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DOES TAX ENFORCEMENT COUNTERACT THE NEGATIVE EFFECTS OF TERRORISM? A CASE STUDY OF THE BASQUE COUNTRY *

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ABSTRACT: This paper analyses the impact of terrorism on tax enforcement policies by focusing on the case of the Basque Country. The presence of externalities in tax administration attributable to the costs of terrorism is investigated by undertaking a theoretical analysis. The findings of this are tested using Spanish data extracted from repeated surveys and other sources. By employing ordered response models, evidence is found of the negative impact of terrorism on tax enforcement as it is perceived by residents in the Basque Country and Navarre. In particular, this impact is found to be stronger for entrepreneurs and liberal professionals. No significant impact is found for individuals resident in the rest of Spain.

MAIN RESULT:** **This study provides evidence of the fact that the tax administrations of the Basque Country and Navarre employ tax enforcement as an instrument to counter the negative impact that terrorist activity has on tax bases, tax revenues and, in short, on the economy as a whole. This result suggests that previous estimations of the impact of terrorism on the Basque economy are implicitly calculated net of the impact of terrorism on tax administration and, thus, they could be considered as lower bound approximations of the actual net effect of this shock on the Basque economic outcomes.

JEL Codes: H83, H23, D74

Keywords: Tax administration and auditing, fiscal externalities, terrorism

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1. Introduction

Terrorism can impact aggregate economic outputs (Abadie and Gardeazabal, 2003) as well as specific sectors of activity (for a survey, see, e.g., Llussá and Tavares, 2007a and 2007b), representing more generally a cost for the economy of the affected countries (see, e.g., Enders and Olson, 2012). Besides personal and material damages, terrorist activity induces a change in the risk perception of economic agents, leading to a permanent reduction in productive investments and consumption of goods (Abadie and Gardeazabal, 2008; Eckstein and Tsiddon, 2004). Additionally, the terrorists' predatory financing system may also impact the economy and its agents. In this regard, one of the main forms of funding used by terrorist groups is that of extortion – the so-called "revolutionary tax" paid by entrepreneurs and liberal professionals[1]. As a result of its impact on economic activity and on the behaviour of economic agents, terrorism may also influence the design of fiscal and monetary policies, either as any other unpredictable shock would or as part of the policy makers' endogenous reaction to terrorist activity. As the previous literature suggests (see Gupta et al., 2004), terrorism can affect the fiscal accounts through three main potential channels: by disrupting real economic activity (GDP); by distorting the composition of government spending; and by affecting the tax bases with negative consequences for tax revenues. While the evidence confirms the negative effect of terrorism on GDP growth and demonstrates an increase in public spending to cover additional security needs (see, e.g., Hobjin, 2002 and Gupta et al., 2004) with its negative impact on the budget deficit (see, e.g., Eichenbaum and Fisher, 2004; Wildasin, 2002), very little has been said about the potential effects of terrorist activity on tax bases, tax collection and tax revenues.

The present paper contributes to this literature by analysing the presence of externalities in tax collection due to terrorism. Specifically, I use the Basque Country[2] as a case study for testing the impact of terrorism on tax enforcement policies. Terrorism can distort the behaviour of the economic agents residing and operating there by inducing them to reduce their investment and consumption or to move their residence in order to avoid the costs

[1] This is the practice of several nationalist and separatist terrorist organizations including "Euskadi Ta Askatasuna" (Basque Homeland and Freedom) – ETA in the Basque Country (Buesa and Baumert, 2013); the Provisional Irish Republican Army – IRA (Silke, 1998), and the National Liberation Front of Corsica – FCLN (Sanchez, 2008).

[2] Here I refer to the Basque Country in a wider sense to include Spain's so-called foral autonomous communities of the Basque Country and Navarre. The foral community of the Basque Country comprises three provinces (Alava, Guipuzcoa and Vizcaya) while the foral community of Navarre coincides with the homonym province. These provinces have a high level of tax autonomy while the remaining Spanish provinces are mainly administered by a central tax agency. See Appendix 1 for a detailed description of the ETA-Basque framework.

of terrorism[3]. Graph 1 shows the presence of a negative correlation between aggregate investment in the Basque Country and Navarre and the level of activity of the terrorist organization ETA in terms of killings per year. This provides casual evidence of the negative impact of terrorism on the economic activity in these regions.

[GRAPH 1]

Given the costs of terrorism, the regional tax authorities might have an incentive to counteract these costs by alleviating tax pressure so as not to lose their tax bases. Due to the pressures of terrorist extortion and the direct damage to their businesses caused by terrorist attacks, entrepreneurs and liberal professionals constitute a cluster within the population that is especially exposed to these costs. Tax enforcement policy is a flexible, adaptable instrument for selective intervention, which can be used to compensate this specific cluster of the population for the costs incurred[4]. In this regard, there is casual evidence that at least one Basque tax authority has reacted to ETA's extortions by tolerating its fiscal deductibility as a cost and by exempting the tax returns of the affected entrepreneurs from fiscal inspections. An investigation conducted in 2004 by the Spanish anticorruption prosecution agency, reported by Buesa (2011) and by the national press[5], reported that the tax authority of the Basque province of Vizcaya formally exempted from being audited the tax returns of a group of entrepreneurs and liberal professionals that had treated payments to the terrorist organization as deductions in their tax forms. The consequent fiscal opacity might further distort the taxpayers' incentives to resist extortion, particularly "if the payments to terrorists are mentally accounted for as an additional tax and, furthermore, if you are confident of obtaining a tax deduction from the tax authorities" (Barbería, 2004).

The objective of this paper, therefore, is to determine whether tax enforcement can be employed as an instrument

[3] According to Buesa (2011) the so-called "Basque Democratic Diaspora" began in the mid-seventies and involved mainly businessmen and the self-employed, which make up the group most badly affected by the costs of terrorism in the form of extortion, but from the mid-nineties onwards the phenomenon began to affect the rest of the population.

[4] Enforcement policies are important determinants of the level and distribution of effective tax rates (see e.g. Johns and Slemrod, 2010) and, hence, they influence the total amount of tax revenues collected by governments. Previous literature on tax externalities has demonstrated the possibility of horizontal tax externalities in tax enforcement (see Cremer & Gahvari, 2000; Durán-Cabré *et al.*, 2014).

[5] See e.g. Korta J.M., "Las Haciendas vascas crean un fichero especial para los chantajeados por ETA" ["The Basque tax authorities create a special file for those blackmailed by ETA"] in *El Mundo* (22nd January, 2004) and Bornstein, F. "¿Deduce el impuesto revolucionario?" ["Do you deduct the revolutionary tax?"], in *Nueva Economia – El Mundo* (8th February, 2004).

for compensating the negative effect of terrorism on tax bases. To do so, I develop a theoretical model and empirically test it using a dataset based on survey results and other sources. The results of the theoretical analysis confirm the presence of externalities in tax enforcement due to the threat of the mobility of tax bases attributed to terrorism. I derive the reaction function of tax enforcement to the costs of terrorism and obtain a negative sign. As explained in detail in section 4.1, in order to corroborate this result I use Spanish data based on surveys, in which respondents are asked to express their opinion about the authorities' tax enforcement effort and I employ alternative measures of the costs produced by ETA's terrorist activity. By estimating ordered response models, I find a significant and negative impact of terrorism on tax enforcement as perceived by individuals who reside in the Basque Country and Navarre. In particular, this impact is found to be stronger for entrepreneurs and liberal professionals, while no significant impact is found for individuals resident in the rest of Spain.

The rest of the paper is organized as follows. Section 2 provides a summary of the relevant literature, section 3 presents the theoretical framework, section 4 presents the empirical strategy while section 5 presents the results. Finally, I conclude in section 6 with some remarks.

2. Literature Review

The literature on the economics of terrorism is vast and can be usefully classified in different areas of study, including the analysis of the impact of terrorism on aggregate economic output and on specific sectors of activity as well as the effect of terrorism on economic policies. In particular, an increasing number of papers focuses on the economic output consequences of terrorist activity (see, e.g., Abadie and Gardeazabal, 2003; Eckstein and Tsiddon, 2004; Eldor and Melnick, 2004). The main conclusion of these articles is that terrorism represents a cost for the economies affected and that terrorist activities do reduce economic growth, particularly if they are concentrated in specific regions (see, e.g., Abadie and Gardeazabal, 2003; World Bank, 2002, 2003). That terrorism represents an economic cost is confirmed by the literature analysing the effect of terrorism on specific economic sectors. In this regard, several articles show that terrorist attacks may be considered as idiosyncratic shocks associated with noticeable decreases in consumption and investment (see, e.g., Eckstein and Tsiddon, 2004; Blomberg et al., 2004), as well as in capital flows and trade across borders (see, e.g., Abadie and Gardeazabal, 2008; Nitsch and Schumacher, 2004), tourism (see, e.g., Enders and Sandler, 1991, 1996; Buckley

and Klemm, 1993) and airline demand (see, e.g., Ito and Lee, 2004).

