# The conditional political tax cycle: The role of fiscal credibility and transparency

Jan Janků[*]

*Department of Economics, Faculty of Economics, VSB – Technical University of Ostrava, Sokolská tř. 33, 702 00 Ostrava, Czech Republic.*

## Abstract

Incumbent politicians tend to use fiscal instruments in order to improve their election outcome. Surprisingly, the whole tax structure can be the subject of political manipulations under certain circumstances. The aim of this paper is to evaluate the conditional political tax cycle in the OECD countries. This means evaluating whether there are conditional systematic decreases in the tax revenue before the elections in the OECD countries. We investigate whether such systematic decreases depend on the transparency and credibility of fiscal policy. We use an unbalanced cross-country time series data set, comprising 34 developed countries (the OECD members) over the period 2000–2013. A dynamic panel linear regression model is tested in this article, while FD GMM is employed. The results are as follows. First, there is a statistically significant political tax cycle in the tax revenues in the countries with a lower level of fiscal credibility and transparency. Second, the political tax cycle is noticeable especially in the consumption taxes.

## Keywords

Elections, government effectiveness, political budget cycle, rationality, taxes.

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## 1. Introduction

The political business/budget cycle (PBC) is a phenomenon that has been studied by many researchers, both economists and political scientists. The PBC denotes a situation when an incumbent politician tries to influence voters' behaviour at the time of an election.

The traditional theory of the political business cycle (the PBC I model) concludes that the incumbent is able to influence certain macroeconomic variables (typically unemployment) and as a result can gain some extra votes from the electorate. This theory (in its basic version) assumes that there is a trade-off between the unemployment rate and the inflation rate – thus, it assumes a short-term Phillips curve and adaptive expectations of players. Moreover, it assumes that the policymakers' manipulations should have an immediate impact on the economy. Both of these assumptions are seen as unrealistic by some researchers. For this reason, there is a shift in focus to the *political budget cycle* theory.

The theory of the political business cycle (the PBC I model) is closely associated with *public choice*. The newer theories of the political budget cycle (the PBC II and PBC III models) are rather associated with *political economics*. The term *political budget cycle* is used to describe cyclical fluctuations in the fiscal policy (in the fiscal policy instruments) induced by the timing of elections. However, the reason for the emergence of these cycles in the macroeconomic variables (the PBC I) and in the fiscal variables (the PBC II and the PBC III) is the same – re-election motives create incentives for incumbent politicians to appear competent just ahead of the elections.

The aim of this paper is to evaluate the conditional political tax cycle in the OECD countries.

In this paper we examine the *conditional political tax cycle* (PBC$_T$) in the developed countries (in the OECD countries). We focus especially on a detailed analysis of government revenues – we examine the PBC$_T$ in the various types of taxes. Using data from the 34 OECD member states over the period 2000–2013 we conclude that there is a statistically significant political tax cycle in the tax revenues in the countries with a lower level of fiscal credibility and transparency.

Furthermore, the PBC$_T$ is noticeable especially in the consumption taxes.

The paper proceeds as follows. Section 2 introduces the basic model. Section 3 includes a description of the data, empirical strategy and underlying empirical model. In Section 4, we discuss the results of the analysis. Section 5 concludes.

## 2. Theoretical considerations and existing empirical research

A basic theoretical model of the political budget cycle will be described in the following section (2.1). Then, we will focus on a survey of existing empirical literature on the PBC (2.2).

### 2.1 PBC III model

In this paper, we examine the third generation of political budget cycle models. These models were originally designed by Persson and Tabellini (2000) and Shi and Svensson (2002a). There is a comprehensively derived model in the later article of Shi and Svensson (2006), but we outline a basic scheme only.

There is an assumption that each politician has a certain competence level in these moral hazard models. Voters have rational expectations and want to elect the politician (incumbent or challenger) with the highest competence level. The competence level is unobservable, so voters must make their decision on the basis of the observable macroeconomic performance of the incumbent government (such as the amount of public goods). There is a very important assumption that the incumbent government can exert hidden effort to stimulate policy instruments as well.

The authors (Shi and Svensson, 2006) describe moral hazard models by the utility function of voters $i$ in period $t$ as,

$$U_t^i = \sum_{s=t}^{T} \beta^{s-t}[g_s + u(c_s) + \theta^i z_s], \qquad (1)$$

where $g_t$ is consumption of a government-provided good (per capita) in period $t$, $c_t$ is private consumption, $z_t$ is a binary variable taking the value $-1/2$ if $a$ is elected and $1/2$ if $b$ is elected, and $u(c)$ is a standard concave utility function.

