

# POLITICAL BUSINESS CYCLES IN LITHUANIA IN 1993–2006

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*The state's role in the economy increased sharply in the twentieth century. The huge expansion of the state's role in the economy has made it possible for politicians to manipulate the economy in the run-up to elections in order to achieve better short-term macroeconomic indicators and win the elections. The purpose of this article is to conceptualise the paradigm of political business cycles and to check the feasibility of political business cycles in Lithuania. The research is based on two ARMAX-type econometric models. The models brought two different results: the first, so-called Klein's model, did not find any political business cycles in Lithuania, while the other, formed by the authors, found some evidence of opportunistic political business cycles in Lithuania. The latter model's results show that politicians start manipulating economic policy between four and eight quarters before elections. That can be explained by the rational behaviour of politicians: the lags of the economic policy effects on the domestic economy are evaluated with due competence.*

*Keywords: political business cycle; economy; unemployment; inflation; elections.*

## Introduction

Political life plays an important role in the evolution of society. Elections that take place in a democratic regime very often engage both political parties and the electorate in political battles. Obviously, every party is determined to win in the elections. Due to this reason, the ruling parties are taking advantage of their status and applying various economic policy instruments to achieve temporal improvement in the economic situation. The electorate are always particularly interested in rapid growth of the economy, low inflation and unemployment rate, social guarantees and security. This means that the political party who has managed to temporarily improve the macroeconomic indicators and the economic situation before the elections is best placed for the victory. In this case, the most important thing is not that the political parties are luring the electorate, but rather that recurrent political business cycles\* exercise substantial influence on the cyclical fluctuations of the economy. Such cyclical fluctuations decelerate the overall progress in the country, as growth rates are losing momentum. In addition, if politicians are using the state budgetary expenditure as an instrument to attain their goals, one may say that from the viewpoint of state governance, the financial resources of the electorate collected as taxes are used in an inefficient manner.

Fluctuations in prices, employment and output resulting from competition driven by the utilitarian reasons of the ruling and opposition political parties constitute the main issue of this article, one that is addressed using political business cycle models. The

\*Political business cycles are fluctuations in prices, employment and output arising from competition between political parties (Tuinstra 2000).

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formation of the political business cycle paradigm started in the 1970's and has attracted immense attention from the scientific community. The article refers to economists like Douglas A. Hibbs (1977), William D. Nordhaus (1975), Assar Lindbeck (1976), Tostern Persson and Guido Tabellini (1997), Manfred Gärtner (1994), Alberto Alesina and Nouriel Roubini (1992), Finn E. Kydland and Edward C. Prescott (1977), etc., scrutinising most of the scientific publications on this subject and analysing the problems of studies based on the models of empirical political business cycles.

The purpose of this article is to conceptualise the paradigm of political business cycles and to check the feasibility of political business cycles in Lithuania. The objective has determined the article's structure of three main sections. In section one, the authors demonstrate the origins of the formation of the political business cycle paradigm and the problems related to the empirical studies of political business cycles. Also, this section presents an analysis of the impact the revolution of rational expectations has had on the development of the political business cycle paradigm. Section two introduces two ARMAX-type econometric models that were used for the purposes of the study. The final section of the article deals with, presents and analyses the outcome of the empirical study of the impact of Lithuania's economic policy on political business cycles, and identifies the potential elements that affected specific results.

### 1. Impact of economic policy on political business cycles

At different times, the state has played the different roles in the economy. In the 19<sup>th</sup> century, the role of the state estimated as ratio between governmental spending and the Gross Domestic Product (GDP), was some 10 per cent, while in 1996, this ratio stood at nearly 45 per cent in the Organisation for Economic Cooperation and Development countries (Tanzi, Schuknecht 2000). As Snowdon and Vane (2005) claimed, such rapid growth of the government's influence on the economy in the 20<sup>th</sup> century was caused by several factors, of which the following can be identified: the impact of the two world wars, the Great Depression and the Keynesian revolution that followed, military spending that increased during the cold war, positive attitude towards income redistribution seeking a higher degree of equality, reinforcement of the welfare state concept and general approval by the economists of the period that, as a system of resource redistribution and demand satisfaction, the market has a lot of flaws. Without going into detail regarding the weight of each of the above elements, we may say that the government's influence on the economy has increased significantly. The results of its economic policy may have tremendous effect on the results of activities under private initiative, the market status of individual economic actors, i.e. the amount of income at their disposal as well as on the social status of individual classes of society.

