Approaches to Tackling Illegal Tobacco Trade in EU Countries

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Please cite this paper as:
Boboc, C., Ciobanu, M. and Ghita, S.I.,2022. Approaches to Tackling Illegal Tobacco Trade in EU Countries. In: R. Pamfilie, V. Dinu, C. Vasiliu, D. Pleșea, L. Tăchiciu eds. 2022. *8th BASIQ International Conference on New Trends in Sustainable Business and Consumption.* Graz, Austria, 25-27 May 2022. Bucharest: ASE, pp.274-281.
DOI: 10.24818/BASIQ/2022/08/036

Abstract

The objective of this paper is to demonstrate that an effective strategy to combat illicit trade in tobacco products (ITTP) in EU countries is one targeted on groups of countries, based on international and intersectoral cooperation, involving actors from government, education, civil society and the media. A basic statistical analysis was performed and regression models for panel data were used to identify the effects of changes in price and non-price factors in ITTP along with other control variables. In general, improving regulatory quality and education all over the EU will decrease the level of ITTP. However, the observation that the relationship between the proportion of people at risk of poverty and social exclusion and counterfeit and contraband consumption varies according to the existence of a border with a non-EU country, emphasizes the need for a tailored approach to combating ITTP. The first important result of this study is that improvements in quality of regulations, in education for all EU countries and reducing the poverty and social exclusion in New EU countries lead to decreases in illicit tobacco consumption. The second one is that increasing prices of tobacco products leads to increases in consumption of illicit tobacco products when the maximum gap between prices in EU countries and neighboring countries remains constant. We didn't find in our estimated models, significant negative dependency between WAP and illicit trade, meaning that the other factors are more important for decreasing the consumption of illicit tobacco products. Another important result is that decreasing the differences in prices of tobacco products in EU countries compared to neighboring countries lead to decreases in illicit tobacco consumption only in association with the reduction of poverty and social exclusion. The study also emphasizes the positive consequences of a holistic approach of all tobacco control measures.

Keywords

illicit tobacco trade; European Union countries; regression analysis; governance indicators.

DOI: 10.24818/BASIQ/2022/08/036

Introduction

The European Union (EU)-funded project: Illicit Tobacco Trade in the European Union 2017–2019 – Raising awareness and enhancing understanding of illicit tobacco trade among academic researchers in the European Union, offered a broad overview of the various approaches that countries have adopted to tackling illicit trade in tobacco products (ITTP). In EU Member States, there are few efficient punishments for those involved in ITTP. Very few people involved in illicit tobacco trade receive substantial sentences and the prosecution processes incur long delays. However, the exchange of information between neighboring countries plays an important role in detecting illicit tobacco flows. In this regard, the cooperation between EU countries is significant. Nevertheless, the current exchange of information with source countries can be improved.

The main objective of this paper is to prove that an effective strategy to combat ITTP in EU countries is the international cooperation and intersectoral cooperation, involving actors from ministries (finance, trade, foreign affairs, justice, internal affairs), customs administration, education and health sectors, civil society

and mass media by two hypotheses. The first one is: *"Improvements in education, in material and social conditions of living and in quality of regulations lead to decreases in illicit tobacco consumption*" and the second one is: *"Increasing the differences in prices of tobacco products in EU countries compared to neighboring countries lead to increases in illicit tobacco consumption".*

In a previous study Boboc and Ciobanu (2021) proved that countries sharing a common pattern of modus operandi in ITTP also share common strengths and weaknesses in their governance status. Reinforcing governance with common instruments and common goals in countries sharing a common ITTP modus operandi, could improve the control of illicit trade in these products. At national level, Ciobanu & al. (2018), even if there is an inevitable lag time between tobacco control interventions and their impact on smoking prevalence and related diseases in the population, there is an association that supports the tobacco taxation despite the perceived risk of increases in illicit trade and supports strengthening tobacco control laws in Romania.

The major contribution of this paper to the field of illicit trade with tobacco products is the comparison of various panel data regression models, based on various economic, educational, social and governmental indicators such that to define the best ways to follow in order to decrease the illicit tobacco consumption.

