

FLOATING EXCHANGE RATE AS AN AUTOMATIC STABILISER ON THE EXAMPLE OF POLISH ECONOMY

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Abstract

In the theory of economics and in the publicist discussion there is an view stating that the fluctuations of the exchange rate act as an automatic stabiliser, that is namely: the recovery and the slowdown stages in the economic growth are usually followed by the appreciation/depreciation of the exchange rate, which should stabilise cyclical fluctuations, according to the theory.

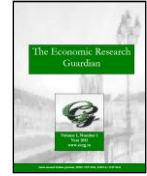
The aim of the article is to verify a relation between changes in economic conditions in Poland and fluctuations in the EUR/PLN exchange rate, and considering such a context, to verify whether the exchange of the Polish zloty performs a role of an automatic stabiliser. The article provides an analysis of the correlation between the changes in the EUR/PLN exchange rate and the dynamics of the GDP growth and of industrial production. The Author applies a simple measurement method based on the Pearson linear correlation coefficient. The analysed time period includes the years 2003-2016, which has provided the Author with an opportunity to observe long series of variables.

The analysis proves that there is a relation between the volatility of the exchange rate of the Polish zloty and the development of the economic situation, however it is not a strong dependency. Furthermore, the analysis does not provide any indications of any possible symmetry or asymmetry in the behaviour of the exchange rate acting as an automatic stabiliser of the economic situation, depending on its stages. It can be therefore concluded that during the analysed period of time, there is not any close relation observed between the movement of the exchange rate of the Polish zloty and the current economic situation; hence, the exchange rate mechanism stabilising the economic conditions has not worked. In this context, the volatility of the PLN exchange rate is coincidental, or it results from some other factors.

The conclusions drawn from the presented analysis may bring significant implications for the national economic policy, particularly in the context of the current discussion on the potential accession of Poland to the Eurozone. Considering the fact that in the article a relatively simple research method has been applied, the Author discerns a necessity to start further in-depth research studies oriented towards the recognition of the role performed by the exchange rate as a stabilising mechanism in economy.

Keywords: Exchange rate, Automatic stabiliser, Economic policy

JEL classification: E42, E44, E52, E61, F31



1. Introduction

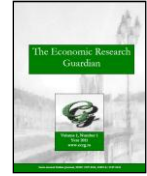
In the theory of economics, a floating exchange rate acts as an automatic stabiliser. This is because in a situation when shocks occur in domestic economy, and they result in a slowdown observed in economic growth or loss of competitiveness, the exchange rate usually responds by accommodating economic conditions and by compensating the balance of trade. For example, following that line of reasoning, an expected natural result of a downturn in the economic situation is depreciation of the national currency; this, in turn, leads to an increase in price competitiveness of export, improves trade performance and finally supports economic growth. It is assumed that such a mechanism particularly refers to smaller, open economies of developing countries, such as Polish economy (Rodrik, 2008, pp. 366-367).

The article presents an analysis of the convergence of changes taking place in economic conditions and fluctuations of the nominal exchange rate in Poland. The analysis is to verify a thesis stating that the exchange rate in Poland actually acts as an automatic stabiliser of economic conditions, and the recovery/slowdown periods in economic growth are usually accompanied by the appreciation/depreciation of the exchange rate of the Polish zloty. According to the theory, it should have a stabilising effect on cyclical fluctuations. Assuming that the exchange rate of the Polish zloty practically acts as such a natural mechanism that can amortise economic conditions, there should be a principle referring to the regularity in the patterns of recovery stages in economic conditions and appreciation of the exchange rate and, respectively, slowdown stages in the economic situation and depreciation of the exchange rate.

The results of the research, based on the observations carried out in a long period of 14 years may bring significant implications for the economic policy in Poland. The analysis of the Polish case is interesting, first of all, because of a discussion which has been taking place in Poland on possibilities to join the Eurozone. An argument related to depriving the exchange rate of its stabilising impact on economic conditions after a possible accession of Poland to the EMU seems to be very significant, and it is frequently referred to in that discussion. A potential accession of Poland to the EMU would undoubtedly come as an event of great importance as Polish economy is the largest in Central and Eastern Europe.

Therefore, the following article may contribute to further development of theoretical considerations in expert literature on the role of an automatic stabiliser performed by the exchange rate, adding a Polish context here. Furthermore, the analysis presented below may also be of an applicative value in a discussion about real economic policy run in Poland and in other countries where currency integration is on the agenda among other political and economic objectives.

The article is divided into three parts. Section 1 presents a review of expert literature on the exchange rate viewed as a mechanism which automatically stabilises economic conditions. Section 2 provides an empirical analysis of relations between changes in economic conditions and the exchange rate in Poland. Section 3 presents conclusions and implications for economic policy in Poland.



