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EUROPE'S NEW BORDER TAXES

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Abstract

Instead of abolishing internal border controls in 1993, the European Union (EU) replaced them with VAT and statistical requirements that appear to be just as onerous. For Dutch businesses, the compliance costs of the new requirements are, on average, 5 per cent of the value of their intra-EU trade. This figure is probably higher for other EU Member States. Obviously, the costs constitute a (differentiated) border tax that impedes intra-EU trade. The paper analyses the determinants of the compliance costs, as well as their effect on intra-EU trade intensity. The paper submits that the differential compliance costs violate the non-discrimination provisions of the EC Treaty. Suggestions are made to reduce them.

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I. Introduction

In 1985, the European Commission (1985) submitted a White Paper to the Council of the European Union (EU) with a programme to achieve a Single Market by 1992. The Commission expressed the belief that the removal of internal frontiers – the clearest manifestation of the continued division of Europe – should be a primary goal of EU policy. These frontiers included, among others, border controls for the imposition of value added tax (VAT) on imports by one Member State from another Member State and the collection of statistical information on imports and exports. The costs of these controls to business were an impediment to intra-EU trade. Hence, they should be eliminated.

After much discussion of various alternative VAT systems without border controls, the Council agreed on Directive 91/680/EEC, which abolished these controls under the deferred payment system. Henceforth, VAT on goods from other Member States would not be collected by the customs office but be payable by the first taxable person in the importing Member State. The new system was called the transitional regime. The regime would expire on 31 December 1996, but it could be extended on an annual basis if agreement on the definitive system could not be reached. To date (January 2001), the transitional regime is still in place and it is unlikely that it will be changed in the foreseeable future.

Under the transitional regime, intra-EU business transactions are called intra-Community (IC) transactions. Exports to other Member States are labelled IC supplies, and imports from other Member States are labelled IC acquisitions. The only significant difference from the pre-1993 customs procedures is that IC acquisitions must be reported on the domestic VAT return rather than to the customs office. Moreover, customs controls have been replaced by a VAT information exchange system (VIES). Under this system, taxable persons have to report their taxable sales to taxable persons in other Member States, including their VAT identification numbers, on a quarterly basis (the listing requirement). The same applies to IC acquisitions, although in the Netherlands, for instance, the VAT return is used for this purpose. The exchange of VIES data between the Member States should enable the VAT administrations in the Member States to match the total of IC supplies (acquisitions) by each taxable person with the total of IC acquisitions (supplies) by taxable persons in other Member States.

Furthermore, a statistical data collection system, referred to as the Intrastat system, was set up to collect trade data between Member States (Council Directive 3330/91/EEC). The statistical requirements pertain to IC transactions in goods (services are exempt), irrespective of whether or not the goods are subject to commercial transactions. Information on inter-company transactions, for instance, also has to be reported. Due to the transitional VAT and Intrastat system, the legal and procedural requirements imposed in respect of IC transactions differ from those imposed on domestic transactions. These requirements bring additional (differential) compliance costs in their train.

This paper determines and analyses the differential compliance costs for Dutch firms with IC transactions, as well as their impact on intra-EU trade intensity. We start by reviewing previous surveys that have attempted to measure the differential compliance costs. We believe that these surveys exhibit various methodological shortcomings. Subsequently, we describe our own survey and specify the estimated multiple regression equation that captures the determinants and quantitative effects of the differential compliance costs of IC transactions. We find that these costs are, on average, 5 per cent of the value of firms' IC trade. Substantial differences between firms can largely be explained by economies of scale and information-technology-related variables. Furthermore, the evidence suggests that the differential compliance costs reduce the IC trade intensity of firms across industries and trades. In the concluding section, we submit that these costs constitute a barrier to IC trade and therefore violate the non-discrimination provisions of the EC Treaty.

II. Previous Studies

A number of studies have estimated the costs to business of complying with various tax and statistical requirements in respect of IC trade, both before and after the abolition of border controls.

Costs of a 'non-unified' Europe

In the mid-1980s, the European Commission, as part of its Single Market programme, commissioned a survey on the costs of a 'non-unified' Europe. In the course of the survey, referred to as the Cecchini Report (Cecchini et al., 1988), some 500 companies in six Member States (Belgium, France, Germany, Italy, the Netherlands and the UK) were interviewed, to determine, among other things, the compliance costs of tax, customs and trade data reporting requirements in respect of IC trade. The sample results were extrapolated on an EU-wide basis. The Cecchini Report estimated the aggregate costs to business of the procedures at internal EU borders in 1986 at Euro 8 billion, or 2 per cent of the value of total IC trade.[1] These costs represented the direct costs of companies, including the costs of transit delays, but not the opportunity costs in terms of trade forgone.

The Cecchini Report was widely criticised for having been written to promote the Commission's Single Market programme (e.g. Harris, 1996, p. 70). Nevertheless, three specific findings of the Cecchini Report are worth noting. Firstly, the costs of customs procedures per consignment (weighted average, euro 69 per import procedure and euro 85 per export procedure) were below average in Belgium and the Netherlands.[2] This could be attributed to the simplified VAT procedures, including the deferred-payment scheme, that these countries already used prior to 1992 – indeed, ever since the introduction of their VATs in 1971 and 1969 respectively. In addition, the customs and trade declaration forms for IC (and third-country) transactions were already integrated. At the same time, Italy, for instance,

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1 The value figures in the Cecchini Report are denominated in ECU. In this paper, all monetary units have been converted into euros at the official exchange rate.
2 Cecchini et al. (1988) provides the following breakdown of the costs of import/export procedures (in euros) at internal EU borders in the six Member States covered by the survey: Belgium (26/34), Netherlands (46/50), Germany (42/79), UK (75/49), France (92/87) and Italy (130/295).

had two separate organisations administering both obligations at considerably higher costs. Secondly, the costs of customs procedures per consignment incurred by small companies were, on average, 30–45 per cent higher than the costs of large companies.[3] Thirdly, company managers estimated that the cost savings associated with the abolition of EU border controls would be 5 per cent of total sales (Cecchini et al., 1988, p. 48).

