THE POLICY MIX IN THE CONTEXT OF THE COMPETITIVENESS OF THE POLISH ECONOMY

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Abstract: The aim of the article is to characterise selected macroeconomic indicators from the policy mix area in the context of the competitiveness of the Polish economy. In order to achieve this aim, the following research methods are used: a review of the literature and statistical analysis method. The study includes an analysis of macroeconomic data for the years 2000-2016 on the policy mix and the competitiveness of the Polish economy. The results of the conducted analysis indicate that in the discussed period there was a statistically significant correlation between monetary and fiscal policy indicators in the background of improving indicators measuring the competitiveness of the Polish economy.

Keywords: *policy mix, competitiveness of economy, Polish economy*

1. Introduction

Monetary policy and fiscal policy have instruments to adjust the market mechanism. This combination is called policy mix.[1] Coordination of monetary policy and fiscal policy has special importance in emergency (crisis) conditions, although it is equally important in a stable economic situation of the country. Policy mix is also a common topic of many works on state strategies used to stimulate or stabilize[2] the economy and thus "create" competitive conditions for economic development. As Kuttner emphasizes, the combination in the IS-LM model is less crucial, but the overall level of aggregate demand is important and it can be shaped by fiscal policy, monetary policy or a combination of both policies, monetary and fiscal ones.[3] Proper monetary and fiscal policy conditions can have a significant positive impact on the country's economic development, as it is possible to stabilize and "improve" macroeconomic indicators. These indicators can influence the competitiveness of a given economy as a result of coordination of monetary and fiscal policy. The coordination of both policies contributes to greater stability of the financial system. Hence, the purpose of this article is to characterize selected macroeconomic indicators from the policy mix in the context of the competitiveness of the Polish economy.

1.1 The competitiveness of economy

The term of competitiveness of economy is not an unambiguous concept in the literature.[4] For Organization for Economic Cooperation and Development (OECD) "competitiveness of the country is its ability to cope with international competition as well as to ensure a high rate of return on applied production factors and a high level of employment".[5] B. Jedliński describes this concept in two senses, emphasizing the ability of a given economy to compete in international markets:[6] • as the country's ability to produce and sell products or services as attractive in terms of price and quality when compared to the same products or services of another country (narrower approach); • as an ability to gain benefits from the commercial cooperation with the countries abroad (broader approach).

Both approaches emphasize the ability to prolong long-term and effective growth and create a proportionately greater wealth of the country than competitors in the world market. The greater the competitiveness of the country's economy is, the bigger the chance for the development of the economy and in a direct way - the citizens (the reinforcement of the economy results from the growth of the citizens' income).[7] The opposite situation (the lack of the competitiveness) may mean the exclusion from the market, subjection and domination of the stronger economies.
Poland's competitiveness can be measured by the presence of Poland in world competitiveness rankings.[8] Over recent years, Poland's position in international comparisons and rankings of competitiveness has been steadily improving.[9] The institutions preparing rankings analyzed the various criteria from areas of the policy mix (e.g. national income per capita, unemployment, economic performance, fiscal policy and monetary policy). Hence, profitable macroeconomic parameters and economic policy are often considered factors contributing to the competitiveness of a given country.[10] For example, the World Economic Forum publishes a ranking of global competitiveness - The Global Competitiveness Index (GCI), which measures the overall competitiveness of economy. This index is calculated on the basis of 100 indicators such as: macroeconomic environment, innovations, a degree of business development, labour market effectiveness, development of financial markets or higher education. In turn, International Institute for Management Development (IMD) prepares World Competitiveness Yearbook evaluating 55 countries based on 300 detailed criteria. The IMD Report takes into account the following factors: economic growth, employment, foreign trade results, price level, fiscal policy, company efficiency or infrastructure.[11] Table 1 presents the position of Poland in two selected rankings (GCI and IMD) within the years 2000 – 2016.

