

# Elections, Checks and Balances, and Government Expenditures: Empirical Evidence for Japan, South Korea, and Taiwan

Yuan-Hong Ho and Chiung-Ju Huang

**Abstract**—Previous studies on political budget cycles (PBCs) implicitly assume the executive has full discretion power over fiscal policy, neglecting the role of checks and balances of the legislature. This paper goes beyond traditional PBCs models and sheds light on the case study of Japan, South Korea, and Taiwan over the 1988-2007 periods. Based on the results, we find no evidence of electoral impacts on the public expenditures in South Korean and Taiwan's congressional elections. We also noted that PBCs are found on Taiwan's government expenditures during our sample periods. Furthermore, the results also show that Japan's legislature has a significant checks and balances on government's expenditures. However, empirical results show that the legislature veto player in Taiwan neither has effect on the reduction of public expenditures, nor has the moderating effect over Taiwan's political budget cycles, albeit that they are statistically insignificant. We suggest that the existence of PBCs in Taiwan is due to a weaker system of checks and balances. Our conjecture is that Taiwan either has no legislative veto player or has observed low compliance to the law during the time period examined in our study.

**Keywords**—Checks and balances, compliance to the law, political budget cycles, veto player.

## I. INTRODUCTION

THE political business cycle theory was first developed by Nordhaus [1]. Nordhaus's studies emphasized policymakers' opportunistic motivations, showing that politicians seeking re-election can systematically and predictably influence macroeconomic outcomes in order to maximize their chances of re-election. A variant of political business cycles is political budget cycles (PBCs), which was first demonstrated by Rogoff and Sibert [2], who proposed a model of adverse selection that emphasizes the idea of competency (ability to handle the economy) coupled with asymmetric information. In this model, voters elect the more competent politician and form rational expectations regarding the incumbent's abilities based on current, observable fiscal policy outcomes. This leads to a pre-election increase in the government deficit when a competent politician is in office. In a political budget cycle model, opportunistic policymakers, regardless of their ideology, try to use expansionary fiscal policies prior to elections in order to please voters, maximize their popularity, and increase their chance of re-election [3], [4], [5], [6], [7].

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Early empirical studies on this topic find evidence in favor of election-driven fiscal policy manipulations [8], [9], [10], [11]. However, the estimated size and composition (expenditures versus spending) of electoral effects vary across these studies. For example, Klomp and De Haan [12] suggest that fiscal policy is only affected by upcoming elections in the short run and that the occurrence of a political budget cycle is conditional on the level of development and democracy, government transparency, the country's political system, its membership of a monetary union, and its degree of political polarization. Additionally, recent studies have found evidence that voter actually punish instead of reward election-year deficit spending, suggesting that deficits do not help a candidate's re-election prospects [13], [14], [15], [16]. Nevertheless, some of the recent empirical literatures show that the magnitude of PBCs of developing countries is significant and higher than that of developed countries [9], [17], [18], [19], [7], [20]. Brender and Drazen [21] suggest that the results of these studies are driven by the first few elections in countries that are "new democracies", where fiscal manipulation may have worked because experienced voters in established democracies have a lack of information.

From a theoretical point of view, PBCs arise in equilibrium when rational voters are imperfectly informed about an incumbent's competency and the incumbent enjoys discretionary power over the budget. Without discretionary power, asymmetric information alone is not sufficient for PBCs. Previous empirical studies on political budget cycles were conducted under the assumption that the executive has full discretion over fiscal policy, implicitly neglecting the role of the legislature in the budget process. As a result, the degree of discretion of the executive has been overlooked in the empirical literature on PBCs, perhaps because theoretical papers on opportunistic cycles usually model fiscal policy in terms of a single policy maker. Persson and Tabellini [22], [23] find that constitutional provisions shaping electoral rules play a key role in determining fiscal outcomes, both directly and indirectly through their impact on the form of government.