An important part of the implementation of economic policy is its goals. The most widespread state economic policy goal that is subject to official approval is the so-called magic square, i.e. four interrelated goals that are the responsibility of the state, usually through the government. These are the growth of output, a high employment rate, the stability of prices, the growth of net exports (Samuelson, Nordhaus 1989: 90)\*. The ranking of such goals tends to shift with elections approaching. Such changes are accounted for by the opportunistic model of the political business cycle theory, which says that "the incumbent party stimulates the economy prior to an election <...> in order to be re-elected" (Tuinstra 2000: 510). Such party behaviour is becoming a norm in today's capitalist system, which, according to Schumpeter (1998), is dominated by an individualistic utilitarian approach, when every scheme of behaviour is judged on the basis of its utility to self. Speaking about governments, James M. Buchanan (1986 economics laureate) also approves of the individualistic utilitarian approach, saying that "governments are not efficient, purely altruistic entities that effortlessly correct market imperfections. Instead, *governments are aggregates of individuals pursuing private rather than the public interest* through regulations and <...> laws. These private interests create wasteful lobbying efforts known as rent seeking" (Formaini 2003: 1)\*\*. The opportunistic behaviour of the parties becomes justified if seen from the utilitarian approach, whereas

\*Note: "The goal of the Lithuanian economic policy is the attainment of a stable macro-economic environment – a competitive economy, the fast growth of economy, a low unemployment rate, stable prices" (LRS 2002).

\*\*Text in italics by the authors.

the statement by Hayek (1999: 196) that “a controlled process cannot yield more than is foreseen by the agent that controls it. He is the only one to benefit from his experience” gains a new meaning in this context.

Just as it has already been mentioned above, fluctuations in prices, employment and output resulting from the competition driven by the utilitarian reasons of the incumbent and opposition political parties constitute the main issue of this article, one that is addressed using political business cycle models. The following part of the analysis deals with the formation and development of the political business cycle paradigm.

## 2. Formation of the political business cycle paradigm

Most authors (Persson, Tabellini 1997; Alesina et al. 1999; Blomberg 2000; Leertouwer, Maier 2001; Akhmedov, Zhuravskaya 2004; etc.) dealing with the problem of political business cycles are unanimous on the fact that the beginning of the formation of the political business cycle paradigm ought to be pinned down to the articles by Nordhaus (1975) and Lindbeck (1976). Introducing his opportunistic model of political business cycles, Nordhaus (1975: 174) then said that the incumbent party “chooses economic policies during its incumbency which maximize its plurality at the next election”. So, politicians are prone to manipulate the economic policy in a way as to make its results – macroeconomic indicators – favourable during the elections period for the incumbent party to win in the elections. Nordhaus’s opportunistic model of political business cycles means that elections are likely to be preceded by a faster growth of economy, a lower-than-natural unemployment rate and a slight increase in prices. After the elections, an opportunist-minded government pursues a restrictive fiscal policy that drives the economy into a recession after the pre-electoral upsurge, thus leading to short-run cyclical fluctuations in the economy.

Soon after that Hibbs (1977) introduced a partisan model of political business cycles, which was based on the idea that political parties were acting on their ideology rather than in an opportunistic manner. Left- and right-wing political parties possess varying combinations of the growth of economy, unemployment and inflation rate, i.e. “left-wing parties more willingly bear the costs of inflation to fight unemployment” (Alesina et al. 1999: 45). The introduction of this model has resulted in two key directions in which the political business cycle models evolved.

Normal science must always seek and does seek that theory should match the hard facts as closely as possible, as this activity may be treated as a test or a search for confirmation or denial (Kuhn 2003). To provide an empirical basis for his model, Nordhaus (1975: 187) conducted a study and arrived at a conclusion that “given both casual and formal evidence of economic behaviour, and the historical record in the countries examined, it is clear that a political business cycle is a significant factor in the operation of some capitalist economies”.

Empirical studies by Schuknecht (1996, 1999) also confirm that the Nordhaus’s model exists in practice. He established that the developing countries in question have cycles of fiscal policy, i.e. governments are pursuing an expansive fiscal policy before elections and a restrictive fiscal policy afterwards (Schuknecht 1999). In the words of said author, Nordhaus’s opportunistic political business cycle model also has support in the studies by Bates (1988) and Calvo (1995). Using the quadratic objective function, Neck (1991) also obtained results that favour the Nordhaus’s model. Whereas Lohmann (1998) conducted a test of the opportunistic political business cycle hypothesis and was inclined to dismiss the hypothesis as her results demanded that the voter’s behaviour be rational rather than retrospective, Alesina and Roubini (1990) conducted their empirical studies and were even more categorical about dismissing the Nordhaus’s hypothesis of political business cycles, yet claimed that several countries provided evidence to support the hypothesis. Paldam (1979) has found very weak evidence of the Nordhaus’s political business cycles, and Alesina et al. (1993, 1999) have found no systematic opportunistic cycles of the Nordhaus’s type.

However, a recent study by Akhmedov and Zhuravskaya (2004) provides plausible evidence supporting the existence of opportunistic political cycles. In addition, these

authors say that previous studies could not detect opportunistic political cycles as they used quarterly rather than monthly statistical data. In the opinion of the authors of the present article, the varying and ambiguous results of empirical studies might have also been caused by the different institutional structure of countries, which determines the legitimacy of the assumptions within the model. The differences of econometric models may also have had their effect on the outcome of the empirical studies.

