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THE IMPACT EXERTED BY CHANGES OF THE NBP INTEREST RATES ON THE EXCHANGE RATE OF THE POLISH ZLOTY

WPLYW WYWIERANY PRZEZ ZMIANY STÓP PROCENTOWYCH NBP NA STOPY PROCENTOWE POLSKIEGO ZŁOTEGO

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Summary: The aim of the article is to analyse the impact exerted by changes of the NBP base interest rates on the exchange rate of the Polish zloty and to evaluate whether the observed impact is consistent with the theory. A typical assumption grounded in the theory of economy refers to a positive direction of the impact exerted by changes of interest rates stated by the central bank on the exchange rate of the national currency. The analysis covers the impact exerted by changes of the NBP interest reference rate on the behaviour of the nominal market EUR/PLN exchange rate during the period 2004–2015 (in 2015 the latest change of the NBP interest rates took place). The authors have applied the event study method for analysing the response of the exchange rate in particular periods of time: during one day/five days before the decision, and one day/two days/five days after the decision made by the NBP. The analysis divides the decisions made by the NBP into decisions which met expectations of the market and decisions which were unexpected by the market. The results of the research present a picture of random multidirectional changes of various strength which do not confirm indications stated in the theory of economy, referring to the direction of the impact exerted by the monetary policy on the exchange rate.

Keywords: exchange rates, interest rates, monetary policy, monetary transmission, event study.

Streszczenie: Celem niniejszego artykułu jest zbadanie wpływu zmian bazowych stóp procentowych NBP na kurs złotego oraz ocena czy obserwowany wpływ był zgodny z teorią. Typowym założeniem osadzonym w teorii ekonomii jest dodatni kierunek wpływu zmian stóp procentowych banku centralnego na kurs krajowej waluty. Analizie poddano wpływ zmian referencyjnej stopy procentowej NBP na zachowanie nominalnego rynkowego kursu EUR/PLN w okresie 2004-2015 (w 2015 r. miała miejsce ostatnia zmiana stóp procentowych NBP). Autorzy zastosowali metodę *event study*, badając reakcję kursu punktowo w dniach 1 dzień/5 dni przed decyzją, oraz 1 dzień/2 dni/5 dni po decyzji NBP. W analizie dokonano rozróżnienia na decyzje NBP zgodne z oczekiwaniami rynku oraz generujące zaskoczenie rynku.

Wyniki przeprowadzonego badania dały obraz przypadkowych wielokierunkowych zmian o zróżnicowanej sile, które nie potwierdzają wskazań teorii ekonomii o kierunku oddziaływania polityki pieniężnej na kurs walutowy. Taki rezultat badań sugeruje ograniczony potencjał oddziaływania polityki stóp procentowych NBP na rynek walutowy w Polsce.

Słowa kluczowe: kursy walutowe, stopy procentowe, polityka pieniężna, transmisja walutowa, studium przypadku.

1. Introduction

It is assumed in the theory of economy that decisions made by monetary authorities come as an important factor which determines the development of the floating exchange rate. The question referring to the relations between the monetary policy and the fluctuations of the exchange rate has been discussed in numerous theoretical and empirical research studies. A typical assumption grounded in the theory of economy refers to a positive direction of the impact exerted by changes of the interest rates stated by the central bank on the exchange rate of the national currency. For example, following this line of reasoning, the tightening of the monetary policy should result in the strengthening of the national currency in relation to other currencies; the expected outcome of a decrease in the interest rates should be depreciation of the exchange rate of the national currency. Having accepted such an assumption, it is possible to draw a conclusion that there is a possibility of controlling the floating exchange rate, or at least affecting it directionally through the central bank, with the use of the interest rate policy. Naturally, in the conditions of the floating exchange rate, decisions made by central banks in the field of interest rates serve the supreme objectives, other than exchange rate objectives. However, it has been assumed that the monetary policy also brings about some particular side-effects in the exchange rate, which condition the achievement of the basic objectives of central banks (inflation objective, stabilisation of economic growth). The exchange rate channel becomes only one of the fundamental channels of monetary transmission.