Some scholars who examined whether budget formation rules influence fiscal performance, find that checks and balances in the formulation and implementation of the budget are epiphenomena, but have real effects on budgetary outcomes [24], [4], [9]. Henisz [25] concludes that checks and balances that limit the discretion of policy-makers reduce the volatility of government expenditures and revenue. Streb, Lema and Torrens [26] find that stronger effective checks and balances explain

why PBCs are weaker in developed and established democracies. Fabrizio and Mody's finding [27] is that budget institutions' mechanisms and rules of the budget process that create checks and balances have significant value in curbing fiscal pressures. Streb and Torrens [28] argue that when there is separation of powers, appropriate checks and balances may work as a commitment device that eliminates electoral cycles in fiscal policy, making all players better off. Albuquerque [29] provides empirical evidence from a panel of 25 European Union (EU) countries over the 1980-2007 periods. The results of the study support the concept of strengthening institutions in order to deal with excessive levels of discretion volatility, given that more checks and balances make it harder for governments to change fiscal policies for reasons unrelated to the current state of the economy.

By leveraging the existing works of Streb, Lema and Torrens [26], this paper goes beyond traditional political budget cycles models and sheds light on the case study of congressional elections, checks and balances, and government expenditures in Japan, South South South Korea, and Taiwan over the 1988-2007 periods. The seemingly unrelated regression (SUR) was used to investigate the role of effective checks and balances of the legislature in the budgetary process that reduce the discretion of the executive are tested using the same techniques. The remainder of this article is structured as follows: Section II describes the data used. Section III presents the methodology in this study. Section IV presents the estimation results, and Section V offers our conclusions.

## II. DATA

Our empirical analysis employed annual data on government expenditures (*EXP*), government revenues (*REV*), fiscal balance (*BAL*), trade openness (*OPEN*), and unemployment rate (*UNEM*) and inflation rate (*INFL*) for Japan, South Korea and Taiwan over the 1986 to 2007 period. The government expenditure, government revenues, and fiscal balance are denoted as a percentage of GDP. Trade openness is defined as the percentage of import and export to their GDP among these three countries. The fiscal and economic data series are taken from Ministry of Finance Japan, Statistics South Korea, and Taiwan Economic Data Center respectively.

A measure of effective checks and balances of the legislature in Taiwan is constructed based on the work of Streb, Lema and Torrens [26]. We also use the Henisz [30] Political Constraints Index (*POLCON*) to measure the veto player variable (*VETO*), and the International Country Risk Guide (ICRG) Law and Order index (*LOI*) to measure compliance with the law for Taiwan. The combination of the legislative veto player with the law dummy (*DLAW*) for compliance with the law is used as a proxy for the effective checks and balances (*CHECKS*) on the executive budgetary process in Taiwan. As in Streb, Lema and Torrens [26], the *VETO* takes value 1 if  $POLCON \geq 2/3$  and  $3/2 \times POLCON$  otherwise. The *DLAW* takes value 1 for a country if  $LOI \geq 4/6$  always, 0 otherwise. The

effective checks and balances, *CHECKS* equal to the product of the values of *VETO* and *DLAW*.

## III. METHODOLOGY

To avoid the problem of spurious regressions discussed by Granger and Newbold [31], we employ ADF, PP, KPSS and Zivot-Andrews unit root tests to examine the stationary property of all the variables used in the model. The seemingly unrelated regression model (SUR) is then used to investigate the role of the effective checks and balances of the legislature in the budgetary process.

Engle and Granger [32] argue that any regression analysis that uses non-stationary series will be "spurious". Thus the purpose of using the unit roots test is to ascertain whether each individual time series in this study is stationary in level form. The common unit root tests used in this study are ADF test [33], PP test [34] and KPSS test [35]. It has been reported that the ADF test may have lower power when compared with near-unit-root but stationary alternatives. Phillips and Perron [34] proposed an alternative (nonparametric) method of controlling for serial correlation when testing for a unit root. In contrast, Kwiatkowski et al. [35] present a complement test for the ADF test where the null hypothesis is that a series is stationary.

