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THE INTERACTION OF MONETARY AND FISCAL POLICY IN THE COUNTRIES OF THE VISEGRAD GROUP

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Abstract

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Coordination of or at least absence of conflict between monetary and fiscal policies are key to the successful implementation of economic policy. The article aims to use reaction functions to assess whether the monetary and fiscal policies in the countries of the Visegrad Group are in coordination or in conflict and which variables influence their decisions. The central bank is the representative of monetary policy, which has interest rates as its instrument, and the government as the representative of the fiscal policy which has change revenue or spending as a share of GDP as instrument. To obtain the results, multivariate regression analysis is used. The research period is based on quarterly observations from first quarter of 2000 to the fourth quarter of 2012. Stabilizing role of monetary policy and in some countries also partially stabilizing role of fiscal policy has been found. Another result was that in the case of the Czech Republic, Slovakia and Poland, monetary policy appears to play the dominant role, whereas fiscal policy plays dominant role in Hungary. In the case of Slovakia, some different results may be due to Slovakia's participation in ERM II, which led to the monetary policy, in addition to maintaining price stability, also aiming to maintain a fixed exchange rate and the subsequent entry of Slovakia into the Eurozone and the de facto loss of autonomous monetary policy.

Keywords: fiscal policy, interactions, monetary policy, policy coordination, policy objectives

1 INTRODUCTION

Monetary policy is, together with fiscal policy, among the most important economic policies. The bearer of fiscal policy is usually the government and the bearer of monetary policy is the central bank. From the perspective of a successful economic policy, the coordination of, or at least lack of conflict between, these two bearers (i.e. governments and central banks) is crucial. The objectives of these policies, however, are usually different. For monetary policy, it is primarily maintaining price stability, while fiscal policy is primarily aimed at supporting economic growth and achieving low unemployment rate, or high employment rate. Given these different objectives, conflicts may occur (but not necessarily, both policies may cooperate with each other). These policies are also independent in their decision making (the central bank has its independence defined by law). In their decisions, monetary and fiscal policies must take into account other macroeconomic indicators and also the behaviour of the other of the two policies.

This article aims to assess the behaviour of monetary and fiscal policy in the countries of the Visegrad group to determine which variables influence the decision of the authorities, economic policy and whether the policies take into account each other in their decisions (if so, whether the two policies are in mutual harmony or conflict).

This paper evaluates the mutual interaction of monetary and fiscal policy from the game theoretical approach. The game theoretical approach is not prevailing method of evaluation of the monetary and fiscal interactions. Furthermore, compared to similar papers, this article does not use the set of panel data for many countries. Thus, this article does not attempt to derive the universal function of behavior of the economic policy authorities across countries (Melitz, 2000 or Wyplosz, 1999) examine this issue). We assume that the behavior of economic policy authorities and their mutual interaction may differ in the different countries (depending on the institutional arrangements). However, we do not focus to only one country (Řežábek, 2011) examines this issue), but we deal with four relatively different countries (PL – the large closed economy, CZ – the small opened economy, SK – the euro area country, HU – the country with economic and political problems). These countries are also characterized by a similar recent history (the economic transformation) and the geographical proximity. In this set will be examined similarities and differences of the economic policy environment.

To achieve these objectives, multivariate regression analysis is used through which the dependence of the main instruments of both policies (for monetary policy it is the change of interest rates of the central bank, for fiscal policy it is the change in expenditure or revenue as a share of GDP) on selected independent variables is examined. The surveyed countries are countries of the Visegrad Group, i.e. the Czech Republic, Slovakia, Poland and Hungary, using quarterly data from the first quarter of 2000 to the fourth quarter of 2012.

2 THEORETICAL AND EMPIRICAL APPROACHES TO THE INTERACTION OF MONETARY AND FISCAL POLICY

The first papers that examined the interaction of fiscal and monetary policy began to be created mainly after the Second World War, for example Friedman (1948) and Tinbergen (1954). The development of mutual interaction and effects occurs in 1980s in the famous article by Sargent and Wallace (1981). They argue that the central bank as the bearer of monetary policy may, under certain circumstances, lose control of price developments. This responded to the monetarists, for example to Friedman (1968), who argued that the central bank cannot permanently affect the real output or unemployment, but can control the price level (especially in the long term). Sargent and Wallace (1981) show, however, that even when meeting the monetarist assumptions, the central bank may lose control over price developments. If it becomes a submissive player with respect to the government[1] and the first step shall be made by the government, which chooses a strategy of deficit budgets, the central bank must adapt by increasing revenue through seigniorage in order to comply with intertemporal budget constraint. In the so-called weak version of the fiscal theory of the price level, the government – fiscal authority may prevent the central bank – the monetary authority from achieving price stability and controlling price developments.