The aim of the article is to analyse the impact exerted by changes of the NBP base interest rates on the exchange rate of the Polish zloty and to evaluate whether the observed impact is consistent with the theory. Although carried out for many years by economists, such research studies present unambiguous and often contradictory results. Providing a research study in the discussed field in Poland seems particularly interesting, considering the fact that in a medium-term perspective, a strategic decision needs to be made on the question whether Poland should enter the Eurozone, and when it should be done. A fundamental consequence of monetary integration is the loss of autonomy in the monetary policy, which usually comes as the most crucial argument used by the opponents of Poland entering the EMU. Therefore, it is worth performing multilayered research focused on the evaluation of the actual efficiency of the autonomic monetary policy in terms of the desirable impact on

the market parameters. It may provide better understanding of the cost that would involve a possible resignation from monetary autonomy.

The article presents an analysis of the impact exerted by the changes of the base reference interest rate defined by the NBP on the behaviour of the nominal market EUR/PLN exchange rate in the years 2004-2015 (the latest change in the NBP interest rates was in 2015). The applied research method has been the event study. The method allows us to observe short-term response of the current PLN exchange rate at the particular periods of time when the NBP benchmark interest rate was changed. The relations between the interest rates and the exchange rates are not easy to be captured and measured precisely, especially considering the fact that changes in the exchange rate are determined by numerous factors which affect it simultaneously. The event study comes as a typical method which is focused on a short period of time. It allows us to reduce information noise and to separate influence of other disturbing factors [Binder 1998]. However, the method has its disadvantage, namely: the lack of information about long-term influence of the interest rates on the exchange rate. An additional simplification in the discussed research, which has been purposefully assumed with the consideration of the applied approach and method, is the reference made only to the nominal EUR/PLN exchange rate; also the fact that the changes of the inflation rates have not been considered along with the actual categories of rates and of the exchange rate, as well as the fact that changes in the benchmark interest rates abroad are not considered either. On the other hand, however, in order to draw some more precise conclusions, the research includes a division referring to expected and unexpected decisions made by the monetary authorities in the field of interest rates. The article is characterised by a typical structure. Firstly, a review of literature and some selected empirical research in the discussed field are presented. Next, the research method is shown with the research results and their interpretation. Finally, a summary and conclusions are depicted.

2. Literature review

The relations between the interest rate of the central bank and the exchange rate have been broadly described in the theory of economy and discussed in empirical analysis. However, the problem does not seem to be exhausted, considering some divergent results obtained after empirical research studies, and consequently their frequent inconsistency with the theory.

The exchange rate is one of the central elements of monetary transmission, that is namely: a mechanism in which the monetary policy of the central bank affects the actual variables in economy. The exchange rate channel of monetary transmission becomes even more important with advancing globalisation [Mishkin 1996]. In accordance with the accepted assumptions, for example, growth in domestic interest rates results in the growing attractiveness of domestic assets in comparison to foreign ones, as it generates the inflow of capital and appreciation of the national currency.

This, in turn, affects the dynamics of net export, GDP and the inflation rate [Loyza, Schmidt-Hebbel 2002]. Hence, growing interest rates result in the appreciation of the national currency and vice versa (the positive direction of the impact exerted by one variable onto another).

In expert literature, the relative speed of the response of the exchange rate to the changes in the parameters of monetary policy is often emphasized, considering the fact that such effects are induced by the financial (currency) market, which is characterised by much higher dynamics of changes than real economy. Overshooting is a very frequent response which involves short-term excessive adjustments of the exchange rate caused by excessively sensitive markets [Dornbush 1976].

On the other hand, however, stabilisation of the exchange rate from the perspective of monetary policy meets some serious limitations. In accordance with the concept of a triangle of monetary inconsistency, in the conditions of the free flow of capital, the central bank, which runs its monetary policy oriented towards the maintenance of low inflation (inflation targeting), is deprived of any control over the exchange rate fluctuations [Obstfeld et al. 2004]. Although it does tie hands of central banks, in practice the assumption does not deprive them of a possibility of running their efficient monetary policy, relying on the exchange rate channel of transmission and short-term exchange rate control [Obstfeld, Rogoff 1995, p. 28; Dornbush 1976]. Hence, decisions about interest rates are formally made with regard to stabilisation of inflation; however, in reality it does not take place in isolation from the analysis of the situation on the currency market.