The evolution of the results of empirical studies of the partisan political business cycle model is similar to that of the opportunistic model. Having analysed the economic policies of post-war capitalist countries, Hibbs (1977) claimed that empirical data confirmed his statements that left-wing governments tend to prefer lower unemployment rates and tolerate higher level of inflation than right-wing governments. Bartels and Brady (2003) performed a study and also maintained that the partisan differences in economic policies as identified by Hibbs remained stable even after two decades. Alesina and Roubini (1990), Alesina et al. (1999), however, have found no evidence of any permanent partisan impact on the growth of economy and unemployment. Although the empirical studies to confirm or deny the Hibbs's model are ambiguous and controversial, in the authors' shared opinion, the results of the studies by Alesina and co-authors could have been affected by the rational partisan political cycle model as proposed by Alesina in 1987, which model integrated rational expectations into the traditional partisan model.

The 1970's saw criticism of the partisan and the opportunistic models claiming that these two models were incompatible and ought to be integrated under a new model (Snowdon, Vane 2005). Frey and Schneider (1978) suggested an alternative hypothesis, which said that political parties were acting in an opportunistic manner when their chances of winning elections were thin. Governments may use independent surveys to see their position on the popularity scale (Snowdon, Vane 2005).

Moreover, the revolution of Lucas's rational expectations theory in macroeconomics inflicted a blow on the traditional (Nordhaus 1975; Hibbs 1977) models of political cycles, as the rational expectations hypothesis means that voters look into the future and cannot be fooled on a systematic basis (Snowdon, Vane 2005). As a result of such criticism of rational expectations, in Alesina's (1988) words, there was no progress in theoretical literature on political business cycles\*. The situation of the political cycle models was aggravated by the arrival of the article by Kydland and Prescott (1977: 473) that raised the issue of time inconsistency of the economic policy. The authors of the article said that "economic planning is not a game against nature but, rather, a game against rational economic agents" and concluded that "there is *no* way control theory can be made applicable to economic planning when expectations are rational".

Studies of political cycles resumed in the mid-1980's. However, due to the influence from neo-classics, the new models of political business cycles contained an assumption that economic agents and voters act rationally (Snowdon, Vane 2005). Such economists as Cukierman and Meltzer (1986), Rogoff and Sibert (1988), Rogoff (1990), Persson and Tabellini (1990) suggested rational opportunistic-type models; Alesina (1987) developed the rational partisan approach. According to Gärtner (1994a), these models have earned the merits of reviving interest in the field that went into a coma ten years ago.

Empirical tests of rational political cycle models also produced ambiguous results. Studies by Ellis and Thoma (1993), Berlemann and Markwardt (2005) support the rational partisan model. In their work, Alesina and Roubini (1990) established that empirical data could be used to prove that both the rational opportunistic model, formed by Rogoff and Sibert (1988), and the rational partisan model of Alesina are legitimate. Alesina et al. (1999) once again prove, by empirical studies, the viability of the above models, although the authors indicate, as an exception, countries where the outcome of statistical data analysis is insignificant. On top of that, Alesina concludes that empirical results are much more favourable for rational versions of political cycle models than the original Nordhaus's model or Hibbs's model. He accentuates that the impact of the partisan-type effects on the economy is much stronger, and the extent of the impact of the opportunistic-type effects is very limited and is more concerned with certain instruments of fiscal policy (Snowdon, Vane 2005).

\*Sieg (2001), having carried out a simulation of a macroeconomic model, established that rationality was not a precondition for political business cycles.

However, Alesina and co-authors have been criticised for their empirical studies of political cycles. Gärtner (1994b) has said that the studies by Alesina and Roubini (1992: 664, 682)\* did not lead to the following conclusions that were produced by them:

- “we find evidence of temporary partisan differences in output and unemployment and of long-run partisan differences in inflation”;
- “we find virtually no evidence of permanent partisan differences in output and unemployment”;
- “the political business cycle hypothesis <...> is generally rejected by the data”;
- “the most interesting result of this paper is that the more recent models of political cycles\*\* significantly outperform their predecessors.”

After conducting a series of new econometric calculations and evaluations of political cycle models, Gärtner (1994b: 437) said that the results obtained by Alesina and Roubini (1992) “are reminiscent of a positively sloped aggregate supply curve and a long-run Phillips trade-off. This puzzling implication may be shrugged off as spurious or as an artifact generated by lumping together one and a half dozen economies with greatly differing institutions and structures”. Such criticism coincides with the position that the authors of this article had voiced previously regarding the differences in the impact of the institutional structure of different countries on the empirical results of political cycle models. Gärtner also found that the established permanent partisan-type effects on the economy were the same as proposed by the Hibbs’s traditional partisan model. The same results may be obtained using the rational partisan model provided it is based on additional (even though not quite plausible) assumptions that offer efficient protection for the rational partisan model against tests of the main hypothesis (regarding the cycles of elections caused by the element of surprise) of the model (Gärtner 1994b). In his analysis of inflation and money growth in different countries, Gärtner also made a conclusion that opportunistic cycles were accounted for by the traditional rather than the rational model of opportunistic cycles. The final verdict of Gärtner’s (1994b: 439) criticism – “all this means that while traditional partisan theory and Nordhaus political business cycle model do not fare well, rational partisan theory and particularly rational political business cycle model fare worse” – impacts a grievous blow on the rational models.

