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Does Compulsory Voting Increase Collected Tax Revenues?

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Abstract

The paper investigates the relationship between tax and type of voting by using GMM-system estimators. The data-set covers the period 2000-2010 and includes 122 countries. The main finding shows that the assumed function is linear, the compulsory voting tending to improve the tax collection. The transmission channel seems to have a motivational reason and shows that the citizens realize better the tax duty under compulsory voting. Hence, tax payment duty has new valences given its congruence with voting duty.

Keywords: Tax revenues, Compulsory voting, Voluntary voting, Effects, Tax policy

JEL classification: H20, D70, C33

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1. Introduction

The tax revenues represent the most important financing source for government. As Musgrave (1959) notes, the state collects taxes and allocates them in order to fulfil three main functions in economy: allocation, distribution, and economic stabilization. Based on the social contract, it is very clear that the tax payment represents a constitutional duty for citizens and a right for the government. Even so, there are a lot of taxpayers who do not pay the taxes, escaping in the 'free rider' area.

Several determinants are relevant in this way. Exploring several papers in this area (e.g. Torgler 2005 and 2006, Martínez-Vázquez and Torgler 2005, Prieto-Rodrígues et al. 2006, Torgler and Schneider 2007, Alm and Torgler 2006, and Cummings et al. 2007), Lago-Peñas and Lago-Peñas (2008) group the factors in four categories: (a) Socio-demographic characteristics: gender, age, marital status, education, employment status, religiosity, and social class; (b) Political and social attitudes: trust in courts, the legal system, politicians and democracy in general, national pride, social capital, the perceived level of corruption, and voting behaviour; (c) Fiscal parameters: tax rates, the fine rate, audit probability, risk aversion, and personal income; (d) Contextual determinants: differences in the extent of direct democracy, language fragmentation or the existence of regional cleavages.

In the public choice approach, as taxpayers, the voters approve the level and structure of taxation accepting to pay the taxes only if they receive benefits from public goods or obtain some financial socio-economic transfers. The collective vector is a result obtained at constitutional or post-constitutional stage of decision. Regarding this vector, quasi-all of literature in the field

assumes the voting as voluntary. What happen when the voting is compulsory? Does it influence the collected tax revenues? If yes, which is the magnitude of this impact?

The paper answers at those questions, studying the impact of type of voting on the tax revenues, based on Generalized Method of Moments (GMM)-system estimators. The data-set covers the period 2000-2010 including 122 countries. The main finding claims a linear connection between tax and type of vote, the variables having the same sign. Therefore, the compulsory vote seems to improve the tax collection.
The contribution of paper is twofold. First, the study offers one of the first empirical analysis exploring the link between tax and compulsory vote based on an extended dataset by also covering the Financial Crisis from 2007-2008. Second, the results have as ground a panel dynamic approach by using GMM-system estimators. According to Roodman (2009), GMM models have several advantages comparing with the classical panels: "1) "small T, large N" panels, meaning few time periods and many individuals; 2) a linear functional relationship; 3) one left-hand-side variable that is dynamic, depending on its own past realizations; 4) independent variables that are not strictly exogenous, meaning they are correlated with the past and possibly current realizations of the error; 5) fixed individual effects; and 6) heteroskedasticity an autocorrelation within individuals but not across them" (p. 86).

The rest of the paper is organized as follows: Section 2 contains the literature review, Section 3 presents the methodology and the empirical results, while Section 4 concludes.

2. Literature review

What is the best type of voting: voluntary of compulsory? Although the voluntary voting is predominant in the world, there are 32 countries or sub-states entities following the compulsory voting. The choosing of voting type system is quite debatable issue in the socio-political spectrum. For example, Jakee and Sun (2006) emphasise that the normative debate over compulsory voting "typically asks whether voting should be viewed" (p. 63) as a civic duty or as a right. If the civil duty implies compulsory voting, the civil right implies voluntary voting.

As the payment of taxes represents a duty, the taxpayers are likely to become more responsible regarding the taxation aspects if the voting is compulsory. In this context, the tax evasion and tax avoidance are minimal while the collection of tax revenues increases. The relationship between collected tax revenues and type of voting was less investigated in the literature. However, there are authors claiming the existence of this connection but with different directions (e.g. Lomasky and Brennen, 2000; Hill, 2002; and Hodler, 2010), while others stress that there is no significant correlation (e.g. Briggs and Celis, 2008; Brooki, 2008; Level, 2009 and Usher; 2011). .

