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Transfer pricing under an origin based VAT system

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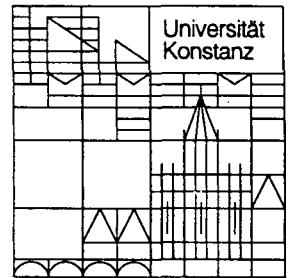
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Sonderforschungsbereich 178
„Internationalisierung der Wirtschaft“

Diskussionsbeiträge

Juristische
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Fakultät für Wirtschafts-
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Transfer Pricing
under an Origin-based VAT System

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Transfer Pricing under an Origin-based VAT System

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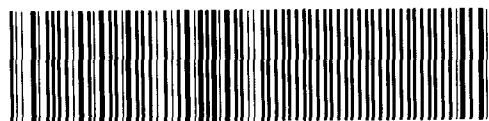
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Abstract

This paper analyzes transfer pricing incentives under a destination-based and an origin-based VAT system. While a switch to the origin-based VAT may moderate or reinforce the incentive for transfer pricing induced by income tax differentials, we show that in the case of the EU this switch tends to reduce the transfer pricing incentive and thus should remove one of the last major objections against the adoption of an origin-based VAT system in the EU.

JEL classification: H21, H26, H87, F15

Keywords: International taxation, transfer pricing, value-added taxation

1 Introduction

The equivalence between a purely destination-based and a purely origin-based value-added tax is well known (Tinbergen-Report 1951, Lockwood/deMeza/Miles 1994). Since the abolition of border controls within the European Union does no longer allow for operating a pure destination-based VAT system due to cross-border shopping the European Commission has proposed a mixed system: registered traders are taxed according to the destination principle while consumers and non-registered traders are subject to origin taxation. Because this system is clearly distorting, a switch to an origin-based VAT has been suggested (Shibata 1967, Siebert 1990).

There exist, however, a series of arguments that have been raised against an origin-based VAT in the European Union. Firstly, the equivalence result requires that VAT systems rely on a single rate (like Denmark) and price level adjustments are able to neutralize any change in national VAT rates as well as the switch from a destination- to an origin-based system. Secondly, the equivalence property ceases to hold in a global environment, when the switch to the origin system is constrained to a subset of countries (e.g., the EU), whereas trade with the rest of the world is still based on the destination regime (cf. Whalley 1979, Berglas 1981). Thirdly, the neutrality property of an origin-based tax may not hold in a world with factor mobility (cf. Krause-Junk 1992: 143 ff). Fourthly, the origin principle, whether restricted or global, is regarded as undesirable since it offers an incentive for transfer pricing by shifting shares of the VAT base to countries with lower tax rates (cf. Cnossen/Shoup 1987).

While there is some grain of truth in all these objections, they nevertheless should not be used to reject the origin principle without further qualification. It has been shown that origin-based VAT regimes exist which do not suffer from the non-equivalence property. Internationally harmonized VAT rate ratios between the reduced and the regular VAT rate ensure that equivalence property holds for multiple-rate VAT systems as well (Fратиanni/Christie 1981). An efficient choice of the common external border tax rate can reduce the price adjustment requirement with respect to the rest of the world following a unilateral switch from the destination-based VAT to an origin-based VAT (Genser 1995). The non-reciprocal restricted origin principle (Lockwood/deMeza/Miles 1994) or the restricted origin principle with common external border tax adjustment (Shibata 1967, Genser 1994) allow for a coexistence of destination- and origin-based elements in a mixed VAT

system and extend the scope of equivalent tax regimes. Genser/Haufler/Sørensen (1995), among others, have shown that the neutrality property of the origin-based system carries over to the case of capital mobility.

In this paper we address the fourth objection, the transfer pricing incentive, which emphasizes the shift in the international distribution of VAT revenue to the advantage of low VAT countries. We argue that the transfer pricing issue can only be tackled within a framework which includes VAT and income taxes and show that there is empirical evidence that the superposition of income and VAT rate arbitrage tends to reduce the incentive for transfer pricing within the EU.