A number of authors have pointed out that the standard ADF, PP and KPSS tests are not appropriate for variables that may have undergone structural changes. For example, Perron [36], [37] has shown that the existence of structural changes tends to bias the standard ADF tests towards non-rejection of the null of a unit root. Hence, it might be misleading to conclude that the variables are non-stationary just on the basis of the results from the standard ADF tests. Perron [37] also developed a procedure to test the hypothesis that a given series has a unit root with an exogenous structural break. Zivot and Andrews [38] criticized this assumption of an exogenous break point and developed a unit-root test procedure that allows an estimated break in the trend function under the alternative hypothesis. Therefore, it seems appropriate to treat the structural break as endogenous and test the order of integration by the Zivot-Andrews procedure.

In this study we are concerned with the Problem of estimating a system of regression equations where the random disturbances are correlated with each other. That is, the equations are linked statistically, even though not structurally, through the non-diagonality of the associated variance-covariance matrix. The seemingly unrelated regression (SUR) model is used to reflect the fact that the individual equations are in fact related to one another, even though superficially they may not seem to be. Seemingly unrelated regression is one of the econometric developments that have found considerable use in the analysis of panel data. This estimation class initially introduced by Zellner [39] has been applied in many fields. The OLS (ordinary least squares) and GLS (generalized least squares) estimators have been proposed for estimating the Parameters of the SUR model. The OLS approach implicitly assumes that the

regression equations in system are independent of each other and estimates the parameters of the model equation by equation. The GLS approach utilizes additional historical information about correlation between the disturbances that is fundamental to the SUR specification and estimates the parameters of all the equations jointly. In this model the GLS method is applied to exploit the corrections in the errors across cross-section units. In general, the efficiency gain tends to be higher when the errors among different equations are highly correlated.

Following the theoretical framework and the previous empirical literature on electoral cycles in government budgeting, the estimated models are shown in the following equations. Fiscal expansions in electoral years and fiscal contractions after elections are estimated in Equation 1. Electoral cycle of the government expenditure measured by the *ELEC* variable is tested in Equation 2. Equation 3 tests whether the effective checks and balances have a moderating influence on PBCs. The Equations are as follows:

$$EXP_{i,t} = \beta_0 + \beta_1 REV_{i,t} + \beta_2 BAL_{i,t} + \beta_3 OPEN_{i,t} + \beta_4 UNEM_{i,t} + \beta_5 INFL_{i,t} + \beta_6 ELE_{1i,t} + \beta_7 ELE_{2i,t} + \varepsilon_{i,t} \quad (1)$$

$$EXP_{i,t} = \beta_0 + \beta_1 REV_{i,t} + \beta_2 BAL_{i,t} + \beta_3 OPEN_{i,t} + \beta_4 UNEM_{i,t} + \beta_5 INFL_{i,t} + \beta_6 ELEC_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$EXP_{i,t} = \beta_0 + \beta_1 REV_{i,t} + \beta_2 BAL_{i,t} + \beta_3 OPEN_{i,t} + \beta_4 UNEM_{i,t} + \beta_5 INFL_{i,t} + \beta_6 ELEC_{i,t} + \beta_7 CHECKS_{i,t-1} + \beta_8 ELEC_{i,t} - CHECKS_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

Where  $EXP_{i,t}$  are the government expenditures of the  $i^{\text{th}}$  country in year  $t$ , and  $i$  stands for J (Japan), K (South Korea), and T (Taiwan) in this model.  $REV_{i,t}$ ,  $BAL_{i,t}$ ,  $OPEN_{i,t}$ ,  $UNEM_{i,t}$  and  $INFL_{i,t}$  are explanatory variables. Variables  $ELE_{1i,t}$  and  $ELE_{2i,t}$  are election indicators,  $ELE_{1i,t}$  takes value 1 in election year, 0 otherwise, and  $ELE_{2i,t}$  takes value 1 one year after election, 0 otherwise. The electoral cycle measured by the  $ELEC_{i,t}$  variable, which as in Schuknecht [3] equals 1 in election years,  $-1$  in post electoral years, and 0 otherwise. Variable  $CHECKS_{i,t-1}$  is a proxy for effective checks and balances on executive discretion. Notice that the expenditure in year  $t$  is modeled as a function of effective checks and balances in year  $t-1$ . This specification is not meant to imply that expenditures do not respond to current checks and balances; rather, it is intended to reflect the reality of budgetary decision making, which happens largely over the course of the previous fiscal year. Notice that the government expenditures of the  $i^{\text{th}}$  country in year  $t$  is modeled as a function of effective checks and balances in year  $t-1$ . This specification is not meant to imply that expenditures do not respond to current checks and balances; rather, it is intended to reflect the reality of budgetary decision making, which happens largely over the course of the previous fiscal year. The variable  $ELEC_{i,t} - CHECKS_{i,t-1}$  measures the influence of effective checks and balances on PBCs, which is

