# The European Software Piracy: An Empirical Application*

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**ABSTRACT**

This paper provides empirical evidence on the link between piracy and software protection, taking piracy determinants in cross–country regressions as basic reference. For that purpose, we use a panel data set for 24 countries over three years, 1994, 1997 and 2000, relating piracy rates to an index of software protection, per capita income and a set of country fixed effects. Results display that software piracy is sensitive to income and software protection changes.

**Key Words: Piracy, Enforcement, Software protection, Copyright.**

**JEL Classifications: 034, L86.**

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# 1 Introduction

The phenomenon of software piracy is not new, although it must be admitted that the Internet has provided the opportunity for copyright infringement on a much larger scale than it ever was. Piracy is widespread in Europe. Indeed, Eastern Europe is considered as one of the largest operation centers for producing and distributing pirated software. According to the Business Software Alliance (BSA)[1], in 2000, the estimated piracy rates, defined as the percentage of software in use in a country that is pirated, ranged from 88 % in Russia to 26 % in Denmark and United Kingdom.

There exist various important reasons for studying piracy, first, because the consequences of piracy not only affect authors (decrease in revenues, loss of image), consumers (risks, increase in the price of the legitimate product), but also governments (lose of tax revenues), second, because policy issues surrounding it. At this respect, the EU software developers have expressed serious concerns over the prospective EU enlargement because thousands of illegal copies may be brought into the European market. Obviously, cross border regulations will be of critical importance within the EU Antipiracy policy. Third, new legal criteria, as Part III of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), have assumed a crucial position to fight against piracy[2].

In this context, it would be useful to have a better understanding of legal system which will play an important role in the future fight against piracy. Despite of all this, the link between software piracy and software protection has been largely neglected. The purpose of this investigation is to start to fill in this deficit.

While theoretical research on software piracy is relatively abundant, empirical

[1] A world wide trade organization which conducts a wide range of anti–piracy activities in Europe, Asia, Latin America and North America.

[2] Arts 41–61 provide explicitly enforcement measures.

work in this area is scarce[3]. The pioneering papers were merely descriptive and examined the question of why individuals pirate software[4]. Recent studies, using cross–sectional data, identified per capita income, cultural and institutional factors as the primary determinants of software piracy rates (Burke, 1995; Gopal and Sanders, 1998; Husted, 2000; Marron and Steel, 2000). Furthermore, according to Burke (1995), copyright conventions have not been truly effective in reducing audio software "counterfeiting". A lacuna in all these empirical approaches is the consideration of how and to what extent software protection would affect piracy.

Another important related branch of the literature investigates the determinants of IP protection. Although, many cross–national IP protection measures have been developed so far, however, they were either compiled for a single year (Lesser, 2001; Knack and Keefer, 1995, Rapp and Rozek, 1990) or focused on patents rather than on other forms of IP protection (Ginarte and Park, 1997)[5]. Only recently, Ostergard (2000) proposed an alternative measure of IPRs protection (copyright, patents and trademarks) which accounts for enforcement issues[6]. He argues that the omission of enforcement issues may lead to overestimate the level of IP protection enjoyed in a particular country. Unfortunately, this index shares some of the limitations of previous measures of IP used, the exclusion of some Eastern countries (Czech. Rep, Russia, Slovakia and Slovenia) and the absence of any empirical application of the index.

The current paper draws empirical evidence on the link between piracy and

[3]Theoretical works on piracy deal with the phenomenon of piracy by end–users (Cheng and Png, 2000); the importance of network externalities (Conner and Rummelt, 1991 and Takeyama, 1994); and government policy towards piracy (Banerjee, 2001).

[4]A few examples are Givon, Mahajan and Muller, 1995; Solomon O'Brien, 1990; Cheng, Sims and Teegen, 1996.

[5]They build an index of patent protection for 110 countries for the period 1960–1990. They find that patent protection is related to income, economic freedom, education and the R& D expenditures.

[6]This index is available for 20 countries and for the periods of time: 1988, 1991 and 1994. The index is based on two components: law and enforcement. In the case of copyright, the law component ranges from 0 to 10 whereas the enforcement component ranges from 0 to 4. Ostergard's measure is available for 20 countries included in the present study.

software protection and applies a new index of software protection for 24 countries over three years: 1994, 1997, and 2000. For that, we advocate a panel data approach which allows control for omitted variables bias and reduce the problem of multicollinearity, hence improving the accuracy of parameter estimates (Hsiao, 1986). The majority of empirical studies on piracy has adopted a cross–country estimation method and therefore has the weaknesses of not being able to account changes over time and heterogeneity problems. Thus, such empirical results may not be robust[7].

The rest of the paper is structured as follows. The next section describes the index of software protection. The data are presented in Section 3. Section 4 shows the econometric model and estimations. Section 5 discusses the main findings, and, finally, Section 6 concludes.

## 2 Constructing an Index of Software Protection

In order to conduct the analysis, it is necessary to develop a measure of the strength of software protection across European countries. Here, we focus on copyright law, the common method of protecting computer programs in Europe[8].

Following previous approaches, the measure of software protection used in this study consists of two components: law and enforcement. Coding of each component was done over the periods of time 1994, 1997 and 2000. The reason of choosing only three periods of time is because one would not expect laws were to vary much annually.

Numerous legal sources were examined by constructing the law component[9].

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[7]The robustness of cross section results can be tested using a methodology developed by Sala–i–Martin (1997).

[8]In the EU, the most significant development was the Software Directive, Council Directive 91/250/EEC. Nowadays, an intense debate has emerged in relation to whether and to what extent software should be patentable.

[9]A few legal sources were World Intellectual Property Organization (WIPO), United Nations Educational, Scientific and Cultural Organization (UNESCO), World Trade Organization (WTO).

The law component covers the following categories: membership in international copyright treaties and enforcement measures. As mentioned above, the TRIPS agreement requires all WTO members to comply with three principles. Furthermore, the 1994 TRIPS adopted certain obligations with respect to enforcement measures which were not included in past international treaties. Therefore, it is especially important that our index reflects how WTO members are making adjustments in their enforcement practices to bring them in compliance with TRIPS. The enforcement measures included in our index were: ex-parte search, border measures and remedies. It should be borne in mind that such enforcement measures reflect the potential of a particular country to enforce IP laws but not its actual performance. On the other hand, the enforcement component was constructed by using the information contained in the Special 301 reports.

Having scored each component of the index, the overall index of software protection for each country was obtained by multiplying both components. In practice, there will be countries that have strong laws but not have tough enforcement. Given the initial construction of our index, the effect of law component on piracy will be diminished by the enforcement component. The idea behind this assumption is that the law and enforcement must not be treated as separate issues. Thus, the software protection index ranged from 2 to 8. Table 4 depicts the measure of software protection for 24 countries and over three years: 1994, 1997 and 2000. The average value of software protection index is $4.87$, with a minimum of $0.67$ and a maximum of $8$. In the following two subsections, a description of each component of index is provided.

## 2.1 Law Component

The law component used in this study included the following categories:

- Membership in international copyright agreements

The intellectual property protection across national borders rely on several international agreements. Most European countries are signatories to the main international copyright treaties such as the Berne Convention for the protection of artistic and literary works (1886), the WIPO Copyright Treaty (1996) and the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS, 1994)[10]. Membership in international agreements confers to foreign nationals the same IP protection that country's own nationals (national treatment principle.).

- Judicial measures

Judicial measures take enormous relevance due to the emphasis placed on them by recent copyright conventions. Most European countries have transposed TRIPs recommendations into their national laws, however, in some cases, there is urgent need to implement them in light of the latest reports by international organizations. The judicial measures included in this category are:

*Ex–parte Civil Search Order:*

A procedure which has been regularly used against pirates of copyright material is the Anton Piller order[11]. This legal term describes a search conducted upon the application of the copyright holder without prior notice filed with a court, wherein the copyright–holder alleges an infringement of a right likely to cause harm and or where there is a enough risk of evidence of being destroyed. If granted, the court will allow the plaintiff to enter the workplace or residence of another in search for documents, software for preserve it or to obtain evidence that may be improperly withheld.

*Border Measures:*

[10] Although, the Berne Convention does not explicitly include computer programs to qualify for protection. However, the definition of literary and artistic works is extremely broad and thus can encompass computer software

[11] This rules derives from the English case Anton Piller K.G.V. Manufacturing Process LTD in 1976.

The term border measures relates to acts where the copyright holder may file in an application to the custom authorities to suspend the entry of pirated goods (illegal software). In most European countries, there also exist the possibility custom officials may act ex–officio (by surprise). As a general rule, the goods proved be pirated through a final decision of a court will be destroyed or rendered to the copyright holder[12].

*Remedies:*

Another enforcement measure is the availability of remedies such as seizure and destruction of infringing copies as well as materials and equipment used for their reproduction.

Finally, this component is coded as follows: for instance, countries where border measures are explicitly provided in their national laws receive a score of $\frac{1}{3}$; those that implement all judicial measures receive a score of $1$. This rule applies to international membership too. The resulting non–weighted sum represents the overall law component. Thus, the law component varies from 0 to 2, with 2 representing the strongest level of statutory software protection. The average value of law component for 24 countries is 1.53 with a minimum of 0.33 and a maximum of 2.

## 2.2 Enforcement Component

Unfortunately, there was two problems with the enforcement measure we could use. Firstly, there is no a generally available ranking of national legal systems,

[12]As regards to European customs action against infringements to intellectual property rights, the legal framework is the Council Regulation 3295/94 of 22 December 1994. Its effects extended to infringement of copyright and other similar rights and also to export and re–export. Lastly, the custom authorities were given greater scope for action and were allowed to act ex–officio. In 1999 Council Regulation No. 241/99 substantially amended the 1994 Regulation, broadening its scope to patents and supplementary certificates, as well as to the protection of Community trademarks at customs via an uniform system of protection in all Member States. Similarly, intervention was extended to infringing goods whatever their customs status.

assessments of the efficiency of judicial systems, etc. Secondly, an alternative approach is to use the law and order indicator from International Country Risk Guide (ICRG) as a proxy variable for the efficiency of the judicial system. While this measure is available for each sample year and for all countries included in our study, one obstacle is that it is based on the popular observance of law rather than on the matter of interest here, the copyright law.

As argued by Ginarte and Park (1997), a second best approach is to look at the execution of IP laws, ie, to examine the complaints against the IP system (delays in courts, low penalties, inadequate damages). Thus, it is argued that a IP protection system is not working if many complaints are filed. Under the section 301 of the 1974 Trade Act, American firms can bring petitions for action against those foreign countries whose IP protection system is judged inadequate or non–effective. The U.S. Trade Representative (USTR) examines the current status in relation to IP laws and enforcement practices of the US' trading partners and prepares an annual list of nations that deny adequate and effective IP protection. This list appears in the annual Special 301 reports. This information would give us a idea of how nations enforce IP law. However, there is no information on the treatment received by other foreign nations in matter of enforcement practices. Although, it is expected that nations face similar problems in those nations where American firms are not fully satisfied in relation to the compliance of IP law.

In the USTR's list, countries are ranked from the lowest to strictest degree of IP enforcement. Thus, countries whose acts, policies or practices have the greatest adverse impact on relevant U.S. products are categorized as Priority Foreign Countries (PFC). The Priority Watch list (PWL) and Watch list (WL) identify those countries which have serious deficiencies in matter of IPRs. Countries which have minor deficiencies are placed on Other Observations (OO). In the present study, coding of enforcement component was done as follows:

1= Priority Watch List

2= Watch List

3= Other observations

4= No reported problems.

Thus, countries which were placed, in a particular year, on the PWL will receive a score of 1. 4 in this case would represent the strongest level of the enforcement component. The overall value of enforcement component for 24 countries is $3.19$, with a minimum of $1$ and with a maximum of $4$.

## 3 The Data

Table 1 displays descriptive statistics and the correlation matrix for all sample period and variables included in this study. This simple exercise shows that the index of software protection ($SP$) and income ($PCGDP$) are negatively related to piracy rates ($r = -0.65$ and $-0.74$ respectively). We also find moderate levels of correlation between the index of software protection and income ($r = 0.51$). This latter result is consistent with the general observation that economic development and the strength of IP protection are positively associated[13].

Table 1: **Summary Statistics (NT= 72)**

| | Mean | S.D. | Maximum | Minimum | PR | PCGDP | SP |
|---|---|---|---|---|---|---|---|
| PR | 55.36 | 19.32 | 96 | 26 | 1 | | |
| PCGDP | 16365 | 10832 | 37309 | 1071 | -0.74 | 1 | |
| SP | 4.87 | 2.42 | 8 | 0.33 | -0.65 | 0.51 | 1 |

We now discuss the content and the statistical sources of the data. National piracy rates were obtained from Business Software Alliance (BSA) and the Soft-

[13] See, Ginarte and Park, 1997; Rapp and Rozek, 1990; Yang and Maskus, 2001.

ware & Information Industry Association (SIIA). The BSA estimates software piracy rates as the difference between software applications installed (demand) and software applications legally shipped (supply)[14]. Thus, piracy rates are defined as the volume of software pirated as a percent of total software installed in each country. Piracy rates range from 0 % to 100 % (all software installed is pirated). The weakness of BSA's piracy data arises by the fact that a great deal of software is sold without the computer hardware. Thus, this might introduce a downward bias in the reported national piracy rates. Despite of all this, piracy data have been applied in numerous empirical studies.

Finally, in some cases (Ukraine and Croacia), the piracy information provided by the BSA either included aggregate data or was only available since 1995.

Real GDP per capita was obtained from the database of the International Monetary Fund (2000).

As displayed in Table 2, piracy is highly concentrated in Eastern countries. In some countries, all software installed is pirated. While Russia had a piracy rate 88%, Czech. Rep was the country had the lowest piracy rate in this region at 43 %. In Western Europe, Greece was the country with the highest piracy rate at 66 %. In contrast, Denmark and United Kingdom had piracy rates of only 26 %. The average piracy rate for 24 countries was at 46 %. Sweden, Norway, Switzerland, Belgium, Finland, Germany, Denmark and UK were the only countries with piracy rates below world average piracy rate at 37%. This would give us an idea how representative is our choice.

[14]Further information on the methodology employed to construct piracy rates, can be found in the recent report on Global Software Piracy elaborated by the BSA and SIIA (2000).

Table 2: **Piracy Rates (2000)**

| Rank Country | Country | Piracy Rate (%) |
|---|---|---|
| 1 | Russia | 88 |
| 2 | Bulgaria | 78 |
| 3 | Romania | 77 |
| 4 | Greece | 66 |
| 5 | Slovenia | 61 |
| 6 | Poland | 54 |
| 7 | Spain | 51 |
| 8 | Hungary | 51 |
| 9 | Italy | 46 |
| 10 | Slovakia | 45 |
| 11 | Czech. Rep | 43 |
| 12 | Portugal | 42 |
| 13 | Ireland | 41 |
| 14 | France | 40 |
| 15 | Netherlands | 40 |
| 16 | Austria | 37 |
| 17 | Sweden | 35 |
| 18 | Norway | 34 |
| 19 | Switzerland | 34 |
| 20 | Belgium–Lux | 33 |
| 21 | Finland | 29 |
| 22 | Germany | 28 |
| 23 | Denmark | 26 |
| 24 | UK | 26 |
| Average | | 46 |
| World average | | 37 |

Source: Business Software Alliance (BSA)