Evaluations of the transitional VAT and Intrastat system

Although the expectations of the business community regarding the Europe 1992 project had been high, the new legal and procedural requirements of the transitional VAT and Intrastat system were considered disappointing. This is the gist of the six surveys that were undertaken prior to our study. Table 1 summarises various particulars of these surveys that differ significantly in method and geographical scope.

Table 1.   Evaluations of VAT transitional regime and Intrastat system

Single Market surveys	Geographical scope	Data collection method	Sample	Response
Ball (1993)	All Member States as at 1 January 1993	Postal questionnaire	3,500 companies	600 (17.1%)
RMK (Netherlands Board of Small Businesses) (1994)	Netherlands	Postal questionnaire	1,500 small and medium-sized companies	190 (13%)
Knigge and Regter (1994) for EIM	Netherlands	Telephone and face-to-face interviews	N/A	208 telephone calls; 17 face-to-face interviews
Michie (1995) for KPMG	UK	Postal questionnaire	N/A	3,000
Haase (1996) for Handwerksinstitut	All Member States as at 1 January 1993, except Greece	Postal questionnaire	11,404 companies	1,210 (10.6%)
European Commission (1997)	All Member States as at 1 January 1993	Mail, telephone or face-to-face interviews as preferred by respondents	Non-random selection	222 responses covering exports/despatches; 223 responses covering imports/arrivals

The findings of the various surveys can be summarised as follows:

1. The European Commission (1997) reported that the introduction of the transitional VAT and Intrastat system had reduced compliance costs by approximately two-thirds overall.[4] Nevertheless, only 49 per cent of respondents preferred the new system to the previous

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3 Specifically, the costs of customs procedures per consignment were, on average, euro 85 for imports and euro 95 for exports by companies with fewer than 250 employees and, on average, euro 47 for imports and euro 75 for exports by companies with 250 employees or more (European Commission, 1988, p. 18).
4 Similarly, Ball (1993) found that 61 per cent of respondents believed that the abolition of border controls was, on balance, advantageous. Unfortunately, his survey does not specify from which population and how companies were selected.

customs regime. Generally, other surveys were more sceptical about the blessings of the new system. The survey of Haase (1996, p. 181) showed that only 18.3 per cent of respondents believed that the abolition of border controls had reduced compliance costs. Moreover, approximately three-quarters of these respondents (14 per cent) considered the advantages to be minor. As regards specific Member States, in the Netherlands, more than half of respondents reported higher compliance costs as a result of the new system (RMK, 1994). In the UK (Michie, 1995), only 19 per cent of respondents believed that the change-over was, on balance, advantageous, while more than 42 per cent disagreed with the statement that the abolition of customs procedures compensated for the new requirements of the transitional VAT and Intrastat system.

2. The views on the merits and disadvantages of the new system varied considerably among Member States (Ball, 1993; Haase, 1996; European Commission, 1997). While companies in northern Member States were generally sceptical about the cost savings under the transitional VAT and Intrastat system, companies in southern Member States reported significant gains compared with the previous customs regime. As noted by Cecchini et al. (1988) and Ball (1993), this difference should be attributed to differences between the old and new systems in the various Member States. Prior to 1993, the costs of the old regime were considerably lower in northern Member States. This implies, of course, that the cost savings should not necessarily be attributed to the changeover *per se*.

3. Interestingly, large companies with established accounting information systems needed more time to adjust to the transitional VAT and Intrastat system and incurred higher costs in doing so than small companies (Ball, 1993; Knigge and Regter, 1994; Michie, 1995).[5] Furthermore, companies with a small volume of IC trade benefited little and in some cases even suffered from the new system (European Commission, 1997).

4. The VAT reimbursement procedure for companies acquiring goods in other Member States without being registered in those States was perceived as ineffective.[6] Ball (1993) reported that only 69 per cent of respondents actually reclaimed the tax. The remaining 31 per cent considered the procedure to be cost-ineffective. Haase (1996) found that more than three-quarters of respondents reported difficulties with the reimbursement of VAT paid in other Member States.

5. Companies involved in chain transactions viewed the new system as complex and costly (Ball, 1993; Michie, 1995). Chain transactions involve more than three sales of the same goods in different Member States, while the goods are delivered by the first seller to the last buyer. A simplified procedure has been agreed upon for chain transactions confined to

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5 RMK (1994) is an exception. It reported that the increase in compliance costs as a percentage of total sales was higher for small than for large companies. But when we recalculated the compliance costs by company size measured by the number of employees, we found that the highest compliance costs were clearly incurred by companies with the largest number of employees.

6 In many cases it is not practicable to apply the zero-rate to IC transactions. Examples are small transactions at petrol stations, restaurants and hotels, or if the goods are transported by the buyer and the supplier is not able to prove that the goods have been shipped to another Member State (which is a condition for the application of the zero-rate). The European Commission has proposed to permit traders to apply for reimbursement through their VAT returns rather than separately.

three registered persons in different Member States (triangular transactions), but Ball (1993) reports, however, that this simplified procedure was used by only 52 per cent of trade intermediaries. In the UK, 44 per cent of respondents believed that the simplified procedure was not cost-effective (Michie, 1995).

