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Do Large Companies Have Lower Effective Corporate Tax Rates? A European Survey

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Abstract: The current debate in corporate taxation is focusing on leveling the tax playing field within the European Union for companies operating across-countries. However, tax burdens could also vary with the size of companies within the same country, raising the question whether large companies pay their share of the burden. This paper uses firm-level data for 21 European countries between 1992 and 2004. The paper finds a robust negative correlation between the number of employees and the effective tax burden of companies. This result tends to validate theories arguing that large companies may enjoy a lower tax burden. As a caveat, using total assets as size variable produces a positive relationship. This relationship is however less robust and less economically significant.

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1. Introduction.

Tax systems are strong political economy instruments. Public authorities universally use taxes for allocative and redistributive purposes. In the same time, the design of tax systems is inherently an arbitrage between efficiency and equity purposes, with differentiated treatments across taxpayers. It is therefore unsurprising that corporate tax systems do not escape this debate. In particular, there are frequent debates on whether large corporations were paying their due share of the tax burden.

A related debate is whether public authorities shall implement measures to specifically lower the tax burden of small companies based on governments' objective of achieving an efficient allocation of resources. As argued by the OECD (1994), possible market imperfections may be detrimental to small companies and governments may desire to alleviate them or compensate small businesses for their adverse effects, possibly by using the tax system. Indeed, small companies may have more difficulties to access credit and may suffer from higher costs of borrowing (Beck et al. 2005) because of information asymmetry on the actual situation of SMEs, a lack of reputation and possible differences in accounting requirements compared to large companies. Small companies may also suffer from both running at high average costs – because they cannot take advantage of economies of scale – and having difficulties to fulfill their managerial needs as they may lack reputation. Finally, small companies may face regulatory failures as that they may lack the expertise to optimize their tax planning and carry out profit shifting activities, leading to a higher tax burden that might need to be corrected via the tax system. The argument is nevertheless turned on its head if one considers that the differences in accounting and tax systems faced by large companies operating across countries may lead to double taxation[1].

From a political economy perspective, the corporate tax burden could be related to company's size. It is common to refer to two main strands in the literature (Holland, 1998; Vandenbussche et al. 205). On the one hand, larger firms may have more political power to negotiate their tax burden, notably through professional unions, are more mobile, and have a larger impact on regional or national employment when they relocate or exit. This political power theory (Siegfried, 1972) predicts that larger companies would face lower effective tax rates. On the other hand, the political cost theory (Watts and Zimmerman, 1978) argues that because of higher visibility and hence higher scrutiny, large companies will end up paying a higher tax burden. The same outcome is predicted by the public choice argument that hypothesizes that small and medium size companies are major contributors to employment in developed economies[2] and that their owners and managers are often easily identifiable voters who need to be accommodated with lower taxes.

The ambiguous results coming from the theoretical economic and political economy literature have led to a series of empirical studies. Several authors have directly estimated the effect of company's size on effective corporate tax rates. Sigfried (1972) estimates such a relationship for the US and, although the results seem to be influenced by a heavy presence of large companies in some sectors, finds a negative relationship between size - measured by assets - and effective taxation. His results are in line with the political power theory and a similar relationship is also found by Pocarno (1986). Such a negative relationship is nevertheless in opposition

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[1] See Nicodème (2002) for a discussion on cross-border tax obstacles with a view on company's size.

[2] In the EU, SMEs account for 99.8% of companies, 66% of total employment, and 54% of turnover (European Commission, 2001e, p.16).

with the findings of Zimmerman (1983) who uses US data for 1948-1981 and finds that, from 1971, the largest fifty companies were facing significantly higher effective corporate tax rates, a result that rather seems to confirm the political cost theory. Several studies try to investigate and extend the results. In particular, Wilkie and Limberg (1990), albeit pointing to differences in the definition of effective tax rates between Zimmerman (1983) and Porcano (1986), still find a positive relationship in their own study. Kern and Morris (1992) extend the results of Zimmerman (1983) up to 1989 and find similar result, but the authors attribute the positive relationship to an industry effect. In another study, Shevlin and Porter (1992) find no significant relationship between size and effective taxation. Finally, Holland (1998) uses UK data for 1968-1993 and finds that the size effect (measured by assets or sales) was varying with sub-periods.

These studies however were carried out in a univariate context – i.e. by way of statistical correlations or with size as sole explanatory variable. Hence, omitted variables in the regression may lead to biased coefficients. For example, Wang (1991) shows that leaving net operating losses and negative tax expenses out of the regression lead to improper conclusions regarding the link between size (measured by sales or assets) and the tax burden. Several elements of the balance sheet will indeed influence the tax burden, of which two obvious elements are the degree of leverage (since interest payments are tax-deductible) and the asset structure of the company (given the various degrees of depreciation rates across types of assets). In a multivariate context, Gupta and Newberry (1997) for the US and Janssen and Buijink (2000) for The Netherlands find no strong evidence of a relationship, both using total assets as a variable capturing size. Stickney and Mc Gee (1982) underline the importance of foreign operations and of industry characteristics, as the effect of size may vary with them. Looking at eleven Member States of the European Union, The US and Japan between 1980 and 1999, Nicodème (2002) confirms the importance of balance sheet structures and finds a negative relationship between size, measured by turnover, and effective corporate tax rates. His results show that, on average, having a turnover inferior to 7 million euros lead to effective tax rates 23% higher than for companies with a turnover superior to 40 million euros[3]. A negative relationship is also found in Huizinga and Nicodème (2006) in which size is measure as the log of total assets. In opposition to this result, several recent studies using Belgian data find a positive relationship between the tax burden and the value of total assets (Valenduc, 2002; Vandenbussche et al. 2005; Vandenbussche and Tang, 2005) or the level of employment (Vandenbussche et al. 2005; Vandenbussche and Tang, 2005). These authors attribute the positive result between the tax burden and the number of employees to the fact that tax incentives in Belgium may go against the interest of labor-intensive firms.

These ambiguous theoretical and empirical results show the importance of the choice and definition of variables. Most papers actually lack a proper theoretical model to be estimated. This may lead to the well-know problem of omitted variables or, conversely, of the overspecification of the model will lead to multicollinearity and affect policy conclusions. This paper derives such a theoretical model and estimates it for eleven European countries using financial statement data. Section 2 derives the model and the estimation framework. Section 3 presents the data used in this study. Section 4 presents the empirical results, while section 5 concludes.

[3] These two figures define small and large firms in his database.