So, the formation of the political cycle paradigm was a bumpy one. Following the criticism of rational expectations in the 1970’s, the paradigm plunged into a coma that lasted up until the mid-1980’s, when the rational versions of political cycle models were produced. However, the empirical tests of the latter models did not yield explicit and reliable results either. Furthermore, the results of political cycle models would depend on specific countries: a model may apply to one country and be dismissed in another. Considering Gärtner’s criticism, we may say that the traditional models of political cycles are just as good as, if not better than, the next-generation rational models – just as the results of Akhmedov’s and Zhuravskaya’s (2004) test show.

Following the formation of the political cycle paradigm, the next section of the article will introduce the econometric models used in the calculations.

### 3. Assessment of the economic policy impact on political business cycles

Empirical studies aimed at proving that political business cycles exist employ a great variety of models. This was discussed in more detail in the previous section of this article, as part of the study of the formation of the political business cycle paradigm.

To assess the impact of the economic policy on political cycles in Lithuania, this article will use several econometric models, commencing with Klein (2004), with adjustments for the Lithuanian situation. The overall expression of the econometric model (auto-regression) is as follows:

$$Y_t = c + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \beta_3 Y_{t-3} + \dots + \beta_n Y_{t-n} + \gamma ELE(N) + \varepsilon_t.$$

This is an ARMAX-type\*\*\* econometric model. The autoregressive model is used when the dependant variable is accounted for by the history of the same variable. In this

\*Note: these studies and conclusions are also published in Alesina, Roubini (1990).

\*\*Note: this is a reference to the rational political cycle models, the predecessors being the Nordhaus’s model and the Hibbs’s model.

\*\*\*ARMA – Autoregressive Moving Average Process. ARMAX is an ARMA process with additional explanatory variables, in this case – *ELE(N)*.

case, the model is adopted to analyse cycles of economy, as executors of the economic policy consider the previous consequences of using a policy instrument before selecting the instrument and the extent of its application lest to cause a shock on the economy. For the purposes of this econometric model, the authors include only one additional explanatory variable  $ELE(N)$ , as the ultimate objective is only to establish political business cycles rather than to enumerate, in detail, every variable affecting the dependant variable.

So, political cycles are established using elections variable  $ELE(N)$ , which for the purposes of the model is assigned value 1 during elections and 0 in other instances. Conclusions regarding the nature of a political cycle are drawn considering the sign and the significance of the cycle. For instance, if the variable coefficient has a positive value and is statistically significant, a conclusion is made that the dependant variable increases before elections, and if a negative value – that the variable drops before elections. The value of the coefficient will indicate the strength of changes during the period of analysis.

To establish political cycles in Lithuania, the authors will analyse four pre-elections scenarios. Scenario one is based on the assumption that the ruling politicians start manipulating the economic policy and preparing for the elections eight quarters to the date of elections. As in Lithuania parliamentary elections take place in autumn (in October), and by virtue of lags it takes more time to obtain improved macroeconomic indicators using instruments of the economic policy, it is likely that the elections campaign will also be launched in autumn, two years to the elections. The authors of this article will also analyse three other scenarios, considering the variety of the economic policy instruments and the different duration of lags. It is quite likely that politicians may start going for better macroeconomic indicators six, four and two quarters to the elections, respectively. A summary of the scenarios being analysed, i.e. the values of political cycle variable  $ELE(N)$ , can be provided in Table 1.

Table 1

**Values of political cycle variable**

ELE(N)	Values
N = 8	Value 1 in the quarter of and 7 quarters to the elections, value 0 during other quarters
N = 6	Value 1 in the quarter of and 5 quarters to the elections, value 0 during other quarters
N = 4	Value 1 in the quarter of and 3 quarters to the elections, value 0 during other quarters
N = 2	Value 1 in the quarter of and 1 quarter to the elections, value 0 during other quarters

Source: the authors' calculations.

For the purposes of the econometric calculations, the time series of the real GDP, unemployment and inflation are used as formulated based on the quarterly data available in publications by the Statistics Department under the Government of the Republic of Lithuania (hereinafter – Statistics Department)\* for the period 1993–2006. For the purposes of the Klein model's calculations aimed at establishing political cycles, a cyclical component of time series was used, as derived using the Hodrick–Prescott filter\*\*.