Actually, the monetary policy in the countries which declare their attachment to the regime of the floating exchange rate is often oriented towards some moderation of the fluctuation of the exchange rate. In such cases, it is the policy of interest rates applied instead of foreign exchange intervention in order to affect the current level of the exchange rate and to counteract against its excessive deviations from the desired level [Calvo, Reinhart 2002]. On the other hand, the abovementioned deviations of the exchange rate from the level determined by the uncovered interest parity occur relatively often, and they can last persistently for a very long time [Taylor 1995]. Correcting such a situation with the use of monetary policy does not always bring about the required results which may impair the analysis of the relations between the interest rates and the exchange rate [Pattnaik et al. 2003]. The explanation, however, is not the lack of impact exerted by the interest rates on the exchange rate, but the impact of other factors which are at least equally strong at a particular moment, for example: changes of the situation in the financial markets, formation of speculation bubbles on some assets, which are detached from their fundamentals, etc. [McCallum, Bennett 1994].

The problem referring to the impact exerted by the monetary policy on the exchange rate has been discussed in numerous empirical research studies. The relations between the interest rates and the exchange rate have been analysed for various economies, both: developing and developed ones; in the research various

approaches and methods have been applied. There is a review of the selected empirical research studies presented below. Mishra, Montiel and Sengupta analyse the efficiency of the operation of monetary transmission with the use of the VAR models in developing economies, focusing their attention mainly on India [2016]. The results of the research confirm that the direction of the adjustments of the exchange rate to the changes in the monetary policy is consistent with the theory, however the scale of such adjustments is very small. According to the authors, more dependence of the RBI (Reserve Bank of India) exchange rate on the interest rates can be limited by the deficient mobility of the capital and frequent foreign exchange interventions of the RBI, which disturb the adjustments of the exchange rate to the monetary policy.

Using the event study technique, Janecki [2012] presents an analysis of the reaction of the Polish monetary market (WIBOR) and the Treasury securities market to the changes of the NBP benchmark interest rate. The analysed results are consistent with the theory. The strength of the adjustments depends on whether the changes of the interest rates are expected in the market (decisions which come as a surprise cause stronger reactions) and on the direction of the changes in the monetary policy (the market reacts stronger when the policy is tightened rather than loosened).

Kapuściński [2017] presents an analysis of the impact exerted by the monetary policy on the prices of assets in Poland. The results of the research, in which the factor analysis has been applied, indicate that the operation of the mechanism related to the impact exerted by the NBP on the prices of assets becomes significantly disturbed, especially in the period of the latest financial crisis. The impact of the monetary policy exerted through the exchange rate channel in the analysed period also appears to be instable.

In the comprehensive study of the NBP [2016] on the operation of the mechanism related to monetary transmission in Poland, a lot of attention is paid to the exchange rate channel. The analysis with the use of the SVAR models indicates strong influence of the changes of the domestic interest rates on the PLN exchange rate. For example, an increase in the base rate by 1 percentage point causes a typical appreciation of the domestic currency by 1.03% in the second quarter after the shock related to a change in the monetary policy. Interestingly, stronger reactions of the PLN exchange rate to the tightening of the monetary policy than to its loosening have been indicated. According to the authors, during the analysed period it was related to a positive sentiment to the Polish currency that had been maintained in the market and a higher probability anticipated with regard to its strengthening rather than its weakening. Despite the observed stable relations between the monetary policy and the exchange rate, the role of moods maintained among the market participants, which can actually present determining strength, has been indicated.

