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How Are They Spending my Taxes? Tax Compliance And  
Citizens' Interest in Politics

Peter Dawson and Philip Jones

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**BATH ECONOMICS RESEARCH PAPERS**

**Department of Economics**



**How Are They Spending My Taxes?  
Tax Compliance and Citizens' Interest in Politics**

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**Abstract**

In neoclassical economics, individuals are assumed to perceive tax payments as commensurate with any other payment. This paper challenges this assumption. Individuals are more likely to identify with the community when they pay a higher share of their income in tax and when compliance is also an expression of civic duty. An analysis of questionnaire responses from over 20 countries suggests that citizens take a greater interest in politics when they are more tax compliant.

*JEL classification* D700; D720; D800

*Keywords:* tax evasion, information, political participation

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## Introduction

The question of whether to commit more resources to policies designed to deter tax evasion is difficult to resolve. Policymakers argue that the social benefit is the increase in tax revenue (Pyle, 1979; Skinner & Slemrod, 1985) but these claims are spurious.<sup>1</sup> If tax revenue is a transfer (within a community), tax revenue is not an increase in ‘social output’ (e.g. Collard, 1989). Other considerations are more relevant when estimating the ‘social benefits’ of policy designed to increase tax compliance (Pyle, 1989; Cullis & Jones, 2009). In this paper, the objective is to focus on the argument that one social benefit of increased tax compliance is an increase in citizens’ involvement in their community.

The usual assumption in neoclassical public finance theory is that tax is a payment commensurate with other payments (tax is simply a cost that must be paid). As individuals have no property rights to the payments they make in markets, they have no incentive to retain any residual (or ‘follow on’) interest in these payments. But, as taxpayers, citizens are members of a community and the community will spend their tax payments.

It is easy to discount the importance of a residual interest in the way that tax might be spent. Each individual pays such a small contribution of total tax revenue and expenditure decisions are made collectively. However, this ignores the observation that, as individuals pay an ever increasing share of their income in tax, they become

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<sup>1</sup> In evidence to the Public Accounts Committee (1981–2) the Inland Revenue stated that in 1981 the yield (in extra revenue) from investigative work was £92 000 per official (Pyle, 1979). This sum of money would exceed the costs of employing a tax investigator. Similarly, Skinner and Slemrod (1985) cite the estimates of the Inland Revenue Service Commissioner to indicate that every extra dollar of resources allocated to the IRS could be expected to bring in more than 10 dollars in tax revenue.

increasingly aware that their own interest and the community's interest are very closely entwined. It also ignores the observation that, when individuals pay more tax to fulfil civic duty, they become more conscious of their civic duty to participate in the life of the community. As tax compliance increases, individuals are more inclined to identify with their community and to take a greater interest in politics.

There are social benefits if individuals take a greater interest in their community. John Stuart Mill (1861/1991: 255) argued that, when a citizen participates, the citizen "...is called upon while so engaged to weight interests not his own; to be guided, in case of conflicting calls, by another rule than his own private partialities". Coleman (1966) argued that individuals have a social ordering of preferences that may take precedence over a private ordering. There are also arguments (drawn from welfare economics) that, when individuals identify with the community, they are more inclined to internalise externalities into their decision-making calculus. The extent to which such increased involvement in the community is beneficial is moot (Dagger, 1975; Segal, 2005) but, if there are advantages, is it really the case that tax compliance will increase individuals' interest in their community?

The following section of the paper considers the way that increased tax compliance increases citizens' interests in their community. It amends the received neoclassical model (Allingham & Sandmo, 1972) to illustrate the impact of instrumental *and* intrinsic motivation. Section three presents the model used to test the hypothesis that increased tax compliance increases citizens' interest in politics. Later sections of the paper discuss the results and the policy implications.

## 2. Tax Compliance and Citizens' Interest in Politics

This section of the paper focuses on the impact of policy designed to increase tax compliance. With increased tax compliance, both instrumental and intrinsically-motivated citizens are likely to take a greater interest in politics:

*(i) Instrumental motivation:* Instrumental individuals take action to change outcomes. Behavioral predictions are premised on the way they respond to changes in price and income constraints (Stigler & Becker, 1977). Figure 1 illustrates the policy response of a representative individual.

In Figure 1 quadrant II, the slope of the individual's indifference curve  $I_1$  is the ratio of expected marginal utility of income if the individual evades detection, to the expected marginal utility of income if the individual is caught (Allingham & Sandmo, 1972). The slope of the budget line 1-2 reflects the 'price' of honesty. When the individual maximizes welfare at point 2, the individual is completely honest (declaring all income and enjoying disposable income  $Y_t$ ). When the individual optimizes at point 1 (completely dishonest - declaring no income) the individual fears an audit because, if evasion is detected, the individual will be fined and left with a lower income ( $Y_f$ ) than if the individual had declared income honestly ( $Y_t$ ).

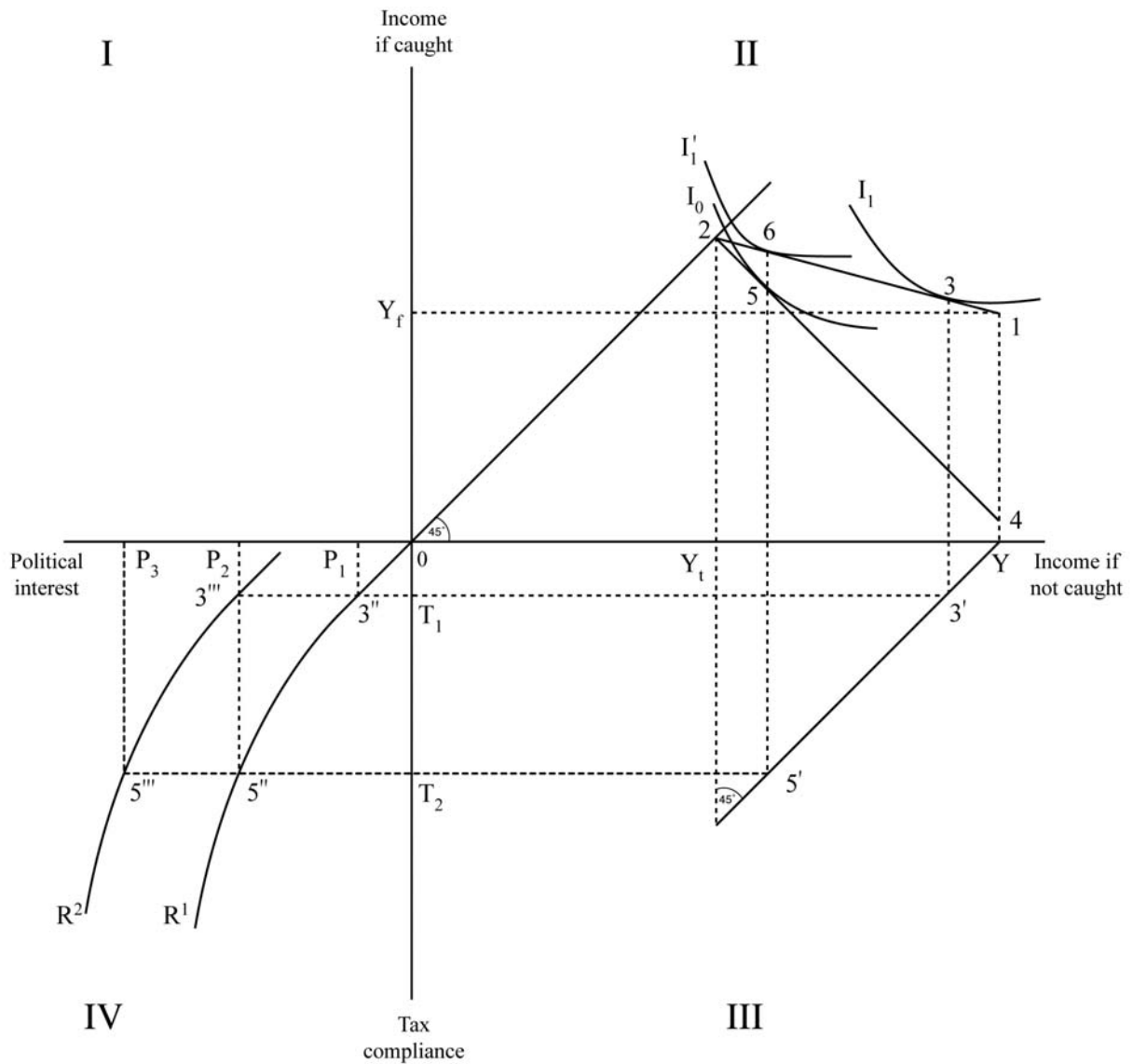


Figure 1. Tax Compliance and Political Interest

The individual maximizes welfare at point 3. The level of evasion is  $[(Y - Y_t) - 0T_1]$ , i.e. the difference between honest tax compliance and the preferred level of tax compliance. The level of tax compliance ( $0T_1$ ) is reported on the vertical axis of quadrant III. If policymakers increase the fine for evasion the budget line in quadrant

II shifts to 2-4 and the individual declares more income (at tangency point 5). Tax compliance increases from  $OT_1$  to  $OT_2$ .

In quadrant IV,  $R^1$  maps the relationship between tax compliance and the interest that this *instrumental* individual takes in politics. In part, the slope of  $R^1$  reflects the individual's perception that it is worth acquiring more information because the individual's interest is more closely entwined with the community's interest. This is relevant if the individual believes that it is possible to exert some influence (however small) on collective decisions. Statisticians recognise that the probability that a single vote might change an electoral outcome is usually minuscule but citizens turn out in large numbers in national elections (Aldrich, 1993). Individuals behave *as if* a single vote might prove significant (see Mueller 2003 for a survey). They behave *as if* they exaggerate the significance of a single vote (Clarke et al, 2004). Quattrone and Tversky (1986) suggest that they confuse the *causal* impact of action with the *diagnostic* signal (they vote because they know that if sufficient voted for a preferred outcome, this outcome would be achieved - thereby confusing a diagnosis with a causal impact).

The prediction is that as tax compliance increases from  $OT_1$  to  $OT_2$  (on the vertical axis of Figure 1 quadrant IV), the individual's interest in politics increases from  $OP_1$  to  $OP_2$ .<sup>2</sup> Certainly there is evidence that citizens engage in a principal-agent relationship with governments (Besley 2006). Pommerehne et al (1994) used a dynamic, recursive analysis to show that, after each period, each taxpayer revised

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<sup>2</sup> The additional interest (shown at point  $OP_2$  in quadrant IV) might also be achieved if other policy instruments changed taxpayers' constraints, e.g. an increase in the audit rate. In each case, as the individual pays a greater share of income in tax, the individual feels that his/her interests are more entwined with those of the community.



their commitment having assessed: the deviation between the individual's optimal choice of public good provision and the actual level; the tax commitment of fellow citizens; the perception that there is government waste.

This paper focuses on the *strength* of this principal-agent relationship. As individuals pay an ever increasing share of their income in tax, they are ever more likely to behave as if their own (individual interests) are entwined with those of the community.

ii) *Intrinsic motivation*: The architects of utility theory (e.g. Bentham 1789) argued that individuals derive value from action (as well as from outcome contingent on action) but, as economic theory evolved, attention focused on 'outcome' (Lowenstein, 1999). Figure 1 also illustrates the individual's response if the individual is "...intrinsically motivated to perform an activity when one receives no apparent reward except the activity itself..." (Deci, 1971:105).

Empirical studies indicate that perceptions of the intrinsic value of action depend on moral considerations and on signals that *acknowledge* the value of action (e.g. Deci & Ryan, 1980; 1985). Communities often rely on signals to influence perceptions of the value of tax compliance. In some communities the policy is to 'name and shame' miscreants (Gordon, 1989). The way that tax authorities deal with taxpayers (e.g. the respect they afford honest taxpayers) is also relevant (Feld & Frey, 2002). The impact of these signals can be illustrated by a shift of the individual's indifference curves when they derive greater intrinsic value from the act of compliance. In Figure 1 indifference curves shift to the left, e.g. from  $I_1$  to  $I'_1$ . The individual derives

intrinsic value from the *act* of compliance because the individual believes that this is the ‘right thing to do’. The new level of declared income is higher (at tangency point 6). Once again (tracing the impact of this through quadrants III and IV), it is clear that the same level of interest in politics ( $OP_2$ ) is possible. However, it is important to emphasise that, if the *only* motivation is that individuals feel that they should ‘do the right thing’, the reason that individuals increase their interest in politics is that policy designed to increase perceptions of the intrinsic value of tax compliance spills over, and also increases individuals’ perceptions of the intrinsic value of taking an interests in their community’s well being.

If both intrinsic and instrumental motivations are relevant, it is important to consider whether policy variables are likely to exert consistent responses. Alm, McClelland and Schulze (1999) argue that if they do not increase the fine it “... sends out a signal to each individual that others do not wish to enforce the tax laws, that it is now socially acceptable to evade one’s taxes...” On the other hand, Frey and Feld (2002) sound a note of caution; they suggest that an increase in the fine rate might signal that others do not comply and that the community regards evasion as socially acceptable. The final impact of policy to deter evasion depends on consistency between instrumental and intrinsic responses. Slemrod et al (2001) compared the relative importance of different instruments (by sending letters randomly to taxpayers in Minnesota before tax returns were due). The threat of audit proved less effective than an appeal to individuals’ conscience.

Returning to Figure 1, consider the *mix of responses* if the fine for evasion is increased. In quadrant II the increase in the fine swivels the budget line from 1-2 to

2-4 and increases compliance from  $OT_1$  to  $OT_2$ . With instrumental motivation, interest in the community increases from  $OP_1$  to  $OP_2$  because the individual hopes to influence outcomes but, if signals also enhance the individual's perception of the intrinsic value of involvement in the community, the individual's interest in the community also increases from  $OP_2$  to  $OP_3$ . The full impact of the policy variable is now a shift from point 3" to 5".

If both instrumental and intrinsic motivations are relevant, the prediction is that increased tax compliance will increase individuals' identity with the community and increases individuals' interest in politics.

### **3. An Empirical Analysis of Tax Compliance and Citizens' Interest in Politics.**

A well-established empirical literature already indicates that tax compliance increases if individuals are able to participate in collective decision-making (e.g. Kidder & McEwan, 1989). In experiments, subjects are more tax compliant if they are offered the opportunity to participate in collective decisions (e.g. Tyran & Feld, 2001).

Studies compare participation in direct and representative democracies and indicate that citizens are more tax compliant if they feel they have a greater say, i.e. if they participate in direct democracy (e.g. Pommerhene & Weck-Hanneman, 1996).

Increased awareness of collective decisions is important because collective decisions inform individuals' perceptions of the intrinsic value of the social norm of tax compliance (Alm, McClelland & Schulze, 1999). But is there a reverse causation? To our knowledge, this is the first attempt to assess whether increased tax compliance increases individuals' interest in collective decisions.

*(i) The Data*

Data can be drawn from the World Values Survey (WVS). The WVS provides cross-country comparisons of values and attitudes relating to life, family, work, religion, the economy and political engagement. To date, four waves have been carried out: 1981-1984, 1990-1993, 1995-1997 and 1999-2004. In this paper analysis is based on responses from Wave 4. The focus is on countries sampled in 1999, providing data on over 20 countries.

Individuals' willingness to comply with tax is gauged with reference to the extent (1 never justifiable to 10 always justifiable) to which individuals agreed with the question:

*Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between:*

*Cheating on taxes if you have a chance 1 2 3 4 5 6 7 8 9 10*

The WVS also reports the extent to which citizens take an interest in politics.

Respondents were also asked:<sup>3</sup>

*How interested would you say you are in politics?*

*1 Very interested*

*2 Somewhat interested*

*3 Not very interested*

*4 Not at all interested*

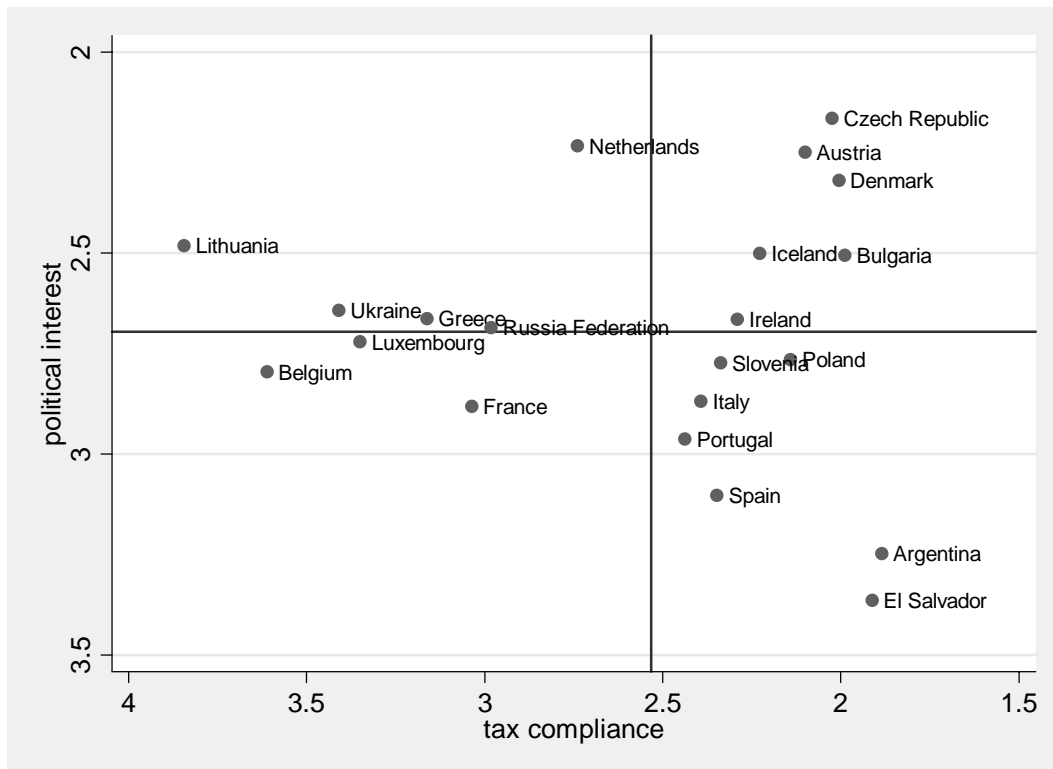
There are always concerns when analyzing questionnaire responses, but this is the usual source of data when analyzing an individual's tax evasion (see Schneider &

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<sup>3</sup> In the regression analysis that follows in Section 3(ii) we reverse the coding of this variable so the first category relates to not at all interested, the second category not very interested and so on.