Some papers deal with the interaction of monetary and fiscal policy in theoretical view, especially in game-theoretical approach, e. g. Hughes Hallet, Libich and Stehlík (2014); Libich, Savage and Walsh (2011); Leeper (2010); Demertzis, Hughes Hallet and Viegi (2004); Dixit and Lambertini (2003) or van Aarle, Engwerda and Plamans (2002). Hughes Hallet, Libich and Stehlík (2014) examine strategic fiscal-monetary interactions in a novel game-theory framework with asynchronous timing of moves that generalize the standard commitment concept of Stackelberg leadership by making it dynamic. They show that the effect of monetary commitment on economic outcomes and interaction crucially depends on its explicitness relationship (i.e. high credibility and goals of central bank and whether it is legislated as a numerical target).

The interaction of monetary and fiscal policy is investigated empirically by another group of authors; those articles include, among others, Řežábek (2011); Gali, Peroti (2003); Melitz (2000); or Clarida, Galí and Gertler (1998). Another area of research is related to the interaction of fiscal and monetary policy within a monetary union; papers in the topic include Libich, Stehlík and Savage (2010), Balboni, Buti and Larch (2007), Onorante (2006), Buti, Roeger and Velt (2001) or Wyplosz (1999).

Buti, Roeger and Velt (2001) claim in their theoretical model that a potential conflict between fiscal and monetary policy arises thanks to the fact that objective function of a central bank (a monetary policy authority) is different from an objective function of a government (a fiscal policy authority). The government tries to achieve the stabilization or maximization of the output, whereas a central bank is focused on maintaining price stability. As well as Demertzis, Hughes Hallet and Viegi (2004) mentioned that, thanks to the different goals of both policies and their mutual independence, a conflict my arise. The conflict can by analysed by using the methodical framework the game theory.

The mutual position of the both policies is an important question, too. Dixit and Lambertini (2003) consider Stackelberg's type of interaction

1 In game theory, this scenario is referred to as a "game of chicken".

when the decision is not simultaneous (the Nash's balance is not reached[2]) but sequential (the Stackleberg's balance). In that case, a central bank is a dominant player, makes the first step (it is called the Stackleberg's leader in the game theory) and fiscal policy follows it. A leader foresees the follower's reaction and this influences its policy. The follower has to adapt a leader's policy. Balboni, Buti and Larch (2007) define it similarly. An opposite opinion is claimed by Beetsma and Bovenberg (1998); they argue that by different timing and decision making of both policies, fiscal policy can become the Stackelberg's leader. The reason is that while a central bank can change interest rates very quickly, a government usually approves state budget annually.

In his study, Řežábek (2011) deals with the interaction of monetary and fiscal policy in the context of game theory. He relies on the assumption of non-cooperative game, Nash equilibrium and sequential decision-making through Stackelberg equilibrium. The country surveyed is the Czech Republic. The interaction of the two policies is investigated by simultaneous decisions. An important element in his work consists in different estimates of potential output or output gap of fiscal and monetary policy. Monetary policy instrument is represented by the change in interest rates; fiscal policy instrument in the basic model is represented by the change of balance of the state budget as a share of GDP. In other models, it is a change of total government revenue as a share of GDP and the change of total government spending as a share of GDP. The paper concludes the following: fiscal policy responds to the change in monetary policy in the same direction, the response of monetary policy to fiscal policy is ambiguous (basic model suggests opposite reaction of monetary policy to fiscal policy, other models fail to confirm a significant response). Other conclusions are counter-cyclical behaviour of the two policies, the stabilization reaction of monetary policy on inflation and on expected inflation, and also destabilizing effect of government debt on the state budget. Řežábek (2011) finally concludes that monetary policy is the leader and fiscal policy is the follower in the Czech Republic.