1. Literature review

There are many reasons to reduce illicit trade in tobacco products (ITTP). The question is how. The first study to demonstrate the scale of ITTP looks to be the estimation made by Merriman, Chaloupka and Yurekli, (2000): between 6% and 8.5% of global cigarette consumption. Since then, many other studies have been made to demonstrate the scale of ITTP, its measurement and the impact of taxation policies on ITTP. But fewer studies focus on new and innovative approaches to reducing the extent of ITTP.

The technical report of the World Bank Group (2019), Global Tobacco Control Program: Confronting illicit tobacco trade: A global review of country experiences, identifies some key strategic directions that have characterized national advances in the control of ITTP. The authors highlight action points those policy-makers and implementers can prioritize to sustain progress in confronting.

Cigarettes are highly taxed in Europe to discourage tobacco use and to fund public health measures to mitigate the harms from tobacco consumption. But at higher levels of taxation, price differences between the legal and illegal tobacco markets largely determine consumers' inclination to use illicit cigarettes. This issue is hotly debated in the literature. One of the most vigorous claims that prices only minimally affect illicit retail trade in cigarettes (IRTC) and what other factors are more important, was made by Joosens and Raw (2008): "Higher income countries, where cigarettes are more expensive, have lower levels of cigarette smuggling than lower income countries. The role of prices in stimulating IRTC is far more empirically important than that of corruption in European countries, both examining illicit market shares or illicit volumes". Later, Schwartz and Zhang (2016) argue also the assumption that the increase in taxes charged on tobacco products always leads to the increasing use of illegal tobacco is misleading. In their view, lowering taxes on tobacco would not solve the problems with contraband tobacco.

In 2018, in their paper, Schafferer, et al., demonstrated that higher taxation would reduce total tobacco use and increase tax revenues but also increase contraband trade. Prieger and Kulick (2018) in their study on ITTP in Europe, found that while the overall correlation between licit cigarette prices and illicit market share is negative, raising prices in any one country would lead, other factors being equal, to substantial increases in the expected illicit market share and volume.

Tobacco price heterogeneity among European states has been identified as the main incentive of illicit trade (Agaku, et al., 2016; Johnston, Kegö and Wenngren, 2016). Specifically, tobacco products are considerably lower priced in South-eastern Europe than in other European countries, proliferating illicit trade and subsequently altering consumption within the European Union.

As seen in previous scientific papers, the factors contributing to ITTP are extremely complex. Taxes and prices have only a limited impact on the illicit cigarette market share at the country level. Evidence indicates that the illicit cigarette market is relatively larger in countries with low taxes and prices and smaller in countries with higher cigarette taxes and prices (Joossens and Raw, 2008). Non-price factors – such as governance status, weak regulatory framework, social acceptance of illicit trade and the availability of informal distribution networks – appear to be far more important determinants of the size of the illicit tobacco market (Daudelin, Soiffer and Willows, 2013).

A high level of education plays an essential role in society, by fostering innovation, increasing economic development and growth and improving the well-being of citizens more generally. Although the

relationship between educational attainment and cigarette consumption has been studied by many authors (Helmert, Borgers and Bammann, 2001; Jefferis, et al., 2003; Barbeau, Krieger and Soobader, 2004; Galea, et. al., 2007), the relationship between illicit cigarettes consumption and educational level has not been extensively studied by so many authors. Authors like Cantrell, et al. (2008) and Coady, et al. (2013) revealed correlations between illicit cigarettes consumption and some specific racial and ethnic minorities (for which included references to the educational level). On EU populations, Joossens, et al (2014) found a correlation between the educational level (low, medium, high) and illicit cigarettes and hand-rolled tobacco. Even if the evidences of a relationship between education and illicit tobacco trade among EU countries are incipient, a possible relationship could prove significant in longitudinal analysis.

