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Flexible Exchange Rates as Shock Absorbers in Central and Eastern Europe

Abstract

Considering the merits of the flexible exchange rate and its ability to absorb asymmetric macroeconomic shocks, results on the basis of a two-variable SVAR model suggest that this ability was lacking in both Hungary and Romania, as regardless of the data used more than 80% of variability in the nominal (real) exchange rate over a four-quarter horizon can be explained by neutral structural shock. Variability in output is determined mainly by non-neutral (permanent) structural shocks. As for Poland and, to a lesser extent, the Czech Republic, the evidence supporting the stabilising properties are somewhat stronger, with up to 30% to 40% of changes in the nominal (real) exchange rate being explained by the permanent (output) shock. However, the results are sensitive to the data used.

Keywords: exchange rate regime, SVAR, the Blanchard-Quah decomposition, transformation economies.

1. Introduction

Stabilisation policies in the wake of the 2008–2009 financial crisis do not provide clear preferences for a particular exchange rate regime – fixed or floating. Although Poland, and its experience in sustaining a “green island”, is credited with a free-floating exchange rate policy, that is not a sufficient argument in favour of greater exchange rate flexibility. While other largest Central and East

European (CEE) countries, including Czech Republic, Hungary, and Romania, have been practicing variants of a floating exchange rate regime, Slovakia adopted the euro in 2009 and the Baltic States have been quite successful in making macroeconomic adjustments under a fixed exchange rate regime.

Under high capital mobility, with limited scope for independent interest rate policy, the choice of the exchange rate regime largely centers around the costs (or benefits) of giving up the flexible exchange rate as a stabilisation tool (i.e., a shock absorber). As mentioned by B. Stążka-Gawrysiak (2009, p. 54), the consensus now is such that the flexible exchange rate can act as a shock-absorbing instrument if its fluctuations are mainly driven by real, especially demand, shocks and as a destabilising one if they are largely driven by nominal disturbances. For the nominal (real) exchange rate to be an efficient shock absorber, it is necessary to respond in similar proportions to the same real (supply and demand) asymmetric shocks that significantly affect output (Masten 2002, p. 2). However, it is quite complicated to resolve whether exchange rate flexibility is a significant stabilising mechanism, as observed exchange rate movements could be purely extraneous and reflect not movements in fundamentals but other factors, such as financial market sentiment (*The Exchange Rate* 2003, p. 3). For a small open economy, M. Artis and M. Ehrmann (2006, pp. 874–893) argued that the exchange rate can act as a shock-absorber only if an economy is affected by an asymmetric shock with respect to its trading partner. If the exchange rate's own shocks are large enough, it is of further interest whether they are stabilising (or destabilising) for the economy. Moreover, the exchange rate – output relationship can evolve over time. For example, the exchange rate appreciation seemed to be contractionary from 1996 to 2000 in Poland, whereas for periods between 2000 and 2008 it had a positive significant effect (Arratibel & Michaelis 2014).

The purpose of this paper is to investigate potential features of nominal (real) exchange rates as shock absorbers in the Czech Republic, Hungary, Poland and Romania. Following the pioneering approach by M. Canzoneri, J. Valles and J. Vinals (1996), shock-absorbing properties are studied within the simplest structural vector autoregression (SVAR) two-variable framework, which could be easily extended to the three-variable framework of demand (IS), supply (AS) and nominal (LM) shocks.

Despite strong theoretical arguments in favour of exchange rate flexibility as a stabilising tool, evidence is not lacking that flexible exchange rate regimes do a worse job of insulating open economies from external shocks (Aysun 2008, pp. 302–328). This study is aimed at comparative analysis of exchange rate shocks for four transformation economies with a floating exchange rate regime within the familiar framework of the Blanchard-Quah decomposition. The long-run zero restrictions are often criticised from a theoretical and empirical point of view on the basis of small sample biases and measurement errors, the possibility for permanent real effects of nominal shocks in overlapping generations and hysteresis models etc. (Farrant & Peersman 2006, pp. 939–961), but this approach is still popular because of its simplicity and transparency. Alternative approaches including, for example, SVAR models with short-run restrictions, suffer from the well-known problem of interpreting the multitude of identified models (Gehrke & Yao 2013).

The paper is structured as follows. Section 2 outlines the necessary analytical considerations, with a focus upon identification of structural shocks and empirical results. In Section 3, data and statistical methodology are presented. Estimation results are discussed at length in Section 4, while Section 5 checks robustness. The final section's concluding remarks round out the paper.

2. Analytical Framework

The main advantage of the shock-absorbing properties of exchange rate flexibility is its potential ability to generate rapid adjustment in international relative prices even when domestic prices adjust slowly (Borghijs & Kuijs 2005, p. 3). In the absence of a relative price-driven "expenditure-switching" mechanism, such real shocks as changes in the budget balance, foreign demand or terms of trade can cause significant output losses or overheating. However, exchange rate adjustment in response to monetary and financial (or nominal) shocks could be counterproductive, leading to a stronger disequilibrium in the economy. A fixed exchange rate system looks preferable in the case of nominal shocks, but it is inefficient in neutralising real shocks. As defined by M. Canzoneri, J. Valles and J. Vinals (1996), shocks are classified as "neutral" if they have no long-run effect on relative output, and as "non-neutral" if they do have. However, M. Artis and M. Ehrmann (2006, pp. 874–893) argue that measuring all variables relative to a neighbour not only reduces the analysis to an asymmetric shock with respect to its trading partner, but would overestimate the role of exchange rate as a shock absorber as well.

If the exchange rate generates shocks of its own, it is important to establish whether these disturbances are stabilising for the economy (Artis & Ehrmann 2006, pp. 874–893). For example, the effect of the exchange rate depreciation on output depends on whether the expenditure-switching channel or the interest rate channel dominates (Arratibel & Michaelis 2014). Assuming depreciation of the nominal (real) exchange rate, expansion of exports is expected, with a positive effect on output, while an increase in the interest rate is likely to "crowd out" domestic consumption and investment, thus triggering a contractionary pressure on the economy. The balance sheet and wealth effects additionally complicate the picture of the relationship between the exchange rate and output in the short run[1].

Following M. