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## The "Europeanization" Of The Common Road Safety Policy: An Econometric Analysis

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# **THE “EUROPEANIZATION” OF THE COMMON ROAD SAFETY POLICY: AN ECONOMETRIC ANALYSIS.**

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## **Abstract:**

The 2001 White Paper and its development in the 3<sup>rd</sup> European Road Safety Action Program, represent a turning point in the history of the European Road Safety Policy. The possible determinants of the road mortality in the EU over (2000-2009) are examined using a panel data. Our main finding is the negative effect and statistical significance of the *Europeanization* variable (the number of years that a country has been in the EU). By this variable, we test the effectiveness of EU programs to save lives in road accidents according to the years that each country has been in the EU.

**KEYWORDS:** Common Transport Policy, Europeanization, Shared Target, Road Safety, Subsidiarity, Panel Data.

**JEL Codes:** C23, F59, I18, R41.

## **1. Introduction.**

Among the adverse road transport-related health externalities, the World Health Organization (WHO) highlights road traffic accidents as a major public health problem in the European Region (Racioppi et al., 2004). According to the European Commission (EC)

(2010b), more than 35,000 people died and at least 1,500,000 were injured on European Union (EU) roads in 2009. And the cost for society was huge, estimated at approximately 130 billion Euros in 2009. But, as can be seen from the Avenoso & Beckmann (2005) and Wilmots et al. (2009) studies, this burden is not equally borne throughout the whole of the European Region: low and medium-income countries in the eastern and southern parts are more severely affected than high-income countries in the west.

Therefore, road transport and road transport safety have become important issues in common EU policies (Threlfall, 2003) and the “Europeanization process” (Knill & Lehmkuhl, 2002), as it appears in official EU Documents on transport, especially since the Maastricht Treaty of 1992 (Bax, 2011). Road safety problems, identified within namely “*new public management*” “governance” or more recently “*evidence-based policymaking*” by Frey (2010), have been addressed by the four European Road Safety Action Programs (ERSAPs) devised to date (Commission of the European Communities, 1993, 1997; EC, 2001, 2003, 2010b): *the 1<sup>st</sup> ERSAP (1993-1996)*, based on the awareness of the problem and the exchange of successful national experiences; *the 2<sup>nd</sup> ERSAP (1997-2001)*, which takes into account the economic cost of accidents; *the 3<sup>rd</sup> ERSAP (2003-2010)*, which pioneered the evaluation of ambitious targets in mortality reduction; and *the 4<sup>th</sup> ERSAP (2011-2020)*, which is currently in force and follows this quantitative strategy with the introduction of the so-called “Vision-Zero”.

Two thousand and one was clearly an inflection point in this process for the Common Road Safety Policy (CRSP) with the publication of the White Paper entitled “Time to Decide” and its development in the 3<sup>rd</sup> ERSAP (2003-2010). In line with earlier successful experiences in leader countries, such as Australia, New Zealand, Sweden, the UK and the Netherlands, this document is considered to be a real revolution (Avenoso & Townsend, 2010; Bosetti et al., 2010), proposing quantitative and measurable targets with a time limit for the first time: *to halve the number of road fatalities from 54,300 in 2001 to no more than 27,150 by the year 2010* (EC, 2001).

For being evaluated, the 3<sup>rd</sup> ERSAP comprises a set of measures grouped in different areas: encouraging road users to improve their behavior, making use of technical progress, encouraging the improvement of road infrastructure, safer commercial goods and passenger transport, emergency services and care for road accident victims, collecting accident data and the introduction of the “*European Road Safety Charter*” to obtain an official commitment (EC, 2003). This focus has been continued in the recent White Paper (EC, 2010b) and the 4<sup>th</sup>

ERSAP (2011-2020), which both commit to halving road fatalities by 2020 with the aim of approaching “*zero fatalities*” by 2050 (ETSC, 2011).

Despite the relevance of the 3<sup>rd</sup> ERSAP, and how clearly quantified its targets are, its achievements for the 27 European States have not been developed to the same extent in the scientific literature. Prior to this study, we must highlight the way that researchers such as Allsop et al. (2011), Elvik (2008) and Wong et al. (2006) demonstrate the positive association between quantitative road safety targets and road fatalities reduction in general terms. However, in the case of the White Paper (2001), published studies limit themselves to the partial impact of specific measures (see Jarašūnienė & Jakubauskas, 2007 for the intelligent vehicle safety system; Thomas et al., 2007 on the European Road Safety Observatory).

Evaluations done to date (Bosetti, et al., 2010; EC, 2006; Jost et al., 2011) seem to point to the EU-27 not having achieved its ambitious goal as yet, despite large savings having been made in road fatalities; nonetheless, Loo et al. (2005) state that these studies have been undertaken using a simple before-after statistical comparison. In this regard, Wong & Sze (2010) note the scarcity of studies examining the degree of commitment to road safety targets in the long-term and evaluating the effect on the time-series trend in road fatalities during the time in which the targets were in effect.

Our objective is to examine any factors that might determine the way that the number of road traffic accidents evolved in the EU-27 during the time period of the 3<sup>rd</sup> ERSAP, which jointly with the White Paper (2001) sets quantitative targets for reductions in road traffic accidents. For this, robust econometric techniques of panel data are used. The effectiveness of different policies to prevent road traffic accidents, such as the maximum amount of alcohol allowed in the blood and of the utility of having a driver license based on a points system, will be tested, and an attempt will be made to measure the importance of certain structural factors, such as the quality of the infrastructure and the education system.

An absolutely novel hypothesis will also be tested, that simply being in the European Union, with all that this entails with respect to involvement in large numbers of actions and programs like the ERSAPs, has a positive effect on road traffic accident numbers in member countries, and that the longer a country has been in the EU, the greater this effect should be.

The article contains five sections: following this introduction, Section 2 explains the sample studied (the 27 countries that made up the EU when the 2001 White Paper and the 3<sup>rd</sup> ERSAP were implemented), with treatment of their road safety strategies during the 2001-

2010 period. Section 3 lays out the variables and the model used, the results of which are discussed in Section 4. The paper ends with the Conclusions and the References.

## **2. Delimitation of the sample.**

When the 2001 White Paper was published, the EU was comprised only 15 member States (Belgium, France, Germany, Italy, Luxembourg, the Netherlands, the UK, Ireland, Denmark, Greece, Spain, Portugal, Austria, Finland and Sweden) and it was progressively enlarged until it was composed of 27 countries at the end of the target period, in 2010. For Bosetti et al. (2010), the EU enlargement process has had a major impact, as the new members included between 2001 and 2010 presented poor performance in terms of road safety at the time of their accession. Great gaps are even found at regional or local levels inside the same country, as revealed by Tolón-Becerra et al. (2009).

Compared to the safest countries, such as the United Kingdom (Broughton & Knowles, 2010), the Netherlands (the “*sustainable safety*” approach, Wegman, 2000) and, above all, Sweden (“*vision zero*” approach, Loo et al., 2005; Rosencrantz et al., 2007), where road safety strategies have been pioneered since the 1990s, at the other extreme we find the countries with the highest death rates, such as Greece (Petridou et al., 1999), and other countries where major political changes have taken place, like Germany (see Clark et al., 2000 for the impact of reunification on road accidents) and other countries that have joined the EU at the end of the target period and which have made great efforts to implement the European *acquis* in a very short time, such as the Baltic countries, the Czech Republic, Romania and Bulgaria (Mikulik, 2004).

In short, we consider a heterogeneous study sample (EU-27) with significant differences in historical, demographic, economic, political, sociological and geographic mobility and cultural conditions which affect their road safety situation (Bosetti, 2010). The major disparities in road safety across the EU-27 justify classifying member States according to their similar circumstances, considering the divisions by Avenoso & Beckmann (2005) and the ETSC (2006):

- *SUNflower countries*: Northern members which have developed solid road safety policies with significant improvements and have the highest performance on road safety.
- *SEC Belt countries*: Southern, eastern and central members with higher fatality rates.

Considering the percentage change in the number of road fatalities between 2001 and 2010, the CARE Database (2012) and the ETSC (2011) indicate, in general terms, a great progress achieved across the EU-27, as in 2010 no country recorded figures that exceeded 2001 figures and, as a whole, there was a reduction of 43%. However, only 8 countries reached the EU 2010 target: Latvia, Estonia, Lithuania, Spain, Luxembourg, Sweden, France and Slovenia. One other country, Ireland, fell only just short of the target, with a 49% reduction. The three Baltic countries top the ranking: Estonia and Latvia reduced road deaths by 61% and Lithuania by 58%; they are followed by Spain, with a 55% reduction, Luxembourg and Sweden both with 54%, France with 51% and Slovenia with 50%.

The Netherlands, the UK, Belgium and Portugal achieved major reductions approaching the EU 2010 target and above the EU 43% average, while the remaining countries recorded smaller improvements, and slower progress in the reduction of road fatalities has been made by Romania (3%), Malta (6%), Bulgaria (23%), Poland (29%) and Greece (33%).

From the point-of-view of the different times at which they joined the EU, the countries which originally set the EU target (2001-2010), i.e., EU15, managed a 48% reduction in road fatalities; 42.4% reductions were achieved by the group of countries that joined in 2004 (the Czech Republic, Cyprus, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Slovakia and Slovenia); and finally, the group of countries that joined in 2007 (Bulgaria and Romania) managed an average 13% reduction.

If both the principles of subsidiarity and proportionality (Steiner & Bozicevic, 2008) are applied, the adoption of the EU 2010 target is based on the combination of efforts at both national and EU levels (Bosetti et al., 2010). Therefore, following Larsen et al. (2008), a National Road Safety Plan (NRSP) (with measurable long- and medium-term targets, alternative road safety actions and adequate sources of funding) is a must for sustainable improvements to be achieved.

An examination of IRTAD annual reports (OECD, 2009, 2010, 2011) and countries' National Road Safety Plans, allows to determine that during the study period all the EU 27 countries (including the so-called Accession Countries joined in 2004 and 2007) have published an NRSP. With the exception of the UK, France, Germany and Luxembourg (which do not have official national programs), most of the countries report reduction targets similar to the EU 2010 target in terms of road fatalities, while several countries, such as Denmark, Hungary, Italy, Latvia, Lithuania and Malta, also extend the target to injuries.

Targets are usually based on the percentage reduction in road fatalities or injuries from a reference year, although several countries, such as Belgium, Denmark, Estonia, Finland, Poland and the Netherlands, use absolute numbers. Most countries consider 2010 to be the limit for the proposed objectives to be achieved, although some have set later years as their targets, such as 2014-2015 (e.g. Belgium, Estonia, Hungary, Malta), 2012 (Denmark and Spain) or even 2020-2025 (the Netherlands and Finland). Other countries finalize the target period before 2010, including Ireland, Portugal, Slovenia, Sweden, and, more especially, the last countries to join EU 27, Bulgaria and Romania. With respect to the duration of the target period, most countries set a period of ten years, although in some cases, countries such as Cyprus and Portugal have three- or four-year plans. The strategies implemented within these NRSPs have been documented by the ETSC (2011), OECD (2010, 2011).

### **3. The empirical strategy.**

We follow a similar empirical approach as a result of which our choice of variables and estimation techniques is similar to previous empirical analyses. Our main contribution concerns a variable that measures the number of years that a country has been in the EU. Our main hypothesis is that the countries that have most recently joined the EU will find it more difficult to adapt their road safety policies to the levels marked by the European Commission, especially bearing in mind the time horizon for the goals set by the 2001 White Paper and the 3rd ERSAP (2003-2010). Hence, we expect a negative relationship between the traffic fatality rates and the number of years that a country has been a member of the EU, (a *Europeanization* process, inspired by Borzel & Risse, 2000 and explained, in general, by Gulbrandsen, 2011), because of the growing priority given to road safety policies by European institutions (Bosetti et al. 2010). This phenomenon is studied in road safety for the case of France by Hamelin (2010). Once a country is part of the European Union, governments may have more incentives to be effective in the reduction of traffic fatalities to meet the goals imposed by the European Commission.

As Bax (2011) reminds, the road safety targets set for the EU as a whole are not binding for member States, which are not required to meet them (neither do these targets constitute a compulsory condition for the accession process, as pointed out in Mikulik, 2004).

Recent research such as Orsi et al. (2012), shows that the level of traffic safety performance differs significantly from one member State to another. Nevertheless, when they join, members seem to be encouraged to adopt the overall EU target in their national road

safety policies to avoid having their credibility undercut and suffering from the poor public image that derives from becoming a free-rider (see Martin, 1995, for the free-rider problem in EU monetary unification).

There may be an imitation effect that spurs on the road safety policies of recent members of the EU. The performance of long-standing members (EU-15) was more in line with the targets of the 3<sup>rd</sup> ERSAP when it came into force in 2003, but New Member States (NMS-12) (Southern and Eastern), presented a more difficult situation (ETSC, 2006). However, it is logical to think that, following the convergence process of EU, existing advances, the “know-how” of the old members and the structures established by European institutions all rub off on countries in transition, as was analyzed by Baskaran (2009) considered for Macroeconomic performance after the Treaty of Maastricht, as Faure (2000) examined for product safety standards and Mattli & Plümper (2002) studied for the enlargement of the Central and eastern European countries.

With respect to our dependent variable, it should be noted that the two previous papers that examined empirically road fatality rates in Europe (Albalade, 2008; Albalade & Bel, 2011) only used data for the EU-15 up to 2003, while our analysis uses data for the UE-27 of (2000-2009).

We develop a two-way fixed effects model that takes the following form for country  $i$  during period  $t$ :

$$Y_{it} = \alpha + \beta_k X_{it} + \lambda_k Z_{it} + \mu_i + v_t + \varepsilon_{it} \quad (1)$$

where  $Y_{it}$  is the log of total fatality rate per capita<sup>1</sup>,  $X_{it}$  contains the vector of economic, institutional and demographic attributes of the country and  $Z_{it}$  are variables related to road safety policies.  $\mu_i$  are country fixed effects that control for time-invariant country-specific omitted variables,  $v_t$  are year dummies that control for national trends and  $\varepsilon_{it}$  is a mean-zero random error.

The time variation of the policy variables considered is low for most of the countries and in some cases there is no variation at all in the period. We apply two different strategies to take into account the country-fixed effects.<sup>2</sup> First we make the estimation using the ordinary least

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<sup>1</sup> Albalade (2008), Albalade & Bel (2011) and Eisenberg (2003) consider that this is the most appropriate dependent variable for assessing road traffic fatalities, because the interpretation of policy variables is clearer.

<sup>2</sup> Depending on the distribution of the dependent variable, the estimation should be made using a negative binomial distribution (e.g. Anbarci et al. 2006). In our case, the wide dispersion of our dependent variable and the small number of observations does not allow this method to be used. We have run some regressions using a



squares method including dummies for countries and years. We can include policy variables with low time variability as covariates. Secondly, the data used for estimating the determinants of road traffic fatalities have a data panel structure. Hence, we also estimate a fixed effects model that exploits the within variation of the data. An advantage of the fixed effects model is that it allows any omitted variable to be controlled for which is correlated with the variables of interest and does not change over time. A shortcoming of the fixed effects model is that it may not consider time-constant variables (or those with a very low within variation) as explanatory variables. Thus, the estimation with the fixed effects model does not include either the policy variables or the country dummies<sup>3</sup>.

The estimates can present heteroscedasticity and temporal autocorrelation problems in the error term. In this regard, the Wooldridge test for autocorrelation in panel data claims that we may have a problem of serial autocorrelation that must be addressed. Following Bertrand et al. (2004), our standard errors are robust to heteroscedasticity applying the White-Huber correction and are clustered by country to take into account the correlation between observations of the same country.

#### [INSERT TABLE 1]

Table 1 lays out the explanatory variables, the sources of information and the descriptive statistics (mean and standard deviation). Our main variable of interest, as mentioned above, is *Europeanization*, which is measured as the number of years that a country has belonged to the EU; obviously this variable will increase by one unit for each year for each country. We expect a negative relationship between this variable and road traffic fatalities (following Orsi's et al. 2012 suggestion, the longer a country has been a member of the EU, the smaller the number of road accidents). In this sense, Crespo-Cuaresma et al. (2008) obtained that the length of EU membership is found to have a significant positive effect on economic growth ("*a growth effect due to the European integration*").

We also consider typical variables used for road traffic fatalities in the empirical literature related to the country's economic and social conditions:

- 1) Gross domestic product per capita as an indicator of the country's economic development. In this regard, Kopits & Cropper (2005) find evidence of a non-linear relationship between road fatalities and economic development using samples that include

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negative binomial distribution and no variable is statistically significant (results available from the authors upon request).

<sup>3</sup> The Hausman test shows that systematic differences are found between the random and fixed effects and thus the fixed effects model should be preferred to the random effects model.

developed and developing countries from all round the world. Indeed, fatality rates may increase with economic development in very poor countries because of increased exposure to road traffic accidents. However, the relationship between economic development and traffic fatality rates may become flat or even decrease after reaching a certain wealth threshold, as Bishai et al. (2006) specify for rich countries. In our context, we should expect a negative relationship between the GDP per capita variable and traffic fatalities.

2) The level of motorization in the country which is also related to the economic development of the country and the development of private transportation in particular. It is not clear what relationship with road traffic fatalities should be expected. On the one hand, higher levels of motorization may imply higher exposure to road traffic accidents (as for example Clark et al. 2000 found in East Germany after German unification). On the other hand, more developed countries may enjoy better infrastructure and vehicles, better policies and better social attitudes towards road safety (confirming the so-called Smeed's law of 1949 regarding how countries with lower levels of road mortality rates are among those with the highest levels of motorization; Smith, 1999).

3) The number of passengers-kilometer weighted by the population of the country. This variable seeks to capture the intensity of traffic on the roads. In this regard, we could expect a positive relationship between the amount of traffic and road fatalities since, as Page (2001) states, the total amount of driving is an indication of the population's exposure to road accident risks. However, following the findings of Li et al. (2012), such a relationship could be dependent upon congestion levels.

4) The density of motorways as an indicator of the quality of transport infrastructure. We may expect a negative relationship between the quality of transport infrastructure and road traffic fatality rates (Noland, 2003).

5) We also consider the educational background of the population from 14 to 65 years of age. As Page (2001) suggests, travelers' educational background may influence both their risk behavior and also the intensity of use of private cars. Thus, its relationship with road traffic fatalities is not clear (Lourens et al., 1999).

6) We also take into account the percentage of vulnerable population in the country depending on age. We consider the percentage of population that is 20-34 years old and the percentage of population of over 60 years old. Young people may be less risk-averse, while the mortality rate could be higher in accidents where older travelers are involved. McCarthy (1994, 2005) finds evidence of a positive relationship between traffic fatalities and the percentage of vulnerable population in the country.

We also consider additional variables which are related to road safety policies:

1) A dummy variable that takes a value of one for countries and periods where the maximum blood alcohol concentration rate allowed is lower than 0.5. Several papers have shown the effectiveness of setting this limit at 0.8 (Eisenberg, 2003) or 0.5 (Albalade, 2008). In our context, most of the countries have set the limit at 0.5 or lower, so we are able to test whether blood alcohol concentration rates lower than 0.5 are also effective in reducing road traffic fatalities.

2) A dummy variable that takes a value of one for countries and periods with points-based driving licenses. With this variable, we can test the effectiveness of this policy in reducing road traffic fatalities (see Castillo-Manzano & Castro-Nuño, 2012 for a recent meta-analysis).

3) A variable that shows the maximum speed limit allowed on motorways. According to McCarthy (1994), we may expect a positive relationship between the speed limit (and its subsequent enforcement e.g. by cameras; Tay, 2010) and road traffic fatalities.

#### **4. Results and discussion.**

Table 2 gives the results of the estimates for the determinants of road traffic fatalities. We find no substantial differences in the results whichever estimation technique is used.

**[INSERT TABLE 2]**

The GDP per capita variable is not statistically significant. A possible explanation is that its variability is not high enough in our sample. However, we find lower road fatality rates in countries with higher levels of motorization. It should be remembered that the motorization

variable correlates with the economic development of the country. Road traffic fatalities seem to be lower in countries with a higher level of transport development, where infrastructure and vehicles may be safer and greater priority is given to road safety policies. Albalate (2008) and Albalate & Bel (2011) also find a negative relationship between traffic fatalities and the level of motorization in analyses of a sample of European countries.

The variable of vehicles-kilometer driven is positive and statistically significant. As expected, more traffic on the roads implies higher fatality rates. We confirm the result found in Albalate & Bel (2011), Eisenberg (2003) and McCarthy (1994, 2005). To the contrary, the motorway density variable is negative and statistically significant. This confirms that the quality of transport infrastructure has a significant effect on road safety, as analyzed in Albalate & Bel (2011) and Noland (2003).