Zettelmeyer [2000] presents an analysis of an impact exerted by the monetary policy on the floating exchange rate of three small open, developed economies (Australian, Canadian and New Zealand) in the 1990s during “regular” periods of

time, as well as during the periods of increased pressure of the financial markets. Carried out with the event study method, the research study indicates a strong relation (consistent with the theory) between the exchange rate and decisions made by the monetary authorities about the interest rates. It has been indicated that an increase in the market cost of money by 1 percentage point resulting from a decision made by the central bank of the analysed economies leads to the appreciation of the domestic currency at the level of 2-3%. Despite the results which indicate that the adjustments of the exchange rate to decisions made in the monetary policy are consistent with the theory, the potential high costs of correcting the market pressure exerted on the exchange rate have been also indicated. For example, the reversing of a 10%-depreciation of the exchange rate in the conditions of increased volatility in the global financial markets would require an increase in the interest rates by as many as 500 base points, without any guarantee that the exchange rate would be maintained at the required level.

Very high costs incurred to stabilise the exchange rate are also discussed by West [2003]. Admittedly, according to the author, it is possible to limit the volatility of the exchange rate with the standard use of the monetary policy instruments, but a side-effect would be an increase in the volatility of interest rates, economic growth and inflation. Kohlscheen [2011] presents an analysis of an impact exerted by the monetary policy on the floating exchange rate in three emerging markets – Brazil, Mexico and Chile. The results of the research turn out to be surprising, as they do not confirm and even reject the principle stating that the tightening of the interest rate policy leads to the strengthening of the domestic currency. It is also important that the obtained results have been confirmed in many variants: both in reference to the USD benchmark exchange rate and in reference to the nominal effective exchange rate (NEER) and also with the consideration of expected (as well as unexpected) decisions made by central banks and changes in the interest rates which have been accompanied by foreign exchange interventions and changes which have not involved such interventions. According to the author, the impact of the monetary policy on the exchange rate might be of illusory nature, and the main determinant of the exchange rate volatility is the global level of aversion towards risk, especially in the group of emerging markets.

3. Research methodology

The article presents an analysis of adjustments in the exchange rate, made in response to changes of the NBP reference interest rate in short periods of time, that is namely: just before or just after decisions made by the Monetary Policy Council (MPC).

The analysis includes the average EUR/PLN exchange rates and changes of the NBP reference interest rate. The data were collected in the years 2004–2015, and they included only the changes of the exchange rate on the days when the decision of the central bank was made about the change of the reference interest rate (in the

analysed period, there were 39 such decisions made). Hence, the data do not provide a full range of daily changes of the exchange rate during that period of time. For the sake of calculation, the level of the exchange rate has been considered one day/five days before the decision and one day/two days/five days after the decision made by the NBP.

The relative changes of the EUR exchange rates have been calculated on the days adjacent to the day of the decision about the change of the reference interest rate, according to the following equation:

$$\Delta e_{t-i,t+j} = \frac{e_{t+j} - e_{t-i}}{e_{t-i}}, \quad (i = 0, 1, 5; j = 1, \dots, 39), \quad (1)$$

where: e_{t+j} , e_{t-i} are the exchange rate at the moments $t - 1$ and $t + j$ respectively, t is the moment of the change of the reference interest rate.

In the relative change of the reference interest rate $\Delta i_{t-1,t}$ has been calculated in a similar way. Considering the fact that it has been assumed that the response of the exchange rate to the change in the reference interest rate may take place at a different moment, seven time periods have been taken into consideration, for which the relative changes in the exchange rate have been calculated. Since it has been assumed that the response of the exchange rate to the decisions of the MPC, which were not unexpected in the market, may take place during the days before such decisions, it has been decided to consider not only the periods of time after the announcement of the decisions but also the periods of time before such an announcement.

Firstly, in order to analyse the impact of the monetary policy on the exchange rate, the following linear regression has been performed with the equation presented below:

$$\Delta e_{t-i,t+j} = \beta_0 + \beta_1 \Delta i_{t-1,t} + \varepsilon_t, \quad (i = 0, 1, 5; j = 0, 1, 2, 5; t = 1, \dots, 39), \quad (2)$$

where: ε_t is a random component.