Regarding the first group of researchers, Lomasky and Brennen (2000) promote the idea that the tax revenues are strongly connected with the type of voting, the variables having the same direction. They argue that the failing to vote is morally indifferent: "one does not morally better to vote than, say, spend the time playing golf instead" (p. 62-63). For them, this type of reasoning is valid in respect to voluntary systems than it does in mandatory system. Therefore, there would be no strong duty to pay taxes in a voluntary tax system. As a consequence, the compulsory voting can increase the tax revenues collected by government comparing with the voluntary one.
Hill (2002) analyses what happen when the voter avoids the tax payment under a voluntary system. In this situation, as the voting is voluntary, the taxpayers do not see any importance of

state's functions. Conversely, the author notes that the compulsory voting under collective action make taxpayers to appreciate the system utility of taxation and encourages them to pay the taxes, improving in this way the collection of tax inputs.
The same conclusion finds Hodler (2010). He models compulsory voting stressing that this type of vote increases the total government spending and taxes. Moreover, the effect on public goods provision is rather ambiguous.
Other researchers defend the existence of the connection but with a contrary sign. Briggs and Celis (2008) investigate the impact of compulsory voting upon differential turnout rates in Britain and Belgium. Showing that the "taxpayers who do vote could see a small percentage reduction in the amount of taxation that they are eligible to pay" (p. 5), the authors reveal there is a significant correlation between voting action and tax revenues but by opposite direction.

Finally, the last opinions promote the idea that there is no evidence regarding the relationship between collection of tax revenues and type of voting. Brooki (2008) studies the connection between tax revenues as percent in GDP and type of voting system by using 9 variables for a sample size with 109 countries. The main finding shows that the most important independent variable - compulsory voting law - is not significant. The second result illustrates that the compulsory voting law is not correlated with government spending. Unlike him, Level (2009) focuses on the justification of compulsory voting. The author considers that the duty to pay taxes is applied whether or not one is a citizen. This thing depends by "ability to pay, proportionality, and even redistributive justice that are absent from the case for compulsory voting" (p. 70). From different perspective, Usher (2011) analyses the duty to vote. The author emphasises that the voluntary voting becomes preferable to compulsory voting. In this context, the outcome of elections is not affected by a tax or fee on voting if the tax is appropriately redistributed.

Based on these theoretical foundations, the study explores the link between the collected tax revenues and type of voting by using a GMM-system models, with 122 countries, covering the period 2000-2010.

3. Methodology and results

In order to investigate the relationship between collected tax revenues and type of voting, two main variables are considered: the tax revenues, as a dependent variable, and the type of voting, as independent interest variable.
The data-set[1] includes 122 countries, covering the period 2000-2010 (Table 1, in Appendix). The level of economic development, form of socio-economic system, culture, geographic position, and type of political regime are the main criterions for selection of the considered countries. Although the considered period is relatively short, there is sufficient number of cross-sections (122) to capture all important investigated issues. More, as Hsiao (2007) notes, the panel models have quality to capture the complexity of human behaviour than a single cross-section or time series data.

The dependent variable is the tax revenues (*tax*) illustrating the amount of tax revenues collected by general government in U.S. dollars. The data has been taken from the International Monetary Fund online data-base (2020). Independent interest variable is the type of voting (*vote*) being a dummy variable. It has value of 1 if the country has mandatory voting and 0 if the country has

[1] The dataset set is available upon request.

voluntary voting (for all countries, the mandatory voting dummy variables are correlated with the year of mandatory voting operationally).
The main hypothesis of the analysis is that the type of voting (i.e. voluntary or compulsory) determines the level of collected tax revenues, based on a function with this shape:

$$tax = f(vote), \quad (1)$$

where, *tax* - the amount of tax revenues in U.S. dollars, and *vote* - the type of voting. The effect of interest variable is isolated based on economic (i.e. Gross Domestic Product - GDP, fiscal balance, balance of trade), socio-administrative (i.e. government effectiveness, level of corruption and adult literacy index) and political determinants (i.e. level of democratization and political stability).