They assume that the economy is composed of a large number of citizens, each of whom derives utility from a private consumption good and a public good.

There are two politicians (political parties), denoted by superscripts *a* and *b*. All agents are expected utility maximizers. All voters are alike in their preferences over consumption, but they differ in the parameter $\theta^i$, which is uniformly distributed on $[-1/2, 1/2]$. If $\theta^i < 0$ voter *i* is biased in favour of party *a* (and vice versa), which can be seen as valuation of another dimension (policy or personal characteristics) on which the candidates differ.

Shi and Svensson (2006) define public output as:

$$g_t = \tau_t + d_t - R(d_{t-1}) + \eta_t^j, \qquad (2)$$

where $\tau_t$ means taxes, $d_t$ means borrowing, $R(d)$ is a continuous cost function of public borrowing with $R(0) = 0$ and $R(d) > 0$ for all $d > 0$ and $\eta_t^j$ means certain *competence level*.

At the beginning of each period, all citizens receive an exogenous income *y*. Public good provision is financed with a lump sum tax $\tau$,

$$c_t = y - \tau_t. \qquad (3)$$

The politicians derive their own utility from consumption goods in the same way as other citizens. Furthermore, the authors state that the politician can gain additional *ego rents X*. There are only two periods (election and post-election period). Thus, elections take place at the end of every other period and political candidate *j*'s utility function is:

$$V_t^j = \sum_{s=t}^T \beta^{s-t} [g_s + u(c_s) + X_s], \qquad (4)$$

for $j = \{a, b\}$.

At the time of the elections *t*, voters will vote for the candidate who will deliver the best expected outcome in period $t + 1$. The budget constraint in period *t* is:

$$g_t = \tau^* + d_t + \eta_t, \qquad (5)$$

where $\tau^*$ is the optimal tax rate.

Since borrowing is costly and the marginal utility of public consumption is constant, the government will not borrow in period $t + 1$, it will run a primary surplus to reduce its debt. Thus:

$$g_{t+1} = \tau^* - R(d_t) + \eta_{t+1}. \qquad (6)$$

At the beginning of period *t*, the incumbent sets $\tau_t$ and $d_t$ to maximize his total expected utility over the next two periods. A shock $\eta_t$ occurs during the period. This timing implies that the incumbent facing a large set of possible policy problems knows the tax code, while he is uncertain about the tax revenues it will generate. The first-order condition of maximization problem mentioned in the cited article equates the marginal disutility of taxes with the marginal utility of spending.

The voters' ability to assess the incumbent's policy differs. A certain share ($\sigma$) of the electorate is assumed to be informed (has access to a free flow of information), in the sense that it observes election year spending ($g_t$), taxes ($\tau_t$) and the amount of borrowing ($d_t$) before elections. A share of $1 - \sigma$ of the electorate

is uninformed (does not have access to a free flow of information) and only observes the policy instruments that directly influence their utility, i.e. $g_t$ and $\tau_t$.

As we examine conditional electoral changes in the tax revenues, we can state that the higher the share of uninformed voters (who can confuse a decreasing amount of taxes $\tau_t$ resulting in borrowing $d_t$ for competence level $\eta_t^i$), the higher should be the incumbent's incentives to manipulate the fiscal outcome.

## 2.2 Existing empirical research

Contemporary empirical research on PBCs is focused on examining political budget cycle models (especially the PBC III models). The empirical literature on PBC I accepts the possibility of electoral cycles that are depicted in a macroeconomic outcome, but the evidence is inconsistent and weak. This evidence is weaker in real economic variables, and strongest in nominal variables, Franzese (2002). The newer studies partly confirming the existence of PBC I include those of Potrafke (2012), Grier (2008) and Klein (1996) in particular.

An empirical research on political budget cycles is much more consistent. Shi and Svensson (2006) examined panel data from 1975 to 1995 (they involved 85 developed and developing economies in this panel).

The authors claim that political-business cycles exist in both developing and developed countries (but the cycle is relatively weak in the developed countries). The PBC has been found in a government budget balance, in government expenditure and in government revenue.

Persson and Tabellini (2002) focused on a constitutional arrangement of analysed economies. They concluded that the welfare spending increases in the pre-election period only in the proportional electoral systems. On the other hand, taxes are decreased in the majority of electoral systems to a greater extent than in the proportional systems, according to their study. This analysis contained almost 40 periods from 1960 to 1998 and covered 60 democratic countries.

Brender and Drazen (2005) examined a sample of 106 countries for the period 1960–2001. They claim that a very robust PBC exists in countries marked as *the new democracies*. These countries have either an insufficient level of democracy or a very short tradition of democracy. They conclude that the robust PBC in these countries inheres in the inexperienced electorate. Inexperienced voters do not recognize pre-electoral manipulation and this generates strong incentives for politicians (incumbents).

The studies mentioned above were primarily focused on less developed countries. Alt and Lassen

(2006) examined the OECD member countries (19) in the years 1989–1998. These countries have a long-term tradition of democracy. The authors conclude that statistically and economically significant PBCs exist in some of them. According to this study, PBCs exist in the countries with a low transparency level of fiscal policy and in the politically polarized countries. Tujula and Wolswijk (2007) found the political budget cycle in the 22 OECD member countries in the period 1970–2002. The budget balance increases periodically by about 0.3% of GDP in the election period in these countries.

The fully developed countries were also examined by Alesina et al. (1997) (13 OECD countries in 1960–1993). They observed a significant political budget cycle in the overall budget balance, but not in the budget revenue. Generally, a political budget cycle is observed especially in the overall budget balance and in government expenditure by many studies. Similarly, Janků (2016) focused on 34 OECD countries in the years 1995–2013 and detected a strong budget cycle (in overall budget balance) in the countries with a lower level of fiscal credibility and transparency. What is important is that the cycle was strong and significant, especially in the government expenditures, and it was much weaker in the government revenues in 1995–2013.

A number of works have investigated which fiscal magnitude, revenues or expenditures, is the subject of political cycles. Schuknecht (2000) did not find a statistically significant impact of elections on overall government revenue in a sample of 24 developing countries. Similarly, Gonzales (2002) investigated evidence for Mexico and found political manipulation of fiscal spending, but no significant manipulation of overall revenue (a political budget cycle in fiscal balance was found as well).

Our research can represent an extension of traditional political budget cycle analyses assessing the impact of elections on specific parts of government revenue, while such research is not so common. We have only a few examples of such analysis.

Yoo (1998) used ARIMA intervention analysis for analysing the impact of elections on tax policy in Japan over the 1953–1992 period. The author claims that the effect of elections on tax policy was to reduce the expected amount of Japanese national taxes by about 0.12% of Japanese GNP. Yoo (1998) states that most existing studies of the electoral tax cycle have used the actual tax revenues and warns that such analysis has

fundamental problems (they including the automatic components due to fluctuations in the business cycles). Therefore, in order to analyse the net electoral manipulation of tax policy, the author used the annual tax changes estimated by the Ministry of Finance in Japan, which allow discretionary tax revenues to be measured by separating total tax revenues from automatic tax revenues due to the effects of business cycles.

The impact of the electoral calendar on the composition of tax revenue (direct versus indirect taxes) was investigated by Ehrhart (2013) using panel data from 56 developing countries over the 1980–2006 period. He found robust evidence of lower indirect taxes being applied by incumbent governments in the period just prior to an election. Indirect tax revenue in election years was estimated to be 0.3 GDP percentage points lower than in other years. Generally, indirect tax revenue falls significantly immediately before an election while direct taxes remain unchanged.

## 3. Data and empirical strategy

In the following section, we present the empirical framework and an econometric specification of the empirical model. The data used for the estimation are described in Section 3.1, the empirical model is described in Section 3.2 and methodology is outlined in Section 3.3.

### 3.1 Data

We use an unbalanced cross-country time series data set, comprising 34 developed countries (the OECD members) over the period 2000–2013. An autoregressive (dynamic) panel model is used. The panel includes a number of economic, socio-economic and political variables.

Data on taxes and economic variables are obtained from the OECD database.[1] Data on demographic variables are extracted from the World Bank database. Political data (election dates) are obtained from the Database of Political Institutions (Keefer et al., 2001). We will test the overall tax quota and tax quota subcomponents, according to the OECD classification. The subcomponents include taxes on individuals (1100), taxes on corporations (1200), social security contributions (2000), property taxes (4000), VAT-type taxes (5110) and selective taxes on consumption (5120).