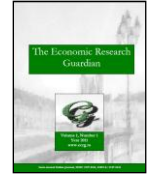
2. Literature

The floating exchange rate develops freely in the market, and it depends on numerous factors. One of the main determinants which affect the level of the exchange rate is the current and anticipated economic situation. It comes as a fundamental factor in the currency market. In accordance with the theory, weakening economic activities, manifested by a downturn in the GDP or by a falling GDP growth rate, should result in a depreciation of the exchange rate of the national currency. A lower level of growth usually initiates a number of occurrences in economy, such as a fall in production and in profits earned by enterprises, a worsening fiscal situation, liberalisation of the course of monetary policy, capital outflows from the stock market, a decline in share prices, etc. Such a coincidence becomes a natural environment for depreciation of the exchange rate, which results from the weakening economic foundations. Depreciation of the nominal exchange rate increases competitiveness of prices and the volume of export which, in turn, supports economic growth in an ad hoc way. Hence, a feedback loop is formed between the economic situation and the exchange rate. In that respect, the floating exchange rate functions as an automatic stabiliser of the economic fluctuations (Obstfeld, 1985, p. 371). A similar mechanism works the other way round. The recovery in economic foundations and a better economic situation lead to appreciation of the national currency. This, in turn, weakens the competitive position of domestic enterprises in relation to foreign ones, impeding economic growth and straightening its cyclical fluctuations.

Following such a course of reasoning, it should be noticed that the floating exchange rate regime dominates over the fixed exchange rate regime in the process of neutralisation of internal or external economic shocks. As it has been mentioned, during an economic shock a correction of the market exchange rate takes place, acting as an adjusting mechanism which enables economy to mildly absorb the shock (to recover more quickly) (Beker, 2006, pp. 318-319). In the system of the fixed exchange rate such a solution is not available, and all the necessary adjustment reactions in response to economic shock are a burdened entirely on the real economy. It practically means that there shall be an increase in the volatility of production, employment and prices (Meade, 1951, pp. 201-202). Thereby, in the regime of the fixed exchange rate, the absorption of shocks in the form of a decrease in the internal economic situation, or worsening terms of trade, takes more time, and it implicates higher social and economic costs.

Edwards and Levy (2003) empirically prove that the floating exchange rate mitigates the impact of external shocks on the GDP growth by half, approximately. It refers both to developing and to developed economies. Furthermore, the analysis provided by the authors proves that applying the fixed exchange rate implies higher volatility of economic fluctuations, especially in the case of negative shocks, which means deeper and longer economic recessions.

Broda and Tille (2003) prove that the absorption of external shocks resulting from the worsening terms of trade takes a quicker and milder course in the regime of the floating exchange course than it does in the regime of the fixed exchange course. Depreciation of the floating exchange course in a short period of time neutralises the results of a negative external shock. In the regime of the fixed exchange rate, internal depreciation (adjustment in the sector of real economy) which comes in response to the worsening relation of competitiveness, occurs in a period of two years, in a partial



scope only. A 10% negative change in terms of trade results in a fall in production. Such a fall is higher by 1.7% in the regime of the fixed exchange rate.

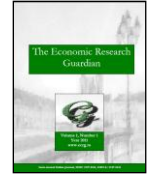
The empirical research studies provided by Ghosh, Gulde and Wolf (2003) also indicate a relative benefit which results from adopting the floating exchange rate, namely: lower cyclical volatility of production, and consequently, relatively higher macro-economic stability. The research also proves that the floating exchange rate functions well as an automatic stabiliser.

However, the fluctuations of the exchange rate do not always come as an exclusive derivative of changes in real economy. They often reflect some separated trends in the global financial markets. The observed phenomenon involving separation of the exchange rate from changes in the macro-economic foundations of particular economies is increased along with the growing weight of financial markets, in relation to the real sector of economy. As a result, the increased volatility in the currency market may not only interfere with the functioning of the exchange rate mechanism which automatically stabilises the economic situation, but it can sometimes act quite in the opposite way – as a source of potential economic shocks (Gadanecz, Mehrotra, 2013). Numerous cases of excessive appreciation of the exchange rates in some countries could be found as the examples of exchange rate overshooting by an exaggerated response of the markets; such a situation results from a sudden inflow of capital which has contributed to the formation of a chronic current account deficit that destabilises economy. Such cases are typical of emerging markets, although they can be observed in some developed economies as well (Beker, 2006, pp. 320-321).

Eichengreen and Hausmann (1999) add that the floating exchange rate may become a source of problems, especially in the situation when economy is characterised by a high level of the foreign debt. In such a situation, sudden reversals of the capital flows in the financial markets (sudden stops) may cause sudden changes in the exchange rate and in the value of the denominated debt; consequently, there might be problems with the solvency of economic entities, leading to long-lasting loss in the economic growth (balance sheet recession) (Calvo, 1999).