In his article, Melitz (2000) examined the interaction of fiscal and monetary policies in 19 OECD countries (including 14 EU countries) on annual data from 1959 or 1976 to 1995. Estimates are performed simultaneously. Dependent variables for monetary policy are money market rate, and for fiscal policy the primary budget balance to GDP. Furthermore, he also works with variable government spending and tax revenues. This allows him to better examine the procyclicality of fiscal policy on the development of the economy. His results show that fiscal policy has a stabilizing effect – its reaction to increasing debt is increasing tax revenues and reducing government spending as a share of GDP. He also found that tax revenue has a stabilizing effect, while government spending has a destabilizing effect. The final conclusion is that fiscal and monetary policy interacts in the opposite direction – i.e. in a conflict. Loose fiscal policy means more restrictive monetary policy.

Wyplosz (1999), in contrast to Melitz (2000), focused only on EU countries. He also works with annual data from 1980 to 1997. As a dependent variable he chose primary budget surplus for fiscal policy, and short-term interest rate for monetary policy. The choice of independent variables is similar. Wyplosz (1999), however, unlike Melitz (2000), does not estimate equations simultaneously but individually. His results imply that monetary policy also reacts, in addition to inflation, to output in a counter-cyclical manner. He claims, however, that estimate of output plays a big role in the decision-making and in the calculation of the inflation prediction. Also, fiscal policy responds to the output in a counter-cyclical manner, and to some extent on inflation. Another of his conclusion is that fiscal and monetary policies are to some extent substitutable for one another. Furthermore, rather in theory, he argues that the Stability and Growth Pact in the European Union represents a fiscal commitment which governments should follow to some extent.

The fiscal and monetary policy interactions may be also studied using DSGE or New Keynesian models. For example Muscatelli, Tirelli and Trecroci (2004) examine the extent to which fiscal policy (automatic stabilisers) assist or hinder monetary policy when the latter takes a standard forward-looking inflation targeting form. Leith and Thadden (2006) researched that without explicit reference to level of government debt is not possible to infer how strongly the monetary and fiscal policy instruments should be used to ensure determinate equilibrium dynamics.

2 The Nash's balance is based on the assumption that players minimalize their loss functions in the same time without respect to the effects of policy arrangements of an opponent. Behavior of every player is determined from the beginning. It does not depend on the opponent's behavior. In the case of Nash's equilibrium, none of the players can improve its situation by one-sided change of chosen strategy. One of these alternatives of this type of reaching the equilibrium, which is often mentioned in literature, is the interaction of the Stackelberg's type where the leader is one of the players. The leader's goal is to foresee the reaction of the opponent, the follower, and this reaction to integrate into his own decision making.

3 FORMULATION OF MODELS AND DESCRIPTION OF VARIABLES

3.1 Specification of Models

In the empirical part, consideration is given to reaction functions of fiscal and monetary authorities. Furthermore, it is examined which variables influence them and whether one affects the each other. Formulation of reaction functions is mainly based on Wyplosz (1999), Melitz (2000) and Řežábek (2011). Dependent variables are changes in the principal policy instrument. The reaction functions of fiscal and monetary policies are given in the following equations:

The reaction function of fiscal policy has the following specification:

$$\Delta\left(\frac{E}{Y}\right)_t = \alpha_0 + \alpha_1 \Delta d_{t-1} + \alpha_2 y_t + \alpha_3 \left(\frac{E}{Y}\right)_{t-1} + \alpha_4 u_t + \alpha_5 \Delta i_t + \varepsilon_t , \tag{1}$$

$$\Delta\left(\frac{R}{Y}\right)_t = \alpha_0 + \alpha_1 \Delta d_{t-1} + \alpha_2 y_t + \alpha_3 \left(\frac{R}{Y}\right)_{t-1} + \alpha_4 u_t + \alpha_5 \Delta i_t + \varepsilon_t . \tag{2}$$

$\Delta\left(\frac{E}{Y}\right)_t$ is the change of state budget expenditures as a share of GDP between period t and period $t-1$, Δd_{t-1} is the change of government debt in absolute value lagged by one period, y_t denotes the GDP output gap at time t, $\left(\frac{E}{Y}\right)_{t-1}$ is the lagged value of government spending as a share of GDP, u_t is unemployment rate at time t, and Δi_t is the change in the interest rate at time t. Equation (2) contains the same variables, except the variable $\Delta\left(\frac{R}{Y}\right)_t$ which is the change of revenue of the state budget as a share of GDP at time t and variable $\left(\frac{R}{Y}\right)_{t-1}$ which indicates a lagged value of government revenue as a share of GDP.