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[1] Data on taxes are available from: OECD Tax Statistics: http://www.oecd-ilibrary.org/taxation/revenue-statistics_19963726

Let us recall the previous chapter. It was mentioned that a higher share of uninformed voters is supposed to lead to higher incentives for the incumbent to manipulate the fiscal outcome. For this reason, $PBC_T$ should arise in the countries with the lowest level of fiscal credibility and transparency (we expected the lowest share of informed voters in those countries).

*Worldwide Governance Indicators* (WGIs) (see Kaufmann et al., 2010) are relatively close to the institutional characteristics mentioned above. The subindex *Government Effectiveness* is probably the best approximation. This index reflects *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.*

If an individual country was ranked in the highest category of the index (i.e. 90–100 percentiles) in the period 2000–2013, then we can identify this country as a country with a high level of credibility and transparency of fiscal policy. This is the main criterion for the distribution of countries into two groups. Countries with a high level (19): Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the United Kingdom and the USA. Countries with a lower level (15): the Czech Republic, Chile, Estonia, Greece, Hungary, Israel, Italy, Japan, Korea, Mexico, Poland, Portugal, Slovakia, Slovenia and Turkey.

## 3.2 Econometric model of the PBC

We use the dynamic panel data model to test the predictions of the $PBC_T$. Originally, the empirical model was designed by some of the authors mentioned above (Shi and Svensson, 2002b, 2006 and Person and Tabellini, 2002). We proposed some modifications to this model. The model has the following form:

$$TAX_{it} = \sum_{j=1}^{l} \alpha_j Y_{it-j} + \beta X'_{it} + \gamma \, growth_{it} + \qquad (7)$$
$$[IN_{it}\delta^1 + (1 - IN_{it})\delta^0]elec_{it} + \mu_i + \varepsilon_{it},$$

where $TAX_{it}$ is a dependent variable, i.e. tax revenues in country $i$ in year $t$, $X'_{it}$ is a row vector of control variables, $growth_{it}$ is the GDP growth rate, $elec_{it}$ is a dummy electoral variable, $\mu_i$ are unobserved country-specific effects and $\varepsilon_{it}$ is an error term.

As already mentioned, the dependent variable $TAX_{it}$ is always one of the categories of tax quota (thus, the ratio of specific tax revenues to nominal gross domestic product). The total government revenues have been studied in some studies (Schuknecht, 2000; Gonzales,

2002), but practically none of them were focused on different types of taxes directly. This is our first modification.

The vector of control variables can be expressed as $X'_{it} = (nairu_{it} \; idr_{it} \, trade_{it})$. These control variables have been shown to be correlated with fiscal policy outcomes in previous studies. They are important to ensure that our estimated results for the political variable will not draw misleading interferences regarding unemployment, a business cycle, international trade, etc.

The variable $nairu_{it}$ is the non-accelerating inflation rate of unemployment (NAIRU) and represents the equilibrium in the labour market. NAIRU can be seen as a reflection of the potential outcome in the labour market (see related literature – Modigliani and Papademos (1975)). It also represents imperfections in the labour market and can be identified by the structural and frictional unemployment. With increasing NAIRU lower tax revenues are expected. The previous studies did not consider the labour market as a significant determinant of fiscal (or tax) outcome/income. This is our second modification.

The variable $idr_{it}$ expresses the proportion of the population aged 15–64 in relation to the proportion of the population aged 65+. It is simply an inverse dependency ratio (workers per dependent). Other authors (Persson and Tabellini (2002) and Brender and Drazen (2005)) use two demographic variables representing the percentage of the population aged 15–64 and 65+. However, these two variables are collinear and they are not statistically significant. Moreover, due to a reduction of these variables into one, the number of instruments is reduced. This is our third modification. With increasing IDR higher tax revenues are expected.

The control variable $trade_{it}$ has been used in the studies mentioned above as well. This variable represents the trade share, i.e. exports and imports as share of GDP. With an increasing openness of the economy, higher tax revenues are expected because openness of the economy boosts the demand for public compensation of external risks and puts pressure on a country's social security system. As a result, governments need to collect more tax revenue to finance increased demand for public goods (Troeger, 2013).

The exogenous variable $growth_{it}$, which represents the annual percentage growth rate of GDP at market prices, is a very important control variable. Its role is to filter out and capture fiscal fluctuations (the fluctuations in the tax revenues) caused by the economic fluctuations. The results should not be misrepresented by the dynamic of a business cycle.