There are also some empirical research studies which indicate advantages of the fixed exchange rate, applied as a solution which positively affects the economic growth. For instance, having surveyed 74 countries which apply various exchange rate regimes, Jakob (2015) states that there is a positive and significant correlation between the application of the fixed exchange rate and the economic growth. De Grauwe and Schnabl (2004) draw similar conclusions after the analysis of 10 countries located in Central and Eastern Europe. The analysis was carried out in the years 1994-2002. Hence, these results are contrary to the results of the empirical research which has been presented above. Therefore, the issue related to the efficiency of the exchange rate viewed as an automatic stabiliser of the economic situation still remains ambiguous.

It is worth mentioning that there is one more reason which limits the potential possibilities referring to the stabilising function of the exchange rate. If it is assumed that the exchange rate is properly adjusted to the cyclical fluctuation of the economic situation, its driving force as a natural shock absorber cannot have such high significance as it is traditionally expected. A standard approach suggests that depreciation of the exchange rate of the national currency automatically increases competitiveness, improving export performance along with the GDP. Such an effect may be



considerably limited by high import intensity of export production which particularly occurs in developing economies. On one hand, exporting enterprises take advantage of the exchange rate depreciation (higher volume of sold production expressed in the national currency); on the other hand, however, they incur loss in terms of higher costs of import which comes as the input required for production. It means that positive effects of depreciation disappear. The estimated rate of the import intensity of export in Poland is approximately 0,6-0,7 (Osiatyński, 2009; Przystupa, 2009).

2. Empirical analysis

The maintenance of monetary autonomy and the floating exchange rate of the Polish zloty as an automatic stabiliser of the economic situation is often presented as an argument against the accession of Poland to the Eurozone. Considering this question, indications provided by the theory of economy are not explicit. It would be worth providing one's own observations of the changes in the exchange rate of the Polish zloty, depending on the economic situation in Poland. The following data shall be analysed in order to provide such an analysis:

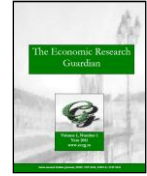
1. Quarterly dynamics of the GDP in the years 2003-2016
2. Monthly dynamics of industrial production in the years 2006-2016¹
3. The EUR/PLN exchange rate in the years 2003-2016²

The analysis shall provide a juxtaposition of the GDP changes and industrial production with the changes of the EUR/PLN exchange rate and the calculation of the vector and strength of the correlation of changes in the value of these variables in time. In the first case, the analysis of the correlation between quarterly changes in the GDP dynamics and the average quarterly EUR/PLN exchange rates in the years 2003-2016. In the second case, the correlation between the monthly changes in the dynamics of industrial production and the EUR/PLN exchange rates at the end of each month in the years 2006-2016 shall be calculated.

Additionally, the analysis shall indicate the recovery and slowdown cycles in the economic growth during the discussed period of time (periods of growing and falling dynamics of the GDP and of industrial production). Then, the separate correlation rates of the changes in the economic situation and in the exchange rate shall be calculated for each stage of the economic situation, selected in such a way. Hence, the result of the research shall be the estimation of the level of correlation between changes in the economic situation and in the PLN exchange rate during the whole analysed period of time and for the selected sub-periods (stages of the economic situation). It shall allow the Author to state whether there is any symmetry/asymmetry in the correlation of the observed changes. In this way, it shall be possible to verify the thesis stating that during the analysed period the nominal PLN exchange rate truly acts as an automatic stabiliser of the economic situation, that is namely: whether

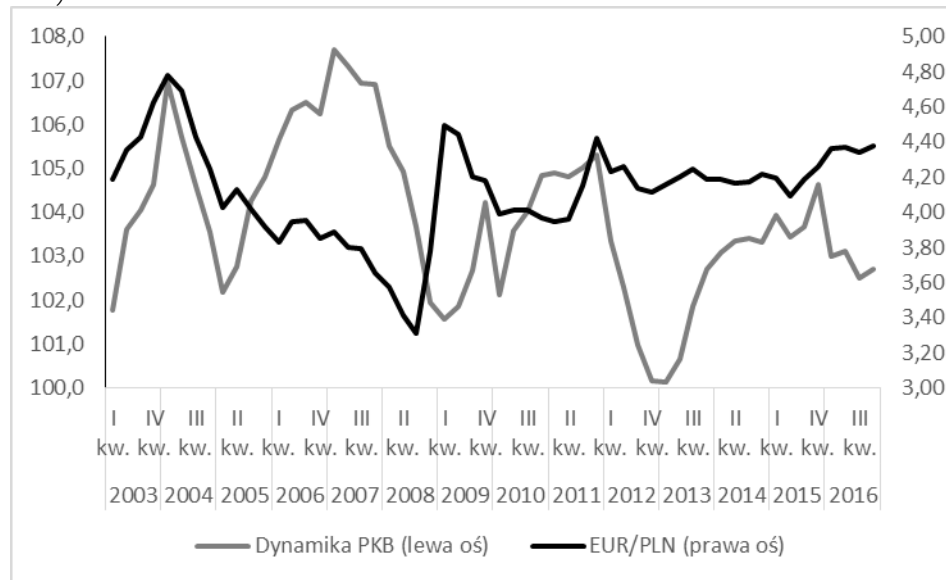
¹ Shorter by three years, the analysed period for the industrial production is not an intentional choice; it merely results from the availability of data provided by the Central Statistical Office.

