Tax Morale, Aversion to Ethnic Diversity, and Decentralization

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September 6, 2016

Abstract

This paper analyzes the relationship between tax morale, decentralization and ethnic fragmentation in an economy where taxpayers are averted to ethnic diversity. We develop a theoretical framework where higher levels of individual aversion to ethnic diversity reduce tax morale, since individuals are reluctant to contribute to public goods benefiting other ethnic groups. However, the impact of the negative individuals’ ethnic diversity on voluntary tax morale is larger in centralized political systems relative to decentralized ones. This is because the higher ethnic homogeneity of the jurisdictions relative to the state and their higher fiscal autonomy in a decentralized system reduce interethnic redistribution. We test our hypotheses using individual data from the World Value Survey and several decentralization measures from Fan et al. (2009). We find evidence that a negative attitude toward ethnic diversity reduces tax morale: (a) in centralized political systems; (b) in ethnically fragmented communities lower than in homogenous countries.

Keywords: Ethnic diversity, Decentralization, Tax morale, Risk-aversion.
JEL Classification: J15, H26, H73

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1 Introduction

There is a large theoretical and empirical literature showing that investments in state fiscal capacity, namely economic institutions for tax compliance, are a key feature of economic development (see Besley and Persson, 2013, for a review). At the same time, a widely accepted literature remarks that tax compliance cannot be fully explained by the level of enforcement or the tax rates and, after a long period in which non pecuniary motivations have been neglected (Andreoni et al., 1998), tax morale has turned into a key issue among the determinants of tax compliance (Torgler, 2007). Tax morale is usually defined as a moral obligation or an intrinsic motivation to pay taxes, and it can be considered “as an umbrella term capturing non pecuniary motivations for tax compliance as well as factors that fall outside the standard, expected utility framework” (Luttmer and Singhal, 2014, p. 150).

Tax morale encompasses many facets that are influenced by a number of factors and various categorizations to investigate the determinants of tax morale have been proposed (see Dell’Anno, 2009, for a review). For example, Lassen (2007), following Levi’s (1988, p. 53) classification, argues that voluntary tax compliance is influenced by two (implicit) social contracts: a horizontal and a vertical one. The horizontal contract concerns the perceived fairness of the tax payment: if people expect others to evade or avoid taxes, they will try to do so themselves, and vice versa. The vertical refers to what has been called the quid pro quo of taxation: if the (perceived) rate of transformation from revenue to (favored) public goods is low, then voluntary tax compliance falls.

In relation to this latter channel, the literature has focused on two factors that can influence the attitude of the citizens to pay taxes; one is the heterogeneity (in income or some noneconomic characteristics) of the population and the other one is related to the institutional arrangement of the country. Among the first group, ethnic diversity has been recognized as one of the main sources of heterogeneity (negatively) affecting tax morale and, more generally, the desire of the citizens to support redistributive policies. Similarly, fiscal decentralization is one of the most important institutions affecting the motivations of the individuals to comply with taxes.

In this paper, we build a bridge between these two strands of the literature and consider both institutions as well as the characteristics of the population, and their possible interactions, as possible factors influencing tax morale. In particular, we examine a specific aspect affecting the intrinsic motivation to pay taxes, namely the individuals’ attitude towards ethnic diversity; then we move on to consider one of the possible channels through which institutions can influence this relationship. Specifically, we focus on the
role of fiscal decentralization and analyze whether it can interact with the individuals’ ethnic aversion in explaining tax morale.

Our analysis has two key and innovative features. First, we point out that the country’s degree of ethnic fractionalization is not necessarily a factor affecting negatively the individuals’ tax morale, as we believe that it is not the ethnic diversity per se that matters in explaining the intrinsic motivation to pay taxes; rather, it is the individual’s attitude towards ethnic diversity. Second, we analyze not only the effect of the individuals’ attitude towards ethnic diversity on tax morale, but also whether and how this relationship is affected by the degree of fiscal decentralization of the country.

The idea behind our analysis is that individuals who are averted to ethnic diversity are more reluctant to contribute to the provision of public goods which can benefit (ethnic) groups toward which they have a negative view. However, in presence of decentralized fiscal institutions (where taxes are collected in one jurisdiction and spent primarily on that jurisdiction’s public goods), the jurisdictions are likely to be more ethnically homogenous than the whole country. Therefore, we might expect that the citizens’ aversion towards other ethnic groups have a lower impact on the individuals’ tax morale.

We present our theoretical framework in section 3. The basic structure of our model is that of a community of tax payers who are asked to pay taxes in order to provide public goods that will benefit the entire community. We leave opened matters related to the extrinsic motivational components of tax morale—such as the individual return from the public good and, for this reason, we assume agents have same income. We also neglect other sources capable of increasing reciprocity between tax payers and the tax administrator—on the quality of the public good, the efficiency in managing its provision, or the perceptions about the fairness of the tax system.

We model individual attitudes and tax payers’ intrinsic motivations in comply with the law—and specifically those motivations that arise with diversity in the ethnic composition of the community. The key assumption of the model is that agents incur in a non-pecuniary extra cost when his or her wealth is used to subsidize a good that also benefits a non-member of his or her ethnic group. This psychological cost is what we interpret as the loss aversion to ethnic diversity.

The risk of contributing to an ethnically fragmented community can be insured by implementing a decentralization reform. In a decentralized country, with no within-region ethnic fragmentation, psychological costs are absent and people just pay taxes for benefiting the public good. The perceived risk is then fully covered after paying the cost of establishing a decentralized system—which is what we interpret as the risk premium.
It tells us how much people would be willing to pay for not contributing to the unfelt social community and it is what we define the ethnic diversity aversion component of the tax cheating.

Our theory highlights a clear mechanism through which intrinsic motivation to comply with taxes is affected by negative beliefs about different ethnic groups and whether decentralization can or cannot be an effective policy to rise up taxpayers compliance. We find that when tax payers are loss averted toward ethnic diversity and the ethnic composition follows territorial boundaries a decentralized fiscal system boiled down the negative impact of risk aversion. On the contrary, when ethnic fragmentation is high but the between regions variation is negligible decentralization is just an ineffective and costly reform. This cost increases with ethnic fragmentation making tax morale relatively higher.

We test these predictions in the last part of the paper, using microdata from the World Value Survey (WVS) that collects respondents’ ethnic diversity aversion and their propensity to cheat on taxes as well as their individual characteristics. We combine this dataset with several measures of fiscal decentralization from Fan et al. (2008) in order to decompose variation in tax morale at individual-, religions-within-country- and country-level using a linear mixed model. This strategy allows to estimate the impact of country variant variables, such as decentralization, gdp per capita, and other sources of fragmentation, whilst providing robust within groups estimates—within religions-within-country and within-country estimations—that cut down eventual sources of omitted variable bias.

Our most preferred estimation reports a decreasing of about $-0.03$ standard deviations in tax morale in response of a one standard deviation increasing in ethnic aversion in centralized countries. Consistently with our theory, by contrast, we find no significant effect of ethnic aversion on tax morale in decentralized countries—even controlling for disparate sources of diversity, such as language, religion and ethnic diversity. Finally, we also study the direct impact of ethnic fragmentation of tax morale in different fiscal system. We find that ethnic fractionalization moderates the negative impact of ethnic aversion in a non-linear fashion. According to our benchmark specification a one standard deviation increasing in ethnic fractionalization, when fractionalization is low, generates a negative impact on tax morale in poorly decentralized systems ($-0.07$ standard deviation) which goes to zero in higly decentralized countries. In these latter systems, high values of ethnic fragmentation are found to positively leverage tax morale ($0.05$ standard deviation).