2. Data and variable description

According to the WHO-FCTC definition, illicit tobacco trade refers to any practice related to distributing, selling or buying of tobacco products that is prohibited by law, including tax evasion (sale of tobacco products without payment of applicable taxes), counterfeiting, disguising the origin of products, and smuggling. 'Contraband' refers to tobacco products produced legally and illegally diverted into another market after manufacture. 'Counterfeit' refers to tobacco products that are illegally produced and bear false manufacturing labels, unauthorized trademarks or trade names. 'Illicit whites' (or 'cheap whites') refers to cigarettes produced in one country for the sole purpose of being exported and illegally sold into another country without payment of any tax (FCTC-WHO, 2013). Traditionally the illicit tobacco trade has been dominated by counterfeiting and contraband, but illicit whites are an emerging trend (Aziani and Dugato, 2019).

In 2017, counterfeit and contraband (CAC) cigarette consumption in the EU was estimated at 8.7% of total consumption, accounting for 44.7 billion cigarettes. Despite a recent decline in CAC volumes (i.e. 7.4% decrease in 2017 compared to 2016) – which is more pronounced than the decline in legal domestic cigarette consumption of only 2.5% in the same period – CAC cigarette consumption grew in countries with the largest price differences with source countries, such as in the Netherlands and the United Kingdom.

Table no. 1. Variable description

Variable	Definition	Unit of measurement	Source
CAC consumption	The Counterfeit and Contraband, including Illicit Whites cigarette consumption in total cigarette consumption	%	*KPMG, SUN project*
Regulatory Quality (RQ)	Perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	Units	*The World Bank Database (Worldwide governance indicators)*
Tertiary Education (TE)	The percentage of population with tertiary education (aged 15-64)	%	*Eurostat*
People at risk of poverty or social exclusion (PRPSE)	The proportion of persons who are: at risk of poverty or severely materially deprived or living in households with very low work intensity in total population. Persons are only counted once even if they are present in several sub-indicators.	%	*Eurostat*
WAP *MAX_GAP_WAP*	The weighted average price for cigarettes calculated by reference to the total value of all cigarettes released for consumption, based on the retail selling price including all taxes, divided by the total quantity of cigarettes released for consumption. The maximum difference in weighted average price for cigarettes between destination country and neighboring countries	Euro	*KPMG, SUN project* *&* *Tables of excise duties on tobacco published by European Commission*

Therefore, even though many studies have suggested that tax policy is considered the most effective strategy to reduce tobacco consumption and prevalence, we argue in the present paper that a multidimensional approach is potentially much more efficient in addressing ITTP. The socioeconomic, educational or governance factors are considered to be important in determining the size of illicit tobacco trade, along with other dummy variables such as 'old' EU countries (i.e. Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK) versus 'new' EU countries (i.e. Bulgaria, Croatia, Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania,

Malta, Poland, Romania, Slovakia, Slovenia) or proximity to non-EU countries (i.e. such as in Bulgaria, Croatia, Czech Republic, Estonia, Finland, Greece, Hungary, Latvia, Lithuania, Norway, Poland, Romania, Slovak Republic, Slovenia) or the weighted price level of cigarettes, or largest differences in prices between destination countries and neighboring countries.

Positive changes in socioeconomic factors in EU countries might imply consumers switch to purchasing cigarettes through the legal market and decreasing tolerance of smuggling. In order to study the relationship between the illegal tobacco market and socioeconomic factors, we have used the variables presented in Table no. 1, chosen according to the main results from the literature. The data set presents a panel structure, containing information about the 29 EU Member States, Norway and Switzerland, observed over 5 years, from 2013 to 2017.

In 2017, 112.8 million people in the EU lived in households at risk of poverty or social exclusion, equivalent to 22.4 % of the population. Compared to 2016, the proportion of population at risk of poverty and social exclusion in 2017 declined sharply in Bulgaria, Croatia, Cyprus, Poland, Portugal, Romania and the Slovakia.

In contrast, the proportion at risk of poverty or social exclusion increased in highly developed countries such as: Denmark, Luxembourg, Norway and Switzerland. We observe that in countries forming the eastern Border of EU (e.g. Bulgaria, Latvia, Lithuania and Romania) the percentage of people at risk of poverty and social exclusion is very high and the CAC consumption is among the highest in Europe. For these people living close to the EU eastern borders, cigarette smuggling is a way of life, and shifting a pack a few miles over the border can quadruple its value. As long as these people remain in high proportion, demand for smuggled cigarettes will always be high.

A high level of education plays an essential role in society, by fostering innovation, increasing economic development and growth, and improving the well-being of citizens more generally. Therefore, in this study we have used the percentage of people with tertiary education, aged 15-64 (i.e. provided by universities and other higher education institutions) to describe the growth potential of a country. Low levels of tertiary education produce reduced opportunities in the labour market and lower participation in political, social and cultural activities. In 2017, at least 35% of the total population (aged 15-64) had completed tertiary education in the UK (38.8%), Cyprus (38.1%), Switzerland (36.8%), Norway (36.8%), Finland (36.4%), Sweden (36.0%) and Belgium (35.6%). At the opposite end of the scale, the lowest proportions (less than 20% of total population aged 15-64) were observed in Romania (15.3 %) and Italy (16.5%).

Law enforcement activities and improved legislative frameworks might also lead to reduced flows of illegal tobacco products from non-EU countries. Therefore, in this study we have used a 'regulatory quality estimate' (RQE) to measure the ability of governments to formulate and implement sound policies and regulations. The countries with the lowest levels of regulatory quality estimate are Greece, Croatia, Romania, Slovenia, Bulgaria and Hungary.

Predictably, this group of EU countries are also important actors in illicit tobacco markets. Weak regulatory quality enables the transit of illicit cigarettes and the active engagement of such countries in developing governance strategies against ITTP is essential.

With higher price differences between legal and illegal cigarettes, consumers tend more towards purchase and use of illicit products. Consequently, our analysis includes a 'weighted average price' of cigarettes (WAP) to measure the impact of price on ITTP, as recommended by the EU Tobacco Tax Directive for calculation of excise levels (Council of the European Union, 2011).

Moreover, we have computed the maximum difference in WAP between destination country and neighbouring countries (MAX_GAP_WAP) as high price differences between neighbouring countries may lead smugglers to divert products to higher priced neighbouring countries where the ITTP remains a low-risk, high-reward activity. The data used for WAP drew from the SUN Project database for the period 2013–2017 (KPMG, 2017) and tables of excise duties on tobacco published by European Commission (European Commission, 2019). The highest cigarette WAPs were registered in Norway (€ 12.12 per pack of 20 cigarettes), UK (€ 8.86 per pack) and Switzerland (€ 7.27 per pack). Even if increased legal prices augment consumers' incentives to buy illicit cigarettes, these countries are not among those with the highest levels of CAC consumption as a percentage of total consumption. This reiterates the observation that smokers with limited incomes and low levels of education are more likely to turn to illicit consumption as the price of legal cigarettes rises (Aziani and Dugato, 2019).

3. Research methods

We used a panel data approach to capture the impact of price and non-price factors described previously as influencing ITTP.

A two-way panel data model assumes the presence of individual effects αi, i = 1, …, N for each cross section and the presence of individual effects γt, t = 1, …, T for each time section:

$$yit = \beta 0 + X'it\,\beta + \alpha i + \gamma t + \varepsilon it, \quad (1)$$

$$uit = \alpha i + \gamma t + \varepsilon it, \qquad i=1,...,N;\ t=1,...,T \quad (2)$$

The linear models for panel data analysis can be conducted using fixed-effects or with random-effects (RE) models. In the fixed-effects model the αi (γt) are permitted to be correlated with the regressors xit, while continuing to assume that xit is uncorrelated with the error εit. In the random-effects model, it is assumed that αi (γt) is purely random, which is a stronger assumption implying that αi (γt) is uncorrelated with the regressors. The empirical study aims to capture the impact of price and non-price factors described previously as influencing ITTP in the 29 European Countries included in the analysis by comparing the econometric results obtained from the application of certain panel regression models. In order to determine the panel regression model that best explains the impact of the factors on illicit tobacco trade, five models have been tested: the simple regression model (OLS), the one-way fixed effects model, the two-way fixed effects model, the one-way random effects model and the two-way random effects model. Based on F-test for fixed effects, the Hausman test, the significance of the model parameters, the R2 coefficient of determination and the distribution of residuals, it has been revealed that the one-way fixed effects regression provided the best results in models that do not have as predictors dummy variables for New or Old EU countries and the one-way random effects models provided the best results in the last two cases. The results for one-way panel data models are presented in Table no. 2. For the current analysis, we used SAS Software to estimate parameters. The procedure PROC PANEL in SAS estimated panel data models and supported model specification. We have used also the option of Newey-West standard error correction for heteroscedasticity and autocorrelation. The formula for the Newey-West covariance matrix estimator can be found in Greene (2003).

4. Results and discussions

In order to capture the impact of price and non-price factors described previously as influencing ITTP, we estimated several linear models with CAC consumption (%) as a dependent variable and the variables described in Table 1 as regressors, for panel data with five periods of time (yearly data from 2013–2017) and 29 cross sections (EU countries, Norway and Switzerland included). Since the variables WAP and MAX_GAP_WAP are correlated and both are price factors, they were not introduced simultaneously in the regression equations. In all models, the estimators of WAP were not significant. Therefore, we have kept in our models only the variable MAX_GAP_WAP. According to Hausman test, to F-test for fixed effects and also to the distribution of residuals, the fixed-effects model is more appropriate to describe the relationship between variables in all cases. The estimated results are presented in Table no. 2.

Table no. 2. Regression analysis results – one-way panel data models with fixed effects

Dep. variable: CAC consumption	Model 1	Model 2	Model 3	Model 4
Intercept	0.57***	0.28 ***	0.54***	0.54***
RQ	-0.05***	-0.04*	-0.05**	-0.05**
TE	-0.39***	-0.25 **	-0.33***	-0.33***
PRPSE	-0.75***	0.14 NS	-0.79**	-0.03NS
MAX_GAP_WAP	-0.01*	-0.01 NS	-0.00NS	-0.03***
PRPSE x non_EU_neighbours	0.91***	-	-	-
PRPSE x MAX_GAP_WAP	-	-0.16 NS	-	-
PRPSE x New EU	-	-	0.76*	-
New EU x MAX_GAP_WAP	-	-	-0.03**	-
PRPSE x Old EU	-	-	-	-0.75**
Old EU x MAX_GAP_WAP	-	-	-	0.03**
R-squared	0.90	0.90	0.90	0.90
Hausman test	10.13*	6.78NS	12.28 **	12.28 **
F-test for no fixed effects	18.77***	18.43***	18.96***	18.96***
Breuch Pagan Test for random effects	142.93***	121.52***	134.78***	134.78***

Notes: *: significance at 10%; **: significance at 5%; ***: significance at 1%; NS: non-significance at 10%

The current analysis presents a strong argument for supporting the high impact of various socioeconomic factors (alone or in association) on illicit trade with tobacco products.

Improving the general regulatory framework in a country in order to promote and implement the principles of the 'state of law' is clearly correlated with a decrease in CAC consumption, and in a relatively short time period (i.e. five years). This effect exists in all EU countries, independent of their old/new status.

The results demonstrate that increasing the percentage of people with tertiary education is a factor for driving down the CAC consumption. One explanation could be the inverse relationship between the level of education and smoking prevalence, for which there are strong evidences (mainly for developed countries), including in relation to the use of legal cigarettes.

Existing studies demonstrate that CAC consumption is more common in deprived areas. As the countries having a border with non-EU countries tend to have more deprived areas than other EU countries, the direct relationship between the proportion of people at risk of poverty and social exclusion and CAC consumption in these countries was anticipated and our model prove their significance. But, when calculated for all EU countries, the correlation between the two variables is not significant. For old EU countries we have a positive significant relationship between these variables. Apart from the fact that in old EU countries there are not many people at risk of poverty and social exclusion, the result could signal the possible existence of factors that have not been taken into account in the current analysis, which might influence CAC consumption. Another possible explanation could be the methodology used to define CAC consumption, as long as some components of it could be biased by many unpredictable factors (Helmert, Borgers and Bammann, 2001; Zhang, et al., 2006; Prieger and Kulick, 2018).

The negative correlation the current study identified between the maximum gap in WAP between reference country and neighbours and CAC consumption in new EU Member States could be the result of the persistent poor governance. Increasing the price of tobacco products in a country is a measure of political will and support for tobacco control measures. Thus, other policies reflecting good governance are expected to be simultaneously introduced in a country with high cigarette prices, policies that could lead to better enforcement of legislation against money laundering, illicit traffic, better customs procedures etc. Taken together, these policies are characteristic of a general state of law, leading to reduced ITTP, including reduced availability of CAC products. In order to decrease CAC consumption in a given country, increases in the prices of cigarettes could be an efficient measure only in old EU Member States, when measures to ensure enforcement of legislation against money laundering, illicit traffic, better customs procedures, etc. have already been taken.

This study also demonstrates the existence of associations between the evolution of socioeconomic factors and CAC consumption, which are not explained in many independent studies and are somewhat counter-intuitive. For example, the negative relation between simultaneous action on reducing the persons at risk of poverty and social exclusion and in decreasing the maximum gap between prices in tobacco products between neighbouring countries and CAC consumption. By decreasing the percentage of people at risk of poverty (as a result of good governance) and simultaneously decreasing WAP differences between neighbouring countries (as a result of cooperation and global good governance), the CAC consumption would decrease. One explanation might be that the maximum WAP decreases because of the increasing prices of cigarettes in less developed countries. The decreasing percentage of people at risk of poverty means that the people have more possibilities and they are less attracted to smuggled goods even if they have more opportunities to buy illicit tobacco products.

Conclusions

This paper provides evidence to support the beneficial role of improving the socioeconomic environment on CAC consumption in a relatively short time period (five years). Improving the general regulatory framework in a country is an achievable goal in five years and is effective in diminishing the CAC consumption component of ITTP.

By demonstrating that increasing the percentage of people with tertiary education is a factor for decreasing CAC consumption, the paper brings a new argument for governments to support tertiary education of young people. By implementing supportive educational policies, impacts on ITTP could be seen in the first five years after ending tertiary studies.

The observation that the relationship between the percentage of people at risk of poverty and social exclusion and CAC consumption varies according to the existence of a border with a non-EU country, emphasizes the need for a tailored approach to combating ITTP. There are some generalized recommendations

but must be adapted according to specific national circumstances – such as the proximity of countries with different regulatory frameworks (i.e. non-EU countries). In support of this approach, the study offers a further argument: each 1% decrease in the proportion of people at risk of poverty or social exclusion in EU countries with a non-EU border, all other factors remaining equal, is expected to decrease the CAC consumption by 0.15%.

Increasing prices of tobacco products leads to increases in consumption of illicit tobacco products when the maximum gap between prices in EU countries and neighbouring countries remains constant. We didn't find in our estimated models, significant negative dependency between WAP and CAC magnitude, meaning that the other factors are more important for decreasing the consumption of illicit tobacco products. Another important result is that decreasing the differences in prices of tobacco products in EU countries compared to neighbouring countries lead to decreases in illicit tobacco consumption only in association with the reduction of poverty and social exclusion, or for old EU countries (characterised by high levels of standards of living).

The study emphasizes the importance of a holistic approach to all tobacco control measures. Increasing the price of tobacco products in a country is a measure of good governance, which also includes interest for a better education of citizens and for reducing the risk of poverty. Adopting measures to improve all these indicators could lead to a more substantial decrease in CAC consumption than when only single measures are implemented.

The use of data from reports/databases produced by companies with direct or indirect ties with the tobacco industry, as well as the use of data potentially influenced by the industry, is the most significant limitation of the current study.

Acknowledgements

The present paper was produced as part of the "Pilot project on Illicit Trade in Tobacco Products in the European Union 2017-2019", implemented by the Secretariat of the WHO Framework Convention on Tobacco Control, with the financial assistance of the European Union. The opinions expressed in this document are those of the authors. They do not purport to reflect the opinions or views of the Secretariat of the WHO Framework Convention on Tobacco Control and the Protocol to Eliminate Illicit Trade in Tobacco Products.

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