## 4 Panel Data Methodology and Estimations

In order to empirically test whether software protection and income level influence piracy rates levels across countries, a panel data set is build for 24 countries which covers the periods 1994, 1997 and 2000. The result is a panel data set with 72 observations. We model piracy rates using a reduced form approach which is specified as follows:

$$LPR_{it} = \alpha + \beta_1 \, LPCGDP_{it} + \beta_2 \, LSP_{it} + \epsilon_{it} \tag{1}$$

$$\epsilon_{it} = \mu_i + \nu_{it} \tag{2}$$

where $i$ denotes different countries, $t$ denotes different years, $L$ indicates the natural logarithm, $LPR$ is the piracy rate, $\alpha_i$ denotes the unobserved individual effects, $LPCGDP$ is the per capita gross domestic product, $LSP$ is the strength of software protection. The residual term, $\epsilon_{it}$, consists of two components: the unobservable country specific effects, $\mu_i$, and, the remaining disturbance, $\nu_{it}$. Here, we explicitly assume that there are some unobservable country individual effects, $\mu_i$, such as institutional and cultural factors, which can not be explained by the included explanatory variables, that affect piracy.

Obviously, a subjective element can creep into our specification. Next, we explain why we chose that specification.

According to previous empirical findings, the income distribution must be a significant determinant of software piracy rates. This result has been verified by Husted (2000). However, the disadvantages of these data are various: First, there is no available indicator to measure income inequality continuously as they are based on household surveys. Second, some countries do have some time-series (but not annual data) on inequality as they have done more household surveys[15]. Third, the methodology used in household surveys differs from one country to another, making comparisons quite problematic.

Furthermore, it is reasonable to think that the price of software plays an important role when explaining piracy rates. In the theoretical literature is argued that a high price of access may be a stimulus for piracy[16]. Nonetheless, there is no published data on the price of software across countries. Therefore, we decide to exclude this variable from the estimation.

Also included as explanatory variable was the freedom index from Freedom House, measuring political rights and civil liberties[17]. However, since it does not vary so much, it did add any explanatory power to econometric specification. Indeed, this variable would be correlated with the unobservable individual effects. For that reasons, we net out this variable from the estimation.

## 4.1 Econometric Modelling and Results

We started by estimating eq.(1) by pooled OLS. The results are reported in Table 3 column 1. This approach is based on the idea that all countries would react in the same way to changes in all explanatory variables and that the intercepts are the same for all countries.

We can now identify whether the data are compatible with a pooled regression model or some kind of intercept variation. We use a F–test to check the significance of individual effects. This test suggest that the null hypothesis that the country specific effects are the same is rejected. In other words, pooled OLS reveals inadequate since it omits country effects in estimation and OLS is inconsistent.

[15] The common measure of income inequality is the Gini index which is available at http://www.worldbank.org.

[16] See, Chen and Png (2000).

[17] Available online at http://www.freedom.org.

In addition, a Lagrange multiplier test confirms our previous results that the appropriate model should allow some intercept variation. The chi–square value of the LM statistic with one degree of freedom for country effects (9.10) exceeds the 3.84 critical value. Therefore, the standard regression model with a single constant term is rejected in favor of a random or fixed effects model.

The results reported in Table 3 (columns 2 and 3), differ in the assumptions concerning to the unobservable individual effects. In (2), the individual effects are treated as fixed, whereas in (3) they are treated as random and hence incorporated into the error term. Under the fixed effects assumption, the within estimator is the best linear unbiased estimator (BLUE), whereas under the random effect assumption, generalized least squares estimator (GLS) is the BLUE estimator, provided that there is no correlation between the explanatory variables and individual effects.

A way of testing hypothesis that individual effects are uncorrelated with the regressors is the Hausman test (1978)[18]. This test compares the distance between the within and GLS estimations. Large differences would suggest correlation between regressors and fixed effects and therefore GLS would be inconsistent. In the present case, the chi–square statistic for the Hausman test is 6.34, which is significant in comparison with the five per cent critical value, 5.39. Thus, the Hausman test suggests that individual effects should be fixed rather than random. A possible explanation is that, for example, the SP can be the result of institutional and cultural factors which are incorporated in the unobservable individual effects.