In view of the calculation results under the Klein's model\*\*\*, which do not prove the existence of statistically significant political business cycles, the authors designed a new ARMAX-type model. The overall expression of the model is as follows:

$$Y_t = \alpha_0 + \sum_{i=1}^4 (\alpha_i Y_{t-i} + \gamma_i x_t^{(i)} + \beta_i \varepsilon_{t-i}) + \varepsilon_t.$$

$Y_t$  in this model is the endogenous (dependant) variable, and  $x_t^{(i)}$  is the exogenous (explanatory) variable ( $i = 1, \dots, n$ ). This model, in addition to and in combination with the  $ELE(N)$  elections variable used in the Klein's model, employs elections variable  $ELE(TN)$ : this allows searching for linear ties, as the political cycle starts with a constant, which increases through  $ELE(TN)$  up to the elections (see Appendix). Moreover, the search for political cycles considers the impact of the accession to the European Union on the rate and cycles of real GDP growth. Yet the key element of this model is the assumption that the cyclical fluctuations of GDP, inflation and unemployment can be related by ties of regression.

\*Note: considering the experience of calculations by Akhmedov and Zhuravskaya (2004), quarterly data will be used. Publications by the Statistics Department do not provide monthly data for all of the macroeconomic indicators covered by the analysis.

\*\*For more information, read: Hodrick, Prescott (1981, 1997).

\*\*\*Due to the limited size of the article the study results are not provided. See more comments about the Klein model's results below.

The calculations of this model are also based on the quarterly data available in publications by the Statistics Department, and the cyclical component of time series is derived through the Hodrick–Prescott filter.

#### 4. Empirical study of the political business cycles in Lithuania

First of all, before performing the calculations, the realisation of the real GDP, inflation, unemployment rate time series were generated using the original data from the Statistics Department. This preparatory stage covered the following essential steps: the season-based component of time series was eliminated (using the X-12 filter)\*. After that, a unitary root test (Augmented Dickey–Fuller test) was conducted for all time series, and once the series turned out to be nonstationary, the time series trend was derived (using the Hodrick–Prescott filter). Subtracting the trend from the time series of the real GDP, inflation and unemployment rate yielded stationary cyclical components. It was the latter that were needed to initiate econometric calculations under the Klein’s model.

The calculations using the Klein’s model were performed. But they did not yield statistically significant results. It is the opinion of the authors that the main reason for that was the ever-changing economic landscape in Lithuania, which is described both by consistent efforts to cut down the inflation rate and the reforms aimed at becoming a market economy. On top of that, the 1995 banking crisis and the 1998 financial crisis in Russia did little to make the economic stability higher. All of the above circumstances should be classed as *ceteris paribus*, because econometric calculations under the Klein’s model are aimed at establishing the relationship between macroeconomic indicators (inflation, GDP growth, unemployment) and elections. However, said circumstances developed an ever-changing (not *paribus*) economic environment. And this inevitably affected the results and final conclusions of the calculations.

Different results under the Klein’s model in Israel and Lithuania can be also obtained because of the different objects of study. If, in the case of Israel, the goal of the analysis was instruments of the economic policy, in Lithuania, the study was aimed at the results, partly affected by such instruments, i.e. macroeconomic indicators. The different institutional structure of the countries calls for a differing number of explanatory variables. Considering such an experience new econometric calculations were performed. The latter calculations are based on the following model that was introduced in the previous section:

$$Y_t = \alpha_0 + \sum_{i=1}^4 (\alpha_i Y_{t-i} + \gamma_i X_t^{(i)} + \beta_i \varepsilon_{t-i}) + \varepsilon_t.$$

This model, in addition to exogenous elections variable  $ELE(N)$  ( $x_t^{(1)}$ ), introduced elections variable  $ELE(TN)$  ( $x_t^{(2)}$ ), which allows searching for direct ties. Moreover, the search for political cycles regards the effect of the accession to the European Union (EU, ( $x_t^{(3)}$ )) on the rate and cycles of GDP growth. As it was mentioned above, the key element of this model is the assumption that the cyclical fluctuations of GDP, inflation and unemployment can be related by ties of regression. The results of the analysis of political cycles are presented in Table 2.

The analysis and evaluation concerned the cyclical component of the GDP (dependent variable). The results of Model 1 show that elections parameters  $ELE(4)$  and  $ELE(T4)$  and parameter  $EU$  of the accession to the European Union are statistically significant. The elections parameters can be interpreted in the following manner: parameter  $ELE(4)$  defines the status of the domestic economy (–185) four quarters to the start of the elections quarter, and by pursuing an expansive economic policy the ruling party improves situation  $ELE(T4)$  by the value of coefficient (43) quarter-on-quarter. This means that during five quarters, the overall result of such manipulation with the economic policy equals  $5 \times 43 = 215$ . This result completely offsets the original situation:  $215 > 185$ . Moreover, the value of regressive parameter  $EU$  and its significance indicates that the accession to the European Union had an impact on the rate of growth of Lithuania’s economy.

\*Note: all of the calculations of econometric models in this paper were done using the *EViews* software.