Methodological flaws

Various surveys have methodological shortcomings, such as lack of transparency of the sampling procedures (Michie, 1995; European Commission, 1997) and low responses (RMK, 1994; Haase, 1996). In two surveys that included a large number of Member States (Haase, 1996; European Commission, 1997), only a small number of companies were interviewed in some Member States, which made the surveys less representative than was desirable. In addition, some of the surveys could be biased because questions were addressed to accounting personnel who, at the time of the surveys, had limited experience with VAT and Intrastat compliance procedures that were previously handled by logistical staff. Perhaps the most serious shortcoming of most surveys is that compliance costs were expressed as a percentage of total sales or accounting costs. Compliance costs of IC transactions are incurred to support IC transactions of individual firms and therefore should be related to the value of IC trade of these firms.

Finally, the theoretical underpinnings of most studies, particularly in terms of research design, are weak. Generally, the studies attempt to realise two research objectives that require conflicting research designs. One objective is to evaluate the European legal systems as such, while the other objective is to identify differences in implementation of legal systems between Member States. Large variations in the variables require the use of different constants in the research designs. The first objective requires a large variation of companies and as few differences as possible in implementation by Member States. By contrast, the second objective requires a limited number of similar companies and as much variation in implementation between Member States as possible. The combination of these objectives in one research design results in findings that have limited value for either objective, as shown by the studies of Haase (1996) and the European Commission (1997).

III. Organisation of Survey

Our survey attempts to evaluate the compliance costs of the transitional VAT and Intrastat system for IC transactions and not to identify the consequences of differences in implementation between Member States. Hence, our study requires a large variation of firms and as few differences as possible in implementation. This can be achieved by confining the sample to VAT entities in one Member State. We chose the Netherlands for three reasons. Firstly, the country is a centre of European-wide distribution networks with ample experience in IC transactions. Secondly, VAT-liable firms and tax offices in the Netherlands had substantial experience with the deferred-payment scheme prior to the introduction of the equivalent transitional regime. Thus, the effect of adjustment problems should have been minimal. Thirdly, the implementation of EU legislation and regulations on VAT and Intrastat by the Dutch VAT administration is generally considered to be efficient. All three aspects imply that our estimates of IC compliance costs are likely to be low when placed in an EU-

wide context.

The survey form, which was drafted with the assistance of tax advisers, tax officials and organisations of employers and accountants, consisted of three parts. Parts A and B requested data on the general characteristics of the firm, its accounting information system and IC transactions. Part C requested information on compliance activities related to IC transactions.[7] These activities include (1) the search for and verification of VAT numbers, (2) the retrieval from the accounting information system of (different) data on IC transactions for the VAT return, the quarterly sales listing and the Intrastat return and (3) the processing of the VAT return, the sales listing and the Intrastat return in the accounting information system. The respondents were requested to indicate average time and frequency per activity. Measurements of compliance activities were translated into monetary values by multiplying them by the average labour costs of accounting personnel, including a mark-up for overhead costs.

The sample was randomly selected from the database of VAT-registered firms in the Netherlands. To select firms with IC transactions, the Dutch VAT declaration form, which requires firms to provide information on the volume of IC transactions, was used. Of 2,988 active firms with IC transactions, 642 (21.5 per cent) firms responded after one reminder. The response was tested for representativeness with respect to the size and economic activity of the responding firms. The evaluation did not indicate significant differences, except that firms with more than 100 employees had a higher response rate than smaller firms.

IV. Results

Our survey reveals that total differential compliance costs of IC transactions of VAT-liable firms in the Netherlands are, on average, 5 per cent of the value of their IC trade, with large variations around this average.[8] Figure 1 shows the relative compliance costs of IC trade against the number of IC transactions. At one extreme, there are a large number of firms with a small volume of IC trade that are confronted with excessively high compliance costs. By contrast, a relatively small number of firms with sophisticated accounting information systems have very low compliance costs. Almost two-thirds of firms with IC trade have fewer than 60 IC transactions per annum. These small IC traders have on average compliance costs that exceed the average of 5 per cent of the value of IC trade per firm. More than one-third of firms incurs on average compliance costs in excess of 12 per cent of their IC trade. The differences in compliance costs between firms with and without IC trade are attributable to the transitional VAT regime and the Intrastat requirements. These compliance costs represent a hefty discriminatory border tax that is probably a significant impediment to intra-EU trade.

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7 The data were collected three years after the introduction of the Single Market (1996); hence, the influence of adjustment costs, if any, should be minimal.

8 The 5 percent refers to the average differential compliance costs of individual firms. In other words, the costs come on top of the (general) compliance cost that are incurred by firms without IC-transactions. Unfortunately only estimates of aggregate compliance costs as a percentage of aggregate turnover of classes of firms are available for the Netherlands. These estimates range from 2 per cent of turnover for small firms to 0.006 per cent for very large firms (Allers, 1994, p. 129).