² In the analysis the choice of the EUR/PLN exchange rate seems the most natural because of the dominating share of trade relations between Poland and the Eurozone.



it is depreciated in response to the worsening of economic activities, and it is appreciated during the economic recovery period, and whether such adjustments of the exchange rate are symmetric.

Figure 1 - The GDP dynamics and the EUR/PLN exchange rate in the years 2003-2016 (quarterly data)*



GDP dynamics (left axis) EUR/PLN (right axis)

*the quarterly GDP dynamics presented in the year-to-year approach (index=100); the average quarterly exchange rate calculated as an arithmetic average of three rates at the end of each month.

Source: the author's own study based on the data provided by the Central Statistical Office and National Bank of Poland.

During the discussed period of 14 years, it is possible to observe clear cyclical fluctuations of the GDP growth dynamics as well as the significant volatility of the EUR/PLN exchange rate. The highest recorded GDP growth rate is 7.7% (the first quarter of 2007), the lowest – is 0.1% (the first quarter of 2013). The EUR/PLN exchange rate also oscillates broadly from 3.20 (July 2008) to 4.87 (February 2004).

Considering the fact that there are many factors which decide about the volatility of the exchange rate, the role of the GDP growth fluctuation as a factor affecting the fundamental condition of the economy should be the most important, especially in a long period of time, excluding some random deviations. The long period of time provides an opportunity to have a large number of observations (56 quarterly data readings).

In accordance with the assumption that the nominal exchange rate acts as an automatic stabiliser of the economic situation, the expected correlation between the observed variables should be negative (the appreciation of the PLN, that is: a fall in the EUR/PLN relation should occur during the recovery period, namely – the growth of the GDP dynamics and vice versa). The figures 1 and 2, however, indicate that such a regularity does not always occur.

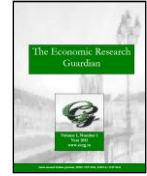
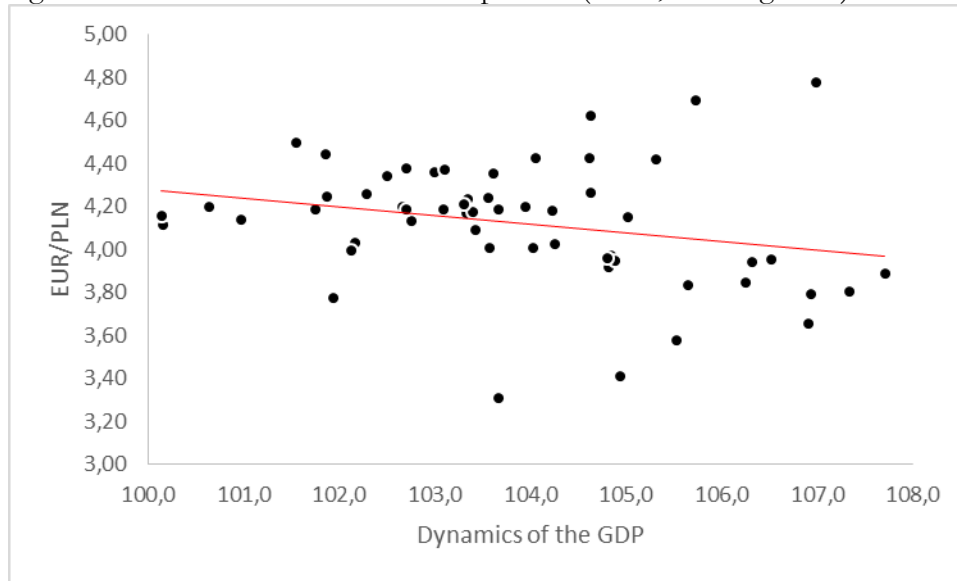


Figure 2 - Correlation chart of data dispersion (GDP, exchange rate)



Source: the Author's own study

In order to calculate the level of correlation, the Pearson linear correlation coefficient is applied (Fisher, 1915). The equation takes the following form:

$$r_p = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2} \sqrt{\sum_{i=1}^n (y_i - \bar{y})^2}}, \quad (1)$$

where:

r_p = the Pearson linear correlation coefficient

x = the GDP dynamics

y = the EUR/PLN exchange rate

n = the number of observations

In order to define the level of significance, test statistics is usually applied:

$$t = r_p \sqrt{\frac{n-2}{1-r_p^2}}, \quad (2)$$

with the assumed level of significance $\alpha = 0,05$.