Finally, the electoral variable $elec_{it}$ codes the year the executive is elected. It equals 1 in the years of

legislative election, and 0 in all other years. The variable $elec_{it}$ is a key variable for the evaluation of a politically induced cycle. This dummy variable is further divided by a binary indicator $IN_{it}$, $IN_{it} \in \{0, 1\}$. The indicator takes the value 0 for the subsample of countries with worse fiscal institutions and the value 1 for the subsample of countries with better fiscal institutions. Thus, we can obtain two new variables: $elec\_high_{it}$ for the countries with better fiscal institutions and $elec\_low_{it}$ for the countries with worse fiscal institutions. See other papers (e.g. Persson and Tabellini, 2002) for a similar procedure.

## 3.3 Methodology

Assuming that the unobserved country-specific effects are equal across countries, that the error term is not serially correlated and that the explanatory variables are strictly exogenous, the model (7) can be estimated with ordinary least squares (OLS). It is almost certain that the unobserved country-specific effects are different across countries. Consequently, the simple ordinary least square estimator is biased. Most empirical studies have employed fixed effects (FE) in order to allow for cross-country differences. However, the dynamic panel data model is used in this article (the inclusion of lagged dependent variables). Hence, there is another source of bias because the vector of the lagged dependent variable is correlated with the vector of the error term. The potential estimation bias is in the order of $1/T$, where $T$ is the length of the panel (the number of periods) (see Nickell, 1981; Kiviet, 1995).

This problem is enlarged if the number of individuals $i$ is large while the number of periods $T$ is quite small (note that the bias becomes smaller as the length of the panel increases to infinity $T \rightarrow \infty$). Since the number of periods is relatively small ($T = 14$) in this panel and it is lower than the number of cross sections ($i = 34$), the generalized method of moments (GMM) is employed. For the panel data, this method uses the Arellano-Bond estimator (Arellano and Bond, 1991).

The Arellano-Bond estimation transforms all regressors by differencing (first differencing, FD), and uses the GMM with the instrumental variables (IV).[2]

The consistency of the GMM estimator depends on the condition of no second-order serial correlation of the differenced residuals. For this reason, we check the Arellano-Bond test for second-order serial correlation (proposed by Arellano and Bond, 1991). Similarly, the consistency of the GMM estimator depends on the validity of instruments. Thus, we perform Hansen's

(1982) test for overidentifying restrictions, which is based on Sargan's (1958) test.

We performed tests of stationarity of dependent and independent variables before estimation of the parameters of our model. We used tests indicating the unit root process in the panel data – Levin, Lin and Chu's (2002) test presupposing a common unit root process. In this case, the null hypothesis, $H_0$, is a common unit root process for all the cross-section units. Moreover, we employed Im, Pesaran and Shin's (2003) test and both of the Fischer tests (ADF and PP, according to Maddala and Wu, 1999). They presuppose an individual unit root process. In this case, the null hypothesis, $H_0$, is an individual unit root process for each cross-section unit. The variables $idr_{it}$ and $trade_{it}$ were found to be non-stationary. We transformed these variables as growth rates (first differences of their logarithm) for this reason. To allow a comparison, we transformed the variable $nairu_{it}$ as well. Thus, we have obtained three new variables: $idr(gr)_{it}$, $trade(gr)_{it}$ and $nairu(gr)_{it}$.

## 4. Results and discussion

The results of regression analysis are included in the table in the annex (appendix, Table 1). There are regression coefficients and $t$-statistics for the model with overall tax quota as dependent variable in the first column. The coefficients on the lagged dependent variable and the other control variables have the expected sign (the variables $idr(gr)$ and $trade(gr)$ are statistically insignificant). There are extra rows reporting the Hansen test for overidentifying restrictions and the Arellano-Bond test for second-order serial correlation of the differenced residuals. Both tests have expected $p$-values (we do not reject the null hypothesis: that instruments are uncorrelated with residuals; that there is no second-order serial correlation in the first-differenced residuals). The model is dynamically stable (see the first row) as well.

