therefore the incentive to shift profits. The reverse is true for the case where we have a negative tax difference ($\tau_i < \tau_j$) and this can be seen in column (2) with the positive coefficient for τ_j. The cross tax rates are both negative, which further enhances the effect of the tax rate difference, but both coefficients are statistically not distinguishable from zero, thus suggesting that trade flows depend more on the country with the higher tax rate. The results furthermore show that trade flows differ in a world where taxation exists from trade flows in a world without (distortive) taxation.

In columns (3) and (4), we introduce a dummy indicating whether TPR were in place in country i at time t. In case of a positive tax rate difference, transfer pricing regulations lead to a slight increase in trade. This seems puzzling at first, because we would have assumed that more quantity was traded than optimally required, prior to the introduction of TPR and therefore, a reduction of the traded quantities should be expected. However, the reduction should take place especially with countries that have a substantially lower tax rate than the exporting country and as trade with the very low tax rate importing countries declines, trade with the importing countries that are close to the exporting country in terms of the tax rate could increase. This suggests that the effect is possibly driven by the tax rate and therefore in columns (5) and (6), we interact the TPR dummy with the tax rate of the exporting country (5) and importing country (6) respectively.

by the country-pair fixed effects.

Table 2: The Effect of Transfer Pricing Regulations on Quantity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$\tau_i > \tau_j$	$\tau_i < \tau_j$	$\tau_i > \tau_j$	$\tau_i < \tau_j$	$\tau_i > \tau_j$	$\tau_i < \tau_j$	$\tau_i > \tau_j$	$\tau_i < \tau_j$
Dependent Variable:				*Log of Exports*				*Exports*
τ_i	1.472***	-0.618	1.770***	-0.644	3.357***	-0.750	0.449	2.146
	(0.538)	(1.836)	(0.543)	(1.825)	(0.604)	(1.809)	(0.461)	(1.305)
τ_j	-0.365	3.215**	-0.380	3.190**	-0.289	4.461**	-0.002	1.058
	(0.478)	(1.323)	(0.474)	(1.313)	(0.459)	(1.751)	(0.477)	(1.494)
TPR_i			0.154***	0.062	2.545***	0.871	1.198***	-0.073
			(0.045)	(0.085)	(0.309)	(0.604)	(0.288)	(0.547)
$\tau_i \cdot TPR_i$					-7.984***		-3.334***	
					(1.009)		(0.841)	
$\tau_j \cdot TPR_i$						-2.583		-0.008
						(1.826)		(1.223)
N	19,300	7,119	19,300	7,119	19,300	7,119	18,827	6,670
R^2	0.227	0.123	0.228	0.124	0.237	0.124	–	–
$F - Test$	–	–	–	–	0.000	0.035	0.000	0.339

Notes: Columns (1)-(6): Fixed effects regressions of Equation (3). τ_i and τ_j are in logarithms, also in the interaction term. Columns (7) and (8): PPML estimation. Cluster-Robust standard errors on the country-pair level are in parentheses. All estimations include the logarithm of GDP for both countries, a set of dummies controlling for economic integration and year fixed effects as control variables. Coefficients are omitted for brevity. F-Test shows the p-value for a test of joint significance of the tax rate and the interaction term. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The reaction is indeed driven by the tax rate, as indicated by the statistically significant negative coefficient on the interaction variable in column (5). Moreover, we find that the positive effect of the tax rate on exported quantities found in columns (1) and (3) was biased downward by country-pairs affected by TPR. An increases in τ_i of one percent leads to an increase in exported quantities of 3.36 percent when no TPR are in place. Likewise, when TPR are in place, an increase of one percent in τ_i leads to a decrease in traded quantities of 4.63 percent. When $\tau_i < \tau_j$ though, TPR in country i do not seem to affect traded quantities as shown in column (4). The interaction effect with the tax rate of the importing country shows a slight decrease in the quantities traded when TPR are in place: An increase in the profit shifting incentive of one percent is associated with an increase in traded quantities of 1.88 percent as opposed to 4.46 percent without TPR, but in contrast to the case where $\tau_i > \tau_j$, the effect remains positive. A test for joint significance reveals that τ_j and the interaction term are jointly significant at the five percent level. To account for the bilateral trade flows over time, we have relied on clustering the data at the country-pair level. However, as the variation in our treatment dummy comes from the exporting country side only, we ideally would like to use cluster-robust standard errors at the exporting country level. Due to the small number of exporting countries in our sample, standard clustering techniques are not suited and we employ randomisation inference in the spirit of Fisher (1935) to calculate valid p-values. The idea behind this inference technique is based on standard permutation methods: by reassigning treatment randomly across clusters many times, one gets a self-made distribution under the null hypothesis of no effect.[10] This distribution is then used to calculate p-values. Note that in our study, it is the *sequence* of the treatment dummy that has to be resampled and not the treatment dummy alone to avoid unrealistic transfer pricing histories where countries randomly seem to switch transfer pricing regulations on and off.