The total budget expenditures as a share of GDP are used in our paper. In the term of mutual interaction can be assumed that the monetary policy reacts to the total budget expenditures of the fiscal policy and not only to the non-mandatory expenditures. Moreover, the fiscal policy considers the total budget expenditures as its main instrument and therefore the change of total expenditures shows the fiscal policy responses to the change of economic environment preferably. The fiscal authority considers the mandatory and non-mandatory parts of its expenditures and if, for example, the economy is in the recession, the fiscal policy cannot act intentionally and the cyclical part of expenditures (non-mandatory, automatic stabilizers) will increase. The fiscal expansion may not be detected in the non-mandatory expenditures necessarily.

The reaction function of monetary policy has the following specification:

$$\Delta i_t = \beta_0 + \beta_1 \Delta i_t^{GB} + \beta_2 y_t + \beta_3 \Delta\pi_t + \beta_4 \Delta\left(\frac{E}{Y}\right)_t + \beta_5 \Delta\left(\frac{R}{Y}\right)_t \epsilon_t . \tag{3}$$

Δi_t is the change in the interest rate of the central bank between period t and period $t-1$, Δi_t^{GB} represents the change in interest rate of ten-year government bond between period t and period $t-1$, y_t denotes the output gap at time t, $\Delta\left(\frac{E}{Y}\right)_t$ change of state budget expenditures as a share of GDP at time t and $\Delta\left(\frac{R}{Y}\right)_t$ a change in state revenue as a share of GDP at time t.

There are two reaction functions of fiscal policy. In both equations, it is assumed that the main instrument of fiscal policy is the state budget. In the first function, the main instrument is the change of state budget expenditure as a share of GDP (the dependent variable). It is affected by the general government debt in absolute terms, or by its changes, as well as by an estimate of the output gap – whether the economy is above or below its potential output, the share of state budget expenditure to GDP in the previous period, the unemployment rate and the change in interest rates. Change in interest rates is representative of monetary policy. In the second fiscal policy equation, the dependent variable is the change in state revenue as a share of GDP. Independent variables are the same except for the lagged value of state budget revenue as a share of GDP.

Dependent variables are expenditures and revenues of state budget. The state budget is the main instrument of fiscal policy and therefore this budget (or budget expenditures and revenues separately) should be used as dependent variable primarily.

Independent variables are chosen due to an economic theory and an economic policy practice. It can be expected, that fiscal policy decides about its expenditures and revenues having regard to the economic cycle. Hence, independent variables are the output gap and the unemployment. If fiscal policy performs stabilization policy, then the output gap and the unemployment are the objects of the stabilization primarily. Lagged value of government debt is chosen for monitoring fiscal responsibility and ability to react to the debt financing of own policy.

In the reaction function of monetary policy, the main instrument is the change in the interest rates of the central bank. It is affected by changes in the ten-year government bond yield. This variable represents the long-term interest rate. Other independent variables include the output gap, similarly to the reaction functions of fiscal policy, changes in inflation rate and the change in expenditure or revenue of the state budget

I: *Estimated coefficients of the independent variables*

Fiscal policy $\Delta\left(\frac{E}{Y}\right)_t$		Fiscal policy $\Delta\left(\frac{R}{Y}\right)_t$		Monetary policy Δi_t	
Variable	**Expected relation**	**Variable**	**Expected relation**	**Variable**	**Expected relation**
Δd_{t-1}	–	Δd_{t-1}	+	Δi_t^{GB}	+
y_t	–	y_t	+	y_t	+
$\left(\frac{E}{Y}\right)_{t-1}$	–	$\left(\frac{R}{Y}\right)_{t-1}$	–	$\Delta\pi_t$	+
u_t	+	u_t	–	$\Delta\left(\frac{E}{Y}\right)_t$	+ (conflict) / – (coordination)
Δi_t	+ (conflict) / – (coordination) /	Δi_t	+ (coordination) / – (conflict)	$\Delta\left(\frac{R}{Y}\right)_t$	+ (coordination) / – (conflict)

as a share of GDP. These last two variables represent fiscal policy.