Table 1. The ranking according to the Global Competitiveness Index and International Institute for Management Development

Ranking according to Global Competitiveness Index (GCI)		**International Institute for Management (IMD) – World Competitiveness Yearbook**	
Years	Position in the ranking GCI	Year	Position in the ranking IMD
2000-2001	35	2000	40
2001-2002	41	2001	47
2002-2003	51	2002	45
2003-2004	45	2003	47
2004-2005	60	2004	48
2005-2006	51	2005	48
2006-2007	48	2006	50
2007-2008	51	2007	52
2008-2009	53	2008	44
2009-2010	46	2009	44
2010-2011	39	2010	32
2011-2012	41	2011	34
2012-2013	41	2012	34
2013-2014	42	2013	33
2014-2015	43	2014	36
2015-2016	41	2015	33
2016-2017	39	2016	33

Source: Own study based on: World Economic Forum, Global Competitiveness Reports for the periods 2000-2017 and World Competitiveness Yearbook for the periods 2000-2016.

[1] Flanagan K., Uyarra E., Laranja M.: Reconceptualising the 'policy mix' for innovation, "Research Policy", 2011, no. 40, p. 703.
[2] Kuta K., Rudnicki K.: Funkcjonowanie gospodarki otwartej - Model Mundella-Fleminga, „Finanse I Prawo Finansowe",2015, no 3, p. 61.
[3] Kuttner K.N.: The Monetary – Fiscal Policy Mix: perspectives from the U.S , „Bank i Kredyt", 2002, no. 11–12, pp. 208–209.
[4] Falkus M.: Korean Business: Internal and External Industrialization, „Business History", 2000, no. 42 (1), pp. 141-142.
[5] Misztal P.: Zdolność konkurencyjna Polskiej gospodarki w okresie 1998 - 2007 w świetle rankingów konkurencyjności międzynarodowej [in:] Kwaśnik Z., Żukow W. (Eds.), Aktualne wyzwania ekonomii. Radom University, Radom, 2009, p. 55.
[6] Jedliński B.: Polityka handlu zagranicznego, Wydawnictwo Uniwersytetu Gdańskiego, Gdansk, 2002, p. 72.
[7] Szamrej-Baran I.: Konkurencyjność gospodarki Polski na tle wybranych gospodarek Unii Europejskiej, „Zeszyty Naukowe Uniwersytetu Szczecińskiego. Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania", 2012, no. 25, p. 125.
[8] The reports that are considered the most well-known reports about the competitiveness of the economy include: The World Bank Annual Report, Doing Business, Report, Ernst & Young Europe Investment Attractiveness Report, Global Competitiveness Ranking by the World Economic Forum, Global Competitiveness Journal, Big Mac Index, International Institute for Management Development Report (International Institute for Management Development), Bertelsmann Annual Report. The analysis of Polish competetiveness position in some of above mentioned reports may be found in Report of Ministry of Economic Development „Entrepreneurship in Poland", October 2016, Warsaw, pp. 108-111.
[9] Poland 2015. Report Economy, Warsaw 2015, Ministry of Economy, p. 9.
[10] Piasecki R.: Rozwój gospodarczy a globalizacja, PWE, Warsaw, 2003, pp. 69-71.
[11] Stawska J.: Konkurencyjność polskiej gospodarki w kontekście ostatniego kryzysu finansowego, „Przedsiębiorczość i Zarządzanie", Tom XV, Zeszyt 10, 2014, p. 376-377.

The position of Poland in selected rankings (excluding very high positions in 2000 in both rankings) shows a positive trend (despite the decline in some years).

2. Policy mix and its instruments and economy

Fiscal and monetary authorities have different goals and preferences. The central bank is striving mainly to maintain a stable price level, whereas the government - to maximize real economic growth, taking into account the impact of the budget deficit on GDP growth and budgetary constraints.[12] The difference in the goals and preferences of the central bank and government makes stabilization of the economy in the short terms difficult. Reconciliation is the right choice for both authorities, because a conflict between monetary and fiscal policy can lead to an increase in the interest rate and budget deficit.

The effect of dual power results in autonomous decisions by monetary authorities and fiscal authorities[13] defined as policy mix and understood as a combination of decisions by monetary and fiscal authorities. The premise of this combination is to stimulate and maximize the development of the economy while minimizing unemployment[14] and ensuring price stability. Consequently, the coordination of both policies contributes to greater stability of the financial system.