the product of  $ELEC_{i,t}$  and  $CHECKS_{i,t-1}$ . Finally, coefficient  $\beta$  captures policymaker responsiveness to economics and political factors, while  $\varepsilon_{i,t}$  represents an error term.

#### IV. EMPIRICAL RESULTS

This section of the paper reports the estimated results of the electoral changes in public spending of Japan, South Korea, and Taiwan during each country's respective congressional elections by using seemingly unrelated regression. The estimated influence of legislative checks and balances on political budget cycles is also reported.

Table I, II, and III indicate the results of the non-stationary tests for Japan, South Korea, and Taiwan data series used in our study via ADF, PP KPSS, and ZA tests, respectively. Results show that except for *UNEM* and *CHECKS* for Japan, *EXP* and *REV* for South Korea, and *OPEN* for Taiwan, data series are stationary in levels.

TABLE I  
ADF, PP, KPSS AND ZA UNIT ROOT TESTS (LEVEL) FOR JAPAN

Variable	ADF	PP	KPSS	ZA (one break)
<i>EXP</i>	-0.177	-0.177	0.104	-4.190***
<i>REV</i>	-0.256	-0.262	0.105	-4.925***
<i>BAL</i>	-3.620**	-3.619**	0.193	-4.878**
<i>OPEN</i>	-1.096	1.393	0.182**	-2.767*
<i>UNEM</i>	-1.898	0.282	0.131*	-3.759
<i>INFL</i>	-3.927***	-4.690***	0.369*	-5.182***
<i>CHECKS</i>	-2.181	-0.109	0.126*	-3.667
<i>PBC_CHECKS</i>	-4.096***	-14.654***	0.278	-4.521**

Note: \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level.

TABLE II  
ADF, PP, KPSS AND ZA UNIT ROOT TESTS (LEVEL) FOR SOUTH KOREA

Variable	ADF	PP	KPSS	ZA (one break)
<i>EXP</i>	1.928	1.917	0.129*	1.215
<i>REV</i>	3.380	-0.902	0.121*	-1.393
<i>BAL</i>	-6.252***	-2.238	0.172**	-6.482**
<i>OPEN</i>	-3.648**	-4.773***	0.292	-4.325*
<i>UNEM</i>	-2.055	-2.141	0.105	-10.57***
<i>INFL</i>	-1.683	-6.178***	0.190**	-4.590***
<i>CHECKS</i>	-3.408*	-2.359	0.378*	-5.278**
<i>PBC_CHECKS</i>	-3.794***	-18.836***	0.276	-4.844*

Note: \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level.

TABLE III  
ADF, PP, KPSS AND ZA UNIT ROOT TESTS (LEVEL) FOR TAIWAN

Variable	ADF	PP	KPSS	ZA (one break)
<i>EXP</i>	-4.947***	-5.198***	0.096	-6.469**
<i>REV</i>	-4.048**	-4.046**	0.081	-5.368**
<i>BAL</i>	-3.894***	-5.149***	0.077	-5.965**
<i>OPEN</i>	0.849	-1.706	0.1833**	-2.447
<i>UNEM</i>	-2.430	0.454	0.096	-6.593***
<i>INFL</i>	-4.303***	-3.524**	0.159**	3.913**
<i>CHECKS</i>	-4.947***	-5.198***	0.096	-2.447
<i>PBC_CHECKS</i>	-1.464	-14.916***	0.500***	-5.809**

Note: \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level.

Table IV shows that the data series of *UNEM* (Japan), *CHECKS* (Japan), *EXP* (South Korea), *REV* (South Korea) and *OPEN* (Taiwan) are stationary with respect to first differences. To avoid spurious regression, in this study we use the first difference stationary series of *UNEM* (Japan), *CHECKS* (Japan), *EXP* (South Korea), *REV* (South Korea) and *OPEN* (Taiwan) along with the other stationary levels series to estimate the SUR model.