Using the specifications from columns (5) and (6) of Table 2, we ran 10,000 replications to construct a valid distribution of the t-values. From the results, we cannot identify a robust effect for importing countries that exhibit a higher tax rate than the exporting country, with the p-value for the interaction between the tax rate and the transfer pricing regulations being 0.602. But for the opposite case, we find a highly statistically significant ($p = 0.005$) reduction of the traded quantities from the exporting countries to countries with a lower tax rate once transfer pricing regulations are in place.

The estimations in columns (1) to (6) of Table 2 were conducted on log-linearised data and as pointed out by Silva and Tenreyro (2006), due to Jensens inequality, estimates could be severely biased as additional heterogeneity is introduced into the data that not only affects the variance but also biases the point estimate. Therefore, we follow the

[10]For a detailed description see Barrios et al. (2012); Ho and Imai (2006).

recent advances in the literature and estimate the gravity model in its multiplicative form, utilising the PPML estimator proposed by Silva and Tenreyro (2006). The results from this exercise are presented in columns (7) and (8). The result from the column (5) is confirmed that τ_i has a negative effect once TPR are in place, indicating that less trade commences when the tax rate difference increases. The effect is smaller in size, -2.89 percent compared to the -4.63 percent from column (5) for a one percent increase in τ_i, but still statistically and economically significant. The difference in coefficient size is a common finding when comparing results from log-linearised models to models estimated by PPML and has been at the heart of the critique by Silva and Tenreyro (2006). Column (8) indicates no effect of TPR on quantities for cases where $\tau_i < \tau_j$. This somewhat contrasts the earlier findings and lets us conclude that the significantly smaller sample size for this relationship affects the OLS estimate. This finding is in line with Egger and Seidel (2013), who also struggle to find significant results for trade with countries that exhibit a higher tax rate than the US, due to the significantly smaller sample size. In summary, the PPML results confirm the qualitative results from the log-linearised model, namely the importance of TPR as an anti-avoidance measure when $\tau_i > \tau_j$, whilst the expected effect for the reverse case cannot be identified from the data. The coefficients are smaller in size, which is in line with the findings of previous authors regarding differences between log-linearised models estimated via OLS and multiplicative models estimated via PPML.

5.2 Effect on Value

The COMTRADE data also include the value of an export. Value is defined as the product of price and quantity and therefore, the results should show a mixture of the price and the quantity reaction to the introduction of TPR. Given the way previous studies have identified the pricing reaction (Clausing, 2003; Lohse and Riedel, 2013), we would expect to see a decrease in the magnitude of the effect for value when compared to the quantity reaction alone. This is because the pricing and quantity reaction should have opposite signs: Following the introduction of TPR, prices should be reduced (increased) and quantities increased (reduced) when exports were overvalued (undervalued), Table 3 shows a replication of the quantity regressions from Table 2. The negative influence of TPR is also visible in column (3) where $\tau_i > \tau_j$, but no value reaction can be inferred for the opposite case. As expected from theory, the reduction in value (2.18%) is smaller than the reduction in quantities (4.63%) following a one percentage point increase in the tax difference.

Because of the differences found between OLS estimates and PPML estimates in Table 2, we proceed to re-estimate columns (3) and (4) using PPML. The results in columns

Table 3: The Effect of Transfer Pricing Regulations on Value

	(1)	(2)	(3)	(4)	(5)	(6)
	$\tau_i > \tau_j$	$\tau_i < \tau_j$	$\tau_i > \tau_j$	$\tau_i < \tau_j$	$\tau_i > \tau_j$	$\tau_i < \tau_j$
Dependent Variable:	*Log of Exports*				*Exports*	
τ_i	2.683***	2.008	4.402***	1.903	-0.138	0.278
	(0.577)	(1.969)	(0.657)	(1.947)	(0.372)	(1.218)
τ_j	-1.580***	2.626*	-1.526***	3.515**	-0.452	-1.066
	(0.561)	(1.384)	(0.545)	(1.773)	(0.467)	(1.055)
TPR_i			2.182***	0.650	0.505**	-0.924**
			(0.332)	(0.631)	(0.242)	(0.361)
$\tau_i \cdot TPR_i$			-6.584***		-1.370**	
			(1.082)		(0.689)	
$\tau_j \cdot TPR_i$				-1.859		1.863**
				(1.940)		(0.838)
N	19,300	7,119	19,300	7,119	18,827	6,670
R^2	0.309	0.145	0.316	0.145	–	–
$F - Test$	–	–	0.000	0.131	0.052	0.063