The optimal situation for the economy takes place when there is mutual complementation and support of the government and the central bank. Choosing the policy mix as the most appropriate combination of fiscal and monetary policy, taking into account the adopted criteria, takes into account the characteristics of both policies, although it should be remembered that even the most appropriate choice does not necessarily have the desired effect.[15] The key problem of coordination of monetary and fiscal policies is also the problem of concern for the entity that would be responsible for such coordination. S. Owsiak emphasizes that the issue of the person responsible for coordinating these policies is still not resolved on the basis of theory or practice. Hence, this problem requires further theoretical research and the search for systemic solutions to develop the institutional basis for policy mix coordination.[16]

Despite the complementary character of fiscal and monetary policies, there are significant differences between them. Each policy is conducted by independent authorities, which results in different objectives, met by using various instruments.

Fiscal policy is one of the basic forms of stimulating economic development. Governments have at their disposal various fiscal and legal instruments to stabilize the current state of affairs (taxes and other public levies, expenditures, public deficits, public debt, guarantees and loan guarantees to economic entities influencing the state budget to achieve specific fiscal and non-fiscal objectives).

It is not easy to conduct a good fiscal policy[17], mainly due to fiscal regulations (fiscal rules).[18] Fiscal policy is largely influenced by political factors. Financing the health care system, pension insurance, combating unemployment or pro-family policy is bound to require budget spending. Rising costs outweigh the state budget and make the tax revenues not sufficient and as a consequence, the public deficit is increasing, leading eventually to excessively high public debt. Both monetary policy and fiscal policy are an essential part of the state's economic policy and they use the money supply for the pursuit of general economic objectives by shaping it to adapt to the needs of the economy. Monetary policy, inter alia through interest rate policy, affects internal demand, economic stability, and availability of credit for businesses and individuals. The central bank's actions focus mainly on maintaining a low inflation rate. According *Monetary Policy Strategy beyond 2003* „(...) the monetary policy is targeted to attain a stable inflation rate of 2.5% after year 2003 with a permissible volatility band of ±1 percentage point either side of this target."[19]

The appropriate policy mix is an opportunity to minimize the effects of the crisis. Similarly, for example, between 2007 and 2012 (including the period during which the international financial crisis emerged), when the coordination of monetary and fiscal policy to a certain extent aroused the investment activity of companies, so that the effects of the crisis were not so severe.[20] Furthermore, some analyses indicate that, without the application of coordinated monetary and fiscal policy, the effects of the financial crisis could be more severe. [21] It was particularly during the crisis that challenges for the policy mix emerged.[22] As a result, an increase in coordination of the policy mix was observed in the years 2007-2013.[23]

Policy mix seems to be a relatively popular research topic in literature. The policy mix is examined inter alia from the point of view of the central bank's decision-making interactions with the government and their priorities[24], assessment the impact of monetary and fiscal policy on the level of investment [25], the state of public finances of a given country against the background of the European Union, the OECD or other world economies, including the context of the debt crisis [26].

3. Research method

Authors assessing the competitiveness of the Polish economy in the context of the policy mix used the annual statistical data presented by the Central Statistical Office (GUS) for the years 2000 - 2016. These years include the economic slowdown 2001-2002 and the recent financial crisis and post-crisis years. In order to conduct the analysis, the authors selected the following macroeconomic indicators: a) from the area of monetary policy: interest rates, money supply, inflation rate and exchange rate, b) from the area of fiscal policy: public debt and deficit ratios in relation to GDP, unemployment level and GDP dynamics.

The correlation between selected variables from the monetary and fiscal policy area was calculated to examine the existence of a statistically significant correlation in the policy mix in the economy. Competitiveness has been measured by such