In this way 7 models have been obtained, one for each considered period of time. It should be emphasized that the analysis performed with the assumed method (event study) is characterised by limited possibilities, because it comes down to the measurement of the particular response of the exchange rate on the day when the decision about the interest rates is made (t), shortly before the decision ($t - 1/5$) and shortly after it ($t + 1/2/5$). It should be, however, remembered that the monetary authorities try to efficiently communicate with the market participants and not to take them by surprise with their decisions. Subsequently, it often naturally leads to preemptive discounting of decisions about changes of the interest rates by the market. It may result in the fact that the changes of the parameters in the monetary policy affect the exchange rate to a lesser extent at a moment of decision made

by the central bank, and to a greater extent at the moment of their anticipation by the market, long before the decisions are made by the central bank. Therefore, it is worth observing the response of the PLN exchange rate to decisions of the MPC which have been unexpected by the market. Intuitively, it seems that the result of an unexpected decision made by the monetary authorities should be a change in the currency market which is materialized at the moment when the decision is made. This, in turn, should reduce the abovementioned shortcomings of the discussed research performed with the use of the event study method. An objective tool for indication whether the decisions made by the Monetary Policy Council have been expected or unexpected is a questionnaire form developed by the PAP (Polish Press Agency) for the analysis of domestic economists' expectations in the field of the NBP interest rates. It is run on the monthly basis, before the decision-making meetings of the MPC. On such a basis, the decisions of the MPC unexpected by the market have been selected (Table 1).

Table 1. Changes of the NBP reference interest rate unexpected by the market

Date	Market expectations	NBP decisions	Direction of surprise
June 2004	+25 pb.	+50 pb.	+
June 2007	Constans	+25 pb.	+
February 2008	Constans	+25 pb.	+
November 2008	Constans	-25 pb.	-
May 2012	Constans	+25 pb.	+
March 2013	-25 pb.	-50 pb.	-
May 2013	Constans	-25 pb.	-
October 2014	-25 pb.	-50 pb.	-
March 2015	-25 pb.	-50 pb.	-

Source: authors' own study based on the PAP data.

Following the abovementioned considerations, it has been decided to provide two separate analyses of the impact exerted by the changes of the interest rate on the exchange rate in the case when the MPC's decision came as a surprise, and in the case when such a decision was expected. However, the number of cases when the unexpected change of the interest rates in the analysed period took place has turned to be too low to provide any estimation. Therefore, the calculations have been provided for all the cases when the decision about a change of the reference interest rate was made.

4. Research findings and discussion

The results of the regression performed with the use of the least squares method are presented below. For each of the analysed models (Table 2), the results obtained after the evaluation of the β_1 coefficient are presented, along with the standard deviation of that coefficient. There is also the p value, that is namely: the probability of rejecting the null hypothesis of the coefficient value insignificantly different from zero and the value of the Durbin-Watson statistics. The values of the statistics higher than the R^2 determination coefficient allow us to state that there is no spurious regression observed in the discussed cases.

Table 2. The reaction of the exchange rate to the changes of the reference interest rate ($T = 39$)

The number of the model	The change of the exchange rate from	$\hat{\beta}_1$	Standard error $\hat{\sigma}_{\beta_1}$	p	R^2	DW	Equation standard error $\hat{\sigma}_e$
1	$t - 5$ to t	-0.0231243	0.0177466	0.2006	0.043875	1.835854	0.009222
2	$t - 5$ to $t + 5$	-0.0607931	0.0368933	0.1079	0.068369	1.902712	0.019173
3	$t - 1$ to t	-0.00703329	0.0125010	0.5771	0.008483	1.562096	0.006496
4	$t - 1$ to $t + 2$	-0.0272395	0.0237670	0.2591	0.034285	1.447069	0.012351
5	t to $t + 1$	-0.00977706	0.0104217	0.3543	0.023234	2.369390	0.005416
6	t to $t + 2$	-0.0201617	0.0183397	0.2787	0.031631	1.927246	0.009531
7	t to $t + 5$	-0.0376063	0.0316918	0.2429	0.036661	2.089590	0.016469

Source: authors' own calculations with the use of the Gretl software.