**Table 2**  
**The results of model-based analysis of political cycles\***

Variable	Model 1	Model 2	Model 3	Model 4
	1995 Q2–2006 Q4	1995 Q2–2006 Q4	1995 Q2–2006 Q4	1995 Q2–2006 Q4
ELE(4)	-185.962 (0.0331)	–	–	159.219 (0.0604)
ELE(T4)	43.571 (0.0646)	–	–	-48.225 (0.0467)
EU	381.104 (0.0440)	318.144 (0.0623)	337.801 (0.0438)	290.126 (0.0759)
AR(1)	0.616 (0.0000)	0.478 (0.0034)	0.472 (0.0031)	0.407 (0.0109)
$U^{cyl}$	–	-104.741 (0.0066)	-119.597 (0.0022)	-109.748 (0.0022)
ELE(6)	–	-250.194 (0.0586)	–	–
ELE(T6)	–	66.966 (0.0153)	–	–
ELE(8)	–	–	-140.365 (0.0723)	–
ELE(T8)	–	–	31.129 (0.0228)	–
R <sup>2</sup>	0.48	0.55	0.54	0.54
Akaike info criterion	13.563	13.465	13.481	13.494
Durbin–Watson statistic	2.018	1.944	1.934	2.031

Note: \*dependent variable of the models – GDP<sup>cyl</sup>; *p*-values in brackets.

Source: Statistics Department data; the authors' calculations.

Model 2 was specified by including a new explanatory variable – the cyclical component of the unemployment rate ( $x_t^{(4)}$ ) – to explain the cyclical fluctuations of the GDP, and by making a new assumption regarding the duration of political pre-elections manipulations with the economic policy, i.e. using elections parameters *ELE(6)* and *ELE(T6)*. The results of Model 2 provided in Table 2 show that the decreasing unemployment rate affected the growth of the GDP in a positive way. Of course, it is the sign of the parameter of the cyclical character of the unemployment rate and not the amplitude itself that can be subjected to interpretation, as the cyclical fluctuations of capital were omitted from the formation of the regressive equation: the valuations of the regressive parameters are moved. This model also revealed the input of membership of the European Union into the development of Lithuania's economy. Finally, the elections parameters are statistically significant and it follows that the cyclical fluctuations of the real GDP can be explained by elections. Therefore, we may say that Lithuania's economy is described by political cycles that match some features of the Nordhaus-type opportunistic political business cycle model.

Moreover, we may conclude that, affected by pending elections, fluctuations in the real GDP may also be perceived as a result of changes in the labour market as initiated by politicians. Yet it is most likely that the formation of political cycles is most affected by instruments of the fiscal policy. Also, considering the start of manipulations with the economic policy by the ruling party, i.e. eighteen months to the elections, we may say that the lags of the economic policy's effects on the domestic economy are evaluated with due competence.

Still, we cannot reject the possibility that politicians start manipulating the economic policy earlier than six quarters before elections. For this reason, the calculations of the last regression were redone using an adjusted new assumption regarding the duration of political pre-elections manipulations with the economic policy, i.e. using elections parameters *ELE(8)* and *ELE(T8)*. The results of Model 3 provided in Table 2 indicate both the significance of the model itself and the significance of every explanatory parameter, including elections parameters *ELE(8)* and *ELE(T8)*. Thus, we may say that opportunistic political cycles were also registered.

The analysis of political business cycles was finished by specifying Model 4, i.e. including an additional explanatory variable – the cyclical component of the unemployment rate – in Model 1. As the results in Table 2 show, all explanatory parameters of Model 4 are statistically significant. The calculations based on two econometric equations and the analysis of their results lead to a conclusion that the Klein's model did not produce the expected results in the case of Lithuania, as the unstable macro-environment prevented identification of political cycles using past realisations of the dependant variable. In addition, the existing lack of stability in the macro-environment might have greatly

distorted the results of the calculation. Such problems were resolved using the second econometric model (and its four specifications), one that was based on the assumption that macroeconomic indicators are interrelated by regressive ties. This assumption partly allowed eliminating the variations in the macro-environment's impact on the calculation results and, consequently, establishing political business cycles of the Nordhaus's type in Lithuania. The experience of the used model once again proves the statement by Chalmers (2005: 111) that theories cannot be ultimately falsified, as one cannot dismiss the possibility that the source of error of forecast lies in a part of the complex test situation rather than in the theory being addressed\*.

### Conclusions

Following the analysis of the process of formation of the political business cycle paradigm and the identification of opportunistic political business cycles in Lithuania, we can draw the following conclusions:

1. Although, for the purposes of implementing economic policy, its objectives are important, the ranking of such objectives may change with the approach of elections, as the ruling parties aim at improving macroeconomic indicators. Such party behaviour that is based on the individualistic utilitarian approach becomes a norm in the modern capitalist system, as this norm is a by-product of capitalist development.

2. The different and ambiguous results of the empirical tests of the first- and second-generation political business cycle models might have been caused by the differences in econometric models, the varying institutional structure of countries, which determines the legitimacy of the assumptions of a model. In addition, subjective attitude of certain economists favouring certain political business cycle models might have had some influence on the evaluation of other models of political business cycles.