As it has been mentioned above, the partial correlation coefficients shall be calculated in the particular stages of the economic situation. During the discussed period, there can be four recovery stages and four slowdown stages observed, which last from several quarters to over a dozen quarters each (Table 1). Defining the precise duration of the particular stages of the economic situation is arbitrary, because the cycles do not occur in an ideally linear way.

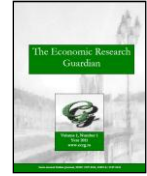


Table 1 - Recovery and slowdown stages in the GDP growth dynamics in the years 2003-2016.

Recovery stages				
Period of time	Q1 2003 - Q1 2004	Q1 2005 - Q1 2007	Q1 2009 - Q4 2011	Q1 2013 - Q4 2015
Number of quarters	4	8	11	11
Slowdown stages				
Period of time	Q1 2004 - Q1 2005	Q1 2007 - Q1 2009	Q4 2011 - Q1 2013	Q4 2015 - Q3 2016
Number of quarters	4	8	5	3

Source: the author's own study

The correlation coefficient of the GDP dynamics and the EUR/PLN exchange rate calculated for the whole time period is (-0,256), which indicates a weak negative relation between both variables. The vector of the correlation follows our expectations, however its level is surprisingly low. The value of the test statistics t , when $\alpha=0,05$, is (1,947), at the critical value $t_{\alpha,n-2}$ equals (2,004), which means that the calculated correlation is statistically insignificant³.

Considering the statistically insignificant correlation calculated with the use of the Pearson coefficient, it would be advisable to apply another measure which might produce a result which would be statistically significant. Hence, the Author applies the Kendall tau coefficient. Using this measure seems proper, because it performs better in the conditions when there are single values which deviate from a typical distribution, which might occur in the case of the exchange rate, especially during the long analysed period (Kendall, 1955). The Kendall tau coefficient of the EUR/PLN exchange rate and the GDP dynamics is (-0,232), and it is statistically significant.

The test statistics applied to verify the significance of the Kendall tau takes the following form:

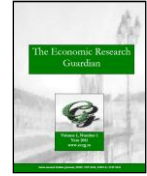
$$Z = \frac{3r \sqrt{n(n-1)}}{\sqrt{2(2n+5)}} = -2,53 \quad (3)$$

Based on the calculated test statistics Z , the value $p=0,011$ is obtained which is lower than the level of significance $\alpha = 0,05$. It means that the calculated correlation is statistically significant at the indicated significance level (mutually).

The result is similar to the measurement performed with the use of the Pearson linear correlation method, indicating a weak relations between the changes of the exchange rate and the GDP.

The correlation coefficients r_p for the particular stages of the economic situation are presented in Table 2. Out of four distinctive recovery stages, two negative and two positive correlations of the GDP growth and the EUR/PLN exchange rate have been defined. Similarly, out of four slowdown stages: there are two cases of negative correlation and two cases of positive correlation. The statistical significance of correlation is obtained for two results during the recovery stage and two other results during the slowdown stage (r_p presented in bold in Table 2). The performance of the EUR/PLN exchange rate fully meets the expectations only during the second recovery stage, when the PLN follows its appreciation trend (the obtained correlation is (-0750)). All other cases

³ The correlation result is de facto at the verge of statistical significance. With $\alpha=0,057$, the test statistics would be higher than the critical value $t_{\alpha,n-2}$, which should mean that the assumption of the statistical significance of the correlation has been accepted.



(particular stages) the performance of the exchange rate is opposite or only partially consistent with the expected results.

Table 2 - Correlation coefficients (GDP, exchange rate) for the particular stages of the economic situation (the statistically significant values are presented in bold)

Recovery stages				
Period of time	Q1 2003 - Q1 2004	Q1 2005 - Q1 2007	Q1 2009 - Q4 2011	Q1 2013 - Q4 2015
r_p	+0,968	-0,750	-0,437	+0,123
Slowdown stages				
Period of time	Q1 2004 - Q1 2005	Q1 2007 - Q1 2009	Q4 2011 - Q1 2013	Q4 2015 - Q3 2016
r_p	+0,989	-0,272	+0,949	-0,851

Source: the Author's own study

The analysis of the data does not prove the hypothesis about the stabilising function of changes in the nominal exchange rate of the Polish zloty. Although the vector of the correlation for the whole period follows the expectations and is negative, but the strength of the correlation is low. Furthermore, the research does not provide any indications referring to the potential asymmetry in the behaviour of the exchange rate, viewed as an automatic stabiliser of the economic situation, depending on the stage of that situation. Therefore, it is possible to conclude that during the analysed period, there is no strict dependency between the movement of the PLN exchange rate and the current economic situation. Hence, the exchange rate mechanism of stabilising the economic situation has not worked. In such a context, the volatility of the PLN exchange rate is coincidental, or it results from some other factors.