The paper is organized as follows. Section 2 reviews the related theoretical and
empirical literature. Section 3 presents our theoretical approach and develops our hypotheses. Section 4 describes the empirical methodology, database and the estimation results. Section 5 analyzes the direct impact of ethnic fractionalization on the relationship between tax morale and ethnic aversion. Section 6 concludes with a summary and discussion of the main results.

2 Related literature

Isolating how distinct factors can explain differences in tax morale is notoriously challenging (Alm and Torgler, 2006). Lago-Peñas and Lago-Peñas (2010) classify the variables affecting tax morale in four categories. The first group includes socio-demographic characteristics (e.g. gender, age, marital status, education, employment status, religiosity, social class), personal financial experiences (i.e. income) and the size of municipalities of residence. The second group of variables measures the fiscal parameters that determine deterrence (e.g. fine and tax rates, audit probability, risk aversion). The third set of variables accounts for political and social attitudes (e.g. trust in institutions and politicians, national pride, perceived level of corruption, voting behavior). Lastly, the group of contextual-level variables able to control for national differences related to the extent of direct democracy, ethnic or linguistic fragmentation, religious or regional cleavages.

In this section of the paper, we mainly focus on the literature exploring two "contextual-level" determinants of tax morale: decentralization and ethnic diversity.

A growing empirical literature, mainly based on European countries, highlighted how decentralized tax systems are characterized by a higher tax morale. Torgler (2007) provides evidence, using Swiss and German data at micro and macro level, that there is a strong positive correlation between local autonomy and tax morale. Torgler and Schneider (2007) find that tax morale exhibits regional differences in Switzerland and Spain but not in Belgium. Martinez-Vazquez and Torgler (2009), while exploring the evolution of tax morale in Spain using WVS data from 1981 to 2000, show that intrinsic motivation to pay tax rose in Spain. They attribute this to the trend towards an enhanced fiscal federalism. However, Spain has undergone many political changes in the same period and this might explain the observed pattern too (Schwarz, 2011). Torgler et al. (2010) find that local autonomy and direct democracy are highly relevant to understand why people cooperate with society rules. The rationale is that, if institutions respect citizens’ preferences, they will have more support from the people than a State that acts as a Leviathan. Güth et al. (2005: 185-186) contribute to this literature providing
experimental evidence that tax morale "is higher in a decentralized tax structure, in which taxes collected in one region are spent exclusively on that region's public good, as compared to a centralized tax structure, in which taxes paid in the two regions are pooled and spent on both public goods on a per capita basis". The authors suggest two possible motivations. First, centralization incentives tax cheaters' free riding because lower local tax revenue can be compensated by tax payments from other regions, consequently, tax non-compliance in centralized system has lower effect in lack of public good provision than in case of decentralized tax system. The second argument of Guth et al. (2005) is based on the assumption that centralization creates more inequalities in income across regions, then fair-minded taxpayer may refrain from paying taxes because of inequality aversion. Lago-Peñas and Lago-Peñas (2010) focus on interregional aspects of tax morale by using the second wave (2004-2005) of the European Social Survey (EVS). They empirically confirm that tax morale is lower in rich federal regions than rich regions in unitary states and attribute this to higher visibility of interregional transfers in decentralized countries. Lago-Peñas and Lago-Peñas (2010) state how, if interregional redistribution is higher, tax morale will tend to be lower in net contributor regions in both centralized and decentralized countries. But this negative relationship between tax morale and interregional transfers will be stronger in the latter, because visibility of interregional redistribution is higher than in centralized tax systems. Schwarz (2011) points out that a decentralized fiscal structure might increase tax morale for at least two main reasons. The first reason is that taxpayers might feel more closely attached to their local community compared to a centralized state and local public goods may be closer to citizens' community-bound preferences. In this sense, an increase of tax morale is due to a higher taxpayer utility of public good provision. The second reason is that, since decentralized systems are characterized by better direct democracy, more tax compliance is a consequence of higher citizen trust towards institutions due to the enhanced process of political decision.

The other side of this review focuses on the impact of ethnic diversity on tax morale. As far as this determinant is concerned, a limited, yet rapidly growing, literature concludes that ethnic diversity is negatively correlated to tax compliance (see for a comprehensive overview Li, 2010). The economic motivations underlying this relationship are shared with a larger literature analyzing the effects of ethno-linguistic fractionalization on economic performance. Alesina et al. (1999) investigate how ethnic fragmentation influences local public goods. They find that citizens demand lower public good provision when a significant fraction of tax revenues collected from one ethnic group are used to provide public goods shared with other ethnic groups. They propose two non-mutually
exclusive motivations: "One is that different ethnic groups have different preferences over which type of public goods to produce with tax revenues. The second is that each ethnic group’s utility level for a given public good is reduced if other groups also use it" Alesina et al. (1999, p. 1244). Alesina and La Ferrara (2005) refer to Tajfel et al.’s (1971) Social Identity Theory to explain which psychological mechanisms may link ethnic heterogeneity to the economic choices. According to the "social comparison stage" of the Social Identity Theory, once people have categorized themselves as part of a group, they then tend to compare their group with other groups. Consequently, individuals may attribute positive utility to the well-being of members of their own group, and negative utility to that of members of other social groups (Alesina and La Ferrara, 2005). Habyarimana et al. (2007), identify three analytically distinct families of possible causal relationships: preferences, technology, and strategy selection mechanisms. The first one focuses on a commonality of tastes within an ethnic group. Accordingly, higher tax morale depends on the better quality and quantity of the public goods provision demanded by homogenous communities rather than fractionalized ethnic groups. It implies that different ethnic groups care about different types of public goods (e.g., Bates 1973; Alesina et al. 1999; Alesina and La Ferrara 2005) and therefore more conflicts of interest among groups can emerge. Another preference-based explanation focuses on psychological evidence that people may have positive utility to the welfare of fellow ethnic group members but null or negative utility to the welfare of non-group members (Tajfel et al., 1971). This hypothesis means that taxpayers of an ethnic group are expected to have a higher intrinsic motivation to paying tax if they believe that most of the beneficiaries of public good provision will be co-ethnics. In addition, that people may derive no benefit (or feel worse) when members of other ethnic groups experience improvements in their welfare, in this sense a "taste for discrimination" (Becker, 1957) can motivate negative correlation between tax morale and ethnic fractionalization.

For what concerns the technology-based mechanisms, Habyarimana et al. (2007) suggest two distinct types, i.e., the efficacy and the findability mechanisms. The first one assumes that homogeneous communities may improve the prospects for successful collective action because they can exploit shared cultural material factors which are an advantage in public goods production that heterogeneous groups lack (e.g. Deutch 1966; Hardin 1995; Spolaore and Wacziarg 2009). The second technology-based explanation hypothesizes that belonging to an ethnic group may enable co-ethnics to find, and thus punish tax cheaters (e.g. higher social stigma within the group). This can make strategy options available, which do not exist for individuals who are socially isolated (Bowles and Gintis 2004a; Ghosh and Ray 1996).
The third family of possible causal relationships, namely the strategy selection mechanisms, draws on the game theory approach. Although a number of possible strategy selection can work for this, Habyarimana et al. (2007) focus on just one, the social sanctioning mechanism. This mechanism assumes that "if co-ethnics expect that cooperation with co-ethnics will be reciprocated under threat of sanctioning but cooperation with non-co-ethnics not, then public goods provision will be higher in homogeneous communities, where the norm/social institution applies to everyone, than in heterogeneous communities, where it applies only to some potential cooperating partners. (p. 711)."