The paper is organized as follows: In sect. 2 we show that income tax differentials imply transfer pricing incentives, which are not affected by a pure destination-based VAT system. In sect. 3 we introduce an origin-based VAT regime and show that the transfer pricing incentive can be reduced or increased if income and VAT arbitrage interact. In sect. 4 we present empirical figures for the EU-countries to illustrate that a switch to an origin-based VAT system in the internal market tends to reduce rather than increase the incentive for transfer pricing. In sect. 5 we conclude that the VAT arbitrage argument by transfer pricing should not be regarded as a serious argument against the introduction of an origin-based VAT system in Europe.

2 Transfer Pricing under the Destination Principle

In this section we characterize the incentive for transfer pricing in a destination-based VAT system. The results derived in this section serve as a point of reference for the analysis of the VAT under the origin principle. They mirror the standard transfer pricing results [e.g. Horst (1971), Bond (1980), and the contributions in Rugman & Eden (1985)], therefore the exposition is limited to the necessary minimum.

We consider a multinational firm (MNF) operating in an economic union which consists of two countries A and B . The firm's objective is to maximize joint after-tax profits Π , regardless in which country they are reported. Both countries tax profits at a uniform rate τ^A and τ^B , respectively, and they levy a destination-based VAT at the rates t^A and t^B . Since we focus on the different incentives for transfer pricing under various taxation principles, and not on the real effects of transfer pricing (like in Horst 1971), we assume that the MNF operates in perfectly competitive markets and takes the net-of-tax commodity price p_X as given. The

parent company produces the final output X in country A under constant unit costs for domestic primary inputs (k_X) and by means of an intermediate input I which is imported from its subsidiary in B at a transfer price p_I . The subsidiary produces only the intermediate input good.¹ Both firms are subject to income taxation on the basis of their tax returns to the tax authorities in A and B . Since we analyze transfer pricing within an economic union national tax authorities are assumed to cooperate such that the parent company and its subsidiary must declare the *same* transfer price in their income tax returns.

Under the destination principle, exports of the intermediate good are fully exempted from the value-added tax in the country of origin B ; they are taxed in the country of destination A at the rate t^A .² The final good is sold at $(1 + t^A)p_X$ to the consumer in A , of which the parent company pays $t^A p_X$ to the treasury in A .³ The MNF's total VAT tax bill T amounts to

$$T = t^A(p_X X - p_I I) + t^A p_I I = t^A p_X X \quad (1)$$

VAT liabilities are calculated only on the basis of the final good's market price, whatever the transfer price p_I for the intermediate input is. A destination-based VAT does not create any incentive for transfer pricing to save VAT. There exists, however, an incentive for transfer pricing as long as the income tax rates are different.

After-tax profit of the parent company, Π^A , is given by

$$\Pi^A = [p_X X - k_X X - p_I I] (1 - \tau^A); \quad (2)$$

the subsidiary's after-tax profit amounts to

$$\Pi^B = (p_I - k_I) I (1 - \tau^B). \quad (3)$$

¹This assumption is made only in order to keep the exposition simple; its removal would leave our results unaltered.

²An alternative to VAT exemption by the country of origin is the tax-credit-cum-clearing method proposed by the European Commission: the subsidiary charges the tax-inclusive price $p_I(1 + t^B)$ and transfers the tax $t^B p_I$ to its national fisc in B ; the importing parent company receives a full tax credit on the VAT paid on the import against its own VAT bill. The subsequent clearing ensures that the fisc in the country of final destination receives the total VAT.

³If the firm exported the final commodity to B , it would earn $p_X^B(1 + t^B)$ and transfer $t^B p_X^B$ to the fisc in B per unit of export. Arbitrage implies that $p_X^A = p_X^B$, so that we can ignore the superscript.

Hence, from (2) and (3) total profits of the MNF sum up to

$$\Pi = \Pi^A + \Pi^B = \underbrace{(p_X - k_X)X(1 - \tau^A) - k_I I(1 - \tau^B)}_{const.} + p_I I(\tau^A - \tau^B), \quad (4)$$

which depend on the transfer price p_I . Unless $\tau^A = \tau^B$, there will always be an incentive for transfer pricing. Obviously, it pays to overstate the transfer price (compared to arm's length pricing) if $\tau^A > \tau^B$; that is, profits are shifted from the high-tax country A to the low-tax country B through overinvoicing of intermediate inputs imported from B . If $\tau^B > \tau^A$, it pays to shift profits through underinvoicing.