Additional research on the relations between the economic situation and the PLN exchange rate refers to the correlation between the dynamics of the industrial production growth and the EUR/PLN exchange rate. Industrial production may come as an alternative indicator of the economic situation. Admittedly, the share of industrial production in the provision of added value in Poland is only 20%, but this sector of the economy participates in the processes of international trade to the largest extent, therefore it might become more exposed to the fluctuations of the exchange rates. Additionally, the industrial production rate includes only enterprises which employ more than 9 workers; these enterprises provide almost the whole turnover value of foreign trade (OECD, 2012). It should be noticed that industrial production is a less stable parameter, and its volatility is more considerable (in terms of the higher frequency of changes in the vector of its fluctuations, as well as in terms of the wider amplitude of its fluctuations), which may restrict the validity of the analysis of the correlation with the exchange rate. On the other hand, however, the readings referring to the dynamics of production are provided every month, hence a higher number of observations can be introduced into the analysis, using the exchange rate at the end of the month (instead of the average quarterly one, as it is in the case of the correlation with the quarterly GDP readings).

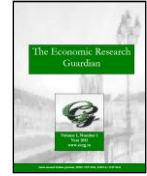
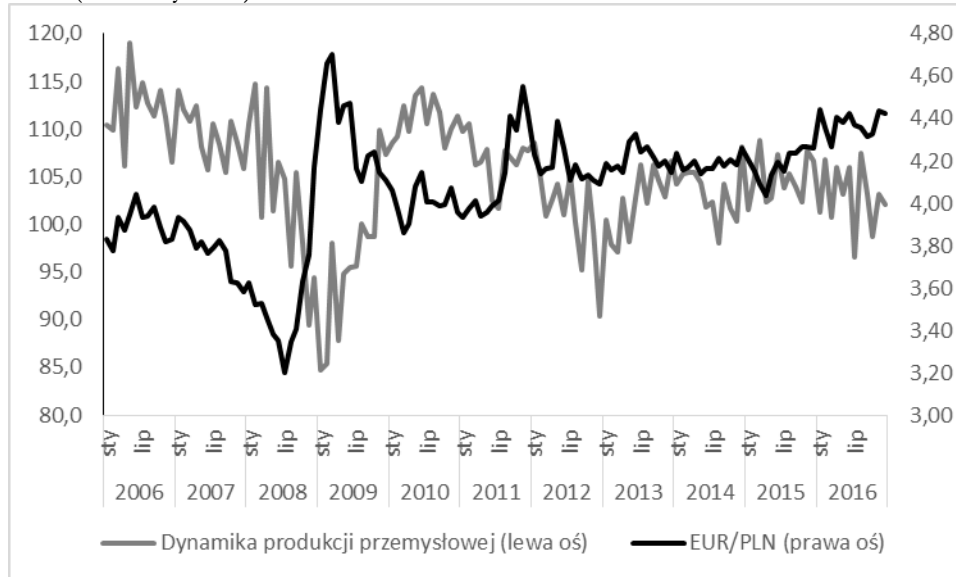


Figure 3 - Dynamics of industrial production and the EUR/PLN exchange rate in the years 2006-2016 (monthly data)*



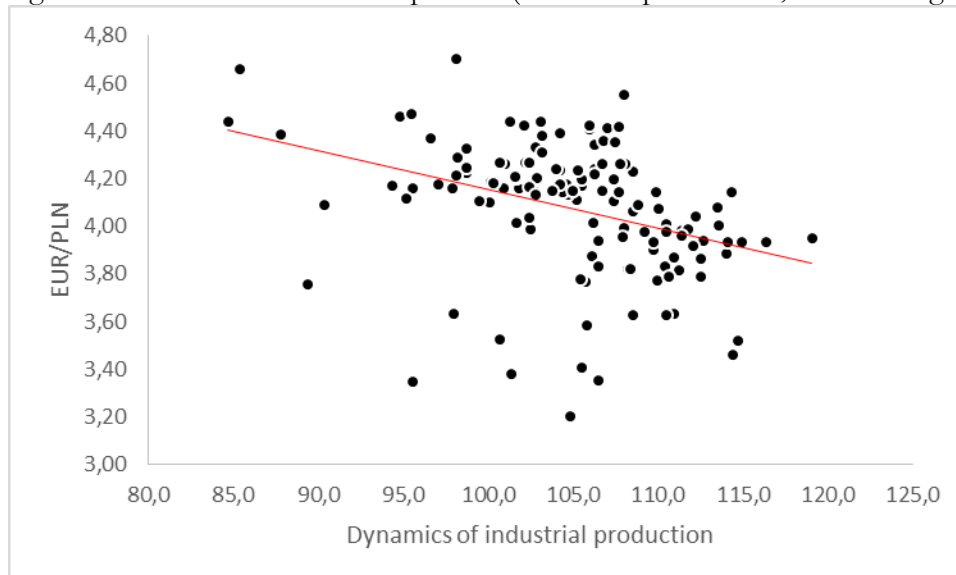
Dynamics of industrial production (left axis) EUR/PLN (right axis)