2. The estimation framework.

Our aim is to present a simple model that will separate the multiple channels though which company size may impact the effective tax rate and that will allow us to correctly regress the necessary variables. We start with a classical expression for the value of a leverage firm.

$$V_l = V_u + T_c D - \frac{\gamma}{2}\left(\frac{D}{A}\right)^2 A \qquad (1)$$

With V_l and V_u being the value of the leverage and unleverage firm respectively. The second term on the right-hand side is the tax shield provided by debt and is equal to the product of the statutory corporate tax rate T_c and the value of debt D. Finally, too much debt leads to some costs of financial distress, modeled here as a quadratic function of the ratio of debt on assets and proportional to the level of assets and some cost parameter γ. The firm will seek to maximize its value. The first-order condition w.r.t. debt gives:

$$\frac{\partial V_l}{\partial D} = T_c - \gamma \frac{D}{A} = 0 \qquad (2)$$

Hence, the optimal level of debt is:

$$D^* = \frac{T_c}{\gamma} A \qquad (3)$$

In line with the literature, our definition of the effective tax rate is the ratio of tax accrued to earning before interest, taxes and depreciation (EBITDA), also defined as:

$$ETR_1 = \frac{(1-\lambda)T_c(EBITDA - \delta A - rD)}{EBITDA} \qquad (4)$$

with EBITDA being the usual earnings before interest, taxes and depreciation allowances, δ being the depreciation rate on assets, r being the interest rate on debt. In addition, λ represents a coefficient to take into account differences between accounting and tax practices.

By inserting (3) in (4), we obtain a new equation for our effective tax rate:

$$ETR_1 = (1-\lambda)T_c\left(1-\delta\frac{A}{EBITDA}-r\frac{T_c}{\gamma}\frac{A}{EBITDA}\right) \tag{5}$$

Our effective tax rate depends on several parameters, some of which can vary with size. First, the term (1-λ) represents (permanent or temporary) differences between accounting and tax practices in the determination of profit. This term may also represent differences in specific treatment that occurs outside of the tax code, such as specific rulings or enforcement. It is therefore the term through which the political cost and the political power theories may be tested. Note that this term may also include industry effects. Second, the effective tax rate is determined by the statutory tax rate. In several tax codes, there is an explicit difference in the tax rate between small and medium size companies and others. For example, some authorities could consider that a progressive corporate tax system is desirable because 'SMEs vote'. Next, the effective tax rate is impacted by the ratio of total assets and EBITDA. This ratio certainly includes an industry effect as some industries are more capital-intensive than others. There is also a size component that will be reflected in economies of scales. Large companies would then display a lower ratio. Finally, the interest rate on debt will depend on risk and incorporate an industry component. It may however also encompass a size component as large companies may have access to better financial conditions than smaller ones. We reasonably assume δ and γ to be independent of size.

Note that a second definition of the effective tax rate (taxes accrued on profit before taxes instead of EBITDA) would be

$$ETR_2 = \frac{(1-\lambda)T_c(EBITDA - \delta A - rD)}{(EBITDA - \delta A - rD)} = (1-\lambda)T_c \quad (6)$$

which offers a direct estimation of the differences between accounting and tax practices.

Considering (5) and (6), our basic regression is:

$$\ln(ETR_1)_{i,t} = \alpha + \beta_1 \ln(T_c)_{i,t} + \beta_2 S_{i,t} + \beta_3 \ln\left(\frac{EBITDA}{A}\right)_{i,t} + \lambda_t + \lambda_c + \varepsilon_{i,c,t} \quad (7)$$

where S is a measure of size and λ_t and λ_c are time and country dummies respectively. The indices i, c and t indicate the firm, the country and time respectively[4]. Note that in this model, the ratio of EBITDA to assets is actually a measure of the profitability on assets.

3. The data.

The data on multinational firms are taken from the *Amadeus* database compiled by Bureau Van Dijk.[5] This database provides accounting data on private and publicly owned European firms. The database provides consolidated and unconsolidated accounting statements. Consolidated statements reflect the activities of the group while non-consolidated statements in contrast reflect the activities directly within a specific firm. Our data are based on non-consolidated statements. The

[4] Note that the alternative regression is:

$$\ln(ETR_2)_{i,t} = \alpha + \beta_1 \ln(T_c)_{i,t} + \beta_2 S_{i,t} + \lambda_t + \lambda_c + \varepsilon_{i,t}$$

Two additional alternative measures have been proposed by the literature. However, the use of tax on sales would implicitly assume that the true profit margins are constant across industries, which shall be rejected as a hypothesis (Collins and Shackelford, 1996 page 5). The use of taxes on total assets could be another possible choice, widely used in the literature (Huizinga and Nicodème, 2006; Grubert et al. 1993;Kinney and Lawrence, 2000) but total assets appears in the definition of some of our explanatory variables, leading to possible endogeneity problems.

database also excludes very small companies that fail to fulfill at least one of the criteria on turnover, total assets or the number of employees. Appendix (A) provides more detailed information on our sample of companies and a discussion.

From Amadeus, we calculate several variables using the financial statements of companies (see the Appendix for variable definitions and data sources). First, the effective tax rate is defined as the logarithm of the ratio of the tax accrued on added-value. This definition derives from our model and allows taking into consideration the effects of both the corporate tax rate and the tax base. Next, we add a measure of profitability, proxied by the logarithm of the ratio of the earnings before interest payments and depreciation to the value of total assets, as derived from our model. We expect this variable to enter positively into our regressions. Finally, we have two alternative measures of size. The first one is the logarithm of the number of employees. However, we know that some authors point to the fact that employment costs are tax-deductible and will negatively influence the tax burden. We therefore add a second size variable defined as the logarithm of the value of total assets and which is widely used in the literature. These two measures show a correlation of .414, which is positive and statistically significant at the 1%-level in our sample.

4. The empirical results.

Tax systems differ widely across countries and, within countries, across time. In particular, some countries may decide to opt for a low tax rate combined with a wide tax base whilst some other may just do the opposite. Several 'tax-rate-cut-cum-base-widening' tax reforms have taken place in Europe recently. Hence, it is unlikely

[5] The database is created by collecting standardized data received from 50 vendors across Europe. The local source for this data is generally the office of the Registrar of Companies. See appendix (A) for data sources.

that our variables behave similarly across countries and time. This leads us to use multiple tests to identify the optimal specification of our empirical model.

First, we test for the presence of fixed group effects. The null hypothesis is the absence of country and/or time effects or, in other words, that all dummies but one are equal to zero. Table (1) shows the test statistics comparing the fixed group effects model and the pooled OLS for the regressions with our two measures of size. The null hypothesis is strongly rejected in both cases, confirming the presence of time and country effects.