Notes: Columns (1)-(4): Fixed effects regressions of Equation (3) using the logarithm of value instead of quantity as the dependent variable. τ_i and τ_j are in logarithms, also in the interaction term. Columns (5) and (6): PPML estimation. Cluster-Robust standard errors on the country-pair level are in parentheses. All estimations include the logarithm of GDP for both countries, a set of dummies controlling for economic integration and year fixed effects as control variables. Coefficients are omitted for brevity. F-Test shows the p-value for a test of joint significance of the tax rate and the interaction term. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Price Reaction to TPR

	PPML		OLS	
	$\tau_i > \tau_j$	$\tau_i < \tau_j$	$\tau_i > \tau_j$	$\tau_i < \tau_j$
Quantity Reaction	-2.885	1.050	-4.627	1.878
Value Reaction	-1.508	0.797	-2.182	1.656
p_{crit}	0.52	0.76	0.47	0.88
Price Reaction	> 0	< 0	> 0	< 0

Notes: The table shows estimated signs of the price reaction to the introduction of TPR. The price reaction is conditional on the price being larger than p_{crit}.

(5) and (6) differ in size from their OLS counterparts, complementing the findings in the quantity regressions. Most notably is the joint significance of the tax rate and TPR in cases where $\tau_i < \tau_j$. Column (6) shows a significant positive effect of the tax rate difference on the value of exports that are attributable to the introduction of TPR. This indicates that the pricing reaction is stronger than the quantity reaction that was not statistically different from zero in column (8) of Table 2.

5.3 Effect on Prices

Having estimated the effects of TPR on the quantity and value of exports, we would like to validate that the pricing effect, which is implicitly in the value effect, has the expected sign. The pricing effect is expected to be positive (negative) when $\tau_i > \tau_j$ ($\tau_i < \tau_j$). The magnitude of the value effects is smaller in absolute terms than the quantity effects in both settings. Table 4 shows the estimated effects that a tax rate increase has, given that TPR are in place. The coefficients for the PPML columns are taken from columns (7) and (8) of Table 2 (Quantity) and columns (5) and (6) of Table 3 (Value) respectively. The OLS results are taken from columns (5) and (6) of Table 2 (Quantity) and columns (3) and (4) of Table 3.[11] The difference between the quantity and the value effect is driven by the pricing reaction to taxation. Because

$$v(\tau) = p(\tau) \cdot q(\tau), \tag{4}$$

[11] We focus on the discussion of the PPML results, although the results for OLS are similar and the arguments brought forward apply idem dito.

we can decompose the effect of an increase in τ[12] on $v(\tau)$ by the total differential to obtain:

$$dv(\tau) = \frac{\partial v}{\partial p}\frac{\partial p}{\partial \tau} + \frac{\partial v}{\partial q}\frac{\partial q}{\partial \tau}. \tag{5}$$

The partial derivatives of the value with respect to price and quantity are just $q(\tau)$ and $p(\tau)$ respectively and both strictly non-negative. Implicitly, we abstract from cross elasticities of prices and quantities, which should play a smaller role in intermediate goods trade than in trade in final goods. Additionally, we can justify this by the large share of intra-firm trade in intermediate goods trade, which amassed to around 45% for the US in 2013.[13] The reaction of the quantity to an increase in τ, measured by $\frac{\partial q}{\partial \tau}$ in Equation (5), is known from the quantity regressions and displayed in the row *Quantity* in Table 4. Likewise, the total reaction of the value is also known and displayed in the row $Value$ of the table. Taking all information together, we can show that the pricing effect in the case of $\tau_i > \tau_j$ is given by