On the basis of data from an area of Kampala in Uganda, Habyarimana et al. (2007) provide experimental evidence on which mechanisms are effectively at work on the link between ethnic diversity and levels of public goods provision. Authors conclude that although their main finding is consistent with the widely accepted result that ethnic heterogeneity causes underprovision of public goods, robust evidence validates the hypothesis that successful public goods provision in homogenous ethnic communities can be attributed to the social sanctioning mechanism. In other words, the strategy selection channel-rather than the most notorious mechanism of the commonality of tastes within ethnic group (i.e. the preferences mechanism)-is the main causal factor explaining why ethnic fragmentation shapes public good provision.

The theoretical explanations for the link between ethnic heterogeneity and tax morale share the same rationales of the previously mentioned literature for the effects of ethnic diversity on public good provision. For instance, La Porta et al. (1999) and Alesina et al. (2003) find a negative effect of ethnic heterogeneity on tax compliance, although the estimates are sensitive to the empirical specifications. Lago-Peñas and Lago-Peñas (2010), using data from the European Social Survey, have found that ethno-linguistic fractionalization is negatively associated with tax morale in European countries. Accordingly they have concluded that trust does not travel well across racial lines. Li (2010), based on microdata from both the European and the World Values Surveys, corroborates the previous finding that ethnic identities negatively affect individuals’ tax morale. The author motivates this result as a consequence of intergroup discrimination, i.e. people favor policies that offer beneficial treatment to their own ethnic communities, and withdraw support for other groups. Recently, Tusicisny (2014) has investigated under what conditions ethnic differences undermine tax compliance in multiethnic societies. Tusicisny’s analysis concludes that in countries with a high level of ethno-linguistic heterogeneity, citizens belonging to smaller ethnic groups are those with lower tax morale. However, trust in the government moderates this positive correlation between ethnic fractionalization and tax morale especially among ethnic minorities.
3 Theoretical framework

In this section we highlight the main mechanisms of our empirical analysis presenting a simple theoretical framework linking tax compliance, decentralization, and ethnic fragmentation where citizens are averted to ethnic diversity.

We focus, for simplicity, on two regions, A and B, populating by citizens that have same preferences on wealth. Agents have same income (normalized to 1) and are asked to pay taxes $\tau$ to provide public goods that will benefit the entire community and remunerate the tax administrator. The provision is efficient and the tax administrator not selfish.

The key assumption of the model is that agents incur in a non-pecuniary extra cost when his or her wealth is used to subsidize a good that also benefits a non-member of his or her ethnic group.\footnote{See on loss aversion Kosgezi and Rabin (2006, 2007).} This cost is equal to a fraction $\lambda$ of taxes $\tau$. When the subsidy goes toward members of their group no additional costs are perceived.

We split the treatment in two parts. We start considering two regions ethnically homogeneous—that is, populated by agents of same ethnicity. In subsection 3.1, therefore, only between variation is at play. In subsection 3.2 we complicate the scheme allowing for a fraction of within-region ethnic fragmentation.

3.1 Homogeneous regions

Regions A and B are ethnically homogeneous but they differ to each others. More precisely, they have same ethnicity with probability $1 - \phi$. The parameter $\phi$ is then the rate of ethnic fragmentation in the country.

Given the ethnic fragmentation in the country, in a centralized system taxpayers perceived a psychological loss equal to $\lambda \tau$ with probability $\phi$. The expected utility of the agent $i = \{A, B\}$ after paying taxes is then equal to:

$$E u_i = \phi(1 - \tau - \lambda \tau) + (1 - \phi)(1 - \tau)$$

$$= 1 - (1 + \phi \lambda) \tau. \quad (1)$$

When $\lambda$ is equal to zero taxpayers do not incur in any extra costs, regardless of the fractionalization of the country. When $\lambda$ is high ethnic diversity counts substantially. $\lambda$ is then the degree of loss aversion to ethnic diversity.

Alternatively taxpayers can ask the tax administrator to decentralize the fiscal system. This reform however costs $\pi$, because of the establishment of two distinct offices,
but cuts $\lambda$ to zero. Once the reform is implemented, region A does not care about region B anymore and region B does not care about A likewise. Therefore the utility of the agent $i$ after paying taxes, in a decentralized country, is then equal to:

$$u_i = 1 - \tau - \pi. \quad (2)$$

In a decentralized country, with no within-region ethnic fragmentation, psychological costs are absent and people just pay taxes $\tau$ for benefiting the public good. The risk of contributing to a fragmented community is then fully covered after paying the cost of establishing a decentralized system. $\pi$ is then the risk premium adverse agents pays to insurance their risk—in this case ethnic diversity. It tells us how much people would be willing to pay for not contributing to the unfelt social community and it is what we define the ethnic diversity aversion component of the tax cheating.

One can easily get the optimal amount that in equilibrium tax payers are willing to pay to insure such a risk, equalizing (1) to (2) as follows:

$$\pi^* = \phi \lambda \tau. \quad (3)$$

### 3.2 Heterogeneous regions

Regions A and B are now also ethnically different within themselves. The total variation can then be disentangled as follows:

- $\phi^w$ is the rate of fractionalization within each region;
- $\phi^b$ is the rate of fractionalization between the two regions;
- All the citizens belong to the same ethnic group with probability $1 - \phi^w - \phi^b$.

As before, in a centralized system, the expected utility of each agent $i$ after paying taxes is given by:

$$\mathbb{E}u_i = (\phi^w + \phi^b)(1 - \tau - \lambda \tau) + (1 - \phi^w - \phi^b)(1 - \tau)$$

$$= 1 - (1 + (\phi^w + \phi^b)\lambda)\tau. \quad (4)$$

In a decentralized system, now, aversion to ethnic diversity also matters as long as ethnic fragmentation within each region is positive, i.e. $\phi^w > 0$. Nevertheless, the
between variation does not affect tax payers decisions anymore. The implementation of
the reform must then take into account the fact that it does not fully insure the risk.
Along with the cost \( \pi \), the implementation of the reform contemplates an additional
psychological penalization proportional to the ethnic fragmentation itself. The idea is
that the decision to decentralize the fiscal system has to be less attractive when within
variation is expected in the region. The expected utility is then:

\[
E u_i = \phi^w (1 - \tau - \lambda \tau) + (1 - \phi^w) (1 - \tau) - (1 + \phi^w) \pi \\
= 1 - (1 + \phi^w \lambda) \tau - (1 + \phi^w) \pi.
\]  

(5)

In equilibrium, agents will cover the risk establishing a reform that costs \( \pi^* \):

\[
\pi^* = \frac{\phi^b}{1 + \phi^w \lambda} \tau.
\]  

(6)

3.3 Comparative statics

How can this simple framework help us understanding the relationship among tax
morale, aversion toward ethnic diversity, ethnic fragmentation, and decentralization?
\( \pi^* \) is the psychological cost that tax payers would like to insure implementing a decen-
tralized system. The complement, \( p = 1 - \pi^* \), gives us a rough measure of the ethnic
diversity aversion component of tax morale. We can then discuss the effects of exogenous
variations of our parameters of interest, \( \lambda, \phi^w, \) and \( \phi^b \), on tax morale. We summarize
them in the following proposition.