3. There exist a few possible ways of modeling political business cycles. The first one is based on ARMA-type models, the second one – on economic growth models. An ARMA-type model has an advantage, because it is not necessary to specify all factors affecting a dependent variable. Thus its advantage is its simplicity. The modeling of political business cycles can also be based on economic growth models, whose calibration is usually complicated, but a business cycle is quite well approximated by simple autoregression.

4. The negative results under the Klein's model can be explained by the unstable macro-environment in Lithuania during the period of analysis. Of course, every model must correspond to the actual situation as closely as possible. As the countries (Lithuania and Israel) both have a different institutional structure, the different results produced by the model seem quite logical. Moreover, the different calculation results under the Klein's model in Israel and Lithuania can be obtained because of the different objects of study. If, in the case of Israel, the goal of the analysis was instruments of the economic policy, in Lithuania, the study was aimed at the results partly affected by such instruments, i.e. macroeconomic indicators.

5. The problems of the econometric calculations under the Klein's model were resolved using the second econometric model (and its four specifications), one that was based on the assumption that macroeconomic indicators are interrelated by regressive ties. This assumption partly allowed eliminating the variations in the macro-environment's impact on the calculation results and, consequently, establishing political business cycles in Lithuania.

6. The results of econometric models show that election parameters are statistically significant under the assumption that politicians start manipulating economic policy four, six, or eight quarters before elections, but no significance is found under the assumption that political pre-elections manipulations with the economic policy start two quarters before elections. That can be explained by the rational behaviour of politicians: the lags of the economic policy's effects on the domestic economy are evaluated with due competence.

7. Although the econometric results allow stating that political business cycles are found in Lithuania, further research should be conducted in this field in the future: a limited number of observations on the Lithuanian economy and the unstable macroeconomic environment still may have affected the final results of econometric models.

\*This problem is also referred to as the Duhem-Quine thesis.

Table 1

*Explanatory variable time series\**

Quarter	ELE(T2)	ELE(T4)	ELE(T6)	ELE(T8)	EU	Quarter	ELE(T2)	ELE(T4)	ELE(T6)	ELE(T8)	EU
1993 Q1	0	0	0	0	0	2000 Q1	0	2	4	6	0
Q2	0	0	0	0	0	Q2	1	3	5	7	0
Q3	0	0	0	0	0	Q3	2	4	6	8	0
Q4	0	0	0	0	0	Q4	3	5	7	9	0
1994 Q1	0	0	0	0	0	2001 Q1	0	0	0	0	0
Q2	0	0	0	0	0	Q2	0	0	0	0	0
Q3	0	0	0	0	0	Q3	0	0	0	0	0
Q4	0	0	0	1	0	Q4	0	0	0	0	0
1995 Q1	0	0	0	2	0	2002 Q1	0	0	0	0	0
Q2	0	0	1	3	0	Q2	0	0	0	0	0
Q3	0	0	2	4	0	Q3	0	0	0	0	0
Q4	0	1	3	5	0	Q4	0	0	0	1	0
1996 Q1	0	2	4	6	0	2003 Q1	0	0	0	2	0
Q2	1	3	5	7	0	Q2	0	0	1	3	0
Q3	2	4	6	8	0	Q3	0	0	2	4	0
Q4	3	5	7	9	0	Q4	0	1	3	5	0
1997 Q1	0	0	0	0	0	2004 Q1	0	2	4	6	0
Q2	0	0	0	0	0	Q2	1	3	5	7	0
Q3	0	0	0	0	0	Q3	2	4	6	8	0
Q4	0	0	0	0	0	Q4	3	5	7	9	0
1998 Q1	0	0	0	0	0	2005 Q1	0	0	0	0	0
Q2	0	0	0	0	0	Q2	0	0	0	0	1
Q3	0	0	0	0	0	Q3	0	0	0	0	1
Q4	0	0	0	1	0	Q4	0	0	0	0	1
1999 Q1	0	0	0	2	0	2006 Q1	0	0	0	0	1
Q2	0	0	1	3	0	Q2	0	0	0	0	1
Q3	0	0	2	4	0	Q3	0	0	0	0	1
Q4	0	1	3	5	0	Q4	0	0	0	1	1

Note: \*Parliament election data are based on the data provided by the Central Electoral Commission of the Republic of Lithuania.

Source: the authors' calculations.

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### Santrauka

## POLITINIAI VERSLO CIKLAI LIETUVOJE 1993–2006 M.

**Giedrius Miliauskas, Artūras Grebliuskas**

Skirtingais laikotarpiais valstybės vaidmuo ekonomikoje buvo nevienodas, o XX a. jis ypač išaugo: amžiaus pabaigoje Ekonominio bendradarbiavimo ir plėtros organizacijai priklausančiose šalyse buvo perskirstoma beveik pusė sukuriama bendrojo vidaus produkto. Gerokai padidėjusi vyriausybės ekonominė įtaka sudaro galimybes ja pasinaudoti politikams, t. y. valdančiosios partijos, siekdamos būti perrinktos, prieš rinkimus imasi tam tikrų priemonių, kad paskatintų ekonomikos augimą. Galimybė manipuluoti ekonomine politika prieš rinkimus mokslinių tyrimų objektu tapo XX a. 8-jame dešimtmetyje, pasirodžius William D. Nordhaus, Assar Lindbeck ir Douglas A. Hibbs darbams, kurie laikomi politinių verslo ciklų paradigmos formavimosi pradžia.