We do not find that the population's educational background has a clear effect on road fatality rates, as found in Lourens et al. (1999). With respect to the vulnerable population-related variables, we find a positive relationship between fatality rates and the percentage of population of over 60 years old. We do not find evidence of higher traffic fatality rates when the percentage of the younger population is higher. These findings are consistent with the idea that risk exposure is higher for a younger population, although the impact of the accidents means that morbidity and mortality are higher for an older population (Yee et al. 2006).

All road safety policies examined in this paper seem to be effective in reducing traffic fatalities. The variables linked to the maximum blood alcohol concentration rate and the points-based driving license are negative and statistically significant, as was to be expected according to prior findings in Albalate (2008) and Castillo-Manzano & Castro-Nuño (2012), respectively, while the maximum speed limit variable is positive and statistically significant, corroborating the findings of Afukaar (2003).

Finally, the Europeanization variable is negative and statistically significant. Controlling for several explanatory factors, we find econometric evidence that a country's road traffic fatalities decrease as the number of years that the country has been a member of the EU increases. This leads us to confirm the initial hypothesis that the EU draws member countries closer together on road safety policy through joint involvement in all its institutions and programs, such as the ERSAPs. The transnationalization of policy norms and practices (see Peck and Theodore, 2010 on the concept) is thus speeded up, making it easier for newcomers (the SEC-Belt countries) to have the opportunity to see and be advised directly on other

members' successful policies and experiences. In many cases the longest-standing European members have had the greatest success in road safety worldwide (the SUNFlower countries).

In the same way as happens with the Economic Theory of Military Alliances (e.g. Kramer, 2002 describe the enlargement of NATO with the Baltic States), benefits exceed accession costs for new members, and “the club” continues to expand. The great national efforts made by new members, such as Spain, Latvia and The Czech Republic (Gitelman et al. 2010) have benefited from the successful road safety policies developed over many decades by the old European countries, such as Sweden, the Netherlands, Germany and the United Kingdom (Loo et al. 2005), that were destined to become international leaders in road safety.

Notwithstanding, as Yannis (2003) suggests, it should not be forgotten that although the achievement of EU road safety targets depends directly on the performance of NSM-12, the role of EU institutions is regarded as necessary by the literature for introducing compulsory and quantified traffic safety procedures according to the EC Treaty's principle of subsidiarity (Bruno et al., 2006; Van den Bergh, 2000).

## **5. Conclusions.**

The 2001 publication of the White Paper and its development in the 3<sup>rd</sup> ERSAP (2003-2010) represents a inflection point in the history of the European Common Road Safety Policy. For the first time, the quantitative and measurable target of halving the number of road fatalities by 2010 was included as a shared target, and at last the issue of road safety seemed to play a crucial role. Nevertheless, there were huge differences in member States' levels of safety performance and the target was only a non-binding commitment for them. According to Eurostat data for 2001, compared to the EU-15 (longest-standing members) average of 105 deaths per million inhabitants, SEC-Belt countries presented mortality rates of 236 for Latvia, 202 for Lithuania, 136 for Spain and 130 for the Czech Republic, while the safest countries in the world (the SUNFlower countries) recorded rates of 61 for UK, 62 for the Netherlands and 66 for Sweden. However, at the end of the target period, the CARE database (ETSC, 2011) found that since 2001 road deaths had been cut by 43% in the EU-27 and by 48% in the EU-15.

Our purpose was to analyze the factors that explain the fall in road traffic accidents in the EU during the 3<sup>rd</sup> ERSAP. We conducted a panel data analysis and found that the fall in mortality rates can be explained by the influence of different typical variables.

However, the most important finding of our research is the *Europeanization* variable (the number of years that a country has been a member of the EU). It is negative and statistically significant at 1%, which shows that a converging process on road safety emerges after the accession process to the EU. When a new member State completes accession, road traffic issues increase in national policy, and the country has the opportunity to have access to other members' successful experiences and benefit from the EU acquis, taking advantage of EU legislation, EU funding and the motivation provided by contributing to the EU shared target. As pointed out in Hamelin (2010): “...*the EU seems more a facilitator than a coercive actor that imposed a solution*”.

The cumulative nature of this variable also allows us to conclude that this process of positive imitation between member countries is not limited to the 2001 White Paper and the 3<sup>rd</sup> ERSAP, but that its significance could be understood as indirect empirical evidence of the effectiveness of the three ERSAPs executed to date.