There is indeed a strong incentive for transfer pricing under the destination principle in the EU since corporate tax rates as well as income tax rates differ significantly between member countries (table 1, p. 15). Obviously, eqs. (2) to (4) apply directly to the case in which the subsidiary retains its profits. But (2) to (4) also describe most of the cases in which profits are transferred to the parent company: Following the Parent/Subsidiary Directive 1990, profits earned in the host country are subject to the national corporate income tax, but no withholding tax on dividends to the foreign parent company must be levied in case of repatriation. In order to avoid double taxation the parent's country of residence must either exempt income from foreign-based subsidiaries from taxation or it has to grant a tax credit for foreign corporate tax paid against the parent company's tax liabilities. Most EU countries have opted for the exemption method known as the "international affiliation privilege", so that the source principle of profit taxation is effective.⁴

To summarize: because the source principle is dominating and tax rates for profits differ between countries, there will generally be an incentive for transfer pricing in the EU. The destination principle leaves this incentive unchanged and our concern is to determine whether a switch to the origin principle strengthens or weakens the incentive for transfer pricing.

Before we turn to the origin-based VAT approach, we note the following simplification of our formal exposition. Eq. (4) implies that if $\tau^A > \tau^B$, the MNF will

⁴The second alternative describes the residence principle. Under this principle the country of residence grants a tax credit for taxes paid in the host country up to the domestic tax liabilities; therefore, the effective tax rate is the higher of the two tax rates (τ^A, τ^B). In other words, if the source country levies taxes at a higher rate than the residence country, (2) – (4) equally apply. If not, the residence country's tax rate becomes relevant. However, since income from foreign-based subsidiaries is taxed only upon repatriation, this tax deferral reduces the effective tax on foreign source income (cf. Hartman 1985). In this case, $t^B (< t^A)$ would have to be interpreted as the effective present value tax rate on foreign source income.

choose the highest possible transfer price p_I and will set it equal to zero otherwise. These corner solutions are clearly unrealistic, as tax authorities will be the more likely to disclose transfer prices, the more they deviate from arm's length prices.⁵ For a more realistic model of transfer pricing behavior we would have to account for the probability of detection and punishment along the lines set out in Schulze (1994), however at the cost of reduced expositional clearness. The possibility of detection and punishment would of course reduce the scope of tax evasion under both systems. Schulze (1994) shows that for a risk-neutral firm the extent of misdeclaration depends only on the probability of detection and the penalty. In order to rank two tax systems that have the same detection and punishment characteristics with respect to the revenue effects of transfer pricing, we only need to assess the different gains per unit of misdeclaration under both systems. In other words, we must answer the question whether the indirect taxation of imported intermediates under the origin approach reinforces or reduces the gain from misdeclaration. Because the punchline of our paper is to show how the incentives for transfer pricing differ between the two international VAT systems and their ranking remains unaffected by extending the model to account for possible detection and punishment, we use the simplest framework that serves our purpose.

⁵See Ikeda (1992) for a comprehensive survey on administrative issues of transfer pricing surveillance, esp. methods to assess arm's length prices. Many authors have assumed exogenously given limits to the misdeclaration of input prices and consider the boundary values as the prices actually chosen [e.g. Horst (1971), Batra & Hadar (1979), Itagaki (1979)]. They implicitly assume that misinvoicing will be detected with probability one outside the interval and with zero probability within. Kant (1988) assumes that the probability of detection is positively correlated to the degree of misdeclaration and thereby obtains the firm's profit maximizing transfer price as an interior solution. Schulze (1994) explicitly derives the probability of detection as a convex function of the amount of misdeclaration: A revenue-maximizing fiscal authority optimizes its investigative behavior on the basis of a density function over the true, but unknown arm's length price, the cost of investigation, the probability that detection leads to conviction, and the additional revenue (including the penalty) in case of conviction. The misinvoicing firm in turn – knowing the detection probability function and the penalty scheme – chooses an optimal transfer price in the interior of $[0, p_I^{max}]$. This maximum price p_I^{max} could reasonably be given by $p_I^{max} = p_X X/I$, i.e. the costs for the imported input would equal the firm's total revenue.

3 Transfer Pricing under the Origin Principle

Although the origin principle has been shown to be equivalent to the destination principle and in particular to be non-distortive to international trade it has come under attack because of its incentives to transfer pricing [e.g., Cnossen & Shoup (1987: 73), Lockwood/de Meza/Myles (1995: 13)]. Since the origin principle implies that final commodities carry a VAT burden according to the share of value added in different countries of processing it is evident that the transfer pricing strategy that shifts the share of value added to the low-VAT country reduces the final VAT burden.

Technically, the origin principle can be implemented either by the subtraction method⁶ or, equivalently, by the notional credit method. Under the notional credit method, imported inputs carry the tax of the country of origin $T^B = t^B p_I^B I$. In order to avoid double taxation of imported inputs the domestic importer is granted a tax credit that amounts to the tax which would have been paid if the input had been purchased domestically. The notional domestic price p_I^A is defined through the equality of the tax-inclusive actual price in country B and the notional tax-inclusive price in country A .⁷

$$p_I^A(1 + t^A) = p_I^B(1 + t^B). \quad (5)$$

The import is taxed at the foreign rate and the notional domestic value added is taxed at the domestic rate. Total tax liabilities in country A amount to

$$T^A = t^A(p_X X - p_I^A I) \quad (6)$$

and, by eq. (5), to

$$T^A = t^A p_X X - \underbrace{t^A \frac{1 + t^B}{1 + t^A} p_I^B I}_{\text{notional tax credit}} \quad (7)$$

⁶Under the international subtraction method, gross-of-tax imports are deducted from the tax base and the domestic VAT liability is calculated as

$$T^A = \frac{t^A}{1 + t^A} [p_X(1 + t^A)X - p_I^B(1 + t^B)I],$$

where the tax rate t^A is discounted by the domestic tax factor $1 + t^A$ to express T^A as percentage of gross value-added. This reduces to eq. (7) below, demonstrating the economic equivalence of both methods.

⁷If the good was traded on markets, this is what arbitrage would imply in the absence of translocation costs.

The second term denotes the *notional tax credit*, which deviates from the amount of taxes actually paid ($t^B p_I^B I$). Total VAT liabilities yield

$$\begin{aligned} T &= t^A p_X X - t^A \frac{1+t^B}{1+t^A} p_I^B I + t^B p_I^B I \\ &= t^A p_X X + (t^B - t^A) \frac{1}{1+t^A} p_I^B I \end{aligned} \quad (8)$$

Eq. (8) shows that the notional tax credit functions like a tax relief on the import of inputs implemented by the home country if $t^B < t^A$ or as a surtax if $t^A < t^B$. Accordingly, there is an incentive to overinvoice the imports if they come from a low-VAT country and to underinvoice otherwise.

This result, however, is flawed because it does not take into account the interdependence between direct and indirect taxes. We have to check how, and to what extent, the two incentives for transfer pricing interact. It may turn out that for the reduction of corporate tax liabilities transfer prices have to be overstated whereas the reduction of VAT liabilities calls for an understatement of p_I^B . We develop the argument analogous to eqs. (2) and (3). The parent company's after-tax profit is

$$\begin{aligned} \Pi^A &= [(p_X - k_X)X - p_I^B(1+t^B)I + t^A p_I^A I] (1 - \tau^A) \\ &= (p_X - k_X)X(1 - \tau^A) + \left\{ t^A \frac{1+t^B}{1+t^A} p_I^B I - I p_I^B (1+t^B) \right\} (1 - \tau^A) \end{aligned} \quad (9)$$

and the subsidiary's net profit is again

$$\Pi^B = (p_I^B - k_I)I(1 - \tau^B). \quad (10)$$

Total after-tax profits amount to

$$\Pi = \underbrace{(p_X - k_X)X(1 - \tau^A) - k_I I(1 - \tau^B)}_{const.} + p_I^B I \left[1 - \tau^B - (1 - \tau^A) \frac{1+t^B}{1+t^A} \right] \quad (11)$$