Figure 1. Relative compliance costs of IC transactions and number of IC transactions
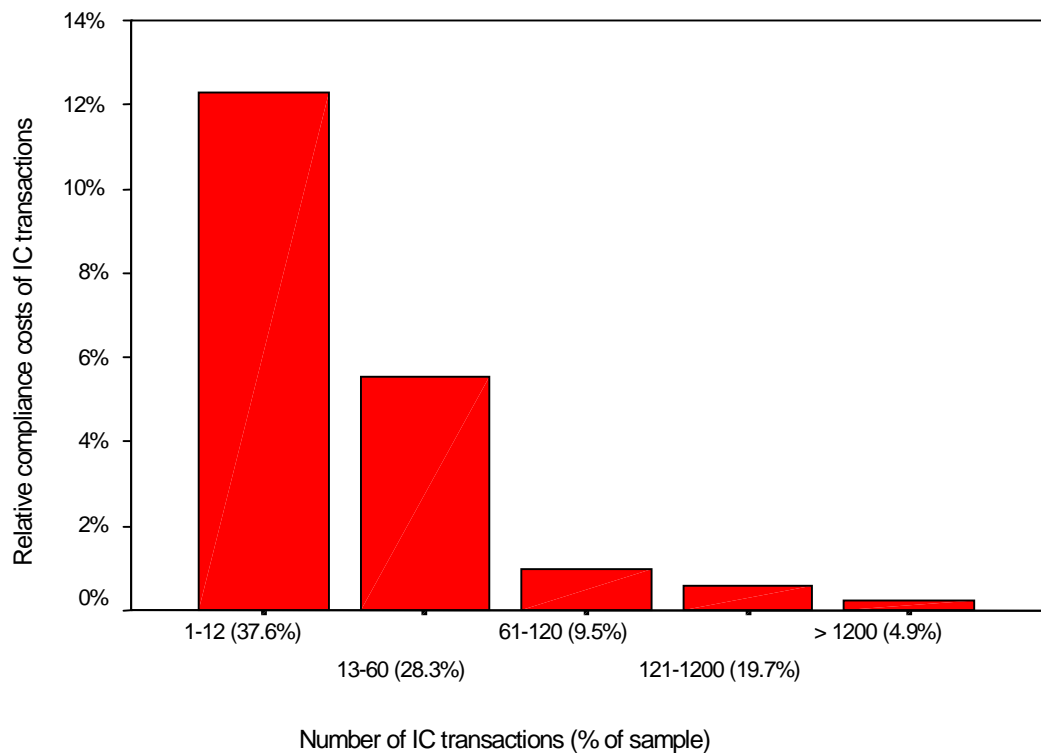
Determinants of compliance costs of IC transactions

To identify the determinants of the compliance costs of IC trade, we estimated an exponential function. The equation is non-linear in the variables but linear in the coefficients and thus can be linearised by applying a logarithmic transformation. The logarithmic transformation yields a function with a double-log functional form, which can be estimated by ordinary least squares. The choice of this functional form is based on the assumption that compliance costs elasticities are constant. This functional form is generally accepted in the compliance costs literature (Blumenthal and Slemrod, 1995; Guntz et al., 1995).[9] The dependent variable of the equation is compliance costs of IC transactions expressed as a percentage of the value of IC transactions. The independent variables and measures are listed in Table 2.

The estimated results of the multiple regression analysis are presented in Table 3. The F-value of 54 is significantly above the critical F-value of a 99 per cent confidence interval. Thus, based on the F-value, the regression equation is statistically significant. The adjusted coefficient of determination, R^2, suggests that, taking into account the degrees of freedom of the regression equation, 72 per cent of the variation around the average of the dependent variable can be explained by the regression equation. This is a reasonable score for cross-sectional research that includes a large variety of firms.

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9 Variance Inflation Factor (VIF) scores and matrix decomposition were used to detect multicollinearity, but neither method indicated any problem with the equation.

Table 2. Model specification of compliance costs function of IC trade

Log Compliance costs$_i$ = α_0 + α_1(Log Firm size)$_i$ + α_2(Manufacturing)$_i$ + α_3(Trade)$_i$ + α_4(Filing frequency)$_i$ + α_5(Log Frequency)$_i$ + α_6(Log Transaction size)$_i$ + α_7(Statistical threshold IC acquisitions)$_i$ + α_8(Statistical threshold IC supplies)$_i$ + α_9(Log New IC buyers)$_i$ + α_{10}(Listing)$_i$ + α_{11}(Computer system)$_i$ + α_{12}(Internal Integration)$_i$ + α_{13}(Government software)$_i$ + α_{14}(EDI with buyers)$_i$ + α_{15}(EDI with suppliers)$_i$ + α_{16}(EDI with tax office)$_i$ + ε_i

Where for firm i:

Log Compliance costs	The log of compliance costs of IC transactions expressed as a percentage of the value of IC transactions
Log Firm size	The log of the number of employees in full-time equivalents
Manufacturing	Dummy variable with value 1 if firm is active in manufacturing, or else is 0
Trade	Dummy variable with value 1 if firm is active in trade, or else is 0
Filing frequency	Dummy variable with value 1 for quarterly and annual returns, or else is 0
Log Frequency	The log of the number of IC transactions per annum
Log Transaction size	The log of the average size of IC transactions
Statistical threshold IC acquisitions	Dummy variable with value 1 if value of IC acquisitions is below statistical threshold-value, or else is 0
Statistical threshold IC supplies	Dummy variable with value 1 if value of IC supplies is below statistical threshold-value, or else is 0
Log New IC buyers	Log of the number of new IC buyers
Listing	Dummy variable with value 1 if value of IC supplies is greater than 0, or else is 0
Computer system	Dummy variable with value 1 if computers are used for accounting purposes, or else is 0
Internal integration	Dummy variable with value 1 if inventory and invoice accounting systems are integrated, or else is 0
Government software	Dummy variable with value 1 if firm uses government supplied software, or else is 0
Electronic Data Interchange (EDI) with buyers	Dummy variable with value 1 if the firm exchanges electronic messages with IC buyers, or else is 0
EDI with suppliers	Dummy variable with value 1 if the firm exchanges electronic messages with IC suppliers, or else is 0
EDI with tax office	Dummy variable with value 1 if the firm exchanges electronic messages with tax office, or else is 0