Proposition 1 The following comparative statics results hold:

1.

2. Aversion to ethnic diversity negatively affects the willingness to comply with the
taxation system:

\[
\frac{\partial p(\lambda | \phi^w, \phi^b)}{\partial \lambda} < 0.
\]  

(7)

3. In a decentralized system (where \( \phi^b = 0 \)), loss aversion to ethnic diversity does not
affect tax morale:

\[
\frac{\partial p(\lambda | \phi^w \geq 0, \phi^b = 0)}{\partial \lambda} = 0.
\]  

(8)
4. In a highly fragmented country the marginal effect of loss aversion to ethnic diversity on the willingness to comply with the taxation system is ambiguous, depending on the source of fragmentation:

\[
\frac{\partial^2 p(\lambda | \phi^w, \phi^b)}{\partial \lambda \partial \phi^b} \leq 0, \quad \frac{\partial^2 p(\lambda | \phi^w, \phi^b)}{\partial \lambda \partial \phi^w} \geq 0. \tag{9}
\]

The first simplest prediction of the model clearly comes out from the assumption of agents being reluctant in contributing to a system with a high degree of ethnic fragmentation. The loss aversion to ethnic diversity has a big impact on tax morale and it is, consistently with previous researches, negatively related.

At the same time, our second result tells us that such negative impact could be boiled down once implementing a decentralized fiscal reform. If tax payers concerns only regard ethnic fragmentation, as in our framework, eliminating one big source of ethnic diversity could be an effective policy to increase the country’s tax morale. Within region fragmentation is still at play, but it could not be insure through a decentralization reform and therefore, by this logic, taxpayers would not be willing to pay a dollar to cover it. So, tax cheating does not vary with the within ethnic diversity when differences between the two regions are cut down through the reform.

Finally, we got ambiguous predictions related to the link tying the marginal effect of loss aversion to ethnic diversity on tax morale and the ethnic diversity itself—depending on the source of fragmentation. A rise in \(\phi^b\) broadens the negative effect of aversion to ethnic diversity since it makes people even more willing to pay for not contributing to the fiscal system of a highly fragmented country. On the contrary, an increase in \(\phi^w\) moderates the impact of taxpayers aversion.

This framework also suits for studying the potential effects of idiosyncratic versus aggregate shocks to the ethnic composition of the country’s population. An incoming migration flow that specifically targets a region (and not the rest of the country) moves up both \(\phi^w\) and \(\phi^b\), generating an ambiguous effect on tax morale. An aggregate migration shock to the country’s population, by contrast, will move up \(\phi^w\) that in turn reduces \(\phi^b\). Tax morale is therefore expected to increase.

In the remainder of the paper we empirically test these three predictions.

4 Empirical analysis

4.1 Data description

Our research objective is to model individual tax morale as a function of ethnic aversion
and decentralization. To this purpose we combine both individual-level and country-level data described below that potentially may influence subjective heterogeneity in tax morale, and correlate with ethnic aversion. Details on data description are reported in Table A0, whereas summary statistics are presented in Table 1. They are both reported in the Appendix.

4.1.1 Individual-level data

We use individual data from the 2005 wave of the World Value Survey—the only providing information upon the individual attitude towards ethnic diversity. Our sample contains more than thirty thousand individuals distributed in 44 countries.

Our dependent variable is tax morale ($TaxMor$). It relies on the question about noncompliance attitudes and assesses the extent to which respondents think cheating on taxes is justifiable, when an opportunity is available. In particular, the index is based on the answer, in a 1 to 10 scale, to the following question: “Cheating on taxes, if you have a chance, is: 1 = never justifiable, 10 = always justifiable.” Hence, the lower the score, the higher the tax morale. We rescaled the index, so that higher values of our variable correspond to a higher tax morale of the individual.

We use the individual attitude toward ethnic diversity ($AED$) as the main explanatory variable of interest. It comes from the answer, on a scale from 1 to 10, to the following question: “Turning to the question of ethnic diversity, with which of the following views do you agree? Ethnic diversity erodes a country’s unity (scale 1); Ethnic diversity enriches my life (scale 10).” This index has been rescaled so that higher values correspond to individuals with higher aversion to ethnic diversity.

We also employ a group of the following indicators accounting for individual socio-demographic characteristics: gender, age, marital status, education, social class, income, and size of town.

- **Sex** is a dummy variable taking value 0 for male and 1 for female.
- **Age** is a variable taking values from 13 to 108 years.
- **Marital status**: we employ seven dummy variables, each for one of the following categories: married; living together as married; divorced; separated; widowed; single/never married; divorced, separated or widow.
- **Education**: we employ eight dummy variables, each for one of the following categories: inadequately completed elementary education; completed (compulsory)
elementary education; incomplete secondary school; complete secondary school; incomplete secondary; complete secondary; some university without degree; university with degree.

- **Social class**: we control for five dummies, one for each social class category (working, lower, lower middle, upper middle, upper class).

- **Income**: we use dummy variables for each of the ten income classes.

- **Size of town**: we employ eight dummy variables, each for category of the size of town.

We choose this group of individual-level indicators because we favor the idea that tax morale should be more widespread among individuals that exhibit a higher attachment to a community and pay more attention to moral and ethical considerations. In this respect, some studies have shown that tax compliance tends to be higher among older people, women, married people (e.g., Lago-Peñas and Lago-Peñas 2010). Moreover, people with a higher income are more likely to cheat on taxes, while the effect of education proves to be ambiguous. While more educated individuals are expected to be better aware of the benefits related to the public goods provision, however they may also be more critical about the state’s fiscal policy (e.g., Torgler and Schneider, 2007). We also control for the size of town because in principle one may think that people who live in small towns would be more averse to tax evasion than people who live in large cities, on the hypothesis that people living in smaller towns develop a greater sense of community and social ethics. This is in line with the Olson’s (1965) thesis that free riding is more likely to emerge in large groups.

As for what concerns religiosity, Lago-Peñas and Lago-Peñas (2010) report as a robust result in the tax compliance literature the finding that religious people are less likely to approve of cheating on taxes. For example, both Guiso et al. (2003) and Torgler (2006) find that religiosity raises tax morale. As we explain in Section 4.2, we model this effect using a religious group random component that allows us to disentangle the variation within that group and among them.

### 4.1.2 Country-level data

**Decentralization measures.** The measures of decentralization employed follow those proposed in literature (Rodden, 2004; Treisman, 2008). Whereas defining a suitable index to compare the degree of decentralization among countries is a particularly hard
task—since decentralization is a multidimensional concept that encompasses political, administrative and fiscal dimensions, as well as cultural and geographical traits—two main approaches have been employed in the literature to measure the degree of country decentralization.

The first kind of measures looks at the political and administrative dimensions of the public decision-making process. In order to account for this aspect, we use two dichotomous variables, *federal* provided by Treisman (2007) and *autonomy* from Fan et al. (2009). The index by Treisman (2007) is a dummy variable on whether the country is federal or not (where 1 denotes the federal state) in the mid-1990s, according to the classification provided by a leading expert of federalism (Elazar, 1995).² The index from Fan et al. (2009) is a dummy calculated on whether the constitution assigned at least one policy area exclusively to subnational governments or gave subnational governments exclusive authority to legislate on matters not constitutionally assigned to any level.