Table (1): Fixed group effects tests.

	Size1 (# of employees)	Size2 (total assets)
Theoretical Statistic	$F_{(5\%;\ 32;\ 527,882)} = 1.44$	$F_{(5\%;\ 32;\ 588,749)} = 1.44$
Observed Statistic	$F_{(Obs)} = 1,045.24$	$F_{(Obs)} = 1,247.82$
P-value	<.0001	<.0001
Regressors	Lcit, laebitda, and size.	Lcit, laebitda, and size.

Second, because of the expected variation in the tax systems, we need to test the hypothesis of homogeneous coefficients. There is indeed a strong presumption that various tax systems will react differently to a change in the statutory tax rate, profitability and/or the size of the company. To investigate this, we apply two poolability tests that both have poolability of the data as null hypothesis, i.e. all coefficients for the regressors across time and countries are identical. The first test is the Chow (1960) F-test[6]. This test estimates the variance between and within groups. When the variance between groups is marginal, the test does not reject poolability. The alternative poolability test is constructed introducing all interactions between the explanatory variables and the time or country dummies, and testing for their joint

[6] Computed as $$F_{obs} = \frac{\left(ee' - \sum e_i e_i'\right) / (n-1)K}{\sum e_i e_i' / n(T-K)} \sim F_{((n-1)K;\, n(T-K))}$$

significance (Nunziata, 2005). This test is much more restrictive because the statistical significance of one or two interactions may be sufficient to reject poolability. Table (2) reports the results of these tests for the time and country dimensions with our two size variables.

Table (2): Poolability tests.

		Across time		*Across countries*	
		Chow test	*Interactions test*	*Chow test*	*Interactions test*
Size1: #employees	Theoretical Statistic	$F_{(5\%;48;\ 221)} = 1.42$	$F_{(5\%;24;\ 527,858)} = 1.52$	$F_{(5\%;80;\ 189)} = 1.35$	$F_{(5\%;33;\ 527,849)} = 1.44$
	Observed Statistic	$F_{(Obs)} = 0.06$	$F_{(Obs)} = 204.36$	$F_{(Obs)} = 0.23$	$F_{(Obs)} = 274.50$
	Decision	1.000	<.0001	1.000	<.0001
	Decision	Does not reject poolability	Reject poolability	Does not reject poolability	Reject poolability
Size2: Total Assets	Theoretical Statistic	$F_{(5\%;48;\ 221)} = 1.42$	$F_{(5\%;24;\ 588,725)} = 1.52$	$F_{(5\%;80;\ 189)} = 1.35$	$F_{(5\%;33;\ 588,715)} = 1.44$
	Observed Statistic	$F_{(Obs)} = 0.04$	$F_{(Obs)} = 138.64$	$F_{(Obs)} = 0.25$	$F_{(Obs)} = 293.79$
	P-value	1.000	<.0001	1.000	<.0001
	Decision	Does not reject poolability	Reject poolability	Does not reject poolability	Reject poolability

The results of the tests are ambiguous. While the Chow test does not reject poolability in any of the cases, the interactions test strongly rejects it in all cases. Although both tests are appropriate in the context of a static panel data model – that is in the absence of a lagged dependent variable – the Chow test assumes a correct underlying parametric specification and its rejection or acceptance may also be due to a misspecification of the model (Baltagi et al., 1996). Nevertheless, pooling data may also be attractive because it increases the efficiency of the estimates (Nunziata, 2005). This gain in efficiency may be at the expense of a biased estimate if there is heterogeneity in the slopes but the bias does not always necessarily occur (Lee, 2002, page 77). Given the ambiguity of the results of the poolability tests and the existing trade-off between efficiency and bias when pooling or not data, we follow a pragmatic

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With ee' being the sum of square of errors of the pooled OLS and $\sum e_i e_i'$ being the sum of the square of errors of the individual time or country regressions. T, n and K are the number of time period, the number of countries and the number of regressors respectively.

approach which will consist of several alternative models with fixed effects and random coefficient models. On the one hand, we will estimate pooled (homogenous) models in the following form for both types of size variables: (a) $y_{i,t} = \beta X_{i,t} + \lambda_t + \lambda_c + \varepsilon_{i,t}$, with λ_t, λ_c being the time and country fixed or random effects. In this model, the slope of the regressors is homogeneous. On the other hand, we estimate random coefficient models, allowing for cross-sectional heterogeneity in all parameters. To minimize the loss of efficiency, we estimate these random coefficient models by pooling the data and using residual maximum likelihood estimation, instead of having a different regression per country or per year. The specification takes the form: (b) $y_{i,t} = \beta_{c,t} X_{i,t} + \lambda_t + \lambda_c + \varepsilon_{i,t}$, in which the coefficients of the regressors are heterogeneous.

The basic sample consists of a panel of companies from 21 European countries during the period from 1992 to 2004[7]. The results of regressions of the effective tax rates (in logs) are presented in Table (3) (see Appendix A for variable definitions and the detailed description of our sample). Regressions (1) through (5) take the logarithm of the number of employees as the size variable while regressions (6) through (10) take the logarithm of the total assets instead. Regressions (1) and (6) are simple pooled OLS without time and country effects. Regressions (2) and (7) include time and country fixed effects. Regressions (3) and (8) include time and country random effects and uses Feasible GLS estimators. Regressions (4), (5), (9) and (10) use the random coefficient model (with residual maximum likelihood estimation), allowing for heterogeneity in the slopes of the regressors. They differ in that regressions (4) and (9) allow heterogeneity across countries only while regressions (5) and (10) allow

[7] These countries are Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Hungary, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Slovak republic, Spain, Sweden, Switzerland, and United Kingdom.

heterogeneity across both time and countries. All regressions include the measure of the statutory tax rate (including local taxes and surcharges and in log), the ratio of total assets on the earnings before interest, taxes, depreciation and adjustments (taken in logs), as well as the log of the size variable. The modelling strategy is directly derived from our model in section 2. The (log of) statutory rate variable is expected to be positively correlated with the effective tax rate and the (log of) ratio of EBITDA to total assets is expected to be positively correlated to the dependent variable, as it is in effect a measure of profitability.

The pooled OLS in regressions (1) and (6) are reported for information purposes but carry very little information since our fixed group effects tests clearly suggest rejecting this model. In regressions (2) and (7), which include fixed time and country effects, all variables are statistically significant at the 1% level. In both regressions, the ratio of the logarithm of EBITDA to total assets and the logarithm of the corporate statutory tax rate enter with the expected positive sign. They also have very similar coefficient in both regressions. There are however significant differences between the two regressions. In regression (2), the number of employees enters with a strong negative coefficient. The estimated elasticity suggests that an increase of 10% in the number of employees decreases the tax burden by 2.43%. In regression (7), however, the variable capturing the size of total assets enters with a positive and significant sign, suggesting that an increase in the value of total assets by 10% increases the tax burden by .61%. Applying a Hausman test to both specifications does not reject the possibility of the presence of random year and country effects.

These effects are estimated in regressions (3) and (8), with almost no changes in the coefficients[8].

Next, we take into account the possibility of heterogeneous slopes in our model. The results of our poolability tests are ambiguous, despite their well-known respective pros and cons. We investigate the issue further by regressing our model for each year and for each country. The results are reported in table (4). The coefficient for the number of employees enters negative and significant in all regressions. There are however some differences in its level. The coefficient seems to become slightly more negative with time. It also varies from -.142 in Denmark – maybe because of consolidated taxation – to -.386 in Hungary. These differences may reflect differentiated relative treatments of large and smaller companies across countries. Our correlation matrices from regressions (1) to (5) does not suggest any correlation between the number of employees and the statutory corporate tax rate (The Pearson correlation coefficient is statistically significant but its value is very small at .007), nor with profitability (the correlation is a meagre 10^{-5} and not at all significantly different from zero). This suggests that there is no difference in the reported profitability of smaller and larger companies, nor that companies with a large number of employees locate in high or low statutory tax rates. Table (4) offers a more contrasted picture for the regressions using total assets. Most of the regressions for individual years in the 1990s do not have a significant coefficient for the size of total assets. Most - but not all - countries have positive and significant coefficients, although a few of them (Belgium, Finland, Hungary and Italy) have a negative and

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[8] In addition, both the Akaike Information Criterion and the Schwarz's Bayesian Criterion do not suggest an improvement in the model. The R^2 could not be estimated in the random effects specifications because of the limitations of the statistical package (we have more than one observation per country and year as our data are at firm-level) and we estimated instead these effects using the feasible GLS estimators.

significant coefficient. These differences may reflect different approaches across countries with regard to depreciation rules of assets as well as the existence of different domestic rules on deductibility of specific expenses that create discrepancies between accounting and financial profit. Here again, our correlation matrix from regressions (6) to (10) does not suggest any correlation between the value of total assets and the statutory corporate tax rate (The Pearson correlation coefficient is statistically significant but its value is only at .008), nor with profitability (the correlation is simply .0008 and not at all significantly different from zero). These differences in the coefficients per year and country suggest that the slopes are heterogeneous and that a random coefficient model may be a better specification. This is done in regressions (4)-(5) and (9)-(10) for the two size variables. In regressions (4) and (9), we allow the coefficients for the statutory tax rate, the profitability and the size to vary across countries while the years are still introduced in the model as fixed effects. In regressions (5) and (10), the coefficients are allowed to vary across countries and years. The reported values for those regressions in table (3) are the estimated means for the random slopes. The Akaike and the Schwarz criterions suggest an improvement of the model when allowing for heterogeneity in the slopes. These specifications dramatically increase the coefficients for the statutory corporate tax rate – mainly because it includes now heterogeneity across countries – although with less significance. They also leave relatively unchanged the mean coefficients for profitability. Finally, they slightly increase the respective effects of size in both models.

Table (3): Basic regressions.

	Size1: #employees					Size2: total assets				
	(1) Pooled OLS	(2) Fixed Effects	(3) Random Effects	(4) Random country coefficients	(5) Random time and country coefficients	(6) Pooled OLS	(7) Fixed Effects	(8) Random Effects	(9) Random country coefficients	(10) Random time and country coefficients
Intercept	-.203**	1.030**	.773**	-2.176	-2.166	-1.689**	-.948**	-.742**	-2.960*	-3.154
	(.038)	(.099)	(.125)	(1.454)	(1.612)	(.037)	(.093)	(.120)	(1.264)	(1.468)
Log CIT	.494**	.119**	.120**	1.042*	1.028*	.478**	.104**	.102**	.752*	.840
	(.010)	(.025)	(.024)	(.416)	(.459)	(.010)	(.024)	(.023)	(.344)	(.408)
Log size	-.245**	-.243**	-.243**	-.254**	-.251**	.056**	.061**	.061**	.077**	.066*
	(.001)	(.001)	(.001)	(.013)	(.014)	(.001)	(.001)	(.001)	(.021)	(.022)
Log (ebitda to assets)	.468**	.487**	.487**	.424**	.437**	.421**	.446**	.446**	.396**	.405**
	(.002)	(.002)	(.002)	(.043)	(.046)	(.002)	(.002)	(.002)	(.046)	(.048)
Country effects	None	Fixed	Random	Random coefficients	Random coefficients	None	Fixed	Random	Random coefficients	Random coefficients
Time effects	None	Fixed	Random	Fixed	Random coefficients	None	Fixed	Random	Fixed	Random coefficients
No. of observations	527,918	527,918	527,918	527,918	527,918	588,785	588,785	588,785	588,785	588,785
Adjusted R^2	.145	.196				.078	.136			
Akaike Information Criterion		1,712,253	1,712,270	1,698,478	1,697,057		1,967,321	1,967,337	1,952,257	1,950,290
Schwarz's Bayesian Criterion		1,712,264	1,712,264	1,698,466	1,697,039		1,967,332	1,967,331	1,952,245	1,950,272
Hausman test for random effects		P-value: .606					P-value: .746			

Data are for 1992-2004. The dependent variable is the log of tax accrued on value-added. Regressions (1) through (5) take the number of employees as the size variable while regressions (6) through (10) take total assets instead. Regressions (1) and (6) are simple pooled OLS without time and country effects. Regressions (2) and (7) include time and country fixed effects. Regressions (3) and (8) include time and country random effects and uses Feasible GLS estimators. Regressions (4), (5), (9) and (10) use the random coefficient model (with residual maximum likelihood estimation and variance-covariance component matrix for the intercept and slopes), allowing for heterogeneity in the slopes of the regressors. Regressions (4) and (9) allow heterogeneity across countries while regressions (5) and (10) allow heterogeneity across both time and countries. The coefficients in regressions (4), (5), (9) and (10) represent the estimated means for the random slopes. The Akaike Information Criterion and the Schwarz's Bayesian Criterion are alternatives to the adjusted-R^2 and provide a measure that captures the trade-off between the goodness-of-fit and the parsimony of the model. They are here defined in their 'smaller-is-better' version. The Hausman test for random effects is a F-test with the null hypothesis that random effects are not rejected. White-Heteroskedasticity consistent errors are given in parentheses for regressions (1)-(2) and (6)-(7). Detailed variable definitions and data sources are given in Appendix A. The standard errors are given in parentheses. * and ** indicate significance levels of 5 and 1 percent, respectively.

Table (4): regressions per year and country.

	lsize1	N obs.	R^2	lsize2	N obs.	R^2
1992	-.191**	616	.149	-.039	699	.079
1993	-.186**	1,476	.082	-.021	1,852	.032
1994	-.172**	6,216	.099	.025*	8,086	.062
1995	-.198**	29,159	.150	.007	34,772	.102
1996	-.210**	34,720	.159	.014**	40,857	.108
1997	-.222**	40,921	.166	.001	46,734	.108
1998	-.233**	46,723	.156	.008*	51,937	.087
1999	-.258**	56,991	.172	.034**	63,570	.088
2000	-.256**	70,147	.180	.045**	76,816	.097
2001	-.261**	67,469	.174	.045**	73,540	.095
2002	-.271**	61,141	.179	.036**	67,591	.088
2003	-.239**	58,542	.087	.143**	65,561	.044
2004	-.277**	53,797	.197	.057**	56,770	.094
Austria	-.243**	979	.143	.061*	2,436	.121
Belgium	-.283**	44,578	.193	-.090**	44,969	.128
Bulgaria	-.242**	3,978	.140	.147**	4,054	.122
Switzerland	-.370**	717	.189	.046	811	.021
Germany	-.219**	14,559	.101	.081**	26,789	.063
Denmark	-.142**	5,091	.049	.204**	5,235	.070
Estonia	-.372**	533	.183	.034	571	.027
Spain	-.300**	73,914	.179	.170**	88,791	.102
Finland	-.289**	13,591	.078	-.031**	16,952	.027
France	-.312**	102,075	.210	.024**	119,361	.136
Un. Kingdom	-.210**	66,637	.143	.153**	68,436	.113
Hungary	-.386**	321	.259	-.034*	3,008	.093
Italy	-.171**	128,071	.189	-.042**	129,554	.138
Luxembourg	-.187**	606	.097	.170**	923	.097
Netherlands	-.254**	5,956	.193	.193**	6,125	.160
Norway	-.237**	6,035	.075	.249**	6,389	.068
Poland	-.259**	12,407	.192	.101**	13,328	.131
Portugal	-.258**	4,834	.145	.008	5,547	.090
Romania	-.194**	16,327	.202	.150**	16,597	.188
Sweden	-.238**	26,375	.101	.038**	26,589	.047
Slovak Rep.	-.247**	334	.060	.034	2,319	.101

Data are for 1992-2004. All regressions use the random coefficient model (with residual maximum likelihood estimation and variance-covariance component matrix for the intercept and slopes), allowing for heterogeneity in the slopes of the regressors for years and countries. The first measure of size (lsize1) is the log of the number of employees, while the second measure (lsize2) is the log of the total assets. * and ** indicate significance levels of 5 and 1 percent, respectively.

5. Robustness checks

Regression (5) and (10) of Table (3) – with random year and country coefficients – provide some evidence that the tax burden is positively related to the total assets of companies and negatively related to the number of employees. In Table (5), we report some additional regressions as robustness checks related to these two regressions. First, in regression (11), we re-estimate the two equations using the log of the tax accrued to taxable profit (instead of value-added) as dependent variable. This specification corresponds to the alternative model discussed in section 2. A significant sign for the size variable could be evidence for either the political cost or the political power theories. The size variable becomes negative although only significant in the case of total assets. This could suggest that the political power theory works for companies with large assets but we do not attach too much weight to this regression because our Akaike and Schwarz criterions suggest that the model is not necessarily well-specified in this case. Next, we add several potentially important controls in our regressions as robustness tests. In regression (12), we add sector fixed effects capturing eight sectors based on the 3-digit NACE code: *Agriculture*, *Manufacturing*, *Utilities*, *Construction*, *Retail and wholesale*, *Transport and communications*, *Financial services*, and *Others*. We also include two macroeconomic variables – real GDP growth and inflation – that are here to control respectively for the economic cycle and the effects of inflation on tax-deductible items based in some countries on historical costs. In addition, we include the financial profit (or loss) of the company as this enters into account for the tax base. Finally, we include a dummy variable taking the value 'one' if the company has corporate parents or subsidiaries and therefore part of a group of companies. This group dummy could act in both ways. On the one hand, companies being part of a group may be able to shift profit within the group and reduce the tax base. On the other hand, the operations between related companies may also lead to double taxation as tax authorities do not always consider these operations as being carried out at arm's length. In regression (12), inflation does not enter as significant, neither from a statistical, nor from an economic point-of-view. GDP growth enters small but negatively, which is counter-intuitive, but it may be influenced by the fact that the carry-forward of losses creates a counter-cyclical effect. Also, there may be endogeneity problems between profits and growth. Next, financial profit enters, as expected, statistically significant and positive but with no economic significance. The dummy capturing group membership is not significant and close to zero when total assets is used as a proxy for size but enters positively and significantly when the number of employees is used as size variable. This seems to be in accordance with several surveys indicating that companies operating across countries may suffer from double taxation. To investigate this further, regression (15) replaces this variable by the share of foreign ownership in the company and this variables turns out to be positive and significant in both panels A and B. Regression (13) adds a dummy variable controlling for the existence of a loss the previous year. As expected given the possibility to carry forward previous losses, this variable enters negative and significant in both regressions. The same results appear in regression (14) which uses the log of the size of the loss in the previous year instead of the dummy. In all regressions (12) to (15), the profitability and statutory tax rate variables enter with the expected positive sign. One slight difference is that statutory rate gets much larger coefficient once the controls are introduced but its significance diminishes. The result of interest is however that the size variable keeps its significance and sign, and that the coefficients are slightly larger when controlling for various potential effects.

As an additional robustness test, regression (16) mimics regressions (5) and (10) but uses maximum likelihood estimations instead of residual maximum likelihood estimation. The results are unchanged, indicating their robustness with regards to the estimation technique used. Next, regression (17) uses consolidated financial statements of companies instead of unconsolidated statements. The effect of the statutory tax rate variable disappear, probably because most countries still tax companies under separate accounting methods but both the profitability and the size variables retain their levels, signs and significance. Finally, regression (18) uses the interaction of size with both profitability and the statutory tax rate instead of being a separate variable. The idea is to try to identify separate effects of size on the tax rate and on the tax base. The regression using the number of employees as size suggests that having more employees increases profitability (effect on the tax base) but decreases the effect of the tax rate. The opposite effect is found when using total assets as size scale (in contradiction with regression (11) in this case). The indication here seems that in the case of the number of employees, the effect on the tax rate dominates and that the opposite holds for the total assets. These effects are in contradiction with the correlations between our size variables and our explanatory variables. In addition, the correlation between the interacted variables is .917 and .763 for the number of employees and total assets respectively. A chi-squared test reveals a large multicollinearity in both cases, putting doubts on the validity of this last regression.

Table (5)-panel A: Robustness Tests.

Size 1: #employees	(11) ETR2	(12) Controls: group	(13) Controls: previous losses	(14) Controls: Size previous losses	(15) Controls: foreign ownership	(16) Maximum Likelihood	(17) Consolidated statements	(18) size interacted
Intercept	.0203	-2.279	-1.040	-1.024	-1.027	-2.108	-.012	-3.222
	(.958)	(1.270)	(.829)	(.834)	(.972)	(1.555)	(.981)	(1.559)
Log CIT	.880**	1.016*	.685*	.675*	.601	1.011*	.178	1.527**
	(.273)	(.366)	(.235)	(.237)	(.277)	(.440)	(.283)	(.451)
Log size	-.007	-.238**	-.222**	-.217**	-.219**	-.251**	-.099**	
	(.013)	(.016)	(.017)	(.017)	(.020)	(.014)	(.017)	
Log (ebitda to assets)		.467**	.427**	.425**	.463**	.437**	.513**	.135*
		(.052)	(.053)	(.053)	(.046)	(.045)	(.035)	(.044)
Log CIT*log size								-.116**
								(.008)
Log (ebitda to assets) * log size								.069**
								(.009)
GDP growth		-.023**	-.026**	-.029**	-.000			
		(.004)	(.005)	(.005)	(.009)			
Inflation		-.000	.000	-.000	.000			
		(.004)	(.001)	(.001)	(.001)			
Financial profit		.000**	.000**	.000**	.000**			
		(.000)	(.000)	(.000)	(.000)			
Group membership		.127**	.126**	.128**				
		(.007)	(.007)	(.007)				
Previous loss dummy			-.893**		-.903**			
			(.009)		(.018)			
Log size previous loss				-.133**				
				(.001)				
Foreign ownership					.168**			
					(.014)			
Industry dummies	No	Yes	Yes	Yes	Yes	No	No	No
No. of observations	499,863	273,375	211,395	211,395	49,785	527,918	125,624	527,918
Akaike Information Criterion	1,433,735	883,867	661,755	662,590	161,780	1,697,057	376,202	1,692,990

Size 1: #employees	(11) ETR2	(12) Controls: group	(13) Controls: previous losses	(14) Controls: Size previous losses	(15) Controls: foreign ownership	(16) Maximum Likelihood	(17) Consolidated statements	(18) size interacted
Schwarz's Bayesian Criterion	1,433,721	883,849	661,737	662,572	161,762	1,697,031	376,190	1,692,968

Data are for 1992-2004. All regressions use the random coefficient model (with residual maximum likelihood estimation and variance-covariance component matrix for the intercept and slopes), allowing for heterogeneity in the slopes of the regressors for years and countries. The coefficients in the regressions represent the estimated means for the random slopes. The size effect is measured by the log of the number of employees. Regression (11) use the log of tax accrued to profit/loss before taxes as dependent variable. Regressions (12) to (15) include the domestic GDP growth rate, domestic inflation rate, and the financial profit/loss as additional controls. Regression (12) includes a dummy taking the value 1 if the company is part of a group. Regression (13), in addition, includes a dummy taking the value 1 if the company had a loss the previous year. Regression (14) replaces the loss dummy by a variable capturing the size of previous losses. It takes the value 0 in the absence of previous losses and the log of the absolute value of the previous loss otherwise. Regression (15) includes a variable indicating the degree of foreign ownership in the company instead of the group dummy. Regression (16) uses the Maximum Likelihood estimation instead of the residual maximum likelihood estimation. Regression (17) takes consolidated financial statements instead of unconsolidated financial statements. Regression (18) replaces the size variable by the interactions of size with the other regressors. The Akaike Information Criterion and the Schwarz's Bayesian Criterion are alternatives to the adjusted-R^2 and provide a measure that captures the trade-off between the goodness-of-fit and the parsimony of the model. They are here defined in their 'smaller-is-better' version. Detailed variable definitions and data sources are given in Appendix A. The standard errors are given in parentheses. * and ** indicate significance levels of 5 and 1 percent, respectively.

Table (5)-panel B: Robustness Tests.

Size 2: total assets	(11) ETR2	(12) Controls: group	(13) Controls: previous losses	(14) Controls: Size previous losses	(15) Controls: foreign ownership	(16) Maximum Likelihood	(17) Consolidated statements	(18) size interacted
Intercept	.497	-4.269*	-3.901*	-3.950*	-2.473*	-3.145*	-2.442	-2.887
	(.880)	(1.692)	(1.320)	(1.319)	(.901)	(1.423)	(1.256)	(1.424)
Log CIT	1.056**	1.035	.906*	.895*	.447	.837	.534	.450
	(.248)	(.492)	(.377)	(.378)	(.246)	(.398)	(.351)	(.416)
Log size	-.094**	.113**	.121**	.130**	.113**	.066*	.069**	
	(.022)	(.026)	(.024)	(.024)	(.025)	(.022)	(.014)	
Log (ebitda to assets)		.456**	.427**	.427**	.446**	.405**	.490**	.869**
		(.050)	(.050)	(.051)	(.047)	(.047)	(.032)	(.085)
Log CIT*log size								.050**
								(.011)
Log (ebitda to assets) * log size								-.046**
								(.010)
GDP growth		-.028**	-.028**	-.030**	.007			
		(.004)	(.005)	(.005)	(.009)			
Inflation		-.001	-.001	-.001	-.001			
		(.001)	(.001)	(.001)	(.002)			
Financial profit		.000**	.000**	.000**	.000**			
		(.000)	(.000)	(.000)	(.000)			
Group membership		-.007	.005	.004				
		(.007)	(.007)	(.007)				
Previous loss dummy			-.910**		-.903**			
			(.009)		(.018)			
Log size previous loss				-.142**				
				(.001)				
Foreign ownership					.140**			
					(.014)			
Industry dummies	No	Yes	Yes	Yes	Yes	No	No	No
No. of observations	557,627	299,446	228,532	228,532	54,319	588,785	139,285	588,785
Akaike Information Criterion	1,597,526	989,990	730,818	730,677	181,036	1,950,290	422,613	1,947,970