It is immediately seen that for $t^A = t^B$ the transfer pricing criterion reduces to eq. (4) – only income tax evasion matters as under the destination principle. The sign of the term in square brackets in eq. (11) determines the direction of misinvoicing. Rearranging this term, we see that overinvoicing is profitable if (and only if)

$$(\tau^A - \tau^B) + \frac{(1 - \tau^A)}{1 + t^A} (t^A - t^B) > 0 \quad (12)$$

Under the origin approach tax evasion may be weaker or stronger than under the destination approach, depending on the two tax differentials. If country A

is a high-tax country compared to country B , i.e. $\tau^A > \tau^B$ and $t^A > t^B$, the origin principle will aggravate the transfer pricing problem. If, however, countries have approximately the same relative financial needs, but levy their revenue with a different tax structure (regarding the direct-indirect tax mix), then gains from transfer pricing are smaller under the origin principle than under the destination principle. Say, country A relies more heavily on direct taxation ($\tau^A > \tau^B$) whereas country B has higher indirect tax rates, then an overstatement of the imported value to save corporate taxes by transferring profits to country B will result in a higher VAT bill - the overall effect will be moderated vis-à-vis the transfer pricing effects under a destination-based VAT system. Which case applies is of course an empirical question. For this reason we turn now to the empirical evidence for the European Union member states.

4 Transfer Pricing Incentives under both Systems of VAT: Empirical Evidence for the EU

In this section we attempt to answer the – empirical – question, whether the introduction of the origin principle would ease or aggravate the transfer pricing problem. From the comparison of eqs. (4) and (11) it is seen that the origin principle moderates (aggravates) the transfer pricing incentive if the two tax differentials in (12) carry the opposite (same) sign.

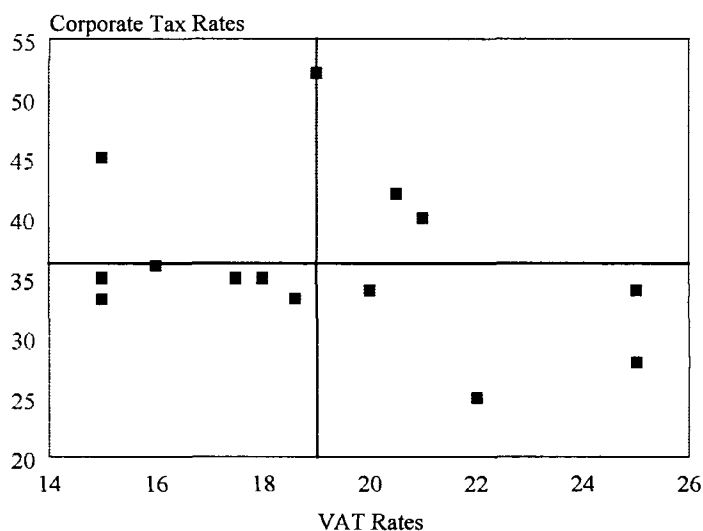
As indirect tax rate we have used the standard rate of the value added taxes. Reduced rates are by far less important (in terms of coverage and volume of transactions); this is all the more so for intra-firm trade in intermediate inputs. For direct taxes the situation is much more diverse because the effective marginal tax burden depends on the legal status of the firm and a variety of special tax provisions, such as depreciation and accounting rules, loss carry forward provisions etc. which may differ across industries and even between firms. This variety of provisions should be captured in a firm-specific effective marginal tax rate. Since we want to address the incentives for transfer pricing on an aggregate level we have selected the top rate of the corporate income tax which is justified for the following reasons: Most of the multinational operating firms are incorporated, and therefore subject to corporate income tax (CIT). Since there is little progression in the corporate tax schedule, the bulk of enterprises is taxed at the top rate. Moreover, because transfer pricing is undertaken by managers, who are interested in after-corporate-tax profits as a mea-

sure for their success (and hence their pay) the integration of stockholders' personal income taxes with the corporate income tax is irrelevant to our problem.