If we focus on the electoral dummy variables we can see that there is a periodic decrease in the overall tax quota at the time of an election in the case of countries with a lower fiscal credibility and transparency (*elec_low*) (see Figure 1 for better orientation). On the other hand, we can see that there is no regular decrease in the tax quota in the countries with a higher level of fiscal credibility and transparency (*elec_high*). In the light of these findings, it seems clear that there is a conditional political tax cycle in the OECD countries. The tax quota periodically decreases

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[2] The instruments used in GMM regression are lagged levels of the dependent variable (they are generated for each period).

The electoral dummy and the strictly exogenous covariates are instrumented by themselves.

by 0.46% of GDP in these countries at the time of an election.
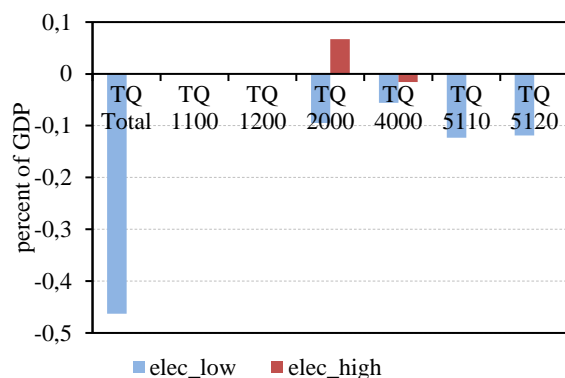


**Figure 1** Coefficients of the political dummy variables.[3]

If we would like to understand this phenomenon more deeply we should focus on the subcomponents of the tax quota. We can see that there are highly significant election variables in the case of consumption taxes (VAT-type taxes and selective taxes on consumption) with a relatively strong impact on these taxes. They decrease regularly by about 0.12% of GDP at the time of an election. However, this is still only valid for the countries with a lower level of fiscal transparency and credibility.

We can see similar results in the case of property taxes and in the social security contributions; however, the impact of these election variables is quite weak. Again, this is valid especially for the countries with a lower level of fiscal transparency and credibility. Finally, the election variables on income taxes (personal income taxes, corporate income taxes) are insignificant in both types of countries.

## 5. Conclusion

Let us summarize our results. First, the political tax cycle (PBC$_T$) seems to be a specific problem in the countries with alower level of fiscal credibility and transparency while it does not matter that these countries are relatively developed. The overall tax

quota regularly decreases by about 0.5% (on average) at the time of an election in these countries. On the other hand, there is no similar cycle in the countries with a higher level of fiscal credibility and transparency.

It was mentioned in the previous chapter that a political tax cycle occurs especially in the consumption taxes. These results seem to be reasonable from the public choice theory perspective. Consumption taxes have a strong impact on daily life and every decrease in these taxes can influence voters' preferences and behaviour. Therefore, the incumbent can target their effort at decreasing consumption taxes just before the elections. Additionally, the changes in this type of tax (consumption taxes, indirect taxes) are relatively easy to carry out. On the other hand, the changes in the direct (or income) taxes are not so common inasmuch as they have a whole range of secondary impacts (on the social system, bookkeeping, investment…). The changes in these taxes are often connected with larger changes in the whole welfare system. Therefore, they are not suitable as an appropriate instrument for electoral manipulations.

Of course, the whole theory of the so-called "fiscal illusions" states that some elements of the tax structure may be partly hidden and voters do not perceive the entire cost of these taxes. Originally, fiscal illusions were studied by Amilcare Puviani (1897, 1903). Later, James Buchanan (1967) investigated them in significantly greater depth. In fact, this theory states that direct taxes are more perceivable than indirect taxes (in most cases) and politicians can use direct taxes in order to influence voters.[4] This is clearly inconsistent with our findings.

On the other hand, the current tax policy is the subject of large-scale *political marketing* more than ever. The decreasing tax burden on consumers (observable in prices) can be a great and visible political advertisement in a society where consumption is preferred. Moreover, the decreasing tax burden on consumers is perceivable literally by every member of the society. We cannot say the same about income

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[3] We should note that statistically insignificant coefficients are equal to zero formally.
Note: overall tax quota (TQ), taxes on individuals (TQ1100), taxes on corporations (TQ1200), social security contributions (TQ2000), property taxes (TQ4000), VAT-type taxes (TQ5110) and selective taxes on consumption (TQ5120).
[4] We can mention the so-called *Mill hypothesis* as well. It states that the tax burden from indirect taxation is underestimated because indirect taxes are less visible than direct taxes. *Are direct or indirect taxes the most eligible? A man dislikes not so much the payment as the act of paying. He dislikes seeing the face of the tax-collector, and being*