The reaction function of monetary policy is derived from the Taylor's rule, Taylor (1993). Hence, dependent variable is the change of interest rate (main instrument of monetary policy) and independent variables are the change of inflation rate and the output gap. Moreover, the government bond interest rate is added, because it can approximate expected inflation and expected economic growth (see yield curve).

Estimated relations of all three equations are listed in Table I.

The table first lists the coefficients for fiscal policy. For the lagged value of government debt Δd_{t-1} variable, a negative relation is expected in expenditure as a share of GDP and positive relation for revenues as a share of GDP. With increasing total debt, the government should respond by reducing spending (which implies a negative relation), or increasing revenue (the resulting positive relation) to prevent the total debt from further increasing or decreasing. For the output gap y_t, the government is to implement counter-cyclical policies. In the case of a positive output gap it is to perform restriction and in the case of a negative output gap it is to perform expansion. Therefore negative relation is expected for expenditure and positive relation is expected for revenues. For lagged revenue or expenditure of the state budget as a share of GDP $\left(\frac{E}{Y}\right)_{t-1}$, $\left(\frac{R}{Y}\right)_{t-1}$ negative relation is expected, which means that the fiscal instrument does not have effect completely, but only partially and further adaptation occurs in the following period. For the unemployment rate u_t, positive relation is expected in the case of expenditures and negative relation is expected in the case of revenues. Given the rising unemployment rate, expansionary fiscal policy should be implemented (spending increases and/or revenue reduction). For the last variable that represents monetary policy Δi_t we may encounter two situations – conflict or coordination. For expenditures, coordination occurs with negative relation, the two policies have effect in the same direction, they perform either expansion, or restriction. In contrast, in case of positive relation, they are in conflict. One of the policies carries out expansion, while the other performs restriction (such as government spending increases, performs expansion, but the central bank increases interest rates – performs restriction). In the case of revenues, the expected relations are opposite. Positive relation means coordination (government conducts restriction – increases government revenue, and the central bank also implements restriction- increases interest rate) and negative relation means conflict.

Furthermore, the table shows estimated coefficients for monetary policy. For the change of ten-year government bond yield Δi_t^{GB} positive relation is expected. This is because increasing yield implies higher expected inflation in the future, to which monetary policy should respond by raising interest rates. For the output gap y_t positive relation is expected. With a positive output gap, restriction is implemented (raising interest rates), while with a negative output gap expansion is implemented (lowering of interest rates). Another variable is the change in inflation rate $\Delta\pi_t$. For this variable, there is a positive relation. The central bank must respond to the rising rate of inflation by raising interest rates, and to decreasing rate of inflation by reducing interest rates. The last two variables represent fiscal policy. Positive relation for the state budget expenditure as a share of GDP $\Delta\left(\frac{E}{Y}\right)_t$ implies a conflict, while negative relation implies coordination. For the state budget revenues as a share of GDP $\Delta\left(\frac{R}{Y}\right)_t$ the situation is reversed. Positive relation means coordination and negative relation means conflict.

3.2 Description of the Data and Methods Used

Data are obtained from the database of the European Central Bank (revenue and expenditure as a share of GDP), Eurostat (variable output gap estimated from the GDP growth rates using the Hodrick-Prescott filter, interest rate, rate of unemployment, government debt and the rate of yield of the ten-year government

bonds) and from the OECD database (the rate of inflation measured by the consumer price index).

The data obtained were statistically analysed, extreme values replaced, tests of stationarity of time series conducted using the ADF test, as well as autocorrelation (ACF) and partial autocorrelation (PACF) tests. Regression functions were estimated using ordinary least squares (OLS). A total of twelve regression functions were estimated.

4 RESULTS

The following table shows the results of the reaction functions for fiscal policy.