GDP dynamics (left axis) EUR/PLN (right axis)

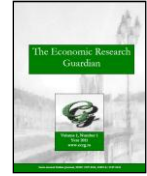
*the monthly dynamics of industrial production presented in the year-to-year approach (index=100); the average monthly exchange rate at the end of the month.

Source: the Author's own study based on the data provided by the Central Statistical Office and National Bank of Poland.

Figure 4 - Correlation of data dispersion (industrial production, the exchange rate)



Source: the Author's own study



If the assumption about the stabilising function of the PLN exchange rate is accepted, similarly to the GDP, the changes in the dynamics of industrial production should be negatively correlated with the changes in the EUR/PLN exchange rate. As it can be observed in Chart 3, such a regularity does not occur explicitly. Although a negative correlation can be observed globally, as presented in Chart 4, it is weak. The conclusion is confirmed also by the result obtained after the estimation of the linear correlation with the use of the Pearson coefficient which is (-0,363). The value of the test statistics t when $\alpha=0,05$ is (4,441), at the critical value $t_{\alpha,n-2}$ which equals (1,978); it means that the calculated correlation is statistically significant.

Table 3 - Recovery and slowdown stages in the dynamics of industrial production in the years 2006-2016.

Recovery stages			
Period of time	02.2009 - 06.2010	12.2012 - 03.2015	
Number of months	16	27	
Slowdown stages			
Period of time	05.2006 - 02.2009	06.2010 - 12.2012	03.2015 - 07.2016
Number of months	26	30	16

Source: the Author's own study

While observing the cycle of the dynamics of industrial production in Poland in the years 2006-2016, it is possible to distinguish five cyclical stages: two recovery stages and three slowdown stages (Table 3) 4. First three stages are clearly distinguished, whereas two latter ones are smoother.

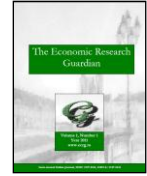
Table 4. Correlation coefficients (industrial production, the exchange rate) for the particular stages of the economic situation (the statistically significant results are presented in bold)

Recovery stages			
Period of time	02.2009 - 06.2010	12.2012 - 03.2015	
r_p	-0,774	+0,097	
Slowdown stages			
Period of time	05.2006 - 02.2009	06.2010 - 12.2012	03.2015 - 07.2016
r_p	-0,264	-0,133	-0,177

Source: the Author's own study

The correlation coefficients for the particular stages of the economic situation are presented in Table 4. In two distinguished recovery stages, there is one positive (statistically significant) and one negative (statistically insignificant) correlation of the changes in production and in the exchange rate. Considering the slowdown stages, in all three cases the calculations indicate some very low (almost

⁴ The fluctuations in the dynamics of industrial production are not entirely parallel to the cycle of the GDP changes, which might be surprising. The explanation to this phenomenon, however, is not an aim of the presented article. This fact has been accepted *per se*.

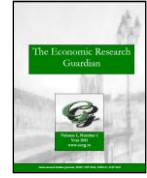


zero) negative correlation between the analysed variables (the lack of statistical significance). Such a distribution of correlation does not allow us to draw a conclusion referring to a possible asymmetry of the exchange rate adjustments, depending on the vector of the economic cycle. Based on the observation, it is possible to see that the scope of the operation of such a mechanism is very limited. In this sense, the nominal exchange rate of the Polish zloty is affected by other factors, which are not related to the fundamental condition of economy.

3. Conclusions and policy implications

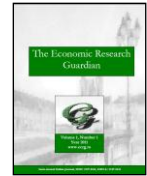
The conclusions drawn from the above-presented analysis do not confirm the traditional, textbook-like approach towards the theory of the role of the exchange rate as a factor which stabilises economic conditions and which acts as a shock-absorber. Hence, the conclusions prove to be in line with some theoretical considerations and empirical research (as referred to in section 1) which undermine the efficiency of the exchange rate mechanism of absorbing cyclical economic shocks. Additionally, the analysis presented in the article indicates some significant implications which refer to real choices made in economic policy of Poland.