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[13] Owsiak O.: O instytucjonalnych przesłankach trudności w koordynacji polityki monetarnej z polityką fiskalną, „Zeszyty Naukowe PTE", no 12, Polskie Towarzystwo Ekonomiczne, Cracow, 2012, 48 p.
[14] Stawska J.: Wpływ policy-mix na wzrost gospodarczy i poziom bezrobocia w Polsce, „Zeszyty Naukowe. Finanse, Rynki finansowe, Ubezpieczenia" no. 67, 2014, pp. 667 - 677.
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[17] The reason why it is not easy to conduct a good fiscal policy explains among others, [in] Działo J.: Dlaczego trudno jest prowadzić "dobrą" politykę fiskalną?, "Gospodarka Narodowa", no. 1/2, 2012; O. Issing O.: The role of fiscal and monetary policies in the stabilization of the economic cycle, 2005 https://www.ecb.europa .eu/press/key/date/2005/html/sp051114.en.html (access 10 December 2017).
[18] income rules– their aim is to maintain stable taxes and limitation of rapid changes in their rates; cost rules– total budget costs could rise at a rate of not higher than inflation + 1 p.p.; public debt rules – limit for total public debt level expressed as a relation of debt to GDP cannot exceed 60%; public deficit rules– in a given period of time (fiscal period) budget deficit should not exceed 3% of GDP [in:] Działo J., Urbanek P.: Wpływ reguł fiskalnych na konkurencyjność gospodarek w nowych i starych krajach członkowskich UE. Wnioski z badań empirycznych, [in:] Grynia A. (ed.), Wybrane aspekty rozwoju i konkurencyjności nowych krajów członkowskich Unii Europejskiej, Faculty of Economics- Informatics, Bialystok University, 2015.
[19] Monetary Policy Strategy beyond 2003, NBP, Warsaw, February 2003, 12 p.
[20] Stawska J.: Znaczenie policy-mix dla działalności inwestycyjnej przedsiębiorstw w kontekście zrównoważonego rozwoju, [in:] Borys G., Dziawgo D., Dziawgo L., Patrzałka L. (eds.) „Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu no. 330, Finanse i rachunkowość na rzecz zrównoważonego rozwoju. Gospodarka - etyka – środowisko", Wroclaw, 2014, 397 – 405 pp.
[21] Stawska J.: Wpływ …, op. cit., 667 – 677 pp.
[22] Stawska J., Grzesiak L.: Challenges for policy mix in the context of the financial crisis. The case of Poland, "Journal of Finance and Financial Law" no. 4/2014, Lodz, pp. 139.
[23] Stawska J.: Wpływ …, op. cit., 667 – 677 pp.
[24] Woroniecka-Leciejewicz I.: Analiza policy-mix z uwzględnieniem interakcji decyzyjnych między bankiem centralnym a rządem i ich priorytetów, „Zeszyty Naukowe Wydziału Informatycznych Technik Zarządzania Wyższej Szkoły Informatyki Stosowanej i Zarządzania. Współczesne Problemy Zarządzania", no. 1/2011.
[25] Stawska J.: Znaczenie …, op. cit., 397 – 405 pp.
[26] Stawska J.: Koszty obsługi długu publicznego w Polsce w kontekście kryzysu finansowego w Unii Europejskiej, „Acta Universitatis Lodzensis, Folia Oeconomica no 279", Lodz University Press, Lodz, 2013,41 – 56 pp.

indicators as: GDP dynamics, inflation rate, budget deficit ratio, public debt ratio and exchange.

4. Analysis of monetary and fiscal policy measures against the competitiveness of the Polish economy

Below is presented an analysis of selected measures describing monetary and fiscal policy in Poland in the context of the competitiveness of the Polish economy. The analysis started with the inflation index as the monetary policy measure. The most common inflation measure is *consumer price index* (CPI). Its popularity results from the fact that it refers to consumption prices, which is the category of the largest part of GDP.

Inflation in Poland in the analyzed period remains at a low level (creeping inflation) with the exception of year 2000 when inflation amounted to 8.5%, otherwise it is generally within the inflation target (2.5% +/- 1p.p.), with some exceptions (such as 2004 - inflation of 4.4% - when Poland joined the European Union). The years 2007 - 2008 are a period of intensifying disturbances on global financial markets, hence inflation in 2007 was 4.0% and exceeded the inflation target.

Significant signs of price declines were observed in the second half of 2014. Deflation lasted until 2015, mainly due to the fall in oil prices (which reduced production costs and increased corporate profits). In the last two years of analysis (2015-2016), deflation initially remained and 2016 saw low inflation. The latest GUS report indicates that inflation in the first quarter of 2017 increased by 1.1% compared to the previous quarter and by 2% compared to the first quarter of 2016.[27] Inflation was accelerating at the beginning of 2017, which was mainly influenced by external factors.[28] The NBP's projection (March 2017) for the annual inflation rate YOY terms is 2.00%, which means that it continues to be in the inflation target.[29] Apart from inflation, the central bank may also to some extent influence the money supply, summarizes in Table 2.