Although both indexes are close to various classics definitions of federalism,³ the variable *autonomy* represents a broader category, since assigns the value 1 “also to countries that devolve decision-making rights to certain selected regions but not to others” (Fan et al., 2009: 17). The variable *federal*, instead, seems to adopt a stricter criterion: it relies on the primary characteristic of a federal state—a constitutionally guaranteed division of power between central and regional governments (Lijphart, 1984), but defines as federal “those states whose constitutions endow subnational governments with residual authority to decide on matters not explicitly assigned to the central government” (Treisman, 2008: 30).

A second set of proxies of decentralization focuses on fiscal decentralization and it usually consists in estimating a ratio between the expenditure (or revenue) of subnational government and the total government expenditure (or revenue) at the national level. We

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²According to Elazar’s definition (1995), federal political systems are those in which a general government is constituted by a group of two or more constituent governments which have very substantial reserved or protected powers within the common whole. Following the author’s suggestion, federalism should be understood as constitutionalized power-sharing through systems that combine self-rule and shared rule.

³As reported in Fan et al. (2009: 17), in Riker’s definition, a federal constitution has (at least) two levels of government governing the same land and people; each level of government has “at least one area of action in which it is autonomous”; and this autonomy must be guaranteed in the constitution (Riker 1964: 11). This is similar to Dahl’s definition of federalism as “a system in which some matters are exclusively within the competence of certain local units-cantons, states, provinces-and are constitutionally beyond the scope of the authority of the national government; and where certain other matters are constitutionally outside the scope of the authority of the smaller units” (Dahl, 1986; quoted in Stepan, 2001: 318).
use three indexes drawn from the IMF – Government Finance Statistics and reported in the World Bank’s database of Fiscal Decentralization Indicators. We calculate their average values over the period 1972-2000. These are subnational expenditures as a percentage of total expenditures ($snete_{7200}$), subnational revenues as a percentage of total revenues ($snrtr_{7200}$), and intergovernmental transfers as a share of sub-national expenditures ($vi_{7200}$). The latest index, defined as vertical imbalance, measures the degree to which subnational governments rely on central government revenues to support their expenditures. Higher values of this variable correspond to lower degree of fiscal decentralization, as this means that a higher share of local expenditure comes from central government transfers. Bordignon (2013) argues that vertical fiscal imbalances—i.e., higher shares of transfers in the local government budgets—is meant to capture the divergence between own revenues and expenditure at the local level. Higher levels of this index are usually shown to be associated with poorer local governments’ performance.

**A synthetic index of decentralization.** We favor the hypothesis that a federal political structure is the proper proxy to use in this context because federalism is viewed as a way to manage conflict in ethnically divided societies, especially in countries where such divisions are more pronounced (Treisman, 2008). Federations often emerged with the role of balancing the competing and conflicting demands for autonomy and unity in such countries, on the basis that political recognition of cultural and ethnic pluralism helps to reduce ethnic tensions and conflicts, thus being an important instrument of nation building.

Moreover, as argued in Teobaldelli (2011) and Dell’Anno and Teobaldelli (2015), federalism—where the constitution guarantees subnational governments the power to autonomously rule and legislate—is meant to be a process of governmental decentralization in which the devolution of resources goes hand in hand with the transfer of political responsibility, thereby strengthening subnational governments in terms of accountability and good governance.

However, there is a key issue concerning the use of this measure. It has been argued that the advantages gained by federal actually stem from fiscal decentralization—namely, the devolution of expenditures and revenue-raising power. Thus, federalism may be an imperfect measure because “there can be both centralized and decentralized federations and, similarly, centralized and decentralized unitary states” (Lijphart, 1984: 176). Lijphart also emphasizes that “federalism and decentralization tend to go together” (especially considering OECD countries) and the same pattern is found by Fisman and Gatti (2002). Moreover, the measure of fiscal decentralization often used in the literature, i.e.,
the subnational share of total government expenditures (or revenues), is not immune from criticism, either. Its most serious limitation is a possibly weak correspondence between budgetary items and actual decision making. If the budgets of local governments are actually mandated from above, then greater decentralization need not correspond to autonomy in expenditure allocation (Fisman and Gatti, 2002; Panizza, 1999). In order to work, fiscal decentralization requires a sufficient degree of local financial autonomy.

Since the indexes, singularly considered, may suffer of such limitations, we propose a new dichotomous variable ($BDT_{Dec}$) based on the cited above five indexes. This new index aggregates different dimensions of political and financial autonomy into one decentralization dummy variable taking value of 1 if the majority of the decentralization variables considered indicates that the country is decentralized and 0 otherwise. In particular, the aggregation of the five decentralization indexes is made as follows. Each index is rescaled taking the value 1 if the country is decentralized and $-1$ if it is centralized; in the case of the three continues indexes (subnational expenditures, subnational revenues and vertical imbalance), the country is considered decentralized (resp. centralized), and therefore the rescaled index takes value 1 (resp. $-1$), when the original index indicates that the country is more decentralized (resp. centralized) than the median. Then, our new decentralization variable ($BDT_{Dec}$) is obtained from the sum of the five rescaled indexes; if the score obtained from the sum of such indexes is negative, the country will be classified as centralized and our decentralization index will take value 0, while our new index takes value 1 indicating that the country is decentralized when the sum of the five rescaled indexes is positive.

In symbols, our index is calculated as follows:

$$BDT_{Dec_i} = \begin{cases} 1 & \text{if } \sum_{k=1}^{5} D^k_i > 0 \\ 0 & \text{otherwise} \end{cases}$$

(10)

where the rescaled indexes $D^k_i$ from the dummy variables $federal$ and $autonomy$ used to realize our synthetic index are obtained as follows:

$$D^k_i = \begin{cases} 1 & \text{if } K_i = 1 \\ -1 & \text{if } K_i = 0; \end{cases}$$

(11)

while the three new indexes drawn from the continuous variables ($snete7200$, $snrtr7200$ and $vi7200$) are as follows:

$$D^k_i = \begin{cases} 1 & \text{if } K_i > \text{median}(K) \\ -1 & \text{otherwise.} \end{cases}$$

(12)
Table 1: Correlations between decentralization measures.

<table>
<thead>
<tr>
<th></th>
<th>Dec_DT</th>
<th>autonomy</th>
<th>federal</th>
<th>subnational expenditures</th>
<th>subnational revenues</th>
<th>vertical imbalance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec_DT</td>
<td>1.000</td>
<td>0.313**</td>
<td>0.627***</td>
<td>0.557***</td>
<td>0.581***</td>
<td>-0.256**</td>
</tr>
<tr>
<td>autonomy</td>
<td></td>
<td>1.000</td>
<td>0.508***</td>
<td>0.143</td>
<td>0.097</td>
<td>0.038</td>
</tr>
<tr>
<td>federal</td>
<td></td>
<td></td>
<td>1.000</td>
<td>0.421***</td>
<td>0.408***</td>
<td>-0.050</td>
</tr>
<tr>
<td>subn. exp.</td>
<td></td>
<td></td>
<td></td>
<td>1.000</td>
<td>0.948***</td>
<td>0.059</td>
</tr>
<tr>
<td>subn. rev.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.161</td>
</tr>
<tr>
<td>vert. imbalance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.000</td>
</tr>
</tbody>
</table>

* p < 0.10, ** p < 0.05, *** p < 0.01

In constructing this variable, our final goal is to preserve the sample size, accepting the trade off to lose information of continuous variable on fiscal decentralization to gain a broader definition of overall decentralization. According to the BDT_Dec index, among the 43 countries of our sample, we count 13 decentralized states and 30 centralized countries.4

Table 1 reports the correlation indexes among the decentralization measures discussed above. Our synthetic index (in column 1), as expected, is significantly correlated with all the other indexes, and negatively with vertical imbalance that captures the share of local expenditure coming from the central government. This latter measure is not correlated with any other proxies of decentralization used here. Federal and autonomy are highly correlated to each other, though federal is also closer to the two indexes measuring the fraction of subnational economic activity—expenditure and revenues.