Size 2: total assets	(11) ETR2	(12) Controls: group	(13) Controls: previous losses	(14) Controls: Size previous losses	(15) Controls: foreign ownership	(16) Maximum Likelihood	(17) Consolidated statements	(18) size interacted
Schwarz's Bayesian Criterion	1,597,512	989,972	730,800	730,659	181,018	1,950,264	422,601	1,947,948

Data are for 1992-2004. All regressions use the random coefficient model (with residual maximum likelihood estimation and variance-covariance component matrix for the intercept and slopes), allowing for heterogeneity in the slopes of the regressors for years and countries. The coefficients in the regressions represent the estimated means for the random slopes. The size effect is measured by the log of the number of employees. Regression (11) use the log of tax accrued to profit/loss before taxes as dependent variable. Regressions (12) to (15) include the domestic GDP growth rate, domestic inflation rate, and the financial profit/loss as additional controls. Regression (12) includes a dummy taking the value 1 if the company is part of a group. Regression (13), in addition, includes a dummy taking the value 1 if the company had a loss the previous year. Regression (14) replaces the loss dummy by a variable capturing the size of previous losses. It takes the value 0 in the absence of previous losses and the log of the absolute value of the previous loss otherwise. Regression (15) includes a variable indicating the degree of foreign ownership in the company instead of the group dummy. Regression (16) uses the Maximum Likelihood estimation instead of the residual maximum likelihood estimation. Regression (17) takes consolidated financial statements instead of unconsolidated financial statements. Regression (18) replaces the size variable by the interactions of size with the other regressors. The Akaike Information Criterion and the Schwarz's Bayesian Criterion are alternatives to the adjusted-R^2 and provide a measure that captures the trade-off between the goodness-of-fit and the parsimony of the model. They are here defined in their 'smaller-is-better' version. Detailed variable definitions and data sources are given in Appendix A. The standard errors are given in parentheses. * and ** indicate significance levels of 5 and 1 percent, respectively.

5. Conclusions.

The current debate in corporate taxation is focusing on obstacles to cross-border activities to level the playing field for companies operating from different countries. However, both theory and practice suggest that there may be large differences of treatment across enterprises operating in the same country but with different sizes. In particular, one question raised in several countries is whether large corporations pay their due share of the tax burden. The political power theory (Siegfried, 1972) predicts that larger companies would face lower effective tax rates because they have the power to negotiate. Opposite, the political cost theory (Watts and Zimmerman, 1978) argues that because of higher visibility and hence higher scrutiny, large companies will end up paying a higher tax burden. Previous empirical studies have provided ambiguous answers to this question.

This paper uses firm-level data for 21 European countries over the period 1992-2004. Using various specifications, estimation techniques and controls, it finds a robust negative correlation between the number of employees and the effective tax burden and a robust – although not for all countries – positive correlation between the total assets of companies and the effective tax burden. These results suggest that the relationship between size and the effective tax burden is indeed dependent from the definition of size. There is however a clear negative relationship between the tax burden and the number of employees, which is valid for all countries and which carries economic significance. The results suggest that the elasticity of the tax burden to the number of employees is -.25. This result is to compare those using total assets as the variable for size. These results are not robust across countries and have a low economic significance. This leads us to conclude that very large companies – as measured by the number of employees – may enjoy a lower tax burden; a result that could suggest a validation of the political power theory.

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Appendix A. Variable definitions and data sources
Variable definitions

- *lETR1* is the log of the ratio of the tax accrued to added value in percent.
- *lETR2* is the log of the ratio of the tax accrued to taxable profit in percent.
- *lSIZE1* is the log of the number of employees.
- *lSIZE2* is the log of the total assets.
- *lCIT* is the log of the statutory corporate tax rate including local taxes and surcharges.
- *Laebitda* is the log of the ratio of total assets to Ebitda (earnings before interest and depreciation).
- Sector fixed effects distinguish 8 sectors based on the 3-digit NACE code: *Agriculture* and fisheries (NACE 0 to 146), *Manufacturing* (NACE 149 to 373), *Utilities* (NACE 390 to 420), *Construction* (NACE 440 to 460), *Retail and wholesale* (NACE 490 to 560), *Transport* and communications (NACE 590 to 649), *Financial services* (NACE 649 to 675), and *Other* (NACE 699 to 749). Firms in essentially public sectors (NACE equal to or above 749) are excluded from our sample.
- *GDP Growth* is the real GDP growth in percent.
- *Inflation* is the deflator of GDP in percentage.
- *Financial profit* is the log of the financial account.
- *Group membership* is a dummy that takes the value 1 if the company has a subsidiary or a corporate owner.
- *Previous loss dummy* is a dummy that takes the value 1 if the company had a loss the previous year.
- *Log size previous loss* is the log of the absolute value of the loss of the previous year. It takes the value zero otherwise.
- *Foreign ownership* is the portion of shares owned by foreign shareholders.

Data sources

Firm-level data are from various versions of the *AMADEUS 'Top 250,000'* Database compiled by Bureau Van Dijk Electronic Publishing. This database contains about 250,000 entries of financial statements for private and also public firms in 34 European countries. Firms are included if they meet one of three criteria regarding the magnitude of operating revenues, total assets and the number of employees.[9] Van Dijk states that 95% of the companies in each country that meet at least one of the three criteria are included. The exclusion of small companies solves the problem of representativity of those companies, which do not always have a legal obligation to report accounts. It also allows us to disregard some specific tax treatments targeted to very small companies such as tax holidays or specific reductions in the tax burden through the tax base. Instead, we concentrate on the difference between medium and large companies. Our database provides financial accounts for the 1991-2005 period. As a rule, bankrupt companies are kept in the database for 5 more years.

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[9] For the UK, Germany, France, Italy, Ukraine and the Russian Federation, the inclusion thresholds are € 15 million in operating revenues, € 30 million in assets, and 150 employees. For other countries, they are € 10 million in operating revenues, € 20 million in assets and 100 employees.