GDP represents the volume of GDP in U.S. dollars. The source of the data is World Bank online data-base (2020). Fiscal balance (*bdef*) reveals the level of fiscal balance as percent in GDP. The data source is the International Monetary Fund online data-base (2020). Balance of trade (*trade*) measure the difference between value of exports and imports as percent of GDP. The data is taken from the World Bank online data-base (2020). Government effectiveness (*geff*) quantifies 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 ranking are -2.5 for weak governance performance, and 2.5 for strong governance performance. The source of the data is World Bank online data-base (2020). Freedom from corruption (*corruption*) measures the intensity of corruption. The level 100 shows lowest level of corruption, while a score of 0 illustrates a very corrupt government. The source of the data is The Heritage Foundation online data-base (2020). Polity2 (*demo*) measures the intensity of democratization, heaving values from +10 (strongly democratic regime) to -10 (strongly autocratic regime). Political durability (*pstab*) indicates the number of years since the most recent regime change or the end of transition period defined by the lack of stable political institutions. Both political variables are taken from Polity™ IV Project Political Regime Characteristics and Transitions, 1800-2010 Dataset. Adult literacy index (*literacy*) is a measure used to determine how many adults can read and write in a certain area or nation as percent in total adult population. The source of data is United Nations Development Programme online data-base (2010).
All variables are treated in their natural logarithm form, with exception of variables already expressed as percentages. Variables with negative values are rescaled in order to obtain strict positive values without affecting their statistical distribution.

Although Lewis-Beck and Nadeau (2011) stress that the tax and voting are exogenous variables, GMM-system estimator proposed by Blundell & Bond (1998) is called to quantify the 'tax-type of vote' nexus as it treats not only the endogeneity issue but also controls for any residuals characteristics. For robustness checks perspective, different scenarios are constructed by also controlling for Financial Crisis from 2007-2008. The crisis is captured through a dummy variable (i.e. *crisis dummy*), taking value of 0 before 2007 and 1 starting with 2007.

In all estimations, the lagged dependent variables is used to control for the 'memory effect' and correct potential autocorrelation in residuals. Hansen-test is calculated in order to test the quality of instruments, while AR(2)-test is performed to check the autocorrelation in residuals. The lags of endogenous variables are considered as instruments in all scenarios.

The results in Table 2 (Appendix) clearly show that the *vote* is significant in all models being positively correlated with *ln(tax)*. This means that in the countries with compulsory voting there are a propensity to maximize the collected tax revenues. In the Model (1), which exclusively considers economic control determinants of tax, only *ln(GDP)* and *bdef* are significant, registering negative and positive signs, respectively. By entering socio-administrative and political factors, the Models (2-3) importantly reveal that the *vote* remains significant maintaining its positive sign. Out of controls, only *bdef* is significant in both models having the same negative sign as in the Model (1). The rest of controls is not conclusive. Finally, testing for robustness under crisis, the estimation in the Model (4) neglects the crisis effect. In this case, the interest variable *vote* is still significant and positively correlated with *ln(tax)*. Herein, only the *ln(GDP)* and *bdef* are significant as controls. *Ln(GDP)* having negative sign while *bdef* negative one.

The quality of results is supported by AR(2) and Hauseman-tests. The lagged dependent variable is not conclusive in quasi-all scenarios, the 'memory effect' not being validated.
Corroborating the results, the estimations clearly show that the *vote* is positively correlated with *ln(tax)* remaining robust under *bdef*. In other words, although the crisis does not have a conclusive impact on tax, the increase of budgetary deficit puts the pressure on collected tax decompressing them.

4. Conclusions

The citizens have different behaviours in respect to vote because it can be perceived either as civil duty or as civil right. In this vain, if the vote is compulsory (i.e. civil duty), they seem to be more responsible regarding the tax payment. The empirical results evidence a strong and positive relationship between type of voting and collected tax revenues under significant influence of fiscal balance.
As two main investigated variables have the same signs, collected tax revenues tend to increase if the vote is viewed as a civil duty. In other words, the compulsory voting improves the collection of tax revenues. The transmission channel could have a motivational reason showing that the citizens realize better the tax duty under compulsory voting. Therefore, the tax payment duty has new valence given its congruence with voting duty.
The study has several limits, especially given the lack of data (i.e. 'literacy' used variable is available only until 2010) and potential multicolinearity between considered determinants.