Country-level control variables. We also control for some characteristics of the country. The total population and the GDP per capita, to account for the level of economic development, based on purchasing power parity (PPP) in 2011, are taken from the World Development Indicators (WDI). The measures of ethnic fractionalization (ethnic), language fractionalization (language) and religious fractionalization (religion) come from Alesina et al. (2003); all three indexes range from 0 to 1 with higher values denoting a higher degree of fractionalization. A large literature on the impact of ethnic fractionalization on government activities indicates that ethnic and linguistic fractionalization are

4According to our index, the decentralized states are, respectively: Argentina, Australia, Brazil, Switzerland, Spain, Germany, India, Moldova, Mexico, Malaysia, Sweden, United States, South Africa. See Table 2 in Appendix for a complete list of country and decentralization status.
Table 2: Between-groups variations in tax morale and intraclass correlations estimated in a null model with $n$ individuals nested within country $k$ and religion-within-country $jk$.

<table>
<thead>
<tr>
<th>Groups</th>
<th>$N$ of groups</th>
<th>Avg. $n$ obs. per group</th>
<th>$\sigma^2$</th>
<th>$\rho$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>$N_k = 56$</td>
<td>1368.70</td>
<td>0.456</td>
<td>0.095</td>
</tr>
<tr>
<td>Religion</td>
<td>$N_{jk} = 469$</td>
<td>163.40</td>
<td>0.071</td>
<td>0.015</td>
</tr>
</tbody>
</table>

associated with negative outcomes in terms of both economic output and the quality of governments (see, for instance, Alesina et al., 2003; La Porta, 1999). According to these theories that look at the taxpayers preferences (culture) and their extrinsic motivation, public goods provision should be less efficient in divided societies, and this may lower tax morale. While in line with these previous findings, our mechanism is substantially different as it underlines the effect of ethnic fragmentation on tax compliance when agents are loss averted to ethnic diversity.

Finally, we add two indexes taken from the Worldwide Governance Indicators (WGI) to control for the quality of institutions that prove to be positively related to the quality and the extent of fiscal policies, which may affect, in turn, the external motivation associated to tax morale. The first one is the government effectiveness index, capturing the perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies. The other one is the control of corruption index capturing the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as “capture” of the state by elites and private interests.

### 4.2 Empirical strategy

In order to capture variations induced by individual specific characteristics and by institutional and cultural or social norms in the voluntary compliance with tax laws, we depart from the existing literature by using a linear mixed model. Though tax morale is a purely individual behavior, its variation across individuals is affected by numerous policies pursued by national tax authorities—either in terms of penalty imposed to detected evasion or programs or public campaigns that are aimed to change the attitudes toward tax evasion—or by specific institutional setting of the country. Cultural norms
that intrinsically prescribe individual contribution to the community are also expected to affect tax morale.

We capture these different sources of variation in factors other than pecuniary using a three-level nested model. Specifically, we model tax morale as an attitude that varies at individual level but that also substantially depends on religion specific features (level 2) and country specific characteristics (level 3). Each individual $i$ then is assigned to a religion group $j$ within a country $k$. Random effects then operate at both the country and the religion-within-country levels.

WVS data confirm that tax morale is mainly a purely individual behavior. Table 2 in fact reports the estimated variance components of tax morale in a null model at the country, $\sigma^2_{u_k}$, and religion-within-country level, $\sigma^2_{u_{jk}}$, as well as the intraclass correlation $\rho$ at either the two levels. In either cases $\rho$ is smaller than 0.1 indicating that grouping counts for only a small part of the variation in tax morale.

Nonetheless, we expect the tax morale/ethnic aversion nexus to line up or down according to each country $k$ and to steepen according to the degree of country decentralization, as our theory predicts. Empirical contributions in this field to date proposed cross-country analysis intended to capture exclusively between variation in the willingness to comply with tax payment. This strategy however neglects variations across individuals that instead account for the biggest part of the tax morale phenomenon. It also omits variations across cultural groups that—with their set of informal norms—can account for substantial variation in tax morale even within the same country.

We then depart from the large part of the works in the field estimating the following mixed regression, that contains both fixed and random effects, to model the relationship among tax morale, ethnic aversion, and a decentralized organization of the state:\footnote{Lago-Peñas and Lago-Peñas (2010) is the only exception. The two authors estimate a multilevel model where tax morale is modeled exploiting variation within-regions (at individual level) and between-regions. They do not include religion groups random effect, however, that in our view accounts for a significant part of variation in tax morale.}

$$
TaxMor_{ijk} = \alpha + \beta_1AED_{ijk} + \beta_2AED_{ijk} \times Dec_k + \beta_3Dec_k + X_{ijk}\gamma + u_{jk} + u_k + \varepsilon_{ijk}.
$$

Here, $Dec_k$ indicates a decentralization measure that can be either a dummy or a continuous variable discussed in Section 4.1.2. In $X_{ijk}$ we gather the surveyed individual characteristics introduced in Section 4.1.1—such as gender, age, marital status, education, income, and the size of the town where the survey respondent resides. $u_{jk}$ is a random effect that we introduce to model cultural specific variations in tax morale.
within a country $k$. Those specific to each country $k$ are modeled by including $u_k$. Finally, $\varepsilon_{ijk}$ is the idiosyncratic residual that captures the unmodeled component in the tax morale behavior.

Since we want to distinguish the effect of ethnic beliefs on tax morale in countries with various degree of decentralization, we add up in equation (13) the interaction term between a measure of decentralization and the individual aversion toward ethnic diversity. Our testable hypotheses implicate a negative sign of $\beta_1$ and a positive sign of $\beta_2$. The first parameter, in fact, captures the effect of ethnic aversion on tax morale—and we expect that, within a country and within a nested religious group, more averted individuals toward ethnic diversity think cheating on taxes is somehow justifiable. A positive sign of $\beta_2$ indicates that the negative effect of ethnic aversion on tax morale is less pronounced in decentralized countries.

4.3 Results

Table 3 reports the estimated parameters in our regression benchmark (13). Columns differ in terms of the decentralization measure adopted. In column (1) we use the synthetic index discussed in Section 4.1.2. We then use (in order) federal, autonomy, the subnational expenditures and revenues. In the last column $Dec_k$ is vertical imbalance. All the columns control the effect of ethnic aversion, and the mediated effect through decentralization, on tax morale using the country ethnic, language, and religion fragmentation indexes. They also include individual controls, not reported in the table due to a size constraint.