The results of fiscal policy reaction functions indicated that some of the results in the surveyed countries are the same. Fiscal policy does not respond (with the exception of the revenue model of Slovakia) to the change in government debt in absolute terms. Moreover, relations are in most cases are contrary to expectations. All countries have countercyclical expenditure policy of the fiscal authority. Expenditure responds to the output gap and the unemployment rate with a stabilizing effect (however, some results are not statistically significant). In contrast, revenue of two countries (Slovakia and Hungary) has destabilizing effect. In the Czech Republic and Poland the revenue

II: *Results of fiscal policy reaction functions*

Dependent variable $\Delta\left(\frac{E}{Y}\right)_t$ (expenditure)					Dependent variable $\Delta\left(\frac{R}{Y}\right)_t$ (revenue)				
Independent variable	**CZ coef.**	**SK coef.**	**PL coef.**	**HU coef.**	**Independent variable**	**CZ coef.**	**SK coef.**	**PL coef.**	**HU coef.**
Δd_{t-1}	5.80E-06 (0.74)	–0.001 (–1.28)	4.30E-06 (0.34)	1.96E-07 (0.35)	Δd_{t-1}	–5.66E-07 (–0.11)	–0,001* (–1.84)	–6.93E-06 (–0.48)	–3.42E-07 (–0.73)
y_t	–0.17 (–1.28)	–0.26 (–1.28)	–0.05 (–0.36)	–0.28 (–1.64)	y_t	0.01 (0.08)	–0.02 (–0.16)	0.26 (1.56)	–0.5*** (–3.28)
$\left(\frac{E}{Y}\right)_{t-1}$	–0.87*** (–5.84)	–0.71*** (–5.18)	–0.01*** (–5.35)	–1.07*** (–6.78)	$\left(\frac{R}{Y}\right)_{t-1}$	–1.01*** (–6.71)	–0.93*** (–6.84)	–0.01*** (–5.1)	–1.06*** (–6.97)
u_t	0.6** (2.48)	0.52** (2.27)	0.02 (0.42)	0.14 (0.85)	u_t	0.02 (0.13)	0.5*** (4.23)	–0.03 (–0.62)	0.58*** (3.78)
Δi_t	–2.33** (–2.48)	–1.87 (–1.48)	–0.55* (–1.91)	–0.14 (–0.37)	Δi_t	0.84 (1.33)	–1.69*** (–2.79)	–0.58* (–1.71)	0.5 (1.64)
Adj. R-square	0.39	0.42	0.36	0.47	**Adj. R-square**	0.46	0.53	0.31	0.53
F-stat.	7.35***	7.99***	6.48***	9.68***	**F-stat.**	9.22***	12.13***	5.41***	12.26***
Number of obs.	50	50	50	50	**Number of obs.**	50	50	50	50

Source: Authors' own calculations
Note: In the parentheses are the t-statistics; *, **, *** indicates significance level of 10%, 5%, 1%.

III: *Results of monetary policy reaction functions*

Dependent variable Δi_t				
Independent variable	**CZ coef.**	**SK coef.**	**PL coef.**	**HU coef.**
Δi_t^{GB}	0.17* (1.86)	0.14 (0.12)	0.39*** (3.04)	0.81*** (6.76)
Ey_t	0.03** (2.02)	0.03** (2.21)	0.18*** (3.29)	0.06* (1.84)
$\Delta\pi_t$	0.16*** (4.13)	0.08* (1.84)	0.29** (2.6)	0.18** (2.42)
$\Delta\left(\frac{E}{Y}\right)_t$	–0.01 (–1.08)	0.02 (0.83)	0.05 (1.0)	–0.02 (–0.87)
$\Delta\left(\frac{R}{Y}\right)_t$	0.01 (0.68)	–0.04 (–1.01)	–0.05 (–1.1)	0.07** (2.6)
Adj. R-square	0.49	0.19	0.59	0.57
F-stat.	9.85***	3.13**	15.65***	14.73***
Number of obs.	47	47	52	52

Source: Authors' own calculations
Note: In the parentheses are the t-statistics; *, **, *** indicates significance level of 10%, 5%, 1%.

and expenditure side of the budget has stabilizing effect. Another conclusion is inertia of adjustment of the revenue and expenditure side of the budget for the previous period. The results of reaction functions for monetary policy are listed in the following table.