From (12) we conclude that the moderating effect of the origin principle is the higher, the more negatively correlated direct and indirect tax rates are. That is, for the origin-based VAT system to moderate tax evasion, a country with a high CIT should have a low VAT and vice versa.⁸ A first indication is provided by figure 1 that plots the VAT - CIT mix for the 15 countries of the European Union. (The dashed lines depict the respective mean values. The point (17.5 %, 35 %) applies for two countries.) VAT rates and corporate tax rates are weakly negatively correlated – the correlation coefficient amounts to -0.311.

Figure 1:

Direct -- Indirect Tax Mix for the EU Countries



Corporate tax rate for retained profits in case of Germany and Italy

The respective tax rates of the individual EU member countries are provided in table 1 in the appendix.

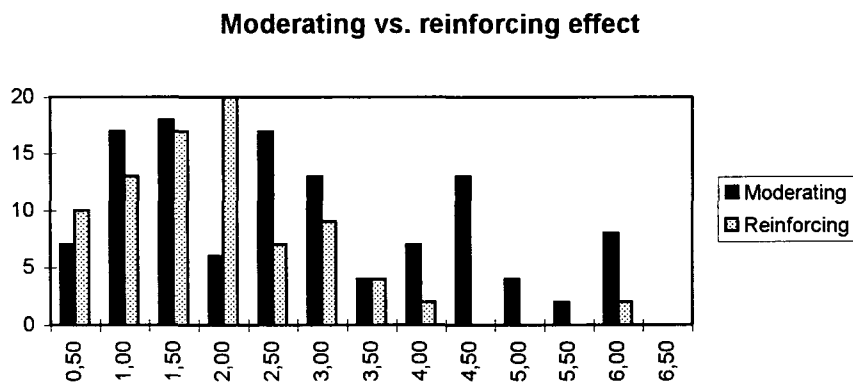
We have assessed the relative importance of the moderating effect by counting the number of cases, in which the corporate tax and the VAT differentials carry the opposite sign. In 58 cases out of 105 bilateral trade relations the VAT differential exhibits the opposite sign to the corporate tax differential and hence the transfer

⁸Of course, the transfer pricing problem within the economic union would be resolved if all tax rates were harmonized. At least for the EU this seems politically unfeasible.

pricing incentive is reduced. In 35 cases the VAT differential reinforces the transfer pricing incentive of the corporate tax differential. Either differential is zero in 11 cases, of which four cases apply to the VAT differential. The Netherlands and the United Kingdom have identical tax rates.

In order to gain more insight into the magnitude of the transfer pricing incentives under both VAT systems we have plotted the two relevant tax differentials in tables 2 and 3 in the appendix. Table 2 provides the tax differential $\tau^A - \tau^B$ and table 3 gives the expression (12) for all EU countries and both directions of trade. The comparison of the two tables allows us to assess the moderating or reinforcing effect for transfer pricing incentives of the origin-based VAT system as opposed to the destination-based system. Figure 2 shows the quantitative importance of these two effects: The abscissa depicts the absolute value of the differential effect [i.e., $|(1 - \tau^A)/(1 + t^A)(t^A - t^B)|$] in percentage points and the ordinate gives the number of cases, in which the moderating or reinforcing effect, respectively, fall within a certain range. (For example, the first solid bar denotes 7 cases, in which the moderating effect is positive, but not greater than 0.5 percentage points.) Two observations

Figure 2:



are straightforward: The number of moderating cases (116 out of 210) exceeds the number of reinforcing cases (84).⁹ In addition, the moderating effect is stronger

⁹The quantitative alteration of the transfer pricing incentive is not symmetric with respect to the direction of the bilateral trade flows as the “scaling factor” of the VAT differential depends on the tax rates of the importing country (A) only: $(1 - \tau^A)/(1 + t^A)(t^A - t^B)$. [The direction of the change (moderating or reinforcing effect) is of course independent of the direction of the trade flow.] Consequently, there are 210 bilateral trade directions between the 15 EU member states, for which we calculate the differential effect of the origin-based VAT system. The reinforcing effects contain also the 14 cases in which only the origin-based VAT system establishes an incentive for

(average value of 2.53 %) than the reinforcing effect (1.69 %). Especially for the cases in which a switch to an origin-based VAT system has a *significant* impact on the transfer pricing incentive (4 % or more) the moderating effect is by far dominating. Our tentative conclusion is that the introduction of an origin-based system of value added taxation will reduce rather than aggravate the transfer pricing problem.