Data robustly reveal that individuals more averted to ethnic diversity are, on average, significantly less willing to comply with tax payment ($\hat{\beta}_1 < 0$) in all the columns presented in Table 3 but, not surprisingly, column (6) where we proxy decentralization by means of vertical imbalance. We turn to this point at the end of this section. Overall we find intrinsic motivations in tax compliance to be negatively affected by own belief about diversity even controlling for disparate sources of diversity. All specifications in our regression, in fact, look at countries with same level of ethnic, religion, and language fractionalization.

Among the survey respondents with higher levels of ethnic aversion those living in decentralized countries show higher desire to comply with the law ($\hat{\beta}_2 > 0$). Centralized states (with $Dec_k$ equals to zero or small), on the contrary, offer to individuals more averted to ethnic diversity less motivations to pay taxes. This result casts light on the role of institutional features in influencing reciprocity and dimensions typically intrinsic
Table 3: Tax morale, decentralization, and ethnic aversion.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$AED_{ijk}$</td>
<td>-0.030***</td>
<td>-0.027***</td>
<td>-0.026***</td>
<td>-0.039***</td>
<td>-0.033***</td>
<td>-0.011</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.009)</td>
<td>(0.009)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>$AED_{ijk} \times Dec_k$</td>
<td>0.033***</td>
<td>0.026**</td>
<td>0.028**</td>
<td>0.001***</td>
<td>0.001**</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
<td>(0.011)</td>
<td>(0.011)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>$Dec_k$</td>
<td>-0.355**</td>
<td>-0.464*</td>
<td>-0.144</td>
<td>-0.010*</td>
<td>-0.009</td>
<td>-0.002</td>
</tr>
<tr>
<td></td>
<td>(0.173)</td>
<td>(0.246)</td>
<td>(0.213)</td>
<td>(0.005)</td>
<td>(0.006)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>$N$</td>
<td>30,647</td>
<td>30,647</td>
<td>29,250</td>
<td>25,524</td>
<td>24,940</td>
<td>25,076</td>
</tr>
<tr>
<td>$N_{jk}(N_k)$</td>
<td>219(32)</td>
<td>219(32)</td>
<td>205(30)</td>
<td>189(27)</td>
<td>182(26)</td>
<td>185(25)</td>
</tr>
<tr>
<td>$R^2_{ijk}$</td>
<td>0.016</td>
<td>0.015</td>
<td>0.016</td>
<td>0.018</td>
<td>0.019</td>
<td>0.018</td>
</tr>
<tr>
<td>$\log - likelihood$</td>
<td>-64,740</td>
<td>-64,742</td>
<td>-61,741</td>
<td>-55,014</td>
<td>-53,671</td>
<td>-54,088</td>
</tr>
</tbody>
</table>

Notes: Dependent variable is tax morale. All the columns include ethnic, language, and religious fragmentation as well as individual controls. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

to one person’s self-image, pride, altruism toward others, honesty, or yet fulfillment of civic duties.

The gross effect of ethnic aversion on tax morale ranges between $-0.030$ and $0$, in centralized and decentralized countries respectively, when we consider dichotomous measures of decentralization ($Dec_{DT}$, federal, and autonomy). When we use continuous variables of decentralization—such as subnational expenditures and revenues—this range broadens to $-0.038/0$, but results qualitatively do not change: in all specifications used decentralization undermines the effect of the aversion to ethnic diversity on tax morale—regardless the decentralization index used.

Table 3 also reports informations on the number of observations in each nested group and the fraction of explained variability across individuals in their surveyed level of tax morale within a religion-within-country ($R^2_{ijk}$). Higher values of $R^2_{ijk}$ consistently move in accordance with the maximum of the log-likelihood function estimated with the data, reported in the last row as a goodness-of-fit approximation.

We now turn on the subject related to the non-impact of vertical fiscal imbalances on tax morale. While it is a widely used measure in the literature, it has been also

---

6In each level $m = \{ijk, jk, k\}$, $R_m^2 = 1 - \frac{\text{unexplained variance at level } m \text{ under the larger model}}{\text{unexplained variance at level } m \text{ under the null model}}$. See also Xu (2003) and Gelman and Pardoe (2006) on $R^2$ and linear mixed models.
stressed how vertical imbalances played its most role on the intensive margin rather than on the extensive one (Bordignon, 2013). Higher levels of it capture the intensity of the expenditure at the subnational level. But no information is provided on the actual diffusion and capillarity of the decentralized state. It can therefore plausibly be that high expenditure is issued in only one part of the country, while the rest being substantially organized under a purely centralized fiscal system. In either cases, it does not capture our mechanism and the link with aversion to ethnic diversity.

4.4 Sensitivity analysis

In this Section we run two robustness checks of the major analysis presented above. First, we control for additional controls at country-level that can potentially confound our main story. Second, we run the same exercise we did in Table 3 using other measures of decentralization from Fan et al. (2009).

4.4.1 Country-level omitted variables

Our results bring evidence in favor of decentralization as a major country-level factor affecting individual tax morale. Other country-level factors are however expected to confound the effect of ethnic aversion on tax morale in decentralized and centralized states. For example, people more averted to ethnic diversity could report a lower degree of tax morale in decentralized states because those states are overall wealthier. The heterogeneous effect we have documented could then relies on income and wellbeing and not on that particular institutional feature we try to capture here. The GDP per capita level is then our first main concern. Other potentially omitted country-level variables that are generally considered in the field literature are corruption and some measures of government effectiveness.

In Table 3 in Appendix we present our estimations of regression (13), conditional on the logarithm of the GDP per capita, the WGI indices of corruption and government effectiveness as well as the logarithm of the population size in country $k$ to provide a coherent across-country comparison. This exercise leaves things qualitatively substantially unchanged and in all the first 5 columns both the first two hypotheses are confirmed.

4.4.2 Other measures of decentralization

In this Section, we replicate our results using additional measures of decentralization from Fan et al. (2009) with the intention of running a sort of placebo test. The measures
included here in fact, though related to some dimensions of devolution, do not capture our mechanism. This analysis complement the main placebo test that used the measure of vertical imbalance.

More precisely, we use here the following alternative measures of decentralization that are itemized in the same order of Table 4 in Appendix:

- **tier** that coded administrations with a state executive body that is funded from the public budget, it has authority over several public services, and with territorial jurisdiction;

- **bottier** that codifies the number of bottom level administrative units;

- **sizebot** that collect information on the average size (in squared kilometers) of the bottom level administrative units;

- **botel** is a variable that takes on 1 if executives at bottom tier are directly elected;

- **secel** is a variable that takes on 1 if executives at second lowest tier are directly elected;

- **subgemp** measures the non-central government employment as % of total government employment.

All these measures, once included or interacted with the aversion of ethnic diversity, do not affect qualitatively our first comparative statics ($\hat{\beta}_1 < 0$)—confirming the negative relationship between negative attitudes toward ethnic diversity and tax morale. Nonetheless, our second prediction is not corroborated by the use of any of these measures and in all such specifications loss aversion still produces an effect on tax morale even in “decentralized” countries.

5 Just ethnic fractionalization or aversion to ethnic fractionalization?

Our theory emphasizes the substantially different role of individual beliefs about ethnic diversity and ethnic diversity itself. We showed how individuals negative view about the “other” potentially undermines their intrinsic motivation in complying with taxes—when taxation is seen as a redistributed mechanism. Beliefs about diversity are however not perfectly correlated with the degree of diversity in the country. India, for example, is
one of the countries where individuals reveal the highest degree of aversion toward the other ethnicities (6.02 in the scale 0-10). However, according to the ethnic fragmentation index, it is not that fractionalized—it lies on the body of the cross-country distribution.