Enste 2000 for a literature review). While this data is sensitive to the reliability of responses, it is the only independently available data for analysis at the level of the *individual*.<sup>4</sup>

As a first indication, consider the relationship between tax compliance and political interest illustrated in Figure 2.



Source: Authors' calculations based on average responses from the World Values Survey (1999).

Figure 2. The Relationship between Tax Compliance and Political Interest

Political interest is measured on the vertical axis with lower values representing higher levels of interest. Likewise, tax compliance is constructed so that lower values are associated with higher levels of tax compliance. The plot is divided into four quadrants, based on the mean values for political interest and tax compliance. For

<sup>4</sup> There are many other ways of estimating tax evasion in different countries but if proxies are required of tax evasion by individuals this is the only meaningful data set in the public domain.

example, countries appearing in the top-right quadrant (Austria, Czech Republic, Denmark, Iceland, Bulgaria and Ireland) represent high levels of tax compliance with relatively high levels of interest in politics. Interestingly, seven countries (including Spain, Portugal and Argentina) appear in the quadrant represented by high levels of tax compliance but low levels of political interest. Only Luxembourg, Belgium and France appear in the bottom-left quadrant.

While the objective is to consider the impact of socio-demographic variables (e.g. age, income, gender, education), it is important to note that ethnic fragmentation and the degree of corruption in countries have proved relevant in studies that have estimated the extent to which citizens identify with their community:

*(i) Ethnic Fragmentation:* Studies (e.g. Alesina et al., 1999; 2003) indicate that participation in social activities and trust in institutions are reduced by ethnic fractionalization. Figures 3 and 4 suggest that ethnic fragmentation reduces citizens' interest in politics and citizens' willingness to comply with tax.

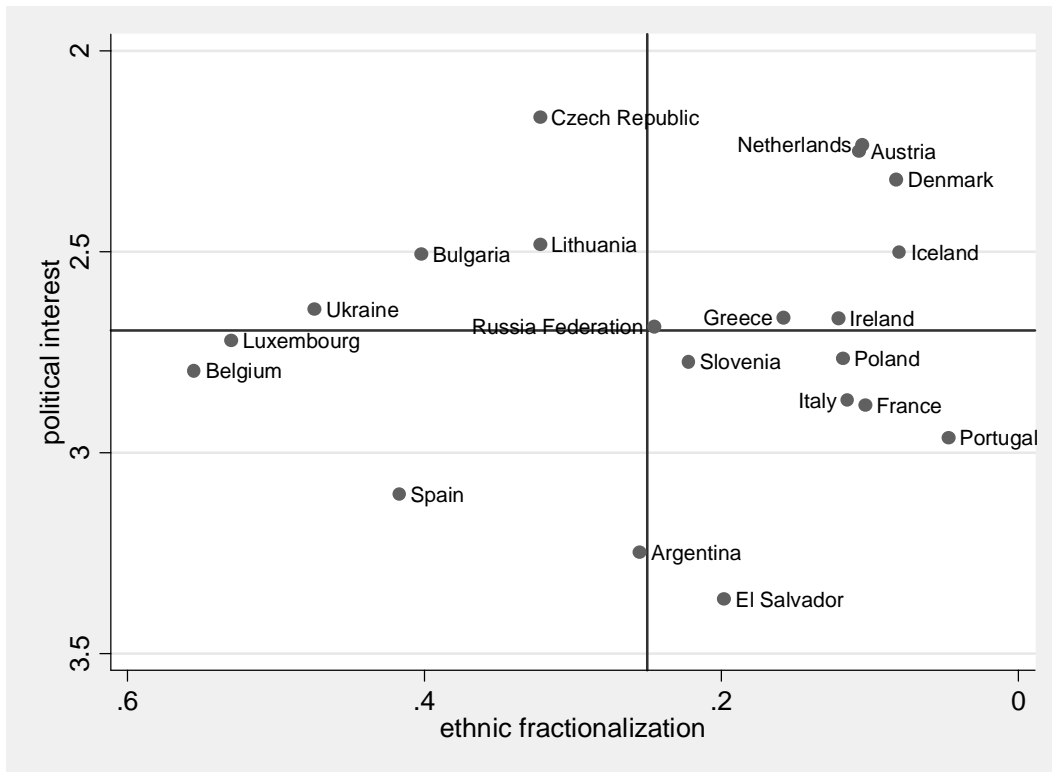


Figure 3: The Relationship between Political Interest and Ethnic Fractionalization