Yet, the possibility that terrorist activity might have fiscal and monetary consequences has received only limited attention in the literature, although, as Wildasin (2002) notes, terrorist "attacks are likely to trigger a complex series of simultaneous adjustments that reverberate throughout *the* entire system of private and public decision-making"[6]. In a similar vein is the study undertaken by Gupta et al. (2004) that analyses the fiscal effects of armed conflicts and terrorism on 20 low- and middle-income countries. These authors empirically corroborate that terrorism negatively affects GDP growth and changes the composition of government spending by increasing military expenditure in response to additional security needs, accompanied by a negative effect on social public expenditure (health and education) and on the level of the public deficit. On the revenue side, they show that the fiscal accounts are affected only in terms of a reduction in real economic activity, but they do not show any significant effect of terrorism on the government revenue-to-GDP ratio.

Further contributions to this literature are made by various papers that deal with the fiscal and economic policy consequences of the terrorist attacks of 11 September 2001. Hobjin (2002) estimates that the economic impact of the 9/11 terrorist attacks in terms of U.S. security policies are relatively small (0.35 % of GDP in 2003) and they are unlikely to have major effects on the fiscal discipline of the government or on productivity in the private sector. Eichenbaum and Fisher (2004) and Wildasin (2002) argue that the large increase in military expenditures in the aftermath of 9/11 is not sufficient to justify the rise in the government deficit and the large fall in labour and capital tax rates. Thus, these papers suggest that isolated terrorist events, such as the 9/11 attacks, have a significant but limited effect on fiscal policies.

Further research is needed in this field and, seen from this perspective, the analysis of the impact of terrorism on fiscal policies in the Basque Country is particularly appropriate. Since this particular case is characterized by persistent terrorist violence over a long period of time, the potential impact of terrorism on fiscal policies might extend beyond the simple spending reaction to an unexpected but isolated economic shock. As a consequence, I expect to find a clear endogenous response on the part of the tax authorities in terms of their tax collection policy.

[6] Wildasin, 2002, p.3. Italics are mine.

Given the case under study here, it is useful to refer to the literature that analyzes the economic impact of terrorism in the Basque Country from a range of different perspectives. On the output side, the economic consequences of ETA terrorism have been accurately analysed by Abadie and Gardeazabal (2003). On the one hand, the authors estimate the macroeconomic impact of terrorism in the Basque Country using a synthetic Spanish region with the characteristics of the Basque Country but in the absence of terrorism. Based on this comparison, the authors find a 10-percent average gap between Basque per capita GDP and the per capita GDP of a comparable synthetic region without terrorism. On the other hand, the authors use ETA's 1998-1999 truce as a natural experiment to estimate the impact of terrorism on the stock markets and find that the stocks of firms with a significant share of their business activity in the Basque Country showed a positive relative performance during the truce period, and a relative negative performance when the truce ended. Abadie and Gardeazabal's (2003) results suggest that terrorism may have further externality effects on tax bases and, consequently, on Basque fiscal policies. This paper aims at filling this gap in the literature.

Buesa and Baumert (2013) describe ETA's financing system and its complex structural and economic network, but also illustrate the direct/indirect economic costs that ETA's terrorist activity has on the Basque economy. Again, their study clearly indicates that when terrorism is persistent in the Basque Country and Navarre the negative economic impact is substantial.

Finally, note this paper shares some of the features of the literature on the economic-policy impact of mafia-type organized crime (see in particular Alexeev et al., 2003; 2004). The theoretical framework presented in these papers is particularly appropriate for describing the context analysed here because of the similarities between mafia-type organizations and the terrorist organization ETA, particularly with regard to the extorting of regular payments from businessmen and firms, but more generally in that they represent a constant threat to the economic stability of the affected regions. This literature has emphasised the role of the mafia as an alternative tax collector and provider of public goods, such as protection and other services that facilitate a firm's underground activities, thus demonstrating the existence of externalities between the government and the mafia in the tax collection

process[7].

In section 3, I introduce elements from the models developed in this literature into my framework based on Durán-Cabré *et al.*, 2014.

3. The Theoretical Framework

Here I seek to identify the possible externality in tax administration due to terrorist activity. I develop a simple framework consisting of a federal state comprising two regions ($i = 1,2$) of equal size in which the total population is normalized to one. Region 1 is subject to the permanent threat of terrorist activity, while the other one is not. I consider two players: the regional tax authorities and the terrorist organization. Adhering to the most common approach in the literature (see, e.g., Shaw *et al*., 2009; Slemrod & Yitzhaki, 2002, 1987), I design the tax administrations as revenue maximizing agencies that set the tax enforcement rate $\beta_i \in (0, 1)$ in their regions. Here I focus on the potential externality effect of terrorism on tax enforcement policies, and so I restrict my attention to one tax instrument, β_i, while assuming the tax rates in the two regions to be exogenously set. In line with the literature on extortion by mafia-type criminal organizations (see, e.g., Alexeev et al., 2003; 2004), I design the terrorist organization as a competing, revenue-maximizing tax collector that finances its violent activity in region 1 through the extortion of regular payments from its population. Individuals face an income tax on an exogenously fixed and normalized-to-one tax base and decide the share $\alpha \in (0, 1)$ of income to declare maximizing their utility. To ensure an interior solution, tax evasion is assumed to be costly for the individual. Since the effectiveness of a tax enforcement policy largely depends on the way it is perceived by taxpayers[8], I assume the enforcement rate to enter into the individual's objective function through his perceived probability of

[7] In particular, Alexeev et al. (2004) argue that the presence of the mafia can actually benefit the revenue-maximizing government as long as public goods do not play a significant role in determining whether the firms operate above or underground. Although this literature has generally assumed that the mafia can tax only underground activities, Alexeev et al. (2003) suppose that if the official government is sufficiently weak the mafia can and does tax above ground activities too. These authors show that when the demand for the firms' output is inelastic and the mafia is not too strong, the revenue-raising capacity of the state is not affected by the mafia, while when the demand is elastic the government's revenues decline as the mafia grows stronger.

[8] In this sense there is vast evidence from psychology that individuals tend to overestimate the probability of their being audited even when fully informed about actual policy (Kahneman and Tversky, 1979). This "may therefore provide an additional explanation for tax compliance. If taxpayers give more weight to the probability of an audit than they ought to (at least relative to an expected utility model), then compliance will be greater than the level predicted by the standard economics approach." (Alm, 2000, p. 748).

being audited $\beta_i{}^e(\beta_i, X)$[9]. For sake of simplicity, the individual's problem is not explicitly developed here, and I assume the results of the standard literature (see Allingham & Sandmo 1972; Kahneman & Tversky, 1979; Alm, 2000). Then, the model consists of three stages. At the first stage, the terrorist organization sets $E \in (0,1)$, the amount of the extortion[10]. At stage 2 the regional tax authorities set the regional tax enforcement rate β_i and at the third stage individuals choose their region of residence. The solution is provided by backward induction, but I will not solve stage 1, as the focus of our empirical analysis is stage 2.

This model has elements of both vertical and horizontal tax competition. Vertically, the tax authority in region 1 and the terrorist organization compete because they co-occupy the same normalized-to-one tax base. There is also horizontal competition because the tax authorities in the two regions compete in a race to the bottom in tax enforcement rates in order not to lose the mobile tax bases. Moreover, and unlike the previous literature (see Cremer & Gahvari, 2000; Durán-Cabré *et al.*, 2014), horizontal competition is not fair in this model because of the presence of the externality produced by the terrorist organization in region 1 that reduces the tax authorities' ability to set β_1.

I employ the notion of "home attachment" (see Mansoorian & Myers, 1993 and 1997) to model the problem at stage 3. At this stage, individuals compare their indirect utility function in the two regions in order to decide where they wish to reside. Assuming that $n \in (0,1)$ indexes the individuals by measuring the non-pecuniary (psychic) benefit they derive from living in region 2 and that individuals are uniformly distributed between 0 and 1[11] I can describe the preferences of individuals n with respect to location in this way:

[9] Where $\frac{\partial \beta_i{}^e}{\partial \beta_i} > 0$, $\frac{\partial^2 \beta_i{}^e}{\partial \beta_i{}^2} > 0$ and X is a variable exogenously collecting information about the individual and situational characteristics as well as the social context that might have an impact on the individual's perceived enforcement (see e.g. Alm, 2000). Following Kahneman and Tversky (1979) I assume $\beta_i{}^e(\beta_i, X) \geq \beta_i$.