Table 2. Total money supply, consumer price and service indices in the period between 2000-2016

Year	Total money supply (in bln PLN)	Total money supply (as M3) Data in % of GDP	Price-inflation ratio – a month ending the period (December of the previous year = 100)	Reference rate (%) at the end of the year
2000	300 757,3	40,3	8,5	19,00
2001	329 704,7	42,3	3,6	11,50
2002	326 124,9	40,2	0,8	6,75
2003	345 144,8	40,8	1,7	5,25
2004	377 534,5	40,5	4,4	6,50
2005	427 125,4	43,1	0,7	4,50
2006	495 309,5	46,3	1,4	4,00
2007	561 623,8	47,3	4,0	5,00
2008	666 231,3	51,8	3,3	5,00
2009	720 232,5	52,5	3,5	3,50
2010	783 648,5	54,2	3,1	3,50
2011	881 496,3	56,3	4,6	4,50
2012	921 412,5	56,5	2,4	4,25
2013	978 908,2	59,1	0,7	2,50
2014	1 059 015,3	61,6	-1	2,00
2015	1 154 992,6	64,2	-0,5	1,50
2016	1 265 675,2	68,4	0,8	1,50

Source: Own study based on: statistical data of GUS available at http://stat.gov.pl/wskazniki-makroekonomiczne (access 18 November 2017).

Money supply in Poland measured by the broadest aggregate - M3 - in the analyzed period is systematically increasing [30]. In Poland, the central bank uses a policy of low interest rates (compared to historical data) which should favor the economy (though not always). Currently (December 2017) the main interest rates of NBP have been not changed since March 2015 (Table 2).

In Poland, the exchange rate has been floating since 2000, which means that it is shaped by the balancing of supply and demand for currencies. Table 3 shows the exchange rates of USD, EUR and CHF in PLN.

Table 3. NBP official exchange rates (annual average) in the period between 2000-2016

Years	100 USD (in PLN)	100 EUR (in PLN)	100 CHF (in PLN)
2000	434,64	401,10	257,47
2001	409,39	366,85	243,10
2002	407,95	385,57	262,70
2003	388,89	439,78	289,05
2004	365,40	453,40	293,58
2005	323,48	402,54	259,99
2006	310,25	389,51	247,61
2007	276,67	378,29	230,35
2008	240,92	351,66	222,02
2009	311,62	432,73	286,58
2010	301,57	399,46	289,51
2011	296,34	411,98	334,84
2012	325,70	418,50	347,21
2013	316,08	419,75	341,00
2014	315,51	418,52	351,23
2015	377,01	418,39	392,00
2016	394,31	436,25	400,21

Source: Own study based on statistical data of GUS available at http://stat.gov.pl/wskazniki-makroekonomiczne/ (access 18 November 2017).

Observing the exchange rate data, we note that the PLN exchange rate strengthened significantly against the USD in 2007-2008, while against the EUR and the CHF it was observed in 2001-2002 and 2007-2008, which was probably influenced by the economic slowdown of 2001-2002 and the 2007-2008 financial crisis.

Next, statistical data from the area of fiscal policy are presented below. The analysis began with the most commonly used measure of economic growth, which is the dynamics of GDP, GDP in current prices, GDP per capita (table 4) This pace determines how fast the economy is developing.

Table 4. GDP Dynamics, GDP in current prices and GDP per capita expressed in the Purchasing Power Standard (PPS) in years 2000-2016

Years	GDP growth in %	GDP in billion PLN current prices	GDP per capita in PPS (UE 28 = 100) according to GUS
2000	4,60	747 032	47
2001	1,20	779 975	46
2002	2,00	810 617	47
2003	3,60	845 930	48
2004	5,10	933 062	49
2005	3,50	990 468	50
2006	6,20	1 069 824	51
2007	7,00	1 187 605	53
2008	4,20	1 286 069	55
2009	2,80	1 372 208	60
2010	3,60	1 445 298	62
2011	5,00	1 566 824	65
2012	1,60	1 629 425	67
2013	1,40	1 656 895	67
2014	3,30	1 719 769	68
2015	3,80	1 799 392	69
2016	2,90	1 858 637	69

Source: Own study based on statistical data of GUS available at http://stat.gov.pl/wskazniki-makroekonomiczne/ (access 18 November 2017).