Regarding the implications, the study suggests that a significant increase of collected tax revenues, without a major negative reaction of taxpayers, can be easily obtained by public authority if the voting is mandatory. Concerning taxation, as the main government financing source, there is no doubt that compulsory voting seems to gain the battle over voluntary voting.

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Appendix

Table 1 - List of analyzed countries

Countries				
Albania	Costa Rica	Iran, I.R. of	Moldova	Slovak Republic
Algeria	Croatia	Ireland	Mongolia	Slovenia
Argentina	Cyprus	Israel	Morocco	Spain
Armenia	Czech Republic	Italy	Mozambique	Sudan
Australia	Denmark	Jamaica	Nepal	Swaziland
Austria	Djibouti	Japan	Netherlands	Sweden
Azerbaijan, Rep. of	Dominican Republic	Jordan	New Zealand	Switzerland
Bahrain, Kingdom of	Ecuador	Kazakhstan	Nicaragua	Tajikistan
Bangladesh	Egypt	Kenya	Niger	Togo
Belarus	El Salvador	Korea, Republic of	Nigeria	Trinidad and Tobago
Belgium	Estonia	Kuwait	Norway	Tunisia
Bolivia	Ethiopia	Kyrgyz Republic	Oman	Turkey
Botswana	Fiji	Lao People's Dem.Rep	Pakistan	Uganda
Brazil	Finland	Latvia	Panama	Ukraine
Bulgaria	France	Lebanon	Paraguay	United Arab Emirates
Burkina Faso	Georgia	Lesotho	Peru	United Kingdom
Burundi	Germany	Libya	Philippines	United States
Cambodia	Ghana	Lithuania	Poland	Uruguay
Cameroon	Greece	Macedonia, FYR	Portugal	Uzbekistan
Canada	Guatemala	Madagascar	Qatar	Venezuela, Rep. Bol.
Central African Rep.	Guyana	Malawi	Romania	Vietnam
Chad	Honduras	Malaysia	Russian Federation	Zambia
Chile	Hungary	Mali	Rwanda	
China,P.R.: Mainland	India	Mauritius	Saudi Arabia	
Colombia	Indonesia	Mexico	Senegal	

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Table 2 - GMM-system results

Dependent variable: *ln(tax)*				
	Model (1)	Model (2)	Model (3)	Model (4)
vote	7970.9** (4056.0)	8308.1** (4117.7)	8398.8** (4150.6)	7972.4** (3656.7)
ln(GDP)	-314.6* (175.9)	-346.8 (224.7)	-350.1 (231.6)	-323.14* (199.9)
bdef	38.94* (23.94)	36.56* (22.02)	36.39* (21.78)	33.14* (18.95)
trade	4.935 (14.34)	5.692 (14.61)	4.787 (14.22)	4.563 (13.51)
ln(geff)		-186.2 (290.9)	-198.9 (294.7)	-209.02 (279.9)
ln(corruption)		23.06 (18.34)	23.13 (19.48)	21.74 (17.51)
literacy		-2190.1 (1507.1)	-2231.8 (1551.9)	-2102.7 (1441.1)
ln(demo)			212.3 (195.8)	204.9 (184.8)
ln(pstab)			18.94 (272.3)	27.55 (258.2)
crisis dummy	187.7 (117.9)	217.3 (141.1)	214.5 (139.1)	
Lagged ln(tax)	- 0.018 (0.449)	-0.021 (0.467)	-0.031 (0.468)	0.022 (0.440)
intercept	2370.3* (1404.3)	3816.7** (1862.5)	2870.6 (1812.89)	2664.7* (1590.6)
Type of estimation	GMM-system	GMM-system	GMM-system	GMM-system
Number of instruments	12	15	17	16
Hansen test [p-vales]	3.35 [0.647]	2.33 [0.802]	1.41 [0.924]	2.72 [0.744]
Arellano-Bond p-vales test for AR(2)	[0.879]	[0.315]	[0.372]	[0.924]
Obs.	1220	1220	1220	1220
Groups	122	122	122	122

(a) (…) denotes the standard error, while […] is the p-vales;
(b) ***, **, and * show significance at 1, 5 and 10 % level of significance, respectively.