[10] Since the tax bases are normalized to one, it is possible to alternatively interpret E as an extortion rate or as a lump-sum payment and even more generally as a linear cost. The model takes into consideration just one component of the total cost of terrorism but its broad interpretation allows us to easily generalize its effects on tax administration. Indeed I am assuming that the entire population in region 1 is the victim of extortion by the terrorist organization. This is compatible with assuming that terrorism is a cost borne by all the regional population, which seems to be a reasonable assumption. A possible extension to the model would be to consider that the terrorist organization also decides the share of population in region 1 to be extorted $\gamma \in (0,1)$ in addition to E. This would lead to the same result since the only change would be the way in which the total amount of extortion is collected through variables E and γ.

[11] Thus individuals indexed by $n \in \left(0, \frac{1}{2}\right)$ reside in region 1 while those identified by $n \in \left(\frac{1}{2}, 1\right)$ reside in region 2.

$$V(n) = \begin{cases} U_1^* + a \times (1-n) - E & \text{if } n \text{ lives in region 1} \\ U_2^* + a \times n & \text{if } n \text{ lives in region 2} \end{cases} \quad (1)$$

where $U_i^* = U_i^*(1 - \alpha^*(\beta_i;\ t_i))$ represents the (pecuniary) indirect utility function of an individual residing in region *i = 1, 2*[12], t_i is the tax rate exogenously fixed in region *i*, and $a \in (0, +\infty)$ is a parameter representing the cost sustained by an individual when moving away from their home region. In equilibrium, the marginal individual, that is, the one indifferent to residing in either region 1 or 2 is identified by $n = n_1$ such that:

$$U_1^* + a \times (1 - n_1) - E = U_2^* + a \times n_1. \quad (2)$$

Since $\int_0^{n_1} dn = n_1$, n_1 also represents the population resident in region 1 in equilibrium:

$$n_1 = n_1(\beta_1, E; a, t_1, t_2, \beta_2) = \frac{1}{2} + \frac{U_1^* - U_2^* - E}{2a}. \quad (3)$$

The population in region 2 in the migration equilibrium is:

$$n_2 = \int_{n_1}^{1} dn = 1 - n_1 \quad (4)$$

At stage 2, the regional tax authorities simultaneously set the tax enforcement rate by anticipating the optimal level of E set by the terrorist organization and by maximizing their objective function. The problem of tax authority in region 1 is then:

$$\underset{\beta_1}{Max}\ R_1(\beta_1, E\ ; a, t_1, t_2, \beta_2) = n_1 \times r_1 = \left(\frac{1}{2} + \frac{[\theta_2 - \theta_1 + g_2 - g_1] - E}{2a}\right) \times [\theta_1 - d(\beta_1)],$$

[12] The direct utility function is defined as $U = [1 - t_i \times [\alpha + (1-\alpha) \times \tau \times {\beta_i}^e(\beta_i, X)] - g(1-\alpha)]$ where $(\tau - 1) > 0$ is the exogenous tax penalty per unit of tax evaded such that $\tau \times {\beta_i}^e(\beta_i, X) < 1$ and the function $g(1-\alpha)$ represents the cost of tax evasion $(1-\alpha)$, such that $g'(1-\alpha) > 0, g''(1-\alpha) > 0,\ g(0) = 0, g(1) \to +\infty$.

where $\theta_1 \equiv t_1 \times [\alpha + (1-\alpha) \times \tau \times \beta_1]$ is defined as the effective tax rate in region 1[13], $d(\beta_1)$ represents the tax administration cost such that $d'(\beta_1) > 0, d(\beta_1)'' > 0$ and $r_1 \equiv \frac{R_1}{n_1} = [B \times \theta_1 - d(\beta_1)]$ is the unitary tax revenue. Tax authority in region 2 faces the symmetric problem. The FOCs of these problems are then:

$$\frac{\partial r_1}{\partial \beta_1} = -\frac{2a}{U_1^* - U_2^* - E + a} \times {n_1}'_{\beta_1} \times r_1 > 0 \tag{5}$$

and

$$\frac{\partial r_2}{\partial \beta_2} = \frac{2a}{U_2^* - U_1^* + E + a} \times {n_1}'_{\beta_2} \times r_2 > 0 \tag{6}$$

The left hand side of both Eq. 5 and Eq. 6 represents, for each region, the marginal benefit of increasing β_i, while the right hand side represents the corresponding marginal cost. In particular, since ${n_1}'_{\beta_1} < 0$ and ${n_1}'_{\beta_2} > 0$, the marginal cost is positive in both cases. If we examine the denominator on the right hand side of both equations, it can be seen that the presence of costs related to terrorism (*E*), by affecting n_1 and n_2, increases the marginal cost of tax enforcement in region one while relaxing it in region 2. Consequently, the optimal level of β_1 (β_2) turns out to be lower (higher) than in the absence of terrorism. In other words, at this stage, given the exogenous level of a, t_1 and t_2, the tax administration of region 1 has to compensate for the costs of terrorism by relaxing its enforcement of existing tax legislation.

Multiple equilibria are possible and for sake of simplicity I assume that $t_1 = t_2 = t$. It is possible to show that in equilibrium $\beta_1 < \beta_2$ then, depending on the capacity of the tax authority in region 1 to maintain the individuals indifferent to living in either region 1 or 2, and given the optimal level of E it is possible to describe the equilibrium in this way:

[13] The effective tax rate is defined between 0 and 1; I limit the attention to the case where $t_1 + E \leq 1$ since the case $t_1 + E > 1$ clearly cannot represent a sub-game perfect equilibrium.

$$\begin{aligned} n_1 < \frac{1}{2} < n_2 \quad & \text{if } U_1^* < U_2^* + E \\ n_1 = n_1 = \frac{1}{2} \quad & \text{if } U_1^* = U_2^* + E \end{aligned} . \tag{7}$$

Applying the inverse function theorem to Eq. (5), I derive the reaction function of β_1 with respect to E in order to determine the nature of the externalities in tax administration due to the cost of terrorism:

$$\frac{\partial \beta_1}{\partial E} = -\frac{n_{1_E} \times r_{1_{\beta_1}}}{R_{1_{\beta_1\beta_1}}(\beta_1, E; a, t_1, t_2, \beta_2)} = -\frac{-\frac{1}{2a} \times r_{1_{\beta_1}}}{R_{1_{\beta_1\beta_1}}(\beta_1, E; a, t_1, t_2, \beta_2)} < 0 \tag{8}$$

The first term of the numerator is the marginal loss of population in region 1 due to the costs of terrorism and it is negative; the term $r_{1_{\beta_1}}$ is the marginal unitary tax revenue that is positive under the FOC. According to the second order condition of the administration's problem, the denominator of Eq. 8 is negative. The slope of the reaction function is then negative. Thus, Eq. 8 shows that the activity of extortion practiced by the terrorist organization causes a negative externality on tax enforcement set by the regional administration representing its strategic substitute.

The individual perceived enforcement $\beta_i^{\,e}(\beta_i, X)$ positively depends on the actual tax enforcement rate and, consequently, it follows that the costs of terrorism also reduce the individual's perceived level of enforcement:

$$\frac{\partial \beta_1^{\,e}}{\partial E} = -\frac{n_{1_E} \times r_{1_{\beta_1}}}{R_{1_{\beta_1\beta_1}}(\beta_1, E; a, t_1, t_2, \beta_2)} \times \frac{\partial \beta_1^{\,e}}{\partial \beta_1} = -\frac{-\frac{1}{2a} \times r_{1_{\beta_1}}}{R_{1_{\beta_1\beta_1}}(\beta_1, E; a, t_1, t_2, \beta_2)} \times \frac{\partial \beta_1^{\,e}}{\partial \beta_1} < 0 \tag{9}$$

I empirically test this result in the next section.

4. The Empirical Analysis

In this section, I present the empirical framework used in order to test my main hypothesis, provide a description of the dataset and finally comment on the results of the analysis.

4.1 The empirical framework

The theoretical model developed in the previous section advances an interesting result that requires empirical investigation. Terrorism operates as a negative externality on tax administration by constraining the tax authority's ability to enforce existing tax legislation: because of individual mobility, the tax authority reacts to the higher costs of terrorism being borne by taxpayers by reducing the level of tax enforcement so as not to lose tax bases (Eq. 8). By impacting the actual policy, the costs of terrorism also have effects on tax enforcement as it is perceived by individuals, being lower in the presence of costs related to terrorism (Eq. 9). Here I test this hypothesis by means of econometric techniques. In order to perform my analysis, I construct a dataset based on the information provided by surveys and data from different Spanish sources.