The following comments can be made on the explanatory variables:

Firm size   The positive sign of the coefficient α_1 indicates that firm size has a positive independent influence on the compliance costs of IC transactions. More specifically, if firm size increases by 1 per cent, compliance costs as a percentage of IC trade increase by 0.12 per cent. This result suggests that – despite the objective of the Single Market programme to enable firms to exploit economies of scale – the artificial splitting of big European-wide firms' accounting information systems involves diseconomies of scale. Suppose that a firm has warehouses and retail stores in various Member States. For every cross-border transport from a warehouse to a retail store, the firm has to report the goods to the authorities of two Member States, although in commercial terms there is no transaction at all but only a shipment of goods from one location of the firm to another. This problem is multiplied as more Member States are involved in the logistical and commercial processing of intra-company transactions.

Table 3.   Results of multiple regression analysis of the determinants of the compliance costs of IC transactions

Explanatory variables		Estimated coefficients	Standard errors	t-values	Significance
Constant		4.8954	0.5261	9.305	$P < 0.01$
Log Firm size	(α_1)	0.1241	0.0535	2.320	$P < 0.05$
Manufacturing	(α_2)	−0.0285	0.2461	−0.116	NS
Trade	(α_3)	0.2131	0.2025	1.052	NS
Filing frequency	(α_4)	−0.8747	0.1694	−5.164	$P < 0.01$
Log Frequency	(α_5)	−0.7235	0.0467	−15.509	$P < 0.01$
Log Transaction size	(α_6)	−0.7867	0.0501	−15.701	$P < 0.01$
Threshold IC acquisitions	(α_7)	−0.4771	0.1962	−2.432	$P < 0.05$
Threshold IC supplies	(α_8)	−0.1805	0.2187	−0.825	NS
Log New IC buyers	(α_9)	0.1451	0.0453	3.204	$P < 0.01$
Listing	(α_{10})	0.6343	0.2353	2.696	$P < 0.01$
Computer system	(α_{11})	−0.4509	0.2043	−2.207	$P < 0.05$
Internal integration	(α_{12})	−0.3465	0.1630	−2.125	$P < 0.05$
Government software	(α_{13})	0.5913	0.1653	3.576	$P < 0.01$
EDI with buyers	(α_{14})	1.1952	0.3766	3.174	$P < 0.01$
EDI with suppliers	(α_{15})	−0.6446	0.3199	−2.015	$P < 0.05$
EDI with tax office	(α_{16})	−0.5818	0.3523	−1.652	$P < 0.10$
Model summary		Adj. $R^2 = 0.72$	$F = 54$	$N=350$	

Type of business activity   The insignificance of the coefficients on the dummy variables 'manufacturing' (α_2) and 'trade' (α_3) indicates that the type of business activity does not have an independent influence on the compliance costs of IC transactions. This finding is in line with the results reported by Allers (1994, p. 142). It suggests that differences in compliance costs between economic activities are likely to reflect the influence of other variables, such as the extent of computerisation or the volume of IC trade.

Filing frequency   The negative and significant coefficient on the dummy variable 'filing frequency' (α_4) indicates that firms with quarterly (and annual) filing frequencies have lower compliance costs than firms with monthly filing frequencies. Generally, the filing frequency of the VAT return depends on the amount of VAT that is due. In this respect, small and medium-sized firms seem to have an advantage.

Frequency and average size of IC transactions   Everything else being equal, the estimates suggest that if a firm increases the frequency (α_5) and average size (α_6) of IC transactions by 1 per cent, relative compliance costs decline by 0.72 and 0.79 per cent respectively. The result is in line with studies of VAT compliance costs (see, for example, Sandford et al. (1981)) which report that compliance costs increase for smaller average transaction size.

Statistical thresholds [10]   The coefficient on the dummy variable 'statistical threshold IC acquisitions' (α_7) is negative. Contrary to our expectations, however, the coefficient on the

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10 A full exemption from the statistical requirements applies for companies below the assimilation threshold. Under this threshold, the VAT declaration is considered to be also the statistical declaration. Member States are obliged to apply the assimilation separately for each dispatch and arrival.

dummy variable 'statistical threshold IC supplies' (α_8) is not significantly different from zero, which suggests a strong interaction between the compliance costs of the VAT listing and Intrastat requirements. In other words the Exempt from the statistical requirements seems ineffective if firms still have to provide VAT information of these transactions to the authorities (there is no VAT exemption for IC transactions). Thus, the effectiveness of thresholds in reducing compliance costs is limited by the overlap of the exempted requirements with other requirements.

Type of transaction   The positive signs of the coefficients on the dummy variables 'log new IC buyers' (α_9) and 'Listing' (α_{10}) indicate higher compliance costs with respect to IC supplies (compared with IC acquisitions). As expected, the requirement to request, verify and process VAT identification numbers in the accounting information system is especially onerous for companies that sell often to new IC buyers. The listing requirement increases compliance costs of companies that are exempt from the Intrastat requirements for IC supplies.

Computerisation, internal integration and government-supplied software   The negative signs of the estimated coefficients on the dummy variables 'computer system' (α_{11}) and 'internal integration' (α_{12}) confirm the importance of computerisation in reducing compliance costs. The positive sign of the coefficient on the dummy variable 'government software' (α_{13}) indicates that firms that use government-supplied standard software are relatively inefficient.