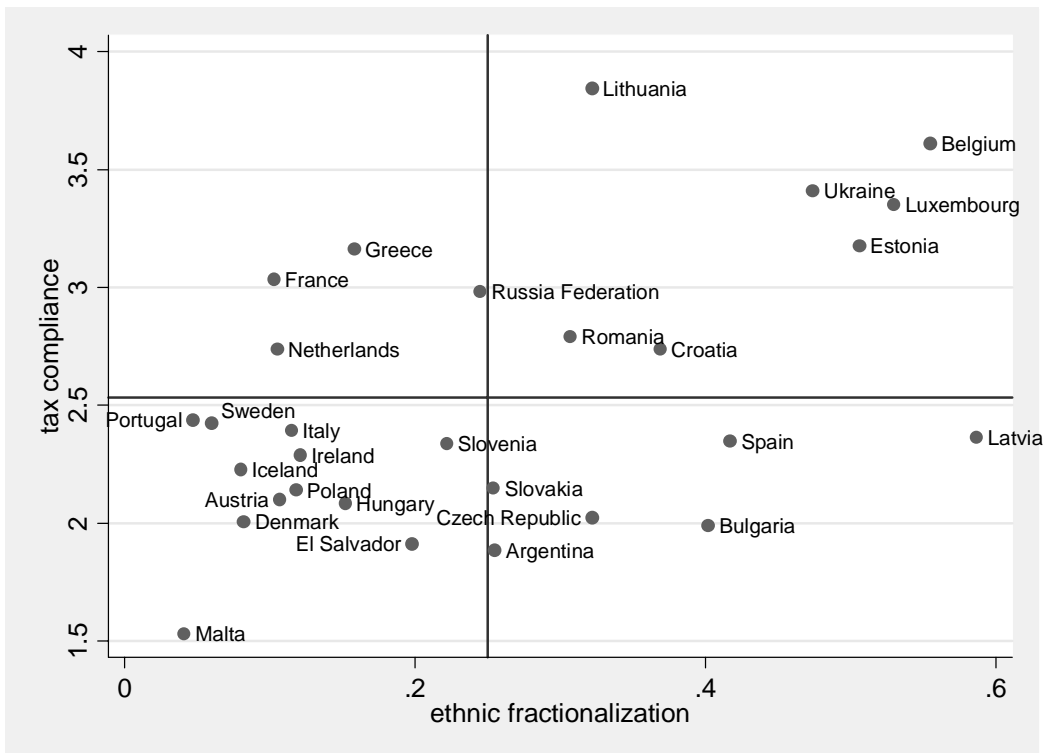


Figure 4: The Relationship between Tax Compliance and Ethnic Fractionalization

(ii) *Corruption* There is also evidence that individuals are less willing to engage in politics if they believe that politics is rife with corruption (Dong & Torgler, 2009). A specific index based on the Corruption Perceptions Index (CPI) produced by Transparency International was constructed using a ten point scale (1-10) where a higher score is indicative of less corruption. CPI measures the level of corruption that is perceived to exist in a particular country using survey responses from business people, the general public and country analysts.<sup>5</sup> The relationships with interest in politics and with tax compliance are illustrated in Figures 5 and 6.<sup>6</sup>

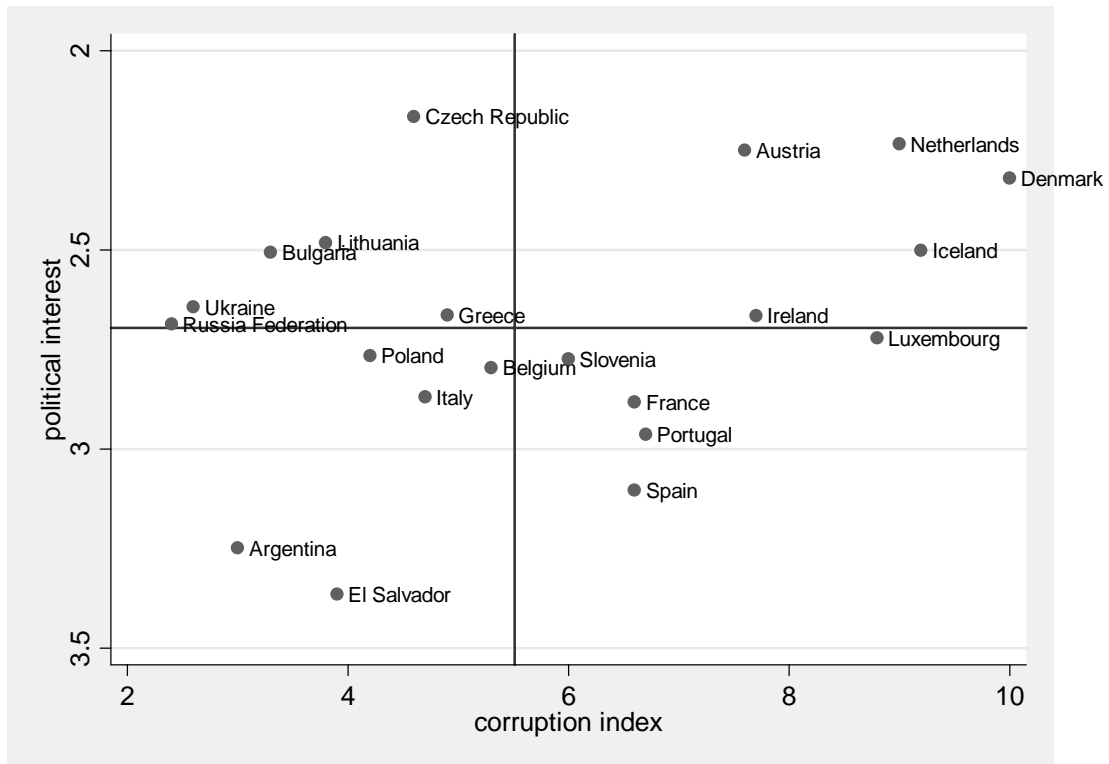


Figure 5: The Relationship between Political Interest and Corruption

<sup>5</sup> Other corruption indices are available, these include International Country Risk Guide and Quality of Government (Control of Corruption) developed by Kaufmann et al. (2003).

<sup>6</sup> Details of the CPI and ethnic fractionalization indices by country are provided in Table A.1.