For all the models, the p parameter value is higher than the accepted level of significance $\alpha = 0,05$. Therefore, it is possible to state that for all the discussed models, the coefficient β_1 insignificantly differs from zero, at the assumed level of significance (similarly for all the models, the constant term β_0 insignificantly differs from zero, and the results are not reported in the table). The obtained result indicates that the changes of the reference interest rate have not affected the exchange rate in any significant way in any of the discussed periods of time. It is also confirmed by the low value of the R^2 determination coefficient which proves that the variation in the exchange rates is explained by the variation in the interest rates to a very little extent considering the fact that most changes of the reference interest rate during the years 2004–2015 were expected by the market because it had already become adjusted, or because in the discussed period of time there were some other factors, which have been not analysed in the model, and which affected the exchange rate in a stronger way than the change of the reference interest rate.

Considering the fact that the results of the performed regressions indicate the lack of relation between the decisions made by the MPC and the currency market, it

has been decided to analyse an average response of the exchange rate to the change of the reference interest rate in 7 periods of time which have been discussed, in the situation of unexpected growth and decline and expected growth and decline of the reference interest rate. The results are presented in Table 3.

Table 3. The response of the exchange rate to the decisions made by the MPC in 7 periods of time (an average change stated in %)

The MPC decisions	1	2	3	4	5	6	7
	$t - (t - 5)$	$t - (t - 1)$	$(t + 1) - t$	$(t + 2) - t$	$(t + 5) - t$	$(t + 2) - (t - 1)$	$(t + 5) - (t - 5)$
Expected Δ : increase $N = 12$	-0.36	-0.17	-0.13	-0.37	-0.40	-0.54	-0.76
Expected Δ : decrease $N = 18$	0.09	-0.10	0.11	0.34	0.22	0.24	0.31
Unexpected Δ : increase $N = 4$	-0.32	-0.35	0.02	0.47	0.86	0.12	0.55
Unexpected Δ : decrease $N = 5$	-0.70	-0.33	0.00	0.51	1.02	0.18	0.31

Source: authors' own calculations.

In columns 1 and 2 the average change which took place on the day of the decision is presented in relation to the 5th and the 1st day before the decision was made. In columns 3 to 5 the average response which was recorded during the 1st, the 2nd and the 5th day after the decision was made is presented in relation to the day of the MPC's decision. Columns 6 and 7 present the average change of the exchange rate on the 2nd and the 5th day after the decision, respectively in relation to the exchange rate on the 1st and the 5th day before the MPC's decision. It is possible to observe that the changes which are inconsistent with the theory occur most often in the case of unexpected decisions (an unexpected increase of the interest rates). The weakest response to the changes has been observed in the case of comparing the situation on the 1st day after the decision to the situation on the day of the decision, in the case of an unexpected decrease (0 p.p.). The strongest response has been observed 5 days after the decision in comparison to the day of the decision – also in the case of an unexpected decrease (1.02 p.p.). The obtained result can be considered as consistent with the expectations – in the case of an unexpected change, the market shall adjust to it after the MPC's decision. However, too many changes indicating a direction that is inconsistent with the theory of economy in the case of unexpected changes do not allow us to generalise on the conclusion. Furthermore, in the case of an expected increase, the weakest average changes took place in the case of comparing the exchange rate on the day of the decision in relation to the day before the decision (0.17 p.p.) and a day after the decision in relation to the day of the decision (0.13 p.p.). Such a change would be well-justified, considering the fact that in the case of the expected change, the market was able to adjust earlier, e.g. 5 days before

the MPC's decision, when the change reached the level of 0.36 p.p. However, the changes of the high level (0.37 p.p.) 2 days after the MPC's decision and (0.40 p.p.) 5 days after that decision, bring the abovementioned interpretation into question. The abovementioned interpretation is also questioned by the fact that in the case of the expected decrease, the smallest average change took place on the day of the decision, in comparison to 5 days before the decision (0.09 p.p.).