GDP growth in Poland declined considerably at the beginning of the analyzed period, i.e. in the years 2001-2002, which was related to the overall economic slowdown. Then, after a period of relatively high GDP growth in 2004, 2006-2007, this dynamics significantly decreased. Clear pace started to slow down in 2008-2009 and in 2012 - 2013 (although the growth was positive). In the first period, this could have been the result of the global financial crisis; in the second, the deceleration of public investment after Euro 2012 and the attempt to consolidate public finances (i.e. the reduction of public expenditure to stabilize the General Government sector).

The analysis of GDP per capita eliminates an impact of absolute population size facilitating comparisons between countries because it reflects purchasing power of each currency. GDP

[27] Statistical data of GUS available at http://stat.gov.pl/wskazniki-makroekonomiczne/.
[28] Monetary Policy Council, Inflation Report, March 2017, NBP,15 p.
[29] Official page of NBP, www.nbp.pl, access 10 December 2017.
[30] Ibidem.

growth ratio per capita in PPS was presented in relation to the average for EU-28 (determined at the level of 100) In the analyzed period, GDP per capita in Poland is lower than the EU average. GDP per capita, expressed according to purchasing power standards, systematically increased in the analyzed period, and in 2015 reached the level of 69% of the EU average.

Accelerating the pace of economic growth may cause a reduction in the unemployment rate, but it may also trigger inflationary pressure and a tendency to increase foreign debt. The drop in unemployment contributes to the growth of real disposable income and is certainly a positive phenomenon in the economy. The unemployment rate in Poland in 2016 is the lowest in the discussed period 2000 - 2016 (Table 5).

Maintaining the stability of the financial sector is crucial for the economy. The indicators presented in Table 5 define the state of the general government sector (General Government - GG) in Poland.

Table 5. Government debt in relation to GDP and unemployment in the period between 2000-2016

Year	Deficit/surplus of government debt in % of GDP	Government debt in % of GDP	Unemploy-ment rate in %	Unemployment rate in thous.
2000	-3,00	36,50	15,1	2 702,6
2001	-4,80	37,30	17,5	3 115,1
2002	-4,80	41,80	20	3 217,0
2003	-6,10	46,60	20	3 175,7
2004	-5,10	45,00	19	2 999,6
2005	-4,00	46,40	17,6	2 773,0
2006	-3,60	46,90	14,8	2 309,4
2007	-1,90	44,20	11,2	1 746,6
2008	-3,60	46,30	9,5	1 473,8
2009	-7,30	49,40	12,1	1 892,7
2010	-7,50	53,10	12,4	1 954,7
2011	-4,90	54,10	12,5	1 982,7
2012	-3,70	53,70	13,4	2 136,8
2013	-4,00	55,70	13,4	2 157,9
2014	-3,30	50,20	11,5	1 825,2
2015	-2,6	51,1	9,7	1 563,3
2016	-2,4	54,4	8,3	1 335,2

Source: Own study based on statistical data of GUS available at http://stat.gov.pl/wskazniki-makroekonomiczne/ (access 18 November 2017).

The presented data shows that the indicators of the public finance deficit and public debt clearly deteriorated in 2001-2005 (which probably resulted from economic deterioration). The process of economic deterioration obviously accelerated in 2008-2011, which probably resulted from the financial crisis. Due to the fact that in 2009-2010 the border of 3% the relation between public deficit and GDP (Maastricht criteria) was explicitly exceeded, excessive deficit procedure was initiated. It was abolished by the Council in June 2015[31], which was certainly helped by the pension reform. Higher budget revenues were provided mainly from taxes and fees. From January 2011 VAT rates were increased by 1 percentage point - from 22% to 23%, and excise duty increased several times. From this moment, the state of public finances has not deteriorated.