Compared to the difficulties that this entails in strictly economic variables, such as unemployment and inflation, a priori this should not be so complex for traffic safety policy, thanks to all the experiences and recommendations (compulsory seat-belt use, reductions in alcohol limits allowed in the blood and improved communication and advertising strategies, among many others) generally with affordable implementation costs. Furthermore, these efforts by States to reduce this gap in road safety seem to receive solid social support, as according to the results offered by the Eurobarometer survey (EC, 2010a), European citizens agree with the efforts made in this field in recent years, and even call for governments to do more to combat the problem.

In other respects, the benefits of the Europeanization process could also be considered as clear empirical evidence in favor of the principle of subsidiarity, as set out in the EU Treaty, in certain areas, such as road safety. And all this within the ongoing debate between the champions of the principle of subsidiarity and those who advocate greater amounts of decentralization in managing national public policy (Van der Bergh, 2000).

Finally, although the European Common Road Safety Policy still has a long way to go (harmonizing alcohol consumption and speed limits or extending the target to injuries), and although some of the measures adopted in SEC-Belt countries will require plenty of time to achieve their full potential impact on road safety (ETSC, 2006), we understand that this paper's findings are especially useful in the context of difficulties found in European integration going forward. Our findings show an area where belonging to the European Union clearly provides positive benefits and demonstrates that it is much more than an economic and

monetary union. In words of Avenoso & Townsend (2010): "...EU road safety legislation has an added value for all Member States...".

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**TABLE 1. VARIABLES.**

<b>Variables</b>	<b>Description</b>	<b>Source</b>	<b>Mean</b>	<b>Standard Deviation</b>
Fatalities per capita	Fatality rates per million inhabitants	CARE (EU road accidents database)	110.61	45.32
GDP per capita	Gross domestic product per capita in International Comparable Prices (US\$ at 2005 prices and PPP)	UNECE Statistical Division Database, compiled from official national and international (CIS, EUROSTAT, IMF, OECD) sources	25211	11738
Motorization	Number of registered vehicles per 1000 inhabitants	UNECE transport division, Eurostat, World Bank and national databases	424.27	113.57
Vehicles-km driven	Number of passenger-cars-km expressed in 1000 million km and weighted by national population	European Commission (Directorate General for mobility and transport)	8.28	2.89
Density of motorways	Number km of motorways divided by square km of the country	EUROSTAT and UNECE	1.68	1.74
Upper secondary Education	% population between 14-65 years old with upper secondary education	WORLD BANK	46.72	14.41
Young	% population between 20-34 years old	UNECE	21.39	2.05
Old	% population over 60 years old	UNECE	19.65	2.32
Europeanization	Number of years that the country has been in the European Union	European Commission	18.17	18.61
BAC_05	Dummy variable that takes a value of 1 for countries and periods where the maximum blood alcohol concentration rate allowed is lower than 0.5	European Commission Road Safety Website	0.25	0.43
PPS	Dummy variable that takes a value of 1 for countries and periods with a points-based driving license	SWOV and National legislations	0.74	0.43

Speed limits	Maximum speed limits (km/hour)	European Commission Road Safety Website	121.18	13.66
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**TABLE 2. Results of estimates: Fatality rates per capita**

Independent variables	Fixed effects (within estimator)	Ordinary Least Squares
GDP per capita	0.000012 (0.000011)	0.000012 (0.000011)
Motorization	-0.0013 (0.0005)**	-0.0012 (0.0005)**
Vehicles-Km driven	0.05 (0.02)**	0.05 (0.02)**
Density of motorways	-0.14 (0.04)***	-0.14 (0.05)**
Upper secondary Education	0.007 (0.05)	0.007 (0.005)
Young	0.003 (0.015)	0.003 (0.01)
Old	0.07 (0.02)**	0.08 (0.03)**
Europeanization	-0.07 (0.02)***	-0.07 (0.02)***
BAC_05	-	-2.38 (1.10)**
PPS	-	-0.90 (0.23)***
Speed limits	-	0.05 (0.02)**
Constant term	4.01 (1.13)***	-1.11 (1.52)
Country fixed effects	NO	YES
Time fixed effects	YES	YES
R-Sq.	0.77	0.95
Number observations	258	258

Note 1: Standard errors are given in brackets (robust to heteroscedasticity and clustered by country)

Note 2: Statistical significance at 1% (\*\*\*), 5% (\*\*), 10% (\*).