We should also keep in mind that that the within estimator is only consistent when the regressors are strictly exogenous and is costly in terms of degrees of freedom lost.

[18] Studies on the correlation between fixed effects and regressors have been done by Hausman and Taylor (1981) and Arellano (1991).

Table 3: **Regression Results**
Dependent variable: Ln Piracy Rate (%)

| | **OLS** | **FE** | **RE** |
|---|---|---|---|
| | **(1)** | **(2)** | **(3)** |
| Constant | $5.89^{***}$ | | $5.96^{***}$ |
| | (30.22) | | (18.10) |
| LPCGDP | $-0.18^{***}$ | $-0.64^{**}$ | $-0.18^{**}$ |
| | (-6.84) | (-3.99) | (-4.83) |
| LSP | $-0.19^{***}$ | $-0.18^{***}$ | $-0.21^{***}$ |
| | (-3.94) | (-4.03) | (-4.44) |
| No. of observations | 72 | 72 | 72 |
| Degrees of Freedom | 68 | 45 | 68 |
| $R^2$–adjusted | 0.61 | 0.78 | 0.63 |
| Sig. Individual effects | | $F_{23,46} = 3.31$ | |
| (p–value) | | (0.00027) | |
| LM test | | $\chi^2(1) = 9.10$ | |
| (p–value) | | (0.0025) | |
| Hausman Test | | | $\chi^2(2) = 6.34$ |
| (p–value) | | | (0.042) |

Note: All estimations carried out using Limdep 7.0. t–statistics, corrected using the White's heteroscedasticity–consistent covariance matrices, in parentheses. *** Statistically significant at 1%, ** Statistically significant at 5% and *** Statistically significant at 10 %. OLS=Ordinary Least Squares, FE= Fixed Effects, RE= Random Effects.

# 5 Discussion

Having selected the model (2), we now discuss the main results. From column 2 of Table 3, we see that all variables included in our study are statistically significant and have the expected signs. Together with the set of fixed effects, these two variables capture 78% of the variation in piracy rates across countries, and thus indicating a good performance for the regression model.

The first result of this empirical investigation is that countries with larger per capita GDP have smaller piracy rates. This result is not surprising. Countries cannot afford to enforce laws adequately if they are relatively poor due to the lack of financial resources and institutional structures. The estimated coefficient for income (and its t statistic) is $-0.64(-3.29)$. This result provides support to Burke (1995), Husted (2000), Marron and Steel (2000) and Gopal and Sanders (1998). A similar effect has been observed at the individual level, where low income also leads to more demand for pirated software due to the low willingness to pay (Cheng et al, 1997).

The second result of this empirical investigation reveals that strength of software protection is important in explaining differences in piracy rates across countries. Countries with a strong software protection expressed by high values of SP might might dissuade individuals from piracy activities due to the potential threat of being caught and therefore reducing overall piracy rates. Thus, the legal system can have a deterrent effect. The estimated coefficient with respect to software protection has a small but statistically significant value of $-0.18(-4.03)$.

# 6 Conclusions

Our objective in this paper was to empirically analyze the effect of software protection on software piracy. For that purpose, we used a panel data approach for 24 European countries over the periods 1994, 1997 and 2000. We find that piracy rates are sensitive to the strength of software protection and income changes. In particular, the impact of software protection on piracy was weaker in magnitude compared to that of income. Specifically, holding the rest of variables equal, an increase in income of 1% was associated with a decrease of 0.64% in piracy rates. The elasticity with respect to the strength of software protection had a small but significant value of 0.18.

The estimates in this study could be improved upon if data on component of enforcement incorporated information on penalties, damages, delays in courts, etc. However, a major obstacle is that majority of laws indicates whether or not there will be civil or criminal sanctions but does not go into the details (the length of jail sentences).