Table IV shows that the data series of *UNEM* (Japan), *CHECKS* (Japan), *EXP* (South Korea), *REV* (South Korea) and *OPEN* (Taiwan) are stationary with respect to first differences. To avoid spurious regression, in this study we use the first difference stationary series of *UNEM* (Japan), *CHECKS* (Japan), *EXP* (South Korea), *REV* (South Korea) and *OPEN* (Taiwan) along with the other stationary levels series to estimate the SUR model.

TABLE IV  
ADF, PP AND KPSS UNIT ROOT TESTS (FIRST DIFFERENCE)

Variable(Country)	ADF	PP	KPSS
<i>CHECKS</i> (Japan)	-3.216***	-3.216***	0.066
<i>UNEM</i> (Japan)	-1.895*	-1.894*	0.232
<i>EXP</i> (South Korea)	-2.845*	-2.845*	0.275
<i>REV</i> (South Korea)	-3.025*	-3.373*	0.221
<i>OPEN</i> (Taiwan)	-3.529**	-5.003***	0.347

Note: \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level

Opportunistic cycles are often linked to fiscal expansions and to the choice of fiscal instruments during election years, and are captured through the variable  $ELE_{i,t}$ , which equals 1 in the election year and 0 otherwise, and the variable  $ELE_{2i,t}$ , which equals 1 one year after the election and 0 otherwise. Additionally, Equation 1 captures the influence of an election

on changes in government budgets. Based on the results of Table V, opportunistic cycles are not found in South Korea and Taiwan at least during congressional elections. While the evidence shows that government expenditures in Japan rise significantly before elections, we find no significant evidence suggesting that government expenditures in Japan fall after elections.

TABLE V  
EMPIRICAL RESULTS OF EQUATION (1)

Independent Variables	Dependent variables: <i>EXP</i>		
	Japan	South Korea	Taiwan
<i>Constant</i>	-7.5E-06 (-1.200845)	-0.0085 (-0.852812)	-0.0000369*** (-3.150824)
<i>REV</i>	0.999997*** (89004.84)	0.889642*** (19.0374)	1.00008*** (33284.57)
<i>BAL</i>	-1.000019*** (-21812.98)	-0.29186 (-1.347423)	-1.000062*** (-29737.42)
<i>OPEN</i>	1.84E-07 (0.425927)	0.035064 (0.503545)	-1E-05 (-0.30232)
<i>UNEM</i>	0.000116** (2.127773)	-8.5E-05 (-0.134137)	1.03E-06 (1.052179)
<i>INFL</i>	-0.00000011** (-2.122676)	-0.00012 (-0.372398)	0.000000176* (1.99114)
<i>ELE<sub>1</sub></i>	0.00000057*** (3.506759)	0.001739 (1.06551)	-1.3E-06 (-0.890069)
<i>ELE<sub>2</sub></i>	2.66E-07 (1.596641)	0.001732 (1.021322)	1.65E-06 (1.147047)
R <sup>2</sup>	0.9766	0.9781	0.9693
Adj. R <sup>2</sup>	0.9634	0.9606	0.9584

Notes: \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level. Numbers in parentheses are t values.

Equation 2 shows the estimated results of the electoral cycle measured by the  $ELEC_{i,t}$  variable. As noted by Schuknecht [3],  $ELEC_{i,t}$  equals 1 in electoral years, -1 in post-electoral year, and 0 otherwise. Equation 3 tests whether the legislative checks and balances are effective, and whether PBCs can be neutralized by the checks and balances, using the variable  $ELEC_{i,t} - CHECKS_{i,t-1}$ . As demonstrated by Table VI, Taiwan is the only country that shows an electoral cycle measurable by the  $ELEC_{i,t}$  variable. In general, the basic conjecture is that effective checks and balances have a moderating affect on PBCs. Table VII describes how the checks and balances are significantly effective in Japan and South Korea. Furthermore, the moderating effect of checks and balances on PBCs is significant in Japan. The results of Table

VII also indicate that legislative checks and balances have no significant influence on political budget cycles of government expenditure in Taiwan during our study periods.