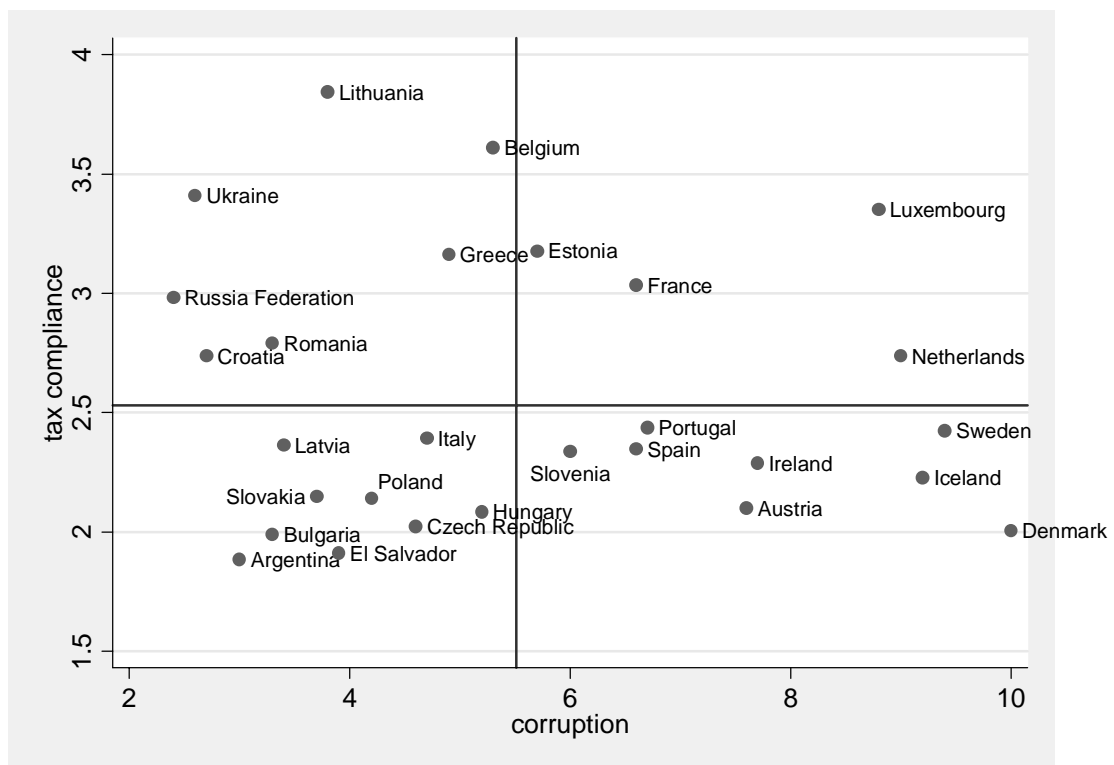


Figure 6: The Relationship between Tax Compliance and Corruption

A comparison of these figures suggests that the relationships between political interest, ethnic fractionalization and corruption follow similar trends. Less ethnic fractionalization appears to be negatively associated with political interest and tax compliance. Less corruption appears to be positively associated with political interest. While there appears to be a strong relationship between tax compliance and ethnic fractionalization (Figure 4), the relationship between tax compliance and corruption appears weaker (Figure 6).

*(ii) The Model and the Results*

To begin, it is worth considering the results when a standard ordered probit model is used for estimation. In Table 1 they indicate that interest in politics is lowest across

the youngest age groups (only becoming positive for those aged 45 years and older). Females are typically less interested in politics compared to their male counterparts. University-educated respondents and respondents in the higher income bracket are more likely to be interested in politics. Employment status also matters, with the unemployed and self-employed typically less interested in politics. A higher level of ethnic fractionalization is associated with less engagement in politics. A better corruption score (which is indicative of less corruption) is associated with greater interest in politics. Finally, and of most relevance to this paper, tax compliance is statistically significant. This variable is coded as a dummy dichotomous variable which equals one if the respondent is less likely to cheat on taxes and zero if they are more likely to cheat on taxes. Therefore the sign of the coefficient suggests that tax compliance is positively associated with political interest.

The problem with this estimation is that, while tax compliance appears a significant determinant of interest in politics, there are likely to be unobserved factors affecting tax compliance that are correlated with unobserved heterogeneity in the political engagement equation. Consistent with the figures presented earlier, it is possible for example that ethnic fractionalization and perceived corruption also influence the level of tax compliance.

Table 1: Tax Compliance and Political Interest: Ordered Probit Model

Variable	Coefficient	Standard Error
Age1824	-0.394***	0.030
Age2534	-0.289***	0.025
Age3544	-0.126***	0.025
Age4554	0.005	0.026
Age5564	0.093***	0.027
Female	-0.359***	0.015
Married	-0.014	0.016
University Education	0.516***	0.018
Self Employed	-0.098***	0.030
Unemployed	-0.166***	0.030
Lower Income	-0.138***	0.018
Higher Income	0.136***	0.018
Tax Compliance	0.045**	0.022
Ethnic Fractionalization	-0.164***	0.049
Lower Corruption	0.048***	0.015
$\mu_1$	-0.0994	0.037
$\mu_2$	-0.063	0.036
$\mu_3$	1.008	0.037
N		22307
LR Test		2292.23
Pseudo R <sup>2</sup>		0.039

Note:\*\*, \*\*\*, significant at the 5% and 1% levels of significance respectively.

To deal with the combination of a potentially endogenous discrete variable and a discrete dependent variable, an endogenous switching framework model is employed. Political interest ( $y$ ) is the dependent variable and tax compliance ( $T$ ) is the regime switch. Following Miranda and Rabe-Hesketh (2005), we construct the model as a system of equations for two latent response variables:

$$y_i^* = \alpha T_i + \mathbf{x}_i' \boldsymbol{\beta} + u_i \quad (1)$$

$$y_i = \begin{cases} 0 & \text{if } y_i^* < \mu_0 \\ 1 & \text{if } \mu_0 \leq y_i^* \leq \mu_1 \\ 2 & \text{if } \mu_1 \leq y_i^* \leq \mu_2 \\ 3 & \text{if } \mu_2 \leq y_i^* \leq \mu_3 \end{cases}$$

Where  $y_i^*$  represents a latent continuous variable,  $\alpha$  is the coefficient associated with the endogenous variable,  $\beta$  represents a  $K \times 1$  vector of parameters associated with the demographic, socio-economic and country-specific characteristics (i.e. the variables listed in Table 2) and  $u_i$  is an error term.

$$T_i^* = \mathbf{z}_i' \boldsymbol{\lambda} + v_i \quad (2)$$

$$T_i = \begin{cases} 0 & \text{if } T_i^* \leq 0 \\ 1 & \text{if } T_i^* > 0 \end{cases}$$

Where  $T_i^*$  represents a latent continuous variable,  $\boldsymbol{\lambda}$  a  $L \times 1$  vector of parameters and  $v_i$  an error term<sup>7</sup>.  $\boldsymbol{\lambda}$  is identical to  $\beta$  but with the addition of trust in other citizens, which is used to identify the model (as will be discussed shortly).