In the previous section, we studied the empirical link among tax morale, ethnic aversion, and decentralization within countries with same level of ethnic fractionalization. We then now move on studying the direct impact of ethnic fractionalization on the tax morale ethnic aversion nexus. We then ask this question: Are more averted individuals to ethnic diversity less prone to comply with the law in more ethnically fractionalized countries? To answer this question, we now add up an additional interaction term in our benchmark regression. Our model of interest is then as follows:

\[
TaxMor_{ijk} = \alpha + \beta_1 AED_{ijk} + \beta_2 AED_{ijk} \times Dec_k + \beta_3 Dec_k + \beta_4 AED_{ijk} \times EthFract_k + \beta_5 EthFract_k + X_{ijk} \gamma + u_{jk} + u_k + \epsilon_{ijk}. \tag{14}
\]

Results are reported in Table 4. Overall we find a positive joint effect of ethnic aversion and fractionalization on tax morale ($\hat{\beta}_4 > 0$). In a more fractionalized country—but with same degree of decentralization—the negative effect of ethnic aversion on their attitude to comply with the tax payment is less pronounced. This finding therefore bring evidence in favor of a moderation (rather than an amplification) role of ethnic diversity on the negative link between aversion to ethnic diversity and tax morale, that our model predicted in section 3.3. According to it, we can therefore infer that the most prominent role in modern countries is the within-region source of ethnic fractionalization.

This effect adds up to that estimated interacting ethnic aversion and decentralization. Both the two effects are significantly positive. The gross effect of ethnic aversion on tax morale is then equal to $\beta_1 + \beta_2 + \beta_4$. The marginal effect can then be decomposed in order to have a better picture of the single contribution of the two country-specific factors.

We do that in Figure 1. It shows the marginal effect of ethnic aversion on tax morale in the two dimensions of interest using as decentralization measure the amount of expenditure charged at the subnational level. For a given level of decentralization, we can therefore appreciate the marginal effect of ethnic fractionalization on tax morale. The last row in Figure 1 reports the marginal effect of ethnic diversity on tax morale in substantially centralized fiscal systems. This effect is about $-0.07$ when the country is quite ethnically homogeneous, and increases up to $-0.02$ in highly heterogeneous ones. However the effect is negative.

In the first row, we can instead look at its effect that has been estimated in highly
Table 4: Tax morale, decentralization, ethnic aversion, and ethnic fractionalization.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deck is federal</td>
<td>Deck is autonomy</td>
<td>Deck is subn.exp.</td>
<td>Deck is subn.rev.</td>
<td>Deck is vert.imb.</td>
<td></td>
</tr>
<tr>
<td>AED_{ijk}</td>
<td>-0.044***</td>
<td>-0.040***</td>
<td>-0.036***</td>
<td>-0.077***</td>
<td>-0.069***</td>
<td>-0.027**</td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
<td>(0.010)</td>
<td>(0.009)</td>
<td>(0.015)</td>
<td>(0.015)</td>
<td>(0.013)</td>
</tr>
<tr>
<td>AED_{ijk} × Deck</td>
<td>0.033***</td>
<td>0.027**</td>
<td>0.026**</td>
<td>0.001***</td>
<td>0.001***</td>
<td>-0.000*</td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
<td>(0.011)</td>
<td>(0.011)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Deck</td>
<td>-0.280*</td>
<td>-0.227</td>
<td>-0.139</td>
<td>-0.010**</td>
<td>-0.010*</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.152)</td>
<td>(0.176)</td>
<td>(0.196)</td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>AED_{ijk} × EthFract_k</td>
<td>0.036*</td>
<td>0.035*</td>
<td>0.028</td>
<td>0.079***</td>
<td>0.079***</td>
<td>0.059**</td>
</tr>
<tr>
<td></td>
<td>(0.021)</td>
<td>(0.021)</td>
<td>(0.021)</td>
<td>(0.025)</td>
<td>(0.026)</td>
<td>(0.025)</td>
</tr>
<tr>
<td>EthFract_k</td>
<td>-0.743</td>
<td>-0.653</td>
<td>-0.707</td>
<td>-1.264***</td>
<td>-1.255**</td>
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<td>(0.485)</td>
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</table>

N                   | 30,647 | 30,647 | 29,250 | 25,524 | 24,940 | 25,076 |
N_{jk}(N_k)         | 219(32) | 219(32) | 205(30) | 189(27) | 182(26) | 185(25) |
R^2_{ijk}           | 0.016 | 0.015 | 0.019 | 0.018 | 0.019 | 0.018 |
log – likelihood    | -64,739 | -64,742 | -61,740 | -55,009 | -53,667 | -54,086 |

Notes: Dependent variable is tax morale. All the columns include individuals controls. Robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.

decentralized countries. This goes from about 0 in, low fragmented countries, to +0.05 in those where ethnic diversity is high.

The other measures show substantially similar patterns.

6 Conclusions

In this paper we analyzed the effects of the individuals’ aversion to ethnic diversity on tax morale under different institutional frameworks. Our work is based on the idea that individuals who are averted to ethnic diversity are more reluctant to contribute to the provision of public goods which can benefit other (ethnic) groups. In decentralized countries, the individuals’ welfare losses associated with the financing of public goods benefiting other ethnic groups is reduced because the provision of public goods and services is made by jurisdictions characterized by communities more homogeneous than the whole country, which increases the individuals’ intrinsic motivation to pay taxes.

We presented a simple model showing the mechanisms at work and then tested the
main predictions of our theory using microdata from the World Value Survey and various measures of fiscal decentralization. Our analysis led to two main results. First, a negative attitude toward ethnic diversity reduces tax morale in centralized political systems, while it does not have a statistical significant effect in decentralized ones. Second, the negative effect of individuals’ ethnic aversion on tax morale is lower in homogenous countries than in ethnically fragmented states.

In terms of normative results, the question under what conditions the negative effects of individuals’ aversion to ethnic diversity on tax morale may be reduced has policy relevance as many developing countries are ethnically fragmented and composed by groups with a negative attitude towards other ethnicities. This paper shows that a proper choice of the institutional setting (in this case, more fiscal decentralization) might improve tax morale and favors investments in state fiscal capacity.

References


Çevik, S. (2014). Tax Morale in Socio-Political Interactions: Insiders and Outsiders,
Review


Treisman, D. (2007). What have we learned about the causes of corruption from ten years of cross-national empirical research? Annual Review of Political Science, 10, 211-244.
A Appendix
Table 1: Summary statistics.

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Table 2: Decentralization measures by country.

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Table 3: Tax morale, decentralization, and ethnic aversion. Additional country-level controls.

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Notes: Dependent variable is tax morale. All the columns include ethnic, language, religion fragmentation and the logarithm of the gdp per capita and of the population. Corruption and government effectiveness index as well as individuals controls are also included. Robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01.
Table 4: Tax morale, decentralization, and ethnic aversion. Alternative measures of decentralization (Placebo analysis).

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$N_{jk}(N_k)$

$R^2_{ijk}$

$log - likelihood$

Notes: Dependent variable is tax morale. All the columns include ethnic, language, religion fragmentation as well as individuals controls. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 

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