Finally, the origin-based indirect taxation will generally *not create* the transfer pricing problem, since the existing corporate income tax differentials establish a transfer pricing incentive that is by far more important than the incentive created by VAT differentials. The average absolute value of the CIT differentials in the EU of 15 amounts to 7.06 % while the average absolute impact of the VAT differentials is 2.07 %.¹⁰ In other words, the transfer pricing incentive created by VAT differentials under the origin principle is considerably smaller in magnitude and tends to work in the opposite direction. It can hardly be said to have an aggravating impact on the existing transfer pricing incentives, but rather tends to alleviate the problem.

5 Conclusion

Reconsidering the pros and cons raised in the discussion about the final VAT system in the EU, we believe that the origin principle must be regarded as an attractive and economically superior alternative to the Commission's proposal. As we have argued earlier, the VAT system proposed by the commission is clearly distorting due to the coexistence of origin-based and destination-based elements *within* the EU. As opposed to this, variants of the restricted origin principle have been shown to be equivalent to the *pure* destination principle. Moreover, the origin principle is advantageous thanks to low administration and compliance costs, no need for clearing, and presumed economic superiority with respect to market imperfections (Keen/Lahiri 1994).

In this paper we have addressed the remaining objection against origin taxation, namely that this system will lead to new and substantial transfer price manipulations induced by VAT differentials. We have shown that this objection does not hold, since VAT induced transfer pricing incentives in the EU are small and tend to mitigate

transfer pricing because of zero corporate tax differentials.

¹⁰The latter figure (not identical with the VAT differential, see above) combines moderating and reinforcing effects; both figures are calculated on the basis of all 210 bilateral trade directions.

rather than intensify the incentives induced by today's corporation tax differentials. If at all, this alleged objection becomes the contrary: Incentives for transfer pricing in the EU are stronger under the destination than under the origin principle.

For these reasons, we think that the Commission should give high priority to the discussion and elaboration of a definitive origin-based VAT system for the European Union.

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A Appendix

Table 1: Tax Rates in the European Union 1994

Country	Corporation Tax top rate ^a	Value Added Tax regular rate
Austria	34	20
Belgium	42	20.5
Denmark	34	25
Finland	25	22
France	33.3	18.6
Germany	45/30	15
Greece	35	18
Ireland	40(10)	21
Italy	52.2/36	19
Luxembourg	33.3	15
Netherlands	35 ^b	17.5
Portugal	36	16
Spain	35	15
Sweden	28	25
United Kingdom	35	17.5

Source: International Bureau of Fiscal Documentation (1994), European Tax Handbook 1994, Amsterdam: IBFD Publications BV.

^aLeft value for retained profits, right value for distributed profits, in brackets special rate for the manufacturing sector.