In what follows, the assumption is a bivariate normal distribution for the error terms from which we can deduce the level of correlation ( $\rho$ ).<sup>8</sup> If  $\rho=0$  (i.e. no dependence between  $u_i$  and  $v_i$ ) then  $T_i$  can be considered exogenous. In such circumstances equation (1) can be estimated using standard ordered probit methods (as in Table 1).

On the other hand, if  $\rho \neq 0$  then  $T_i$  is considered endogenous. In this case, using

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<sup>7</sup> In order to operationalise the endogenous switching model we assume the coefficient associated with the endogenous variable is binary.

<sup>8</sup> Details are provided in Miranda and Rabe-Hesketh (2005).

standard ordered probit methods will generate inconsistent estimators. As such, exogenous switching will be nested within the endogenous switching framework.

To consider whether exogenous switching is nested within an endogenous switching framework a further test considers the impact of one additional variable. Studies report that tax compliance is influenced by how others behave (Fischbacher & Gächter, 2006) and by the extent to which they trust others (Frey & Torgler, 2007).<sup>9</sup> In this paper, trust in others is used to identify the model. *A priori*, higher levels of trust are likely to explain higher levels of tax compliance. However, *a priori* the impact of trust on political engagement is ambiguous. While it is possible that citizens might take a greater interest the more that they believe that they can trust others, it is also possible that that they are more concerned about their ‘stake’ in the community the more they *question* that they are able to trust others. For example, the more widely politicians’ ‘affairs’ are publicized, the greater the interest that citizens may take in the lives of their political representatives.<sup>10</sup>

The estimates from the endogenous switching model are reported in Table 2. Based on the results of the switching equation (Column 3), trust and corruption are both positively associated with tax compliance. This implies that respondents who trust are more likely to comply with taxes. Ethnic fractionalization is negatively associated

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<sup>9</sup> Frey and Torgler (2007) estimate a tax compliance equation based on the European Values Survey that includes conditional cooperation variables relating to trust in the judicial system and trust in the parliament. Their equation also includes a variable which captures each individual’s satisfaction with democracy together with standard demographic and socio-economic factors such as age, gender, education and income. Finally, they also include country fixed effects to capture unobserved differences across countries. In contrast this paper uses ethnic fractionalization and corruption index to capture some of these country-specific effects.

<sup>10</sup> This is quite different from the negative impact that persistent reports of endemic corruption might exert on citizens interest in politics.

with tax compliance. Therefore, a higher level of ethnic fractionalization is associated with less tax compliance.

Table 2: Tax Compliance and Political Interest: Endogenous Switch Ordered Probit Model

Variable	Political Interest	Tax Compliance (Switching Model)
Age1824	-0.393*** (0.030)	-0.338*** (0.101)
Age2534	-0.288*** (0.025)	-0.331*** (0.088)
Age3544	-0.126*** (0.025)	-0.181** (0.090)
Age4554	0.005 (0.026)	-0.049 (0.095)
Age5564	0.093*** (0.027)	0.029 (0.097)
Female	-0.359*** (0.015)	0.107** (0.049)
Married	-0.014 (0.016)	0.116** (0.055)
University Education	0.516*** (0.018)	0.033 (0.065)
Self Employed	-0.098*** (0.030)	-0.006 (0.095)
Unemployed	-0.166*** (0.030)	-0.172* (0.104)
Lower Income	-0.138*** (0.018)	-0.038 (0.064)
Higher Income	0.136*** (0.018)	-0.098* (0.059)
Tax Compliance	0.053** (0.025)	
Trust		0.228*** (0.051)
Ethnic Fractionalization	-0.162*** (0.049)	-1.838*** (0.153)
Lower Corruption	0.049*** (0.015)	0.200*** (0.052)
$\mu_1$		-0.986*** (0.039)
$\mu_2$		-0.055 (0.038)
$\mu_3$		1.089*** (0.039)
$\rho$		-0.020 (0.032)
Wald Test	2518.88 (0.000)	
N	27644	

Notes: standard errors in parentheses. \*, \*\*, \*\*\*, significant at the 10%, 5% and 1% levels of significance respectively.

In terms of the socio-demographic variables, tax compliance is higher amongst females and respondents who are married. Age is also an important determinant, whereas education and employment status are statistically insignificant.

Turning to the political interest equation (column 2), the results are similar to those reported in Table 1. The key result is that, once the endogeneity status of tax compliance is controlled for, those who are more likely to comply with taxes are more engaged in politics. The negative value for  $\rho$  suggests a negative correlation between the unobservable factors affecting tax compliance and political engagement.

Invariably, we would have expected this parameter to be positive, since political engagement and tax compliance are both related to civic engagement. However, the parameter is insignificant. Given the similarity between the political engagement variables in the two approaches, it would appear that tax compliance in this model is exogenous.

As a further consideration (and in order to test the robustness of our results) the tax compliance equation was re-estimated using standard ordered and binary probit frameworks (Table 3). The binary probit results (Model 1) are consistent with the results presented in the endogenous switching approach. There are also similarities between the binary response model and the ordered probit (Model 2), but also some differences. In particular, whereas previously self-employed and unemployed variables were insignificant both are now significant (at better than the 5% level). Finally, in Model 3 we again apply an ordered probit but now include political interest (in binary form) as an additional explanatory variable. Despite marginally increasing the goodness of fit and having the correct (positive) sign it is statistically insignificant. From this, we (tentatively) conclude that tax compliance appears to influence political interest more than political interest influences tax compliance.