$$\frac{\partial p}{\partial \tau_i} = \frac{2.885p - 1.508}{q} \tag{6}$$

and for the opposite case by

$$\frac{\partial p}{\partial \tau_j} = \frac{0.797 - 1.05p}{q}. \tag{7}$$

As soon as p surpasses its critical value of $p_{crit} = 0.52$ in Equation (6) or $p_{crit} = 0.76$ in Equation (7), we can unambiguously derive the sign of the pricing reaction. In the former case, $\frac{\partial p}{\partial \tau_i}$ is positive, indicating that prices are corrected upwards when τ_i increases, following the introduction of TPR. This is in line with the ex ante manipulation of prices and the undervaluation of exports in cases where the tax rate of the partner country is lower than the tax rate of the exporting country. In the latter case, $\frac{\partial p}{\partial \tau_j}$ is negative, which hints at an overvaluation of exports prior to the introduction of TPR. Back-of-the-envelope calculations of the average prices in our sample (we simply assume $p = v/q$) indicate that only around 0.4% of all prices are below the critical value when $\tau_i > \tau_j$ and 3.9% in the opposite case. In other words, for nearly all observed trade flows, we find that TPR must have the expected effect on pricing behaviour, namely price increases when exports are undervalued and price decreases when exports are overvalued.

[12] Subscripts i and j have, without loss of generality, been dropped for brevity. When $\tau_i > \tau_j$, the exposition refers to τ_i and in the opposite case to τ_j.

[13] Own calculation on the basis of data from BEA (intra-firm trade in manufacturing) and WITS (total trade in intermediate goods).

5.4 Discussion

The results presented here indicate a substantial response in traded quantities following the introduction of TPR. They show the presence of allocative inefficiencies through exploitation of tax rate differentials by MNEs. Our results are consistent with the hypothesis that TPR help to partly correct these misallocations, as we find a reduction in traded quantities with countries that have a lower tax rate than the exporting country. This suggests that part of the trade in intermediate goods between two countries was purely driven by tax considerations. Following the introduction of TPR, this channel became unprofitable and we observe relatively more trade with countries that exhibit a higher tax rate than the exporting country. Egger and Seidel (2013) report a 7% increase in intra-firm trade as a reaction to a one percentage point increase in the tax gap between the US and the average host country in their reduced form estimation. The fact that we find a smaller decrease (2.89%) as a reaction to the introduction of TPR suggests that TPR fail to fully combat the distortive effects that taxation has on traded quantities.

Our findings confirm the results from earlier studies on the misuse of transfer prices on the firm level: Clausing (2003) reports significant distortions of prices and Davies et al. (2015) find low internal prices for low tax trading partners, especially very low tax trading partners such as tax havens. We add to this by showing that quantities were distorted as well, amplifying the effect of TPR. Whilst the manipulation of transfer prices is de facto a manipulation of bookkeeping, manipulation of quantities can have real economic consequences such as labour market responses and any regulatory changes should therefore carefully consider the reaction in quantities.

In line with Lohse and Riedel (2013) and Beer and Loeprick (2015), we can identify that TPR have a dampening effect on profit shifting behaviour, which is also visible in traded quantities. Thus, we are able to show that following the introduction of TPR, quantities exported to lower tax countries are reduced. This could in turn lead to negative real responses in the respective low tax countries, at least from a global welfare perspective.

Next to analysing the effect of TPR on quantities in a log-linearised model, we also showed results from estimations of a multiplicative model via PPML. As advocated by Silva and Tenreyro (2006), OLS estimates of the log-linearised model could be severely biased and although we found significant quantitative differences in the estimated coefficients arising from this, the qualitative results remain the same. This is in line with several previous studies from the international trade literature that compared OLS and PPML results, such as Baltagi et al. (2014), Gómez-Herrera (2013) and Silva and Tenreyro (2011).

Utilising the value of exports, we were able to identify the sign of the pricing reaction. In cases where there was an incentive to undervalue exports in order to minimise profits accrued in the exporting country, we find a positive pricing reaction following the introduction of TPR. Likewise, when an incentive existed to overvalue exports, because the exporting nation was the country with the lowest tax rate, TPR seem to correct prices downward. Both results resemble the findings of earlier studies, for example Lohse and Riedel (2013), Zinn et al. (2014) or Cristea and Nguyen (2013).

6 Conclusion

We analyse the effect of transfer pricing regulations on international trade flows in intermediate goods. We exploit bilateral trade data for the automobile industry from the BACI database for the years 1995 to 2012, as well as information on the introduction of transfer pricing regulations. We find evidence that is in line with the ex ante manipulation of transfer prices for tax optimising reasons. This reduces trade quantities for importing countries with higher tax rates than the exporting country and significantly increases trade quantities with countries that exhibit lower tax rates. The effects are strongly driven by the tax rate difference, which is as expected given that the tax rate difference represents the incentive to manipulate transfer prices for profit shifting purposes.