Specifically, I use data from the 1994-2013 waves of the survey "Public opinion and fiscal policy"[14], conducted annually and released by the Spanish Centre of Sociological Research (*Centro de Investigaciones Sociológicas* in Spanish, CIS henceforth). This repeated cross-section survey reports information on subjective perceptions of the fiscal policies, public provided goods and services, and other aspects of the tax system in Spain. Socio-economic information about the respondents and their province of residence is also included in the survey data. In order to define my endogenous variable I employ the following question: "Do you think that the tax administration is currently taking many/quite a few/a few/very few steps in its efforts to fight tax evasion?"[15], which remains unchanged over the 1994-2013 period. For any respondent *i* in province *j* in survey year *t*, I code the answer to this question into the variable $\beta^{e}{}_{ijt}$ which is scaled from very low (1) to very high (4) according to the answer. Thus, by defining $\beta^{e}{}_{ijt}$ as an ordinal dependent variable measuring the latent perceived tax enforcement of individuals $\left(\beta^{e*}{}_{ijt}\right)$, I can design an ordered response model (see e.g. Wooldridge, 2002, pp. 504-509) to test the hypothesis raised in Eq. 9 in this way[16]:

[14] All annually released surveys are based on personal interviews conducted with a representative sample of 2500 Spaniards over the age of 18. The complete contents of the survey are available at the CIS website (http://www.cis.es).

[15] The original question in Spanish is "¿Cree Ud. que, en la actualidad. la Administración hace muchos, bastantes, pocos o muy pocos esfuerzos para luchar contra el fraude fiscal?" (see e.g. question n. 21 of the survey n. 2994 released in 2013).

[16] In this case, since the dependent variable is defined as an ordinal discrete ranking, the most appropriate estimation strategy is that of employing an ordered response model. Indeed as Greene (2002) states "although the outcome is discrete, the multinomial logit or probit model would fail to account for the ordinal nature of the dependent variable. Ordinary regression analysis would err in the opposite direction, however. Take the outcome of an opinion survey. If the responses are coded 0, 1,

$$\beta^{e*}_{ijt} = \mu T + \pi T \times Foral_{ijt} + \rho Foral_{ijt} + \boldsymbol{Y_{ijt}\psi} + \boldsymbol{X_{it}\alpha} + \vartheta_j + \tau_t + \varepsilon_{ijt}$$

$$\beta^{e}_{ijt} = \begin{cases} 1 & \text{if } \beta^{e*}_{ijt} \leq \omega_1 \\ 2 & \text{if } \omega_1 \leq \beta^{e*}_{ijt} \leq \omega_2 \\ 3 & \text{if } \omega_2 \leq \beta^{e*}_{ijt} \leq \omega_3 \\ 4 & \text{if } \beta^{e*}_{ijt} \geq \omega_3 \end{cases} \tag{10}$$

I estimate the coefficients as well as the cut-points in Eq. 10 through an ordered probit model by means of maximum likelihood technique. The variable T measures the costs generated by ETA's terrorist activity. In order to identify this, I employ five alternative proxies[17]. The first approach is standard in the literature (see, e.g., Abadie and Gardeazabal, 2003), and is based on the use of information about ETA's truces and ceasefires: I construct a dummy variable equal to one for the years in which a truce was announced by ETA[18]. This variable indirectly measures the costs of ETA's activity, while the other variables employed directly measure the costs of terrorism. Specifically, I employ two measures of the aggregate costs attributable to ETA's activity. They refer to the pecuniary compensation for the damage caused by terrorism and provided respectively by the Spanish Ministry of the Interior[19] and by the Insurance Compensation Consortium ("Consorcio de Compensacion de Seguros" in Spanish, IC henceforth)[20] on a national and annual basis[21]. Both variables are defined at the national

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2, 3, or 4, then linear regression would treat the difference between a 4 and a 3 the same as that between a 3 and a 2, whereas in fact they are only a ranking." (see Greene, 2002, p. 736).

[17] Depending on the measure employed, T varies over time or alternatively both over time and across provinces. For this reason I omit subscripts.

[18] Information on truces is extracted from the dataset of the Spanish Ministry of the Interior. Specifically I define $Truce_t$ as being equal to one if a ceasefire was announced and implemented by ETA during the survey year *t*, i.e. during a period of time within the 12 months previous to the implementation of the survey.

[19] The Ministry's compensations include personal as well as any kind of material damages. These data are extracted from the Spanish Ministry of the Interior's annually released statistical report (for the report of 2013 see http://goo.gl/GEwg2R).

[20] The IC is a public corporate entity attached to the Spanish Ministry of the Economy. It is a guarantee fund that aims at providing insurance cover for a series of extraordinary risks such as terrorism and natural catastrophes. The data are extracted from the IC's report "Extraordinary risk statistics 1971-2012" (http://goo.gl/5ND1n0).

[21] These data are aggregated at the national level and do not distinguish between the compensation paid out to the victims of ETA from that paid out to the victims of other terrorist organizations. Nevertheless, I was able to exclude data referring to the 2004 Islamic terrorist attack on Madrid and as 96.5% of the fatalities of terrorism in Spain are attributable to ETA (in common with almost the totality of all other classes of injury due to terrorism), it seems that these measures provide a reasonable approximation of the damages caused by ETA's activity.

level, as are the proxies of the ETA terrorist costs for the affected economy. Alternatively, I measure ETA's level of activity by employing a variable collecting information on the number of fatalities attributed to ETA in any Spanish province and, thus, directly identify the costs generated by ETA in terms of the threat to personal security and provincial stability[22]. According to the theoretical model, terrorism should negatively impact tax enforcement and its perception in the areas most affected by terrorist activity in Spain, namely, the four provinces belonging to the foral autonomous communities of the Basque Country and Navarre. Thus, I employ an interaction term between the measure of terrorism costs and $Foral_{ijt}$, a dummy variable equal to one for residents in the foral provinces and I expect the linear combination between the interacted and the un-interacted terms to be negative[23].

As a final measure of the costs of terrorism, I employ an estimation of the total revenues obtained by ETA through the "revolutionary tax" in the foral communities of the Basque Country and Navarre. This variable is extracted from Buesa and Baumert (2013). These authors estimate the total amount of extortion required by ETA on an annual basis in the Basque Country and Navarre by employing documents seized from the terrorist group by Spain's anticorruption prosecution agency; thus, this variable is incomplete and measured with error. This variable is set as being equal to zero for the rest of the country and, consequently, no interaction term is calculated.

According to the assumption of the theoretical model, perceived tax enforcement is a function of the information on the actual enforcement policy that individuals have. In particular, I expect actual tax enforcement and the individuals' perception of it to be positively related. In order to disentangle the changes in perceived tax enforcement due to the externality produced by terrorism in the setting of the actual tax enforcement from those changes determined by other factors that may alter the real tax enforcement, I include in vector $\boldsymbol{X_{jt}}$ information on political and budgetary variables that directly affect the setting of the enforcement policy. Specifically, I

[22] This frequently used indicator has been criticized since it tends to underestimate the degree of terrorist activity (Frey *et al*., 2007). Nevertheless, in this framework, the possibility of expressing this variable at a provincial level is of particular interest for the analysis since in the territories belonging to the foral regime the tax authorities are appointed to operate at this level of government. The variable is also defined considering the survey year and not the current one and the information on fatalities is also extracted from the Spanish Ministry of the Interior's dataset.

[23] Since the variable $Truce_t$ is indirectly related to the level of terrorist activity, its coefficient is expected to be positive and significant.

include dummies for elections and rightist governments. I also control for provincial per-capita GDP and population.

In the theoretical model, I have also assumed perceived tax enforcement to be a function of individual personal characteristics and the social context. For this reason, I control in Eq. 10 for the vector of variables $\boldsymbol{Y_{ijt}}$ collecting information on relevant personal and social characteristics that are likely to influence the individual's perception of the risk of being audited. These variables are also extracted from the survey "Public opinion and fiscal policy". Specifically I control for sex, age, level of education, civil status, job market status, the industry in which respondents work, their political views (including dummies for leftist voter and nationalist voter) and I include a dummy equal to one for individuals that are heads of household and a dummy equal to one if the respondent to the survey declares themselves as being an entrepreneur or liberal professional. Finally, I include provincial fixed effects and time trends, while ε_{ijt} is the error term.