Straipsnyje keliamas tikslas aptarti politinių verslo ciklų tyrimų patirtį ir kartu, remiantis ekonometriniais modeliais, patikrinti, ar tokių ciklų požymių esama Lietuvoje. Keliamas tikslas numato tam tikrą straipsnio struktūrą. Pirmoje straipsnio dalyje nuosekliai apžvelgiamas politinių verslo ciklų paradigmos formavimasis iki racionaliujų lūkesčių kritikos ir vėliau. Aptariamas oportunistinis politinio ciklo modelis, pagal kurį valdančioji partija įgyvendina tokią ekonominę politiką, kuri užtikrintų kuo daugiau balsų per ateinančius rinkimus (*Nordhaus* modelis), taip pat vadinamasis politinio ciklo modelis, kuris remiasi idėja, kad politinės partijos veikia ne oportunistiškai, bet vadovaudamosi tam tikra ideologija (*Hibbs* modelis). Deja, nė vieno iš šių dviejų pirmosios kartos politinio verslo ciklo modelio nepavyko pakankamai pagrįsti empiriškai. Be to, įprastiniams politinio verslo ciklo modeliams smūgį sudavė XX a. 8-ajame dešimtmetyje atsiradusi revoliucinė *Lucas* racionaliujų lūkesčių teorija, teigianti, kad rinkėjai orientuojasi į ateitį ir negali būti nuolatos kvailinami. Tokia racionaliujų lūkesčių teorijos kritika lėmė, kad teorinėje politinių verslo ciklų literatūroje iki XX a. 9-ojo dešimtmečio vidurio esminės pažangos nebuvo pasiekta. Tyrimai vėl pradėti plėtoti, į modelius įtraukus prielaidą dėl rinkėjų racionalumo. Remiantis šia hipoteze, politiniam verslo ciklui vertinti imta taikyti racionalius oportunistinio politinio verslo ciklo modelius, sukurtas racionalus partinio politinio verslo ciklo modelis (*rational partisan model of political business cycle*). Nors šiems „racionaliesiems“ modeliams ir priskirtini pagrindiniai nuopelnai už susidomėjimo politiniais verslo ciklais atgaivinimą, empiriniai tyrimai ir vėl nedavė vienareikšmių, patikimų rezultatų. Todėl antrosios kartos modeliai nėra pranašesni už pirmosios kartos modelius.

Aptarus politinio verslo ciklo paradigmos formavimąsi, straipsnio antroje dalyje aprašomas atliktas empirinis tyrimas, pagrįstas dviejų ARMAX ekonometrinių modelių taikymu. Jais siekiama nustatyti, ar politinį verslo ciklą galima įžvelgti Lietuvoje. Tuo tikslu pirmiausia taikomas *Klein* modelis. Regresijos lygties priklausomasis kintamasis (BVP cikliniai svyravimai) aiškinamas jo praeities reikšmėmis ir fiktyviu kintamuoju, kartu darant tam tikras prielaidas dėl manipuliavimo ekonomine politika prieš rinkimus pradžios. Taikant *Klein* modelį atlikti ekonometriniai skaičiavimai Lietuvoje neleidžia užčiuopti jokių politinio verslo ciklo požymių. Tokius skirtingus nei Izraelio atveju, kuriam buvo taikomas modelis, rezultatus galima paaiškinti šalių istorinių aplinkybių ir valstybės institucinės sandaros skirtumais, taip pat skirtingais tiriamaisiais objektais. Taikant *Klein* modelį Izraelio ekonomikai, buvo analizuojamos ekonominės politikos priemonės, o Lietuvos atveju – tam tikras tų priemonių taikymo rezultatas, t. y. iš dalies jų lemiami makroekonominiai rodikliai. Tokių problemų leidžia išvengti antrasis, autorių sudarytas, ekonometrinis modelis, pagrįstas makroekonominių rodiklių regresinio sąryšio prielaida. Darant tokią prielaidą, galima bent iš dalies eliminuoti nepalankios makroekonominės aplinkos poveikį skaičiavimų rezultatams. Remiantis antrojo regresijos modelio taikymo rezultatais, teigtina, kad Lietuvos ūkiui būdingi tam tikri politiniai verslo ciklai, atitinkantys kai kuriuos *Nordhaus* oportunistinio politinio verslo ciklo modelio bruožus. Tačiau tyrimai turėtų būti tęsiami toliau – tai leistų nustatyti, ar rezultatams neturėjo įtakos nestabili analizuojamo laikotarpio šalies makroekonominė aplinka ir nedidelis stebėjimų skaičius, kurio priežastis yra palyginti trumpas Lietuvos kaip savarankiškos valstybės gyvavimo laikotarpis.