A potential shortcoming of our study is the focus on one industry. The automotive industry is characterised by highly specialised products that are seldomly traded with unrelated third parties, thus providing ample opportunities for the manipulation of transfer prices. We would thus expect the effectiveness of TPR to decrease or even vanish when looking at less specialised or more open sectors. Especially when looking at intermediate goods trade as a whole, the positive effects of TPR on the reduction of transfer mispricing in cases where the opportunities are manifold could be confounded by the insignificance of TPR for other sectors of the economy.[14] Given the significant economic burden on companies and the tax administration, social desirability of TPR depends on the extent of sectors present in an economy that have the opportunity to excessively manipulate transfer prices. Our study adds to the discussion on the effectiveness of TPR that the allocative distortions through quantity reactions need to be considered on top of the pricing reactions.

[14] This is confirmed in a specification that includes all industries. Here, no significant effect of TPR on traded quantities can be found. Results are available from the author upon request.

References

Anderson, J. E. and E. Van Wincoop (2003): "Gravity with gravitas: a solution to the border puzzle," *The American Economic Review*, 93, 170–192.

Baltagi, B. H., P. Egger, and M. Pfaffermayr (2003): "A generalized design for bilateral trade flow models," *Economics Letters*, 80, 391–397.

——— (2014): "Panel data gravity models of international trade," *CESifo Working Paper Series No. 4616*.

Barrios, T., R. Diamond, G. W. Imbens, and M. Kolesár (2012): "Clustering, spatial correlations, and randomization inference," *Journal of the American Statistical Association*, 107, 578–591.

Bartelsman, E. J. and R. M. Beetsma (2003): "Why pay more? Corporate tax avoidance through transfer pricing in OECD countries," *Journal of Public Economics*, 87, 2225–2252.

Beer, S. and J. Loeprick (2015): "Profit shifting: drivers of transfer (mis) pricing and the potential of countermeasures," *International Tax and Public Finance*, 22, 426–451.

Clausing, K. A. (2003): "Tax-motivated transfer pricing and US intrafirm trade prices," *Journal of Public Economics*, 87, 2207–2223.

Cristea, A. D. and D. X. Nguyen (2013): "Transfer Pricing by Multinational Firms: New Evidence from Foreign Firm Ownerships," *mimeo*.

Davies, R. B., J. Martin, M. Parenti, and F. Toubal (2015): "Knocking on Tax Haven's Door: Multinational Firms and Transfer Pricing," *CBT Working Papers WP 15/01*.

Deloitte (2015): "Global Transfer Pricing Country Guide," Tech. rep.

Egger, P. and T. Seidel (2013): "Corporate taxes and intra-firm trade," *European Economic Review*, 63, 225–242.

Ernst&Young (2014): "Worldwide Transfer Pricing Reference Guide," Tech. rep.

Fisher, R. A. (1935): "The design of experiments," *Oliver and Boyd, Edinburgh.*

Gómez-Herrera, E. (2013): "Comparing alternative methods to estimate gravity models of bilateral trade," *Empirical Economics*, 44, 1087–1111.

Ho, D. E. and K. Imai (2006): "Randomization inference with natural experiments: An analysis of ballot effects in the 2003 California recall election," *Journal of the American Statistical Association*, 101, 888–900.

Huizinga, H. and L. Laeven (2008): "International profit shifting within multinationals: A multi-country perspective," *Journal of Public Economics*, 92, 1164–1182.

KPMG (2014): "Global Transfer Pricing Review," Tech. rep.

Lohse, T. and N. Riedel (2013): "Do transfer pricing laws limit international income shifting? Evidence from European multinationals," Tech. rep., Oxford University Centre for Business Taxation.

Loretz, S. (2008): "Corporate taxation in the OECD in a wider context," *Oxford Review of Economic Policy*, 24, 639–660.

PWC (2016): "International Transfer Pricing Guide," Tech. rep.

Silva, J. S. and S. Tenreyro (2006): "The log of gravity," *The Review of Economics and statistics*, 88, 641–658.

——— (2011): "Further simulation evidence on the performance of the Poisson pseudo-maximum likelihood estimator," *Economics Letters*, 112, 220–222.

Tinbergen, J. (1962): *Shaping the world economy; suggestions for an international economic policy*, Twentieth Century Fund, New York.

Zinn, T., N. Riedel, and C. Spengel (2014): "The Increasing Importance of Transfer Pricing Regulations: A Worldwide Overview," *Intertax*, 42, 352–404.

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