We first exclude companies for which the information on either the tax accrued, the ebitda, the total assets or the added-value are missing, as these four items enter in all our regressions. We also exclude consolidated statements as these statements may reflect taxes paid in several countries. Also, entries of firms in primarily public sectors are excluded (NACE3 above or equal to 749). The data used in the regressions further exclude firms with erroneous balance sheet ratios that are negative or that exceed unity. We also exclude data for the years 1991 and 2005, as well as data for Czech Republic, Croatia, Iceland, Latvia and Malta because these years or countries have very little information available. The regression sample is further reduced on account of missing variables and of loss-making companies (by the application of the logarithm) to yield respectively 527,918 and 588,785 observations in regression (1)-(5) and (6)-(10) of Table (3). Tables (C1) and (C2) in the appendix indicate how many observations are from a particular country in a particular year in these two samples.

The source of the macro data used in this study is *AMECO* (DG Economic and Financial Affairs, European Commission).

Appendix B. Summary Statistics for Table (3).

Variable	Mean	Minimum	Maximum	Std. Dev.	Observations
Size 1: #employees					
Log ETR	1.541	-7.840	9.440	1.365	527,918
Log CIT	3.583	2.872	4.066	.175	527,918
Log Size1	4.446	0	12.964	1.457	527,918
Log (ebitda to assets)	2.271	-8.720	11.796	.033	527,918
Size 2: total assets					
Log ETR	1.516	-7.840	9.440	1.384	588,785
Log CIT	3.581	2.872	4.066	.178	588,918
Log Size 2	9.625	.693	20.908	1.442	588,918
Log (ebitda to assets)	2.269	-8.720	11.796	.926	588,918

Appendix C.1.: number of observations for basic regressions using number of employees as size.

Size: #employees	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*Total*
Austria	3	7	19	17	33	55	81	81	36	63	193	234	157	979
Belgium	21	94	446	3,143	3,252	3,379	3,448	3,969	7,355	7,735	3,913	3,915	3,08	44,578
Bulgaria	0	0	0	0	0	0	136	383	975	1,050	524	532	378	3,978
Switzerland	0	0	3	37	50	53	59	74	84	80	89	97	91	717
Germany	147	352	668	1,023	1,027	1,096	1,205	1,394	1,200	1,219	2,104	2,006	1,118	14,559
Denmark	0	0	0	0	0	3	31	106	988	994	941	1,062	966	5,091
Estonia	0	0	0	0	0	144	177	99	5	1	0	48	59	533
Spain	1	84	1,359	4,141	4,816	5,546	6,882	9,352	10,941	9,275	8,529	8,307	4,681	73,914
Finland	0	0	0	33	869	1,267	1,196	1,485	1,890	1,896	1,676	1,681	1,598	13,591
France	0	0	0	7,129	7,521	8,398	9,967	11,383	12,676	12,070	11,091	10,917	10,923	102,075
UK	21	114	1,245	4,604	5,325	5,812	6,016	6,649	8,420	8,547	7,148	7,087	5,649	66,637
Hungary	0	0	0	0	5	4	25	57	96	41	40	38	15	321
Italy	407	744	2,087	7,120	9,560	10,561	12,264	14,546	15,663	14,780	14,323	11,778	14,238	128,071
Luxembourg	4	14	37	50	50	58	69	117	127	72	7	1	0	606
Netherlands	4	20	101	273	304	355	430	756	703	746	870	864	530	5,956
Norway	0	0	0	0	0	0	0	2	49	125	1,775	1,999	2,085	6,035
Poland	0	18	79	311	360	712	779	1,392	1,737	1,581	1,956	2,085	1,397	12,407
Portugal	8	29	172	477	547	520	699	418	432	395	399	415	323	4,834
Romania	0	0	0	801	1,000	1,260	1,264	1,428	2,624	2,676	1,719	1,778	1,777	16,327
Sweden	0	0	0	0	1	1,698	1,995	3,263	4,044	3,988	3,797	3,686	3,903	26,375
Slovak Rep.	0	0	0	0	0	0	0	37	102	135	47	12	1	334
Total	616	1,476	6,216	29,159	34,720	40,921	46,723	56,991	70,147	67,469	61,141	58,542	53,797	**527,918**

Appendix C.2.: number of observations for basic regressions using total assets as size.

Size: Total assets	*1992*	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*Total*
Austria	9	22	29	35	73	89	109	127	65	143	691	719	325	2,436
Belgium	21	95	450	3,168	3,272	3,403	3,478	4,011	7,429	7,814	3,938	3,949	3,941	44,969
Bulgaria	0	0	0	0	0	0	193	384	981	1,053	526	537	380	4,054
Switzerland	0	0	3	40	54	60	69	86	98	94	100	106	101	811
Germany	184	447	840	1,339	1,462	1,623	1,923	2,485	2,122	2,831	4,465	4,423	2,645	26,789
Denmark	0	0	0	0	0	3	31	108	1,005	1,023	982	1,092	991	5,235
Estonia	0	0	0	0	0	152	179	99	5	1	0	65	70	571
Spain	22	273	2,686	6,160	6,696	7,258	8,430	11,436	12,551	10,311	9,154	8,815	4,999	88,791
Finland	0	4	119	1,207	1,336	1,511	1,404	1,683	2,134	2,167	1,856	1,806	1,725	16,952
France	0	0	0	8,732	10,319	10,928	11,742	13,209	14,804	13,823	12,645	12,174	10,986	119,362
UK	24	122	1,293	4,749	5,495	5,997	6,202	6,864	8,654	8,748	7,289	7,242	5,757	68,436
Hungary	0	0	0	0	34	220	267	561	796	286	326	366	152	3,008
Italy	414	753	2,097	7,133	9,575	10,570	12,271	14,563	15,669	14,785	14,372	12,890	14,462	129,554
Luxembourg	5	17	43	54	57	67	88	147	155	127	94	65	4	923
Netherlands	4	20	104	279	313	368	443	779	719	771	891	896	538	6,125
Norway	0	0	0	0	0	0	0	2	49	132	1,904	2,120	2,182	6,389
Poland	0	29	108	343	400	731	789	1,508	1,837	1,721	2,123	2,274	1,465	13,328
Portugal	16	55	247	517	613	578	773	485	511	464	470	472	346	5,547
Romania	0	0	0	873	1,002	1,269	1,270	1,433	2,632	2,739	1,781	1,818	1,780	16,597
Sweden	0	0	0	0	1	1,714	2,060	3,286	4,066	4,005	3,821	3,716	3,920	26,589
Slovak Republic	0	15	67	143	155	193	216	314	534	502	163	16	1	2,319
Total	699	1,852	8,086	34,772	40,857	46,734	51,937	63,570	76,816	73,540	67,591	65,561	56,770	**588,785**