The above analyses of statistical data of variables related to monetary and fiscal policy were supplemented with an analysis of the correlation ratio between selected variables in the policy mix in Poland in the years 2000 - 2016. Table 6 shows the Pearson's correlation coefficients between variables related to monetary policy like: nominal reference interest rates of NBP (%) - [IR_NOM], inflation rate (CPI) in the Poland – month ending the period (December of the previous year = 100) – [INF], Money Supply as Broad Money M3– in million PLN – [M3_REAL], and the selected economic variables related to fiscal policy like: nominal GDP in current prices in PLN, adjusted by the CPI- [GDP_REAL]; GG deficit as % of GDP – [DEF%]; GG debt as % of GDP [DEB%]; GG Debt in million PLN adjusted by CPI [DEB_REAL] and the level of unemployment – as at the end of the year [in thous.] – [UNEMP]. Time series [GDP_REAL] and [M3_REAL], [DEB_REAL] are in real terms using CPI index (I_1= 2000=100). For each correlation, the p-value was estimated (assuming that a p-value greater than $\alpha = 0.05$ or $\alpha = 0.1$ was indicative of a statistically insignificant correlation). Prior to correlation analysis, variables were tested for stationarity with the ADF test (Dickey-Fuller test). Variables were transformed into first differences (if it was necessary), yielding stationary. To perform the analysis, data spanning the years 2000-2016 were sourced from the website of the Central Statistical Office of Poland.

Table 6 Pearson's correlation coefficients for the selected variables for Poland, 2000-2016

Variables	Pearson's correlation for Polish economy
IR_NOM v. d_ GDP_REAL	-0. 5708 (p-value= 0.0209)
d_M3_REAL v. d_ GDP _REAL	0.678 (p-value= 0.0039)
IR_NOM v. DEB%	- 0.8511 (p-value = 0.000)
d_M3_REAL v. DEB_REAL	0.599 (p-value= 0.0143)
d_M3_REAL v. DEF%	0.539 (p-value= 0.0314)
INF v. DEB%	- 0.486 (p-value= 0.048)
UNEMP v. IR_NOM	-0.608 (p-value = 0.009)
UNEMP v. d_M3_REAL	-0.797 (p-value= 0.0002)

Source: Own study prepared in GRETL program.

Analyzing directions and strengths of correlation between macro and micro-economic variables concerning the course of monetary and fiscal policy in Poland in the years 2000-2016 it must be noted that there are dependencies between these variables and significance of these interdependencies for the policy mix of the government and central bank. In the period between 2000-2016 a moderate negative correlation between a nominal NBP reference rate and first differences for the real GDP [-0,570] was observed. What was particularly important was a correlation between first differences for the real money supply M3 and first differences for the real GDP [0,678]. Then, a nominal NBP reference rate to a great extent is negatively correlated with public debt [-0,851]. Moderate correlations were observed between first differences for the real money supply M3 and appropriately real GG government deficit [0,599] and GG government deficit in % of GDP [0,539].

Moderate negative correlation is observed between inflation ratio and government debt as % of GDP in Poland [-0,486]. Conducted correlations also indicate that the level of unemployment is significantly correlated with a NBP nominal reference rate [-0,608], which suggests crucial interdependencies between one of fiscal authorities objectives (as the lowest unemployment rate) and interest rate as an instrument of monetary power. Unemployment was also correlated to a great extent with the first differences for the real money supply M3 [-0,797]. These dependencies indicate a significant connection of tools and variables from monetary policy with key macroeconomic variables for government fiscal policy. It can suggest that in the analyzed period there were crucial correlations between variables from policy mix area in Poland.

5. Conclusions

The issue of competitiveness of the economy is the result of decisions taken by the economy policy agents (central bank and the government) of a given country. Polish economy still expands steadily which was confirmed in this article by conducting the analysis of indicators and the research by the European Commission.[32] General economic perspectives are still positive, although the internal risk appears, related e.g. to unfavourable demographic perspectives.

In the analysed period the deterioration of the macroeconomic indicators resulted from the economic slowdown in 2001-2002 and the last financial crisis, which very quickly moved to the economies of the individual countries. This deterioration resulted in the setback of the standing of public finance, higher

[31] In Poland, the excessive deficit procedure has been initiated since 2009.

[32] Commission Staff Working Document. National Report – Poland 2016. http://ec.europa.eu/europe2020/pdf/csr2016/cr2016_poland_pl.pdf (access 18 June 2017).

unemployment which definitely also adversely affected competitiveness of the economy. In the relationship of the threats for economy (as financial crisis), central bank and government decided to take anti-crisis activities. By characterisation of the given indicators about policy mix, the authors conducted the correlation analysis between indicators from policy mix. Results of the analysis point out at statistically significant correlation between measures from monetary and fiscal policy against improving measures of competitiveness of the Polish economy, which may prove that mutual relevant impact of policy mix indicators positively affects the competitiveness of the economy.

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