Table 3: Tax Compliance (Robustness Checks)

Variable	Model 1	Model 2	Model 3
Age1824	-0.344*** (0.101)	-0.390*** (0.072)	-0.375*** (0.073)
Age2534	-0.333*** (0.088)	-0.444*** (0.061)	-0.433*** (0.061)
Age3544	-0.184** (0.090)	-0.283*** (0.061)	-0.274*** (0.061)
Age4554	-0.052 (0.095)	-0.126** (0.063)	-0.115* (0.064)
Age5564	0.022 (0.097)	-0.080 (0.064)	-0.071 (0.064)
Female	0.104** (0.048)	0.129*** (0.034)	0.137*** (0.034)
Married	0.113** (0.055)	0.094** (0.039)	0.093** (0.039)
University Education	0.031 (0.065)	-0.059 (0.046)	-0.065 (0.046)
Self Employed	-0.011 (0.095)	-0.160** (0.062)	-0.159** (0.062)
Unemployed	-0.164 (0.103)	-0.171** (0.080)	-0.188** (0.080)
Lower Income	-0.041 (0.064)	-0.018 (0.044)	-0.012 (0.044)
Higher Income	-0.099* (0.059)	-0.068* (0.041)	-0.071* (0.041)
Trust	0.229*** (0.051)	0.232*** (0.036)	0.229*** (0.036)
Ethnic Fractionalization	-1.813*** (0.152)	-1.346*** (0.113)	-1.360*** (0.114)
Lower Corruption	0.197*** (0.051)	0.095*** (0.035)	0.088*** (0.036)
Political Interest			0.047 (0.036)
$\mu_1$		-1.425*** (0.073)	-1.396*** (0.076)
$\mu_2$		-1.127*** (0.073)	-1.100*** (0.075)
$\mu_3$		-0.307*** (0.071)	-0.278*** (0.074)
N	4867	4867	4831
LR Test	272.24	389.73	394.23
Pseudo R <sup>2</sup>	0.074	0.035	0.036

Notes: As table 2.

When relying on both of these tests, the results are consistent with the proposition that individuals retain a residual (or ‘follow on’) interest in the payments they make as tax. They are consistent with the proposition that instrumental and intrinsic motivations are relevant (because socio-economic variables that might explain action premised on these motivations are statistically significant). However there is also further evidence of the impact of a residual (or ‘follow on’) concern for the way that the community will use tax payments.



## **5. Conclusions and Policy Implications**

When neoclassical microeconomic theory is applied to analyse taxation, it assumes that individuals behave as if tax payment is commensurate with any other payment. This paper indicates that the greater the share of income that individuals pay as tax and the greater the impact of the perception that they have a civic duty to pay tax, the greater the difference between tax payment and other payments made in markets. The evidence is that increased tax compliance increases individuals' 'follow on' interest in the way tax payments are spent.

In this paper an endogenous-switching-model is applied to estimate the impact of variables that influence instrumental and intrinsic motivations. There is evidence that these variables (e.g. ethnic fragmentation and politician corruption) are relevant but there is also evidence that tax compliance exerts its own statistically significant impact on individuals' interest in politics.

A growing empirical literature (reviewed by Thaler 1996) insists that individuals do not regard money as perfectly fungible. This paper presents evidence that individuals do not regard tax payments as commensurate with the payments they make in markets. This observation is important when reflecting on the dichotomy that underpins neoclassical public finance. In neoclassical public finance, tax is a cost to the individual but not to the community (because tax revenue is available to be spent in the community). Here the evidence is that tax is a cost to the individual but, as the individual pays an increasing share of income in tax there is an ever increasing

incentive to take a greater interest in politics *because* tax revenue is available to be spent in the community.

These observations are relevant for public finance theory (e.g. when analysing individuals' perceptions of the incidence and cost of tax) and they are also relevant when reflecting on unresolved questions in political science (e.g. when explaining participation in political decision-making processes).<sup>11</sup> This paper focuses on the way that policy might be designed to increase tax compliance. As tax revenues are not the only (or the most relevant) estimate of 'social benefit' (Collard, 1989) other potential social benefits must be considered (e.g. as listed by Pyle, 1989 and Cullis & Jones, 2009). With John Stuart Mill's ringing endorsement, this paper indicates the way in which increased tax compliance increases individuals' involvement in politics.

This is a first insight into an inherently enigmatic relationship. It calls for greater consideration of consistency when assessing instrumental and intrinsically-motivated responses to policy changes. With this qualification, it supports the proposition that policy can be designed to induce 'good' citizenship (for other policy examples see Frey, 1997; Jones et al, 1998). The over-arching conclusion is that a carefully designed policy to increase tax compliance can increase individuals' interest in their community.

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<sup>11</sup> As an example, consider the dilemma posed by Frey (1971). He observed that high-income individuals participate more in elections than low-income individuals even though the opportunity cost of time is higher for high-income individuals. The results in Table 3 shed insight because they indicate that, other things equal, income is an important variable when explaining the interest that individuals take in politics.

## Appendix 1

The details of estimates of corruption and ethnic fractionalisation used in the paper are shown in Table A1.

Table A1: Corruption and Fractionalization Indices by Country (1999)

Country	Corruption Index Score	Rank	Ethnic Fractionalization
Argentina	3.0	71	0.255
Austria	7.6	17	0.107
Belgium	5.3	29	0.555
Bulgaria	3.3	63	0.402
Croatia	2.7	74	0.369
Czech Republic	4.6	39	0.322
Denmark	10	1	0.082
El Salvador	3.9	49	0.198
Estonia	5.7	27	0.506
France	6.6	22	0.103
Greece	4.9	36	0.158
Hungary	5.2	31	0.152
Iceland	9.2	5	0.080
Ireland	7.7	15	0.121
Italy	4.7	38	0.115
Latvia	3.4	58	0.587
Lithuania	3.8	50	0.322
Luxembourg	8.8	11	0.530
Malta	N/A	N/A	0.041
Netherlands	9	8	0.105
Poland	4.2	44	0.118
Portugal	6.7	21	0.047
Romania	3.3	63	0.307
Russia Federation	2.4	82	0.245
Slovakia	3.7	53	0.254
Slovenia	6	25	0.222
Spain	6.6	22	0.417
Sweden	9.4	3	0.060
Ukraine	2.6	75	0.474

Note: A higher corruption score (higher rank) is indicative of less corruption. Not all countries are included in the empirical analysis due to data limitations.

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