^bFor the lowest part of corporate income 40 %

Table 2

Corporate tax differential	A	B	DK	SF	F	D	GR	Irl	I	Lux	NL	P	E	S	UK	
	34	42	34	25	33,3	45	35	40	52,2	33,3	35	36	35	28	35	
A	34	0	8	0	-9	-0,7	11	1	6	18,2	-0,7	1	2	1	-6	1
B	42	-8	0	-8	-17	-8,7	3	-7	-2	10,2	-8,7	-7	-6	-7	-14	-7
DK	34	0	8	0	-9	-0,7	11	1	6	18,2	-0,7	1	2	1	-6	1
SF	25	9	17	9	0	8,3	20	10	15	27,2	8,3	10	11	10	3	10
F	33,3	0,7	8,7	0,7	-8,3	0	11,7	1,7	6,7	18,9	0	1,7	2,7	1,7	-5,3	1,7
D	45	-11	-3	-11	-20	-11,7	0	-10	-5	7,2	-11,7	-10	-9	-10	-17	-10
GR	35	-1	7	-1	-10	-1,7	10	0	5	17,2	-1,7	0	1	0	-7	0
Irl	40	-6	2	-6	-15	-6,7	5	-5	0	12,2	-6,7	-5	-4	-5	-12	-5
I	52,2	-18,2	-10,2	-18,2	-27,2	-18,9	-7,2	-17,2	-12,2	0	-18,9	-17,2	-16,2	-17,2	-24,2	-17,2
Lux	33,3	0,7	8,7	0,7	-8,3	0	11,7	1,7	6,7	18,9	0	1,7	2,7	1,7	-5,3	1,7
NL	35	-1	7	-1	-10	-1,7	10	0	5	17,2	-1,7	0	1	0	-7	0
P	36	-2	6	-2	-11	-2,7	9	-1	4	16,2	-2,7	-1	0	-1	-8	-1
E	35	-1	7	-1	-10	-1,7	10	0	5	17,2	-1,7	0	1	0	-7	0
S	28	6	14	6	-3	5,3	17	7	12	24,2	5,3	7	8	7	0	7
UK	35	-1	7	-1	-10	-1,7	10	0	5	17,2	-1,7	0	1	0	-7	0

Table 3: eq. (12)

(in percentage points)

	$(\text{TauA} - \text{TauB}) + (1 - \text{TauA}) / (1 + \text{Ta}) * (\text{Ta} - \text{Tb})$															
	A	B	DK	SF	F	D	GR	Irl	I	Lux	NL	P	E	S	UK	
A	0,00	-8,28	-2,75	7,90	1,47	-8,25	0,10	-6,55	-17,65	3,45	0,38	0,20	1,75	3,25	0,38	
B	8,24	0,00	5,83	16,28	9,61	-0,35	8,20	1,76	-9,48	11,35	8,44	8,17	9,65	11,83	8,44	
DK	2,81	-5,47	0,00	10,69	4,30	-5,37	2,94	-3,75	-14,82	6,33	3,22	3,07	4,63	6,00	3,22	
SF	-7,77	-16,08	-10,84	0,00	-6,21	-15,70	-7,54	-14,39	-25,36	-4,00	-7,23	-7,31	-5,70	-4,84	-7,23	
F	-1,49	-9,77	-4,30	6,39	0,00	-9,68	-1,36	-8,05	-19,12	2,02	-1,08	-1,24	0,32	1,70	-1,08	
D	8,61	0,37	6,22	16,65	9,98	0,00	8,57	2,13	-9,11	11,70	8,80	8,52	10,00	12,22	8,80	
GR	-0,10	-8,38	-2,86	7,80	1,37	-8,35	0,00	-6,65	-17,75	3,35	0,28	0,10	1,65	3,14	0,28	
Irl	6,50	-1,75	4,02	14,50	7,89	-2,02	6,49	0,00	-11,21	9,68	6,74	6,48	7,98	10,02	6,74	
I	17,80	9,60	15,79	25,99	19,06	8,81	17,60	11,40	0,00	20,51	17,80	17,41	18,81	21,79	17,80	
Lux	-3,60	-11,89	-6,50	4,24	-2,09	-11,70	-3,44	-10,18	-21,22	0,00	-3,15	-3,28	-1,70	-0,50	-3,15	
NL	-0,38	-8,66	-3,15	7,51	1,09	-8,62	-0,28	-6,94	-18,03	3,08	0,00	-0,17	1,38	2,85	0,00	
P	-0,21	-8,48	-2,97	7,69	1,27	-8,45	-0,10	-6,76	-17,86	3,25	0,17	0,00	1,55	3,03	0,17	
E	-1,83	-10,11	-4,65	6,04	-0,33	-10,00	-1,70	-8,39	-19,46	1,70	-1,41	-1,57	0,00	1,35	-1,41	
S	-3,12	-11,41	-6,00	4,73	-1,61	-11,24	-2,97	-9,70	-20,74	0,46	-2,68	-2,82	-1,24	0,00	-2,68	
UK	-0,38	-8,66	-3,15	7,51	1,09	-8,62	-0,28	-6,94	-18,03	3,08	0,00	-0,17	1,38	2,85	0,00	