As emphasized in the introduction, Basque and Navarrese entrepreneurs and professionals constitute the cluster of individuals that are most affected by the costs of terrorism, as a result of their exposure to blackmailing. This makes these self-employed workers a specific target for potential tax enforcement cutbacks by the foral tax authorities. Therefore, I suspect that the costs of terrorism may impact the perceived tax enforcement of self-employed workers resident in the Basque Country and Navarre more strongly. For this reason, I further interact the term $T \times Foral_{ijt}$ with the dummy SE_{ijt}. Thus, I define in a similar fashion the following model:

$$\beta^{e*}{}_{ijt} = \gamma T + \xi T \times Foral_{ijt} +_t \eta T \times Foral_{ijt} \times SE_{ijt} + \varphi SE_{ijt} + \boldsymbol{\lambda} Foral_{ijt} + \boldsymbol{Y'_{ijt}\sigma} + \boldsymbol{X'_{it}\alpha} + \vartheta'_j + \tau'_t + \epsilon_{ijt}$$

$$\beta^{e}{}_{jit} = \begin{cases} 1 & \text{if } \beta^{e*}{}_{jit} \leq w_1 \\ 2 & \text{if } w_1 \leq \beta^{e*}{}_{jit} \leq w_2 \\ 3 & \text{if } w_2 \leq \beta^{e*}{}_{jit} \leq w_3 \\ 4 & \text{if } \beta^{e*}{}_{jit} \geq w_3 \end{cases} \tag{11}$$

4.2 Data, sources and descriptive statistics

With the exception of the endogenous variable, the proxies of the costs of terrorism and of the individual personal characteristics discussed above, the other variables are obtained from the following statistical sources. The provincial per-capita GDP and the provincial population are provided by the Spanish National Institute of Statistics (INE). The dummies identifying rightist government in office and elections are based on information extracted from the electoral database of the Spanish Ministry of the Interior. In Table 1, I report the summary statistics[24].

[TABLE 1]

Before the multivariate analysis, I perform a test for the equality of the means of the subsample of the individuals residing in the foral provinces and the rest of the population concerning their perceived tax enforcement. The results of this analysis are reported in Table 2.

[TABLE 2]

According to this analysis (model 1), I can reject the hypothesis of equality of the means of the two subsamples, in particular the perceived tax enforcement mean in the foral regime subsample is significantly lower than that in the common regime subsample. In order to obtain a clearer picture of the distribution of the perceived tax enforcement in the two subsamples, I construct four dummy variables equal to one corresponding to the four values assumed by $\beta^{e}{}_{jit}$ and I replicate the analysis of subsample means for these variables (models 2 to 5). The results go in the same direction, suggesting that the distribution of the perceived tax enforcement in the foral regime is more skewed to the right with respect to the corresponding distribution in the common regime subsample. This may depend in part on differences in the risk perception of the population in the two Spanish areas, but it may also be the result of substantial differences in the policy strategies set by the competent tax authorities in the two territories. In particular part of the potential differences in the policy strategies might be due to the externality that terrorism has on tax enforcement in the foral territories. To gain an initial insight into this issue I replicate the analysis performed in model 1 for the two sub-periods identified by the dummy Truce

[24] I do not present descriptive statistics for the branch of industry in which respondents work in the interest of space as they are a large number of dummies. These descriptive statistics are available upon request.

(models 6 and 7). According to this analysis, the difference in means is mainly driven by the effects of terrorism but there is a residual part that is still explained by other potential factors. In the next section I report the results of the main analysis presented in section 4.1.

5. Results

In Table 3, I report the results of the estimation of alternative models expressed in Eq. 10[25]. As discussed above, I employ five alternative measures of the costs of terrorism that are reflected respectively in models 1 to 5. Using the interpretation I have given to the latent variable, it is possible to interpret the estimated coefficients in terms of the marginal effects of the regressors on the latent perceived tax enforcement ${\beta^{e*}}_{jit}$[26]. In most of the models, the costs of terrorism significantly impact the individuals' perceived tax enforcement in a way that is consistent with the theory. In particular, it has a significant negative impact on the perceived tax enforcement of individuals residing in the foral provinces – the interacted terms $T \times Foral_{ijt}$ and the corresponding linear combination with T are significant in most of the specifications and present the expected signs – but it does not have any effect on the tax enforcement perceived by the rest of the individuals interviewed (the un-interacted terms T are not significantly different from zero). Thus, this result suggests that while terrorism represents an externality in the tax-enforcement-setting process for the foral tax authorities, it does not impact at all on the setting of auditing policies in the provinces belonging to the common tax regime, which are administered by a central agency. Furthermore, I find that the dummy variable $Foral_{ijt}$ is negative and significant confirming what the analysis of sub-samples means previously indicated. This result may well be evidence of the competitive behaviour of the foral provinces but it might also, in part, collect the residual effect of terrorism on tax enforcement that is not fully identified by the measures of terrorism employed.

[TABLE 3]

[25] The complete results for the covariates have been omitted for reasons of space but are available upon request.

[26] The coefficients can always be interpreted as the marginal effects of the regressors on the latent variable, which is particularly useful in contexts such as the one analyzed here, where the latent variable can be given some easily interpretable meaning and it is not a mere modeling device (see e.g. Wooldridge 2002).

In Table 4, I present the results of the estimation of alternative specifications of Eq. 11. The impact of ETA's terrorist activity on the perceived tax enforcement of the residents in the foral provinces is even stronger for the cluster of entrepreneurs and liberal professionals, as the interacted terms and linear combinations of interacted and un-interacted coefficients show. The entrepreneurs and liberal professionals are found to report a higher perceived tax enforcement than that reported by the rest of the population[27], which makes sense because their probability of being audited is higher as they have more opportunities to evade taxes.

Thus, the results of the analysis performed here show that in the presence of more intense terrorist activity, individuals residing in the foral territories perceive a lower level of tax enforcement. This confirms that the costs of terrorism do represent a negative externality for the foral communities. In particular, the impact of the cost of terrorism is, most of the time, significantly stronger for self-employed people confirming that the foral tax authorities might react to the externalities attributable to terrorism by reducing tax enforcement in particular for this group of people.

[TABLE 4]

As a robustness check, I perform an ordered logit estimation of the models presented above obtaining results congruent with the main analysis. The results are reported in Appendix 2.

6. Conclusions

In this paper, I have analysed the impact of externalities due to terrorism on fiscal policy, in particular, on tax enforcement. By altering individuals' incentives to reside in their home region, terrorism constrains the tax authority's ability to set tax enforcement policies in the affected region. As a result, the tax authority decreases the tax pressure by reducing the audit rate so as not to lose tax bases. This hypothesis has been tested for the Basque Country and Navarre: by employing a dataset based on surveys as well as on data extracted from other statistical sources, I estimated ordered response models whose outcomes corroborate the theory.

[27] Even if not shown in Table 3, this result is present also in the absence of the interaction $T \times Foral_{ijt} \times SE_{ijt}$.

The costs of terrorism have been found to impact negatively and significantly the perceived tax enforcement of individuals residing in the provinces belonging to the Basque Country and Navarre, with a more marked effect on self-employed workers. This is the main contribution of the paper. No significant effect is reported for the residents in common-regime provinces, where the main taxes are administered by the central government. ETA's terrorist activity acts then as a negative externality on the setting of tax enforcement policies only in the territories where terrorism represents a substantial and persistent cost that might significantly affect the residents' incentives to move. We can conclude, therefore, that in the Basque Country and Navarre the tax administration uses tax enforcement as an instrument to counteract the negative effect of terrorism on its tax bases, tax revenues and definitely on the economy. Abadie and Gardeazabal's (2003) results are implicitly calculated net of this effect, and so they could be considered as a lower bound of the impact of terrorism on the Basque economy.

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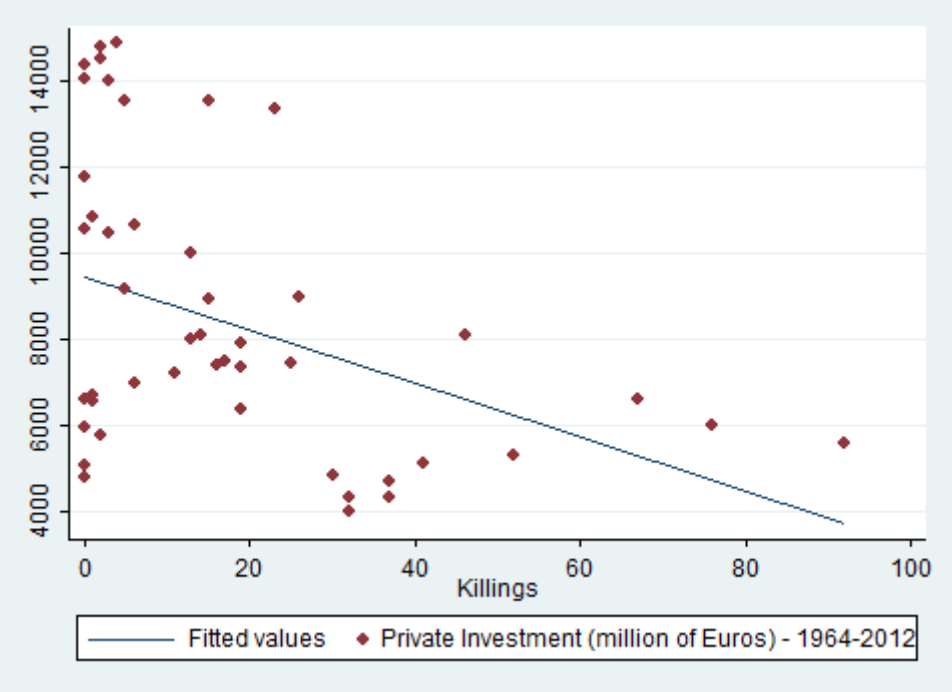
GRAPHS AND TABLES:

Graph 1: Relationship between investmens and terrorist activity in the Basque Country and Navarre (1964-2012)



Source: own calculations from IVIE and BBVA stock capital database (available at http://goo.gl/fbmGmG) and the Interior Ministry's database on terrorism.