Electronic Data Interchange (EDI)   Although it is often asserted that information and communication technology reduces compliance costs, few studies have provided useful empirical evidence. In fact, the positive and statistically significant value of the coefficient on the dummy variable 'EDI with buyers' (α_{14}) appears to be at odds with the cost savings suggested in the literature. One explanation of this unexpected result could be that the tax authorities accept electronic invoices only if both buyer and supplier meet specified requirements in addition to the normal requirements for conventional invoices. Also, these extra requirements may differ between Member States. Hence, these additional requirements may increase the compliance costs of IC transactions, particularly if more than one tax office is involved. This finding is confirmed by a European-wide survey of the use of EDI for invoicing purposes which indicates that additional VAT requirements for electronic invoicing are complex and time-consuming (Schmidt, 1997). It is also possible that EDI is still in an experimental phase. In other words, the differential costs could decline over time. The values of the coefficients on the dummy variables 'EDI with suppliers' (α_{15}) and 'EDI with tax office' (α_{16}) indicate that EDI can reduce the compliance costs of IC transactions by respectively 47 per cent and 44 per cent.[11]

Effect of compliance costs on IC trade intensity

To estimate the effect of the differentially higher VAT and Intrastat compliance costs on IC trade, we measured IC trade intensity as the total value of IC transactions as a percentage of the total sales of firms. If the compliance costs of IC transactions induce a bias for domestic

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11 These results were calculated using the following calculation rule for logarithms for dummy variables (d):
$\ln(C_i|d=1) - \ln(C|d=0) = \ln \{(C|d=1)/(C|d=0)\}$.

trade, IC trade intensity should decrease. We examined this relationship using an exponential function with the log of IC trade intensity as the dependent variable and the log of relative compliance costs of IC transactions as the independent variable. The log of firm size and dummies for manufacturing and trade were included to control for the influence of firm size and industry characteristics.[12] To make sure that the results were not driven by a restrictive specification of the functional form, a flexible approach was adopted that used first- and second-order terms and interactions[13] between the variables. The insignificant variables were dropped from the model. This resulted in a model of which the mathematical specification is presented in Table 4.

Table 4. Model specification of compliance costs function of IC trade

Log IC trade intensity$_i$ = α_0 + α_1(Log Firm size)$_i$ + α_2(Manufacturing)$_i$ + α_3(Trade)$_i$ + α_4(Log Compliance costs)$_i$ + α_5(Log Compliance costs)$_i^2$ + α_6(Log Firm size)$_i$ * (Log Compliance costs)$_i$ + ε_i

Where for firm i:

Log IC trade intensity	Log of the total value of IC transactions divided by the total sales of a firm
Log Firm size	The log of the number of employees in full-time equivalents
Manufacturing	Dummy variable with value 1 if firm is active in manufacturing, or else is 0
Trade	Dummy variable with value 1 if firm is active in trade, or else is 0
Log Compliance costs	The log of compliance costs of IC transactions expressed as a percentage of the value of IC transactions

The results of the estimated regression equation are presented in Table 5. The F-value of 15 is significantly above the critical F-value of a 99 per cent confidence interval, indicating that the regression equation is statistically significant. To illustrate the impact of the estimated coefficients, the predictions of the equation are presented in Figure 2, in which the curves represent combinations of firm size and relative compliance costs given a specified level of IC trade intensity. Consider, for instance, the curve with an IC trade intensity of 0.20. If the relative compliance costs for a given firm size increase, the firm will have to shift to a curve with a lower level of IC trade intensity. This is true for any point on any IC trade intensity curve in Figure 2, indicating that an increase in relative compliance costs always has a negative effect on IC trade intensity.

Interestingly, Figure 2 indicates that even changes in very low levels of compliance costs have a significant negative effect on IC trade intensity. This supports the proposition of Obstfeld and Rogoff (2000) that relatively small differences in differential transaction costs can induce a significant bias for domestic trade. The theoretical argument is that a bias for home trade depends on the interaction between the differential costs of international trade and the elasticity of substitution between home and foreign goods. Empirical estimates of the average size of this elasticity are rather high (between 5 and 6) as well as biased downwards

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12 Dummies for different types of goods were also included in the equation, but they proved to be insignificant.
13 The variables in the interaction are mean-centred, a procedure commonly recommended to reduce multicollinearity and to provide unbiased parameter estimates (Aiken and West, 1996). To check if this was successful, we employed two widely used measures of multicollinearity. Both the maximum VIF scores and maximum condition indexes were well below the levels (10 and 30 respectively) that commonly signal detrimental multicollinearity.

because information on goods that are not traded is not included. The estimates of our study are biased downwards for the same reason, since firms without IC trade are excluded from the sample. In addition, the negative effects of compliance costs of IC trade may have a detrimental effect on firm growth and profitability.[14]

Table 5.   Results of multiple regression analysis

Explanatory variables		Estimated coefficients	Standard errors	t-values	Significance
Constant		−4.6663	0.7446	−6.267	$P < 0.01$
Log Firm size	(α_1)	−0.2681	0.1020	−2.628	$P < 0.01$
Manufacturing	(α_2)	0.7286	0.2402	3.034	$P < 0.01$
Trade	(α_3)	0.5255	0.2177	2.413	$P < 0.05$
Log compliance costs	(α_4)	−1.0221	0.2180	−4.689	$P < 0.01$
Log compliance costs^2	(α_5)	−0.0616	0.0158	−3.893	$P < 0.01$
Interaction: firm size × costs	(α_6)	−0.0831	0.0194	−4.284	$P < 0.01$
Model summary		Adjusted $R^2 = 0.32$	$F = 15$	N=350	