TABLE VI  
EMPIRICAL RESULTS OF EQUATION (2)

Independent Variables	Dependent variables: <i>EXP</i>		
	Japan	South Korea	Taiwan
<i>Constant</i>	-0.00834 (-0.845656)	-0.0000038 (-0.530182)	-0.0000383*** (-3.643281)
<i>REV</i>	0.881086*** (19.41259)	1.000001*** (75839.44)	1.000083*** (36001.39)
<i>BAL</i>	-0.35569 (-1.662654)	-1.000003*** (-18602.65)	-1.000069*** (-35821.48)
<i>OPEN</i>	0.042031 (0.610915)	1.36E-07 (0.267605)	-8.4E-06 (-0.268837)
<i>UNEM</i>	-0.0005 (-0.927908)	8.21E-05 (1.289001)	9.86E-07 (1.007179)
<i>INFL</i>	-9.4E-05 (-0.300296)	-0.000000115* (-1.931185)	0.000000184** (2.194513)
<i>ELEC</i>	0.000221 (0.2992)	1.49E-07 (1.639147)	-0.00000157** (-2.083425)
R <sup>2</sup>	0.9683	0.9764	0.9631
Adj. R <sup>2</sup>	0.9547	0.9613	0.9529

Notes: \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level. Numbers in parentheses are t values

## V. CONCLUSIONS

Political business cycles theory highlights the distortions induced by the recurrence of elections. While numerous studies of the political business cycle theory have been conducted, very few studies explore the impacts of the checks and balances of the legislature on the executive's discretionary control over the budgetary process. By leveraging existing research of Streb, Lema and Torrens [26], this study goes beyond traditional research on political budget cycles theory and sheds light on the theory as it pertains to the congressional elections checks and balances, and public expenditures of Japan, South Korea and Taiwan over the 1988 to 2007 period.

Based on the results, we find no evidence of electoral impacts on the public expenditures in South Korean and Taiwan's congressional elections. We also noted that political budget cycles are found on Taiwan's government expenditures during our sample periods. Furthermore, the results also show that Japan's legislature has a significant checks and balances on government's expenditures. However, empirical results show that the legislature veto player in Taiwan neither has effect on the reduction of public expenditures, nor has the moderating

effect over Taiwan's political budget cycles, albeit that they are statistically insignificant. We suggest that the existence of public budget cycles in Taiwan is due to a weaker system of checks and balances. Our conjecture is that Taiwan either has no legislative veto player or has observed low compliance to the law during the time period examined in our study.

TABLE VII  
EMPIRICAL RESULTS OF EQUATION (3)

Independent Variables	Dependent variables: <i>EXP</i>		
	Japan	South Korea	Taiwan
<i>Constant</i>	-0.00947 (-1.147426)	-18206.44** (-2.3586)	-0.0000278* (-2.013783)
<i>REV</i>	0.907859*** (24.20204)	0.2849*** (4.1499)	1.000044*** (36844.95)
<i>BAL</i>	-0.452025** (-2.551084)	0.1188*** (9.1174)	-1.000036*** (-32000.83)
<i>OPEN</i>	-0.0389 (-0.68919)	0.1188*** (9.1174)	8.09E-06 (0.26223)
<i>UNEM</i>	0.000193 (0.412624)	0.0002 (0.0957)	1.32E-06 (1.526625)
<i>INFL</i>	-0.000781** (-2.480093)	-3492.103** (-2.5083)	8.85E-08 (0.620862)
<i>ELEC</i>	0.00213*** (2.823144)	4349.251 (1.1292)	-6E-07 (-0.690326)
<i>CHECKS</i>	-0.017922*** (-4.19718)	-54330.63** (-2.1336)	7.19E-06 (1.075802)
<i>ELEC_CHECKS</i>	0.004096*** (2.866692)	7454.228 (1.1129)	2.55E-06 (1.6658)
R <sup>2</sup>	0.9864	0.9865	0.9741
Adj. R <sup>2</sup>	0.9736	0.9729	0.9627

Notes: \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level. Numbers in parentheses are t values.

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