*subjected to his peremptory demand. Perhaps, too, the money which he is required to pay directly out of his pocket is the only taxation which he is quite sure that he pays at all. That a tax of two shillings per pound on tea, or of three shillings per bottle on wine, raises the price of each pound of tea and bottle of wine which he consumes, by that and more than that amount, can not, indeed, be denied; it is the fact, and is intended to be so, and he himself, at times, is perfectly aware of it; but it makes hardly any impression on his practical feelings and associations, serving to illustrate the distinction between what is merely known to be true and what is felt to be so* (Mill, 1848).

taxes. Income taxes are not directly paid by a certain part of the society (income taxes can be paid by employers; specific groups of people do not pay income taxes at all). It is quite possible that just these voters are the subjects of political manipulations.

Our findings are consistent with a previous empirical research done by Ehrhart (2013). He found robust evidence of lower indirect taxes being applied by incumbent governments in the period just prior to an election. Indirect tax revenue in election years was estimated to be 0.3 GDP percentage points lower than in other years. We present quite similar results (add together the political dummy variables on indirect taxes in the case of the countries with a lower level of fiscal credibility and transparency). Let us recall, however, that Erhart (2013) investigated only the developing countries.

Further, we found a substantially greater impact of elections on the overall tax burden than Yoo (1998), who examined the tax structure in Japan (fully developed country). The author warned against some crucial problems in the analysis of the tax burden. We were able to avoid these fundamental problems (including the automatic components due to fluctuations in the business cycles) due to our set of control variables.

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**Appendix**

**Table 1** The political tax cycle in the OECD countries[5]

| indep./dep. | TQ | TQ1100 | TQ1200 | TQ2000 | TQ4000 | TQ5110 | TQ5120 |
|---|---|---|---|---|---|---|---|
| TAX (−1) | 0.692*** [23.687] | 0.558*** [23.546] | 0.529*** [19.819] | 0.705*** [18.779] | 0.397*** [30.696] | 0.599*** [28.136] | 0.141*** [11.606] |
| growth | 0.076*** [6.032] | 0.008 [1.107] | 0.030** [2.383] | −0.037*** [−3.830] | 0.018*** [23.093] | 0.046*** [23.734] | 0.018*** [18.807] |
| nairu(gr) | −3.503* [−1.749] | −4.321*** [−4.222] | −3.849** [−2.100] | −0.024 [−0.093] | 0.211 [1.113] | 1.909*** [5.080] | −0.174 [−0.925] |
| idr(gr) | 12.847 [0.942] | 6.716 [0.916] | −4.147 [−0.649] | 7.415*** [2.580] | 0.396 [0.869] | 6.615* [1.648] | −2.829** [−2.354] |
| trade(gr) | 0.207 [0.260] | −0.601*** [−3.486] | 0.800*** [4.372] | 0.145 [1.351] | −0.363*** [−11.438] | −0.131 [−0.829] | −0.305*** [−9.269] |
| elec_low | −0.463*** [−2.657] | −0.024 [−0.518] | −0.062 [−0.790] | −0.095** [−1.919] | −0.056*** [−7.928] | −0.123*** [−4.775] | −0.119*** [−9.443] |
| elec_high | −0.046 [−0.527] | −0.011 [−0.259] | −0.065 [−1.468] | 0.067* [1.632] | −0.016*** [−3.142] | 0.001 [0.043] | −0.016 [−0.832] |
| Hansen test | 31.195 [0.263] | 26.026 [0.406] | 30.249 [0.244] | 27.688 [0.427] | 29.773 [0.374] | 30.665 [0.332] | 30.304 [0.301] |
| Corr. test | −0.634 [0.526] | 0.077 [0.939] | 1.039 [0.299] | 0.553 [0.580] | −0.001 [0.999] | −1.001 [0.998] | 0.216 [0.829] |
| No. Observ. | 403 | 347 | 379 | 403 | 336 | 369 | 334 |

Source: own calculation, Eviews 8
Note: overall tax quota (TQ), taxes on individuals (TQ1100), taxes on corporations (TQ1200), social security contributions (TQ2000), property taxes (TQ4000), VAT-type taxes (TQ5110) and selective taxes on consumption (TQ5120).

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[5] *Significant at the 10% confidence level, **significant at the 5% level, ***significant at the 1% level.