Figure 2.   The impact of the compliance costs of IC transactions on IC trade intensity
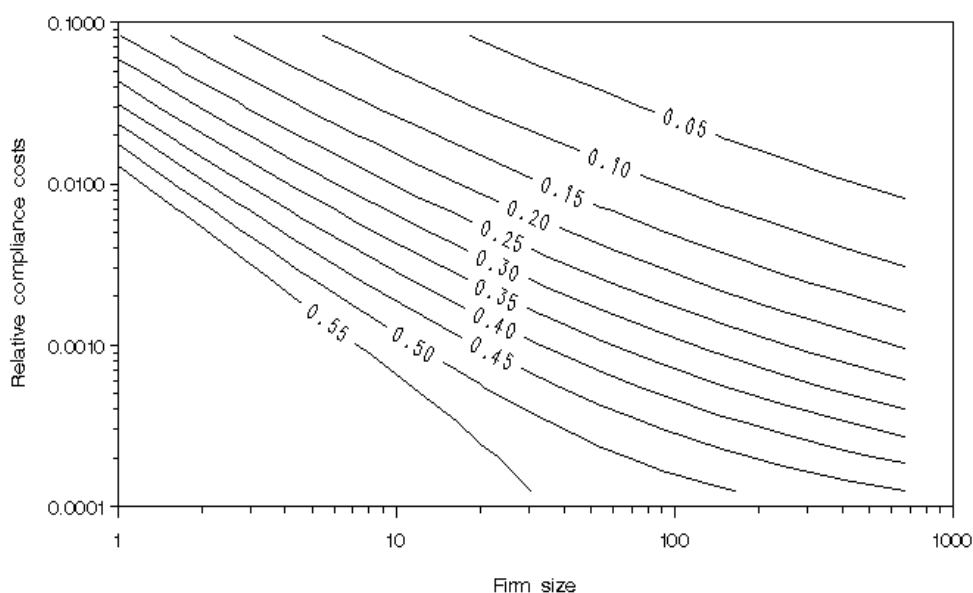
V. Policy Implications

In sum, our study shows that the differential compliance costs of the transitional VAT and Intrastat system, at, on average, 5 per cent of the value of IC transactions, represent a sizeable border tax (with large differences between firms). These compliance costs impede IC trade, distort competition and consequently weaken the competitive strength of European

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14 This follows from Roper (1999) who finds positive effects of the development of new export markets on both firm profitability and growth.

businesses. Although our findings are specific to the Netherlands, it is unlikely that the burden of compliance costs would be lower in other Member States. Our study also indicates that even relatively low compliance costs have significant negative effects on IC trade intensity if substitution elasticities between domestic and IC trade are high.

These findings should have implications for EU tax policy. The two important questions that our survey raises are (1) do the new internal border taxes violate the 1957 Treaty on the European Community (ECT), as amended by the 1997 Treaty of Amsterdam? and (2) what can be done to bring the compliance costs down to a level that is acceptable when judged in light of subsidiarity, neutrality and feasibility considerations?

Legal considerations

Directly applicable Community law prohibits overt and covert discrimination of IC cross-border situations (supply of goods and services, cross-border movement of persons and capital) compared with domestic situations. Prohibited is any different treatment, without justification, by a single legislator (Member State or Community) of similar situations on the basis of an arbitrary criterion, resulting in a disadvantage for the cross-border situation compared with the domestic situation (reverse discrimination). To emphasise, it is constant case law that acts of Community institutions are also tested against the constitutional principle contained in the ECT. In principle, border taxes imposed by individual Member States cannot be replaced by Community border taxes in the form of differentially higher compliance costs for intra-EU transactions.

Furthermore, it is clear from case law in the income tax area that the distinction made in international law between substance and procedure is not acceptable for the EU. The starting-point is that treatment of similar situations must be identical and that, in order to reach that result, both the substantive and procedural tax rules must be the same so that both the tax and the tax compliance burden, broadly interpreted, are the same.[15]

The constitutional non-discrimination principle was tested before the European Court of Justice (ECJ) in *Kieffer and Thill* (Case 114/96). The appellants maintained that the Intrastat requirements violated Article 30 ECT (old), which prohibits quantitative import restrictions and 'any measures with equivalent effect', and Article 34 ECT (old), which prohibits quantitative export restrictions and 'any measures with equivalent effect'. The Advocate General opined and the ECJ concurred that trade statistics are essential to obtain insight in the development and completion of the internal market. Accordingly, the ECJ was willing to accept the justification for legal and procedural differentiation between domestic and IC situations, because this different treatment was objectively justified, served an overriding public interest and did not result in an unnecessary burden on traders. The collection of these statistics would be discriminatory only if the measure exceeded what is necessary to achieve its purpose (proportionality principle).

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15 Reference is made to the jurisprudence of the ECJ as found in *Commission vs. Luxembourg* (Case 151/94), *Biehl* (Case 175/88), and *Schumacker* (Case 274/93).

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However, as we interpret the further developments in the internal market and the jurisprudence, it is not excluded that the ECJ will reverse its position that differentiation in statistical (and VAT) requirements between domestic and IC transactions, resulting in a disadvantage for IC supplies and acquisitions, does not constitute unlawful discrimination. Before 1999, the collection of trade statistics was essential for the design of trade and exchange rate policies of individual Member States. With the introduction of the euro, however, this purpose has become redundant, because the internal market has all of the characteristics of a domestic market.