Monetary policy appears to have stabilizing effect in all of the countries surveyed. The central bank reacts to changes in inflation and also on the output gap with stabilizing effect. Similar results are concluded by e.g. Wyplosz (1999) and Clarida, Gali, and Gertler (1998). Monetary policy also responds to expected inflation (except Slovakia) with stabilizing effect. Statistically insignificant response of monetary policy to changes in expected inflation rate and also statistical significance only at 10% significance level in the case of changes in inflation is likely due to the participation of Slovakia in the ERM II, when monetary policy, in addition to the objective of maintaining price stability, aimed to maintain a fixed exchange rate and subsequently the entry of Slovakia into the Eurozone and the de facto loss of autonomous monetary policy.

The Czech Republic, Slovakia and Poland show a statistically significant response of fiscal policy to monetary policy. In the case of the Czech Republic, expenditures act in the same direction (positive relation) to a change in the monetary policy instrument (interest rate change). Fiscal and monetary policy are therefore consistent and statistically significant response of fiscal policy to monetary policy (and the lack of response of monetary policy to fiscal policy) means that fiscal policy adjusts to monetary policy. Monetary policy in the Czech Republic is therefore in the dominant role[3]. Similar results are also in Slovakia (fiscal policy responds to monetary policy by changing its revenue) and Poland, where fiscal policy responds in the same direction by changing its expenditure, but by changing their revenues in the opposite direction. In Hungary, fiscal policy shows no significant reaction to monetary policy. In contrast, monetary policy responds in the same direction to the revenues in the case of fiscal policy. Fiscal policy in Hungary is dominant (at least on the revenue side) to monetary policy.

5 CONCLUSIONS

Based on the results obtained it can be concluded that monetary policy operates with stabilizing effect in all countries surveyed. Fiscal policy has also rather stabilizing effect on the expenditure side (but not always statistically significant); on the revenue side, stabilization reaction has not been statistically proven. This can be justified by the fact that fiscal policy is relatively more flexible on the expenditure side than on the revenue side. The government usually reacts with a change rather on the expenditure side than on the revenue side.

Fiscal policy reacts with statistical significance in three of the four countries to monetary policy; for the Czech Republic and Poland, it is on the expenditure side with response in the same direction (fiscal policy also responds with expansion to monetary expansion of monetary policy, fiscal policy also responds to monetary restriction with restriction), for Slovakia and again Poland, it is on the revenue side and the response is contrary (fiscal policy responds to expansionary monetary policy in a restrictive way and vice versa). The reverse response (monetary policy to fiscal policy) has not been statistically proven.

In Hungary, the situation is different. Monetary policy reacts with statistical significance and in the same direction to fiscal policy (revenue); on the other hand, fiscal policy does not respond to monetary policy with statistical significance. Fiscal policy in Hungary seems to be a dominant player, and monetary policy adapts to it.

In this paper, it was analysed Visegrad group states. It was find, who plays dominant role and which variables are substantial for fiscal and monetary policy decision.

SUMMARY

Monetary policy and fiscal policy are among the most important economic policies of any state. Their coordination, or at least lack of conflict, is crucial to the economic development of any country. The aim of this paper is to assess whether the monetary and fiscal policies in the countries of the Visegrad Group are in mutual coordination or conflict. Also, what macroeconomic variables affect the decisions of the two policies. To achieve this objective, multivariate regression analysis is used, which is used to examine statistical significance of independent variables. As a fiscal policy instrument, change of revenue or expenditure as a share of GDP is chosen; monetary policy instrument is the change in central bank interest rates. The surveyed period is based on quarterly data from 1 quarter of 2000 to the fourth quarter of 2012.

The results show the stabilizing role of monetary policy in all countries (with some problems in Slovakia). Also, stabilizing role has been shown in expenditures as a share of GDP (but not always statistically significant). On the revenue side as a share of GDP, stabilizing role has not been statistically proven. Other findings include statistically significant response of fiscal policy to monetary policy

3 Also Řežábek (2011) argues that monetary policy in the Czech Republic is in the dominant role.

in the Czech Republic, Poland and Slovakia. The reverse response (monetary policy to fiscal policy) has not been statistically proven. This implies the dominant role of monetary policy in these three countries. In the case of Hungary, statistically significant response of monetary policy to fiscal policy has been found. Fiscal policy does not show statistically significant response to monetary policy. This implies the dominant role of fiscal policy in Hungary.

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