As far as the unexpected changes are concerned, the interpretation refers only to those the direction of which was consistent with the theory of economy. The size of these changes has been compared to the size of the changes expected in the same periods of time, assuming that during the days before the MPC's decision some bigger changes of the exchange rate should take place in the case of the expected changes; during the days after the MPC's decision such changes should be bigger in the case of the unexpected changes. Hence, it is possible to observe that an unexpected increase in the reference interest rate triggered a stronger response of the exchange rate on the day of the decision in relation to the day before the decision (by 0.18 p.p. in comparison to the growth expected in the same time period – such a conclusion would be unfavourable to the abovementioned considerations). Stronger average response to the unexpected decrease in the exchange rate in relation to the response to the expected decrease in the exchange rate, observed 2 and 5 days after the decision with regard to the day of the decision (respectively by 0.17 and 0.8 p.p.) would confirm the assumptions presented above. Considering one day after the decision, the average change would be stronger in the case of the expected decrease in comparison to the unexpected decrease (by 0.11 p. p.); this, in turn, would again bring the discussed assumptions into question. Summing up, a large number of changes which are inconsistent with the theory in terms of their direction or size, result in the fact that the obtained results are ambiguous and do not allow us to draw a conclusion that would confirm it. Possibly, an analysis of a larger number of cases in which an unexpected change has taken place could allow us to draw different conclusions; however, considering the situation in Poland, it is impossible to rely on longer periods of time and a larger number of variables (because of a short history of monetary stability and numerous changes of the regimes applied in the monetary policy).

Table 3 presents the average changes of the exchange rate calculated 2 and 5 days after the decision in relation to the exchange rate 1 and 5 days before the MPC's decision respectively, based on expert literature. In [Janecki 2012], there is some strong response observed during the first of the analysed periods, whereas in [Hardy 1998], a time period includes 4 days before and 5 days after the meeting of the Bundesbank Council, in order to provide the period of one week before and one week after that meeting. It was expected that the consideration of such periods of time would allow the authors to confirm the discussed theory, but the obtained results did not allow them to do so.

5. Conclusions

The provided analysis does not allow the authors to state that changes of the PLN exchange rate are explicitly determined by the changes of the NBP interest rates. The obtained results more likely show random multi-direction changes of different strength, which do not confirm the indications of the theory of economy with regard to the direction of the impact exerted by the monetary policy on the exchange rate. A similar divergence of the results can be also observed in the review of other empirical research studies. Certainly, the exchange rate is simultaneously affected by other factors, but the applied method of event study is designed to limit the impact exerted by such factors as much as possible, for a short period of time. A clear limitation to the provided research in Poland is a small number of changes of interest rates, especially those which are inconsistent with the expectations of the market (in the analysed period of time, there were only 9 changes observed). A larger number of unexpected changes would provide a possibility of drawing conclusions based on a more extensive analysis.

The lack of an explicit direction of the impact exerted by the interest rates on the exchange rate may suggest a limited capability of the monetary policy to affect the currency market, and consequently also other variables. Hence, the operation of the exchange rate channel of monetary transmission may not always follow theoretical assumptions. In economies similar to Polish economy, that is: small, open and sensitive to shocks that appear in the global markets, the advantages of running the autonomic monetary policy can turn out to be limited. A possibility of shaping the interest rates by the National Bank of Poland does not provide full control over the market parameters, including the exchange rate. The results show that using the policy of interest rates, the NBP is not able to control the PLN exchange rate (or, at least, to affect it in a directional way). It can positively contribute to a discussion on the potential accession of Poland to the Eurozone, weakening the arguments presented by the opponents of the Polish accession to the EMU, who refer to the cost of such a monetary integration, namely: resignation from the autonomic monetary policy. The advantages of retaining our monetary autonomy, however, may not be as obvious as it is commonly believed. At the same time, the conclusions presented in the article do not come as the ultimate proof in the discussion. The authors are perfectly aware of this fact. Undoubtedly, it is advisable to provide further research on the efficiency of the monetary policy and passable channels of monetary transmission. The authors intend to continue their research studies in this field. Considering the context, it seems particularly interesting and advisable to provide an analysis of short-term and long-term interactions between the policy run by central banks and the exchange rate.

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