Of interest in this connection is *Futura* (Case 250/95), in which the Luxembourg requirement that non-residents, if they were to enjoy a carry-over of losses, had to record those losses in accounts kept at the branch and in accordance with Luxembourg rules, was considered EU-incompatible. The Advocate General opined that the rule constituted different procedural treatment by requiring non-residents to keep two sets of accounts, one at head office and one at the branch, whereas residents only had to keep one set of accounts. The European Court of Justice (ECJ) considered that, although the rule applied without distinction to residents and non-residents, nevertheless it constituted a prohibited non-discriminatory restriction to free movement.

As regards the merits of the statistical obligations, we believe that the trade data collection requirements are so fragmentary and incomplete that it is doubtful whether they serve much purpose at all. Thus, services – a large and growing proportion of the national products of Member States – are exempted from the Intrastat requirements. In the case of goods, moreover, the requirement makes little sense in the case of intra-company transactions, representing the majority of all intra-EU trade in goods, because the declared values are largely meaningless. Finally, we note that federal countries, such as the US and Canada, do not collect trade statistics at internal state and provincial borders. Yet this is not considered an impediment to the formulation of the economic policies of individual state and provincial governments.

Some suggestions

In attempting to formulate some suggestions to eliminate or at least mitigate the differential compliance costs burden, we proceed from the assumption that Member States want to retain the maximum degree of autonomy in operating their own VAT systems, including setting their own VAT rates. Accordingly, we do not consider solutions that, in essence, would involve ceding the whole or part of the operation of the various VATs to the European Commission. These proposals include the European Commission's (1996) common VAT, the 'exporter rating system' (taxation of IC supplies at the VAT rate of the country from which the goods are supplied in conjunction with a tax clearing mechanism) and various 'uniform rating systems' (taxation of IC supplies at a uniform VAT rate, regardless of the rate that would be applied to corresponding domestic supplies).[16] We note that changes involve new adjustment costs, particularly for firms with sophisticated accounting information systems.[17]

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16 For excellent discussions of the coordination of two-tier VATs in federal countries and common markets, see McLure's (2000) CVAT, Bird and Gendron's (1998, 2000) dual VAT, and Keen and Smith's (1996, 2000) VIVAT.
17 We support the European Commission's call for reducing unwarranted differences between Member States in

Accordingly, we limit our suggestions to solutions that can be found within the transitional VAT and Intrastat system. We offer the following ideas as food for thought.

1. Abolish the Intrastat system for VAT-liable persons with IC transactions, because the statistics are highly fragmentary, of doubtful value, and of little economic use. Intrastat requires data for each category of goods (identified by the corresponding 8-digit code) on the Member State of supply and acquisition, volume, value, nature of the transaction, supply conditions and the probable mode of transportation. The furnishing of these data represents a significant increase in overall compliance costs. We note that the VAT and statistical requirements are not suited to modern business practices of firms that try to use the economies of scale of the Single Market but are obliged to record trade data per Member State.

2. Abolish the VIES listing system, which also did not exist in the Benelux countries when they operated the deferred-payment system prior to its EU-wide introduction in 1993. Instead, encourage individual Member States to perform joint audits of VAT returns on a bilateral or multilateral basis. The Mutual Assistance Directive allows tax authorities to obtain any information that is necessary for determining the tax that a taxpayer must pay. The bulk of IC transactions take place with neighbouring Member States. Following the examples of Schengenland or Euroland, regional groupings of Member States could agree to jointly monitor VAT obligations regarding IC transactions. By analogy, bilateral and multilateral agreements already exist to investigate criminal activities.

If these major reforms are not acceptable, consideration might be given to the following less radical measures.

3. Introduce licences for IC traders that are links in complex IC supply chains. Firms with accounting systems that meet specified requirements might be issued a licence to trade with firms in other Member States on a zero-rate basis. Generally, such firms have sophisticated accounting information systems and therefore should be able to meet additional requirements without much additional cost. Firms with less sophisticated accounting information systems would be disadvantaged by the conditions attached to the licences. However, it is unlikely that many firms with complex supply chains will have less sophisticated accounting information systems.

4. Compensate firms with a small volume of IC trade for the disproportionately high compliance costs that they incur. Whereas licenses would tend to favour large firms, compensation dependent on the volume of IC trade would tend to favour small firms. Compensation equal to 5 per cent of the first euro 1 million of IC transactions would reduce average compliance costs to less than 0.5 per cent of the value of IC transactions. Compensation could be given in the form of a proportional tax credit against the VAT payable as shown on the return. Interestingly, Denmark has a mechanism under its income tax to compensate small firms for the disproportionate higher compliance costs that they

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VAT legislation, interpretation and implementation. This would lessen the complexity of the transitional regime and reduce the costs associated with entry to other Member States (Smith, 1997, p. 22).

incur.[18]

None of these measures would be ideal in the sense that it would eliminate all compliance cost differences between domestic and IC transactions. That ideal remains elusive as long as VATs are administered at Member-State level. As with other EU issues, a balance must be struck between subsidiarity, neutrality, and feasibility considerations. But the abolition of Intrastat and VIES would accomplish much in reducing differentially higher compliance costs of IC transactions to acceptable levels. Most certainly, the EU is not on the right track if the old tax, customs and statistical obligations that had the effect of border taxes are replaced by EU-wide obligations regarding IC transactions that have equivalent effect.

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18 See Sandford (1995, p. 255) who recounts that Denmark provides compensation at the rate of 2.5 per cent of net income, with a maximum of euro 790 which is reduced by euro 264 for every year of manpower working capacity. Although a compensation scheme would improve firms' competitive conditions, new distortions would arise if firms were compensated differently among Member States. In addition, the compensation would have to be an approximation of real costs; if not, it could be considered an export subsidy.

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