Table 1: Summary Statistics

Variable	Measurement Unit	Observatio	Mean	Std. Dev.	Min	Max
Key variables						
Perceived Enforcement	Ranking 1 to 4	40913	2.37	0.81	1	4
Truce	Dummy	49656	0.60	0.49	0	1
Killings_prov	Units	49656	0.28	0.99	0	8
Total_Extortion(BC)	Millions of Euros	48513	0.14	0.85	0	10.42
Int_Min_Compensation_Terr	Millions of Euros	49656	4.37	30.07	0	12.92
CCS_Compensation_Terr	Millions of Euros	49656	10.97	10.32	0	40.08
Individual Characteristics						
Female	Dummy	49656	0.51	0.50	0	1
Age	Years	49625	46.03	18.14	18	99
Schooly	Years	49493	8.20	4.93	0	17
Civil Status	Dummy	49656	0.36	0.48	0	1
Household head	Dummy	49656	0.45	0.50	0	1
Worker	Dummy	49656	0.45	0.50	0	1
Self_Employed	Dummy	49656	0.19	0.39	0	1
Nationalist	Dummy	49656	0.06	0.23	0	1
Left	Dummy	49656	0.52	0.50	0	1
Social context characteristics						
Rigth	Dummy	49656	0.40	0.49	0	1
Per_Capita_GDP	Thousands of Euros	49656	21823.88	26790.88	0.00	267471.90
Population	Thousands of People	49656	2054.46	2007.99	79.90	6461.97
Foral	Dummy	49656	0.07	0.25	0	1

Table 2: Subsamples Means Estimation: Foral vs. Common regimes

	(1) Perceived Enforcement	(2) Dummy Perc_Enf=4	(3) Dummy Perc_Enf=3	(4) Dummy Perc_Enf=2	(5) Dummy Perc_Enf=1	(6) Perceived Enforcement Truce=0	(7) Perceived Enforcement Truce=1
Common Regime (Foral = 0)	2.381***	0.071***	0.378***	0.414***	0.138***	2.389***	2.374***
	(575.718)	(53.796)	(152.132)	(164.215)	(78.100)	(395.753)	(418.210)
Foral Regime (Foral = 1)	2.227***	0.057***	0.296***	0.465***	0.182***	2.154***	2.295***
	(144.690)	(12.859)	(34.071)	(48.943)	(24.803)	(99.819)	(105.525)
Linear Combination (Foral_Regime – Common_Regime)	-0.154***	-0.014**	-0.081***	0.051***	0.045***	-0.235***	-0.079***
	(-9.65)	(-3.04)	(-9.00)	(5.16)	(5.89)	(-10.48)	(-3.51)
Observations	40913	40913	40913	40913	40913	40913	40913
Common regime	37615	37615	37615	37615	37615	37615	37615
Foral regime	3298	3298	3298	3298	3298	3298	3298
Equality of the means ***(H_0: means of subsamples are equal)***							
Wald F statistic	93.08	9.22	80.92	26.65	34.70	109.81	12.31
p-value	0.0000	0.0024	0.0000	0.0000	0.0000	0.0000	0.0005

Note*: t* statistics in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Impact of terrorism on perceived tax enforcement.
Ordered Probit Models (1994-2013). Interaction Foral.

	(1) Perceived Enforcement	(2) Perceived Enforcement	(3) Perceived Enforcement	(4) Perceived Enforcement	(5) Perceived Enforcement
Truce	-0.010				
	(-0.522)				
Truce×Foral	0.196***				
	(4.180)				
Comp_Terr_IM		-0.002			
		(-0.551)			
Comp_Terr_IM×Foral		-0.018**			
		(-2.499)			
Comp_Terr_IC			0.001		
			(0.972)		
Comp_Terr_IC×Foral			-0.001		
			(-0.509)		
Annual_Killings_province				0.002	
				(0.286)	
Annual_Killings_province×Foral				-0.054***	
				(-3.951)	
Extortion (in Foral Provinces)					-0.009
					(-0.941)
Foral	-0.352***	-0.158***	-0.313***	-0.182***	-0.266***
	(-8.913)	(-2.799)	(-8.694)	(-3.448)	(-5.003)
Linear Combinations					
Truce +Truce×Foral	0.186***				
	(3.85)				
Comp_Terr_IM +Comp_Terr_IM×Foral		-0.019**			
		(-2.69)			
Comp_Terr_IC +Comp_Terr_IC×Foral			0.000		
			(0.07)		
Annual_Killings_province +Annual_Killings_province×Foral				-0.052***	
				(-4.37)	
Observations	40755	40755	40755	40755	39751
Log likelihood	-47128.840	-47127.195	-47142.276	-47065.466	-46281.486
Wald chi2 (All variables)	5089.247	5126.426	3021.360	25984.423	3865.418
p-value	0.000	0.000	0.000	0.000	0.000
Test for the equality of the cut-points (H_0: $w_1=w_2$)					
Wald chi2	23269.54	23268.69	23366.97	23261.66	22618.57
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Test for the equality of the cut-points (H_0: $w_2=w_3$)					
Wald chi2	18917.36	18910.21	19485.56	18924.38	18732.64
p-value	0.0000	0.0000	0.0000	0.0000	0.0000

Note: *t* statistics in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Each model includes Individual Characteristics, Contextual-level characteristics, Provincial fixed effects and Time Trends. In particular Individual Characteristics include sex, age, level of education , civil status, dummy variable for head of household, job market status, dummy for self-employed, branch of activity and political views (leftist voter and nationalist voter dummies). Contextual-level characteristics include dummy for right government, per-capita GDP, population.

Table 4: Impact of terrorism on perceived tax enforcement.
Ordered Probit Models (1994-2013). Interaction Foral & Self Employed

	(1) Perceived Enforcement	(2) Perceived Enforcement	(3) Perceived Enforcement	(4) Perceived Enforcement	(5) Perceived Enforcement
Truce	-0.011				
	(-0.549)				
Truce×Foral	0.169***				
	(3.463)				
Truce×Foral×SE	0.179*				
	(1.799)				
Comp_Terr_IM		-0.002			
		(-0.558)			
Comp_Terr_IM×Foral		-0.013*			
		(-1.783)			
Comp_Terr_IM×Foral×SE		-0.030***			
		(-2.613)			
Comp_Terr_IC			0.001		
			(1.055)		
Comp_Terr_IC×Foral			0.002		
			(0.804)		
Comp_Terr_IC×Foral×SE			-0.018***		
			(-4.618)		
Killings_province				0.002	
				(0.289)	
Killings_province×Foral				-0.052***	
				(-3.632)	
Killings_province×Foral×SE				-0.009	
				(-0.334)	
Extortion (in Foral)					-0.008
					(-0.793)
Extortion (in Foral)×SE					-0.046
					(-1.506)
Foral	-0.158***	-0.152***	-0.310***	-0.183***	-0.264***
	(-2.804)	(-2.689)	(-8.607)	(-3.449)	(-4.981)
SE	0.088***	0.085***	0.092***	0.087***	0.070**
	(5.777)	(5.633)	(6.091)	(5.794)	(2.496)
Linear Combinations					
Truce+Truce×Foral+Truce×Foral×SE	0.337***				
	(3.44)				
Comp_Terr_IM+Comp_Terr_IM×Foral+Comp_Terr_IM×Foral×SE		-0.044***			
		(-3.64)			
Comp_Terr_IC+Comp_Terr_IC×Foral+Comp_Terr_IC×Foral×SE			-0.015***		
			(-3.67)		
Killings_province + Killings_province×Foral +Killings_province×Foral×SE				-0.059**	
				(-2.31)	
Extortion (in Foral)+ Extortion (in Foral)×SE					-0.054*
					(-1.75)
Observations	40755	40755	40755	40755	39751
Log likelihood	-47123.183	-47124.686	-47131.584	-47065.412	-46280.616
Wald chi2 (All variables)	5015.030	5046.874	3042.743	25830.262	3846.938
p-value	0.000	0.000	0.000	0.000	0.000
Test for the equality of the cut-points (H_0: w_1=w_2)					
Wald chi2	23267.18	23271.72	23364.28	23261.94	22618.50
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Test for the equality of the cut-points (H_0: w_2=w_3)					
Wald chi2	18917.59	18907.54	19484.87	18924.13	18731.97
p-value	0.0000	0.0000	0.0000	0.0000	0.0000

Note: *t* statistics in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Each model includes Individual Characteristics, Contextual-level characteristics, Provincial fixed effects and Time Trends. In particular Individual Characteristics include sex, age, level of education , civil status, dummy variable for head of household, job market status, dummy for self-employed, branch of activity and political views (leftist voter and nationalist voter dummies). Contextual-level characteristics include dummy for right government, per-capita GDP, population.