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http://www.customs.ro (General Customs Directorate, Romania)
http://www.orda.ro (Romanian Customs Office)
http://www.patent.gov.uk (The UK Patent Office)
http://www.rupto.ru (Russian Patent Office)
http://www.uil–sipo.si (Slovenian Intellectual Property Office)
http://www.ustr.gov (Office of the United States Representative)
http://www.ivir.nl (Institute for Information Law, Netherlands)
http://docsonline.wto.org/ (WTO Trips Documents On–Line)

## APPENDIX

Table 4: **Index of Software Protection**

| **Law Component** | | |
|---|---|---|
| (1) International Membership | Signatory | Not signatory |
| Berne Convention | $\frac{1}{3}$ | 0 |
| WIPO Copyright Treaty | $\frac{1}{3}$ | 0 |
| TRIPs Agreement | $\frac{1}{3}$ | 0 |
| (2) Judicial Measures | Exists | Does not exist |
| Ex–parte search | $\frac{1}{3}$ | 0 |
| Border Measures | $\frac{1}{3}$ | 0 |
| Remedies | $\frac{1}{3}$ | 0 |
| **Enforcement Component** | | |
| (1) Special 301 reviews | Placed on | |
| Priority Watch List | 1 | |
| Watch List | 2 | |
| Other observations | 3 | |
| No reported problems | 4 | |

Table 5: **Index of Software Protection**

| Country | Year | SP | Country | Year | SP |
|---|---|---|---|---|---|
| Austria | 1994 | 5.32 | Netherlands | 1994 | 5.32 |
| | 1997 | 6 | | 1997 | 8 |
| | 2000 | 8 | | 2000 | 8 |
| Belgium | 1994 | 5.32 | Norway | 1994 | 5.32 |
| | 1997 | 8 | | 1997 | 6.68 |
| | 2000 | 8 | | 2000 | 6.68 |
| Bulgaria | 1994 | 2.68 | Poland | 1994 | 2 |
| | 1997 | 2 | | 1997 | 3.34 |
| | 2000 | 6.68 | | 2000 | 1.67 |
| Czech. Rep | 1994 | 2.68 | Portugal | 1994 | 4 |
| | 1997 | 3.99 | | 1997 | 8 |
| | 2000 | 3.34 | | 2000 | 8 |
| Denmark | 1994 | 4 | Romania | 1994 | 1.32 |
| | 1997 | 3.34 | | 1997 | 3.99 |
| | 2000 | 3.34 | | 2000 | 3.34 |
| Finland | 1994 | 5.32 | Russia | 1994 | 0.99 |
| | 1997 | 8 | | 1997 | 0.67 |
| | 2000 | 8 | | 2000 | 0.67 |
| France | 1994 | 5.32 | Slovakia | 1994 | 1.32 |
| | 1997 | 8 | | 1997 | 4 |
| | 2000 | 8 | | 2000 | 6.68 |
| Germany | 1994 | 3 | Slovenia | 1994 | 1.32 |
| | 1997 | 6 | | 1997 | 8 |
| | 2000 | 8 | | 2000 | 8 |
| Greece | 1994 | 1.33 | Spain | 1994 | 2.66 |
| | 1997 | 2 | | 1997 | 8 |
| | 2000 | 2 | | 2000 | 4 |
| Hungary | 1994 | 2.68 | Sweden | 1994 | 4 |
| | 1997 | 6 | | 1997 | 3.34 |
| | 2000 | 4 | | 2000 | 8 |
| Ireland | 1994 | 5.32 | Switzerland | 1994 | 5.32 |
| | 1997 | 4 | | 1997 | 8 |
| | 2000 | 4 | | 2000 | 8 |
| Italy | 1994 | 2.66 | UK | 1994 | 4 |
| | 1997 | 4 | | 1997 | 8 |
| | 2000 | 2 | | 2000 | 8 |