In Poland the question referring to the potential accession of Poland to the Eurozone has been discussed for many years. One of the most important and frequently presented arguments against the accession to the monetary union is the necessity to resign from the monetary autonomy, which would follow such an accession (Kawalec, Pytlarczyk, 2016). In practice, it means that there shall be no possibility to shape the monetary policy at the national level, and the deficiency in the fluctuation of the floating exchange rate which acts as a natural mechanism of macro-economic adjustments (De Grauwe et al., 1993). Based on the above-mentioned simple observations of dependencies between the development of the exchange rate of the Polish zloty and the dynamics of the economic situation, it is possible to conclude that the fluctuations of the EUR/PLN exchange rate are not fully synchronised with the rhythm of the cyclical fluctuations of Polish economy. Indeed, there is a relation between the behaviour of the PLN exchange rate and the current economic situation, however this is a moderate relation. The volatility of the EUR/PLN exchange rate is determined by other factors, hence, the exchange rate mechanism of amortising the economic situation does not work by the book. In some cases, the floating exchange rate of the Polish zloty can affect economy in a stabilising way – in some other cases it can be a destabilising factor, which has been clearly revealed by the analysis of the behaviour of the exchange rate during the particular stages of the economic cycle. Additionally, it should be remembered that even if the exchange rate changes coincided perfectly with the rhythm of the cyclical fluctuations of the economic situation, their stabilising role could be smaller than it is usually assumed. As it has been mentioned in the first part of the article, the high import intensity of export comes as a limitation here. Considering all that, the cost of the potential accession of Poland to the Eurozone, implicated by the loss of the autonomy in the development of the exchange rate, does not have to be one-dimensional, as it is presented by the opponents of the monetary integration.



References

- Beker E (2006). Exchange Rate Regime Choice. *Panoeconomicus*, 3: 313-334.
- Broda C, Tille C (2003). *Coping with Term-of-Trade Shocks in Developing Countries, Current Issues in Economics and Finance*. Federal Reserve Bank of New York. 9(11): 1-7.
- Calvo GA (1999). Fixed versus Flexible Exchange Rates. Preliminaries of a Turn-Of-Millennium Rematch. *Economics Research Works*. <http://hdl.handle.net/1903/4295> (accessed in June 5, 2017).
- De Grauwe P, Dewachter H, Embrechts M (1993). Exchange Rate Theories. Chaotic Models of the Foreign Exchange Markets. Blackwell
- De Grauwe P, Schnabl G (2004). Exchange Rate Regimes and Macroeconomic Stability in Central and Eastern Europe. *CESifo Working Paper*. 1182.
- Edwards S, Levy E (2003). Flexible Exchange Rates As Shock Absorbers. *NBER Working Paper*. 9867.
- Eichengreen B, Hausmann R (1999). Exchange Rates and Financial Fragility. *NBER Working Paper*. 7418.
- Fisher RA (1915). Frequency Distribution of the Values of the Correlation Coefficient in Samples from in an Indefinitely Large Population. *Biometrika*. 10(4): 507-521.
- Gadanecz B, Mehrotra A (2013). The Exchange Rate, Real Economy and Financial Markets, A Chapter in Market Volatility and Foreign Exchange Intervention in EMEs: What has changed?. *BIS Papers*. 73.
- Ghosh AR, Gulde AM, Wolf HC (2003). Exchange Rate Regimes: Choices and Consequences, MIT Press.
- Jakob B (2015). Impact of Exchange Rate Regimes on Economic Growth. *Undergraduate Economic Review*. 12(1): 1-23.
- Kawalec A, Pytlarczyk E (2016). Paradoks euro. Jak wyjść z pułapki wspólnej waluty? Poltext.
- Kendall MG (1955). *Rank Correlation Methods*. Charles Griffin & Co.
- Meade J (1951). *The Theory of International Economic Policy*. Oxford University Press.
- Obstfeld M (1985). Floating Exchange Rates: Experience and Prospects. *Brookings Papers on Economic Activity*. 2.
- OECD, *OECD Studies on SMEs and Entrepreneurship, Poland - Key Issues and Policies*, July 2012.



Osiatyński J (2009). Strategia makroekonomiczna Polski w warunkach światowego kryzysu. *Gospodarka Narodowa*. 7-8: 1-16.

Przystupa J (2009). Scenariusze na niepogodę. *Nowe Życie Gospodarcze*. 4 May

Rodrik D (2008). The Real Exchange Rate and Economic Growth. *Brookings Papers on Economic Activity*. 2.