Appendix 1: Framework background: The Basque Country and ETA

The four provinces belonging to the Spanish autonomous communities of Navarre and the Basque Country represent the main part of the historical Basque territories: they share common cultural roots including a common second language, "Euskera", which in those regions is co-official with Spanish. They are two of the richest regions in Spain, the Basque Country being the first and Navarra the third in terms of per capita GDP among the Spanish autonomous communities according to the data of the Spanish National Institute of Statistics (INE). From a tax management perspective, the Basque Country and Navarra enjoy a special (so-called "foral") tax regime granting them an almost full autonomy in the setting and collecting of all the taxes which grants them complete jurisdiction in determining tax law and tax administration. The foral tax authorities are appointed at the provincial level and thus the four foral provinces levy all the taxes that elsewhere are levied by the central government (including personal income tax and corporate tax). In return both autonomous communities pay an annual quota for the common public services provided by the central government (such as defense), which is agreed between the two parties on a periodical basis. An important aspect of this system is that there is no effective mechanism of equalization between the foral communities and the common regime communities[28]. In Figure 1 I highlight the foral communities of Navarre and the Basque Country within the Spanish national confines.

[28] For more information on the differences between the foral and the common regimes see e.g. Garcia-Milà and McGuire 2007.

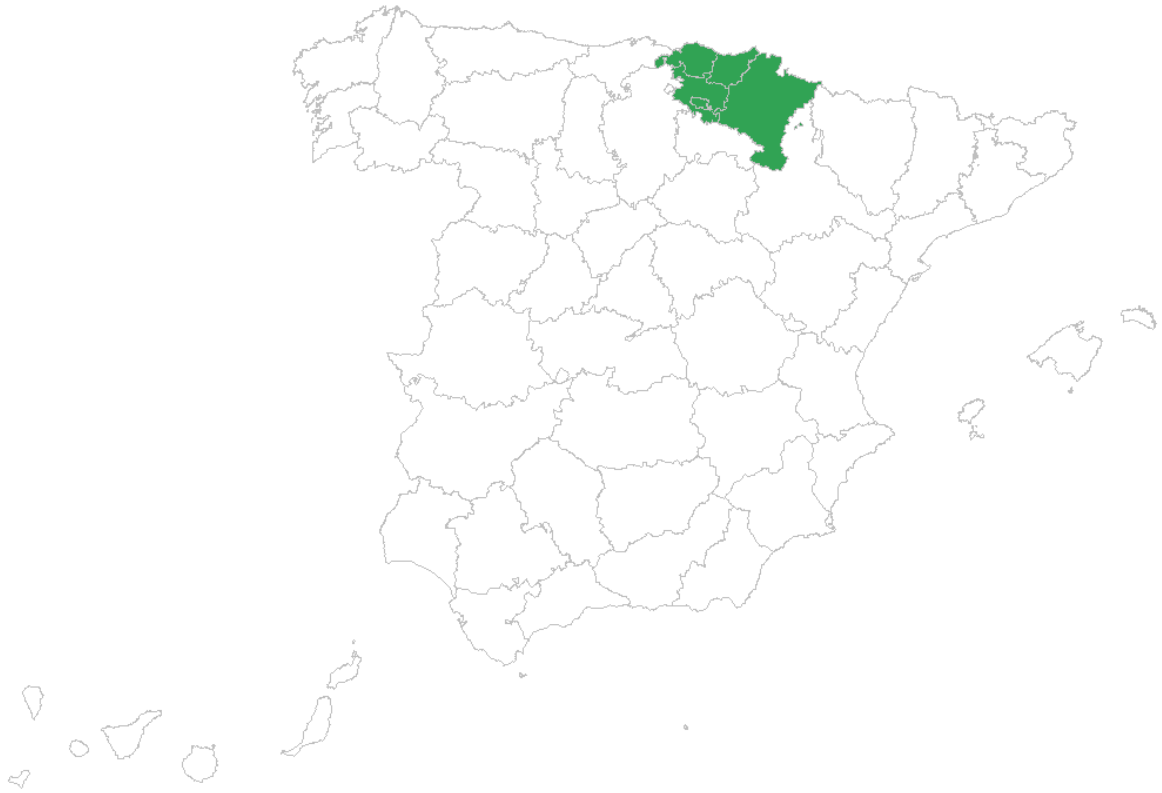


Figure 1: The foral autonomous communities of Navarre and the Basque Country

In this context in 1959 a group of Basque students founded the extreme left-wing terrorist organization ETA (*Euskadi Ta Askatasuna*, Basque acronym for "Basque Homeland and Freedom") with the political objective of achieving the establishment of an independent Basque state[29]. ETA carried out its first terrorist attack in 1968 and since then its violent and paramilitary activity has claimed more than 800 lives and many more victims in Spain until the allegedly definitive cessation of its armed activity declared on 20 October 2011. In Figure 2, I report the distribution of killings due to ETA's attacks by Spanish provinces. The picture shows that the majority of attacks were perpetrated in the Basque and Navarrese provinces but that also Madrid and Barcelona have been frequent targets.

[29] Among others monographic works on ETA see e.g. Clark; 1984, Domínguez 1998 and Mees 2003.

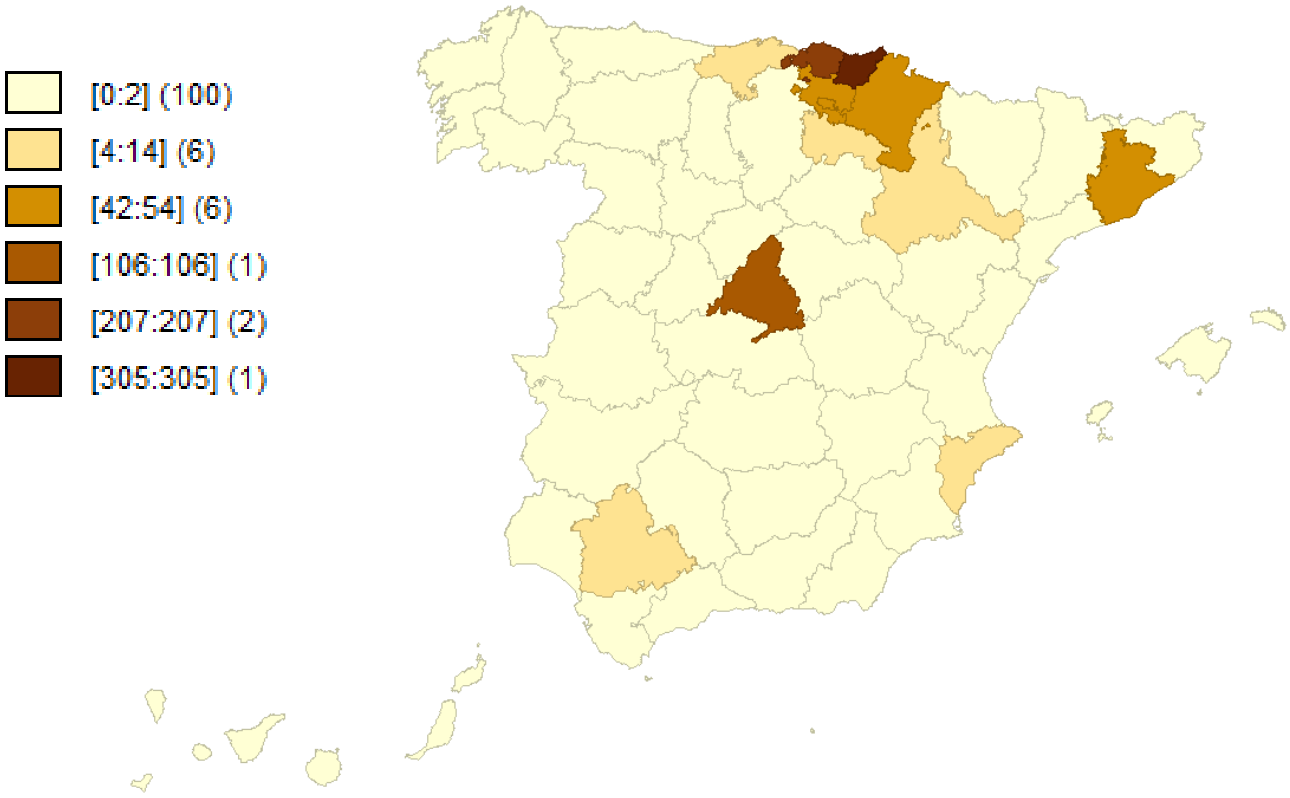


Figure 2: ETA's killings by province

In particular Basque entrepreneurs and liberal professionals were specific targets of violence including assassinations, robberies, extortion and kidnappings-for-ransom. In this regard Buesa and Baumert (2013) show that the revolutionary tax extorted from this cluster of the population was one of the main sources of income for ETA from the 1970s onwards, after substituting the previously more important activities of bank robberies and thefts. These authors estimated that during the three decades that range from 1978 to 2008, ETA obtained more than 115 million euros through its extortion activity. This value has to be considered a minimum, since the information employed is mostly obtained from documents seized from the terrorist group and, as such, is incomplete. In the same line, Juan Miguel Liñan Macias – former representative of the Spanish Ministry of Defense – declared that "ETA is funded mainly from one source: the money it collects through extortion of small and medium-sized businessmen, charging them the so-called "revolutionary tax". At present the amounts required are between 35,000 and 400,000 euros. The annual budget the terrorist organization needs for the maintenance of

its structures is estimated at around 10 million euros."[30]. Thus the effect of terrorism is responsible at least in part for the economic downturn suffered by the Basque Country during ETA's period of activity (see Abadie and Gardaebazal, 2003; Enders and Sandler 1991, 1996).

Finally ETA holds a central role within the Basque national liberation movement (MLNV), a composite aggregation of multiple organizations (both legal and illegal), which are united by the aforementioned common ideological objective but not always by any actual formal links. In the past decades, several judicial rulings have made illegal many, but not all, of the MLNV entities due to their connections with ETA. Some of the entities that are part of the MLNV are responsible for street terrorism, which represents a further threat to the stability of businesses based in the Basque Country and Navarre[31].

[30] (Text extracted from: "Counterterrorism: An Example of Co-operation", speech pronounced at the Seminar on The role of the Euro-Atlantic Partnership Council in combating terrorism, Feb. 22nd, 2002).
[31] For a detailed investigation of ETA's network and its financing system see Buesa (2011) and Buesa and Baumert (2013).

Appendix 2: Alternative estimation strategies

Table A1: Impact of terrorism on perceived tax enforcement.
Ordered Logit Models (1994-2013). Interaction Foral.

	(1) Perceived Enforcement	(2) Perceived Enforcement	(3) Perceived Enforcement	(4) Perceived Enforcement	(5) Perceived Enforcement
Truce	-0.031				
	(-0.909)				
Truce×Foral	0.330***				
	(4.098)				
Comp_Terr_IM		-0.000			
		(-0.057)			
Comp_Terr_IM×Foral		-0.032***			
		(-2.593)			
Comp_Terr_IC			0.003		
			(1.443)		
Comp_Terr_IC×Foral			-0.002		
			(-0.539)		
Annual_Killings_province				0.001	
				(0.056)	
Annual_Killings_province×Foral				-0.085***	
				(-3.605)	
Extortion (in Foral Provinces)					-0.007
					(-0.442)
Foral	-0.602***	-0.243**	-0.549***	-0.292***	-0.496***
	(-8.832)	(-2.554)	(-8.894)	(-3.279)	(-5.386)
Linear Combinations					
Truce +Truce×Foral	0.299***				
	(3.60)				
Comp_Terr_IM +Comp_Terr_IM×Foral		-0.032**			
		(-2.60)			
Comp_Terr_IC +Comp_Terr_IC×Foral			0.001		
			(0.29)		
Annual_Killings_province +Annual_Killings_province×Foral				-0.084***	
				(-4.17)	
Observations	40755	40755	40755	40755	39751
Log likelihood	-47049.353	-47045.678	-47063.462	-46984.323	-46219.275
Wald chi2 (All variables)	4627.979	4672.693	3178.987	11816.392	3318.701
p-value	0.000	0.000	0.000	0.000	0.000
Test for the equality of the cut-points (H_0: $w_1=w_2$)					
Wald chi2	20425.65	20421.68	20456.51	20404.18	19955.87
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Test for the equality of the cut-points (H_0: $w_2=w_3$)					
Wald chi2	15595.64	15580.12	15819.36	15588.18	15348.47
p-value	0.0000	0.0000	0.0000	0.0000	0.0000

Note: *t* statistics in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Each model includes Individual Characteristics, Contextual-level characteristics, Provincial fixed effects and Time Trends. Individual Characteristics include sex, age, level of education , civil status, dummy variable for head of household, job market status, dummy for self-employed, branch of activity and political views (leftist voter and nationalist voter dummies). Contextual-level characteristics include dummy for right government, per-capita GDP, population.

Table A2: Impact of terrorism on perceived tax enforcement.
Ordered Logit Models (1994-2013). Interaction Foral & Self Employed

	(1) Perceived Enforcement	(2) Perceived Enforcement	(3) Perceived Enforcement	(4) Perceived Enforcement	(5) Perceived Enforcement
Truce	-0.032				
	(-0.931)				
Truce×Foral	0.282***				
	(3.383)				
Truce×Foral×SE	0.327*				
	(1.933)				
Comp_Terr_IM		-0.000			
		(-0.065)			
Comp_Terr_IM×Foral		-0.024*			
		(-1.909)			
Comp_Terr_IM×Foral×SE		-0.051**			
		(-2.526)			
Comp_Terr_IC			0.003		
			(1.506)		
Comp_Terr_IC×Foral			0.002		
			(0.635)		
Comp_Terr_IC×Foral×SE			-0.031***		
			(-4.354)		
Killings_province				0.001	
				(0.058)	
Killings_province×Foral				-0.081***	
				(-3.308)	
Killings_province×Foral×SE				-0.017	
				(-0.355)	
Extortion (in Foral)					-0.005
					(-0.276)
Extortion (in Foral)×SE					-0.080
					(-1.597)
Foral	-0.603***	-0.243**	-0.543***	-0.292***	-0.495***
	(-8.844)	(-2.550)	(-8.782)	(-3.280)	(-5.380)
SE	0.129***	0.147***	0.153***	0.146***	0.109**
	(4.916)	(5.580)	(5.862)	(5.596)	(2.239)
Linear Combinations					
Truce+Truce×Foral+Truce×Foral×SE	0.577***				
	(3.42)				
Comp_Terr_IM+Comp_Terr_IM×Foral+Comp_Terr_IM×Foral×SE		-0.075***			
		(-3.49)			
Comp_Terr_IC+Comp_Terr_IC×Foral+Comp_Terr_IC×Foral×SE			-0.025***		
			(-3.41)		
Killings_province + Killings_province×Foral +Killings_province×Foral×SE				-0.097**	
				(-2.21)	
Extortion (in Foral)+ Extortion (in Foral)×SE					-0.084*
					(-1.69)
Observations	40755	40755	40755	40755	39751
Log likelihood	-47047.518	-47041.857	-47053.861	-46984.262	-46218.347
Wald chi2 (All variables)	4682.104	4573.557	3198.190	11804.676	3302.779
p-value	0.000	0.000	0.000	0.000	0.000
Test for the equality of the cut-points (H_0: $w_1=w_2$)					
Wald chi2	20421.22	20428.67	20454.69	20404.63	19956.17
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Test for the equality of the cut-points (H_0: $w_2=w_3$)					
Wald chi2	15597.57	15578.72	15819.91	15587.94	15348.21
p-value	0.0000	0.0000	0.0000	0.0000	0.0000

Note: *t* statistics in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Each model includes Individual Characteristics, Contextual-level characteristics, Provincial fixed effects and Time Trends. Individual Characteristics include sex, age, level of education , civil status, dummy variable for head of household, job market status, dummy for self-employed, branch of activity and political views (leftist voter and nationalist voter dummies). Contextual-level characteristics include dummy for right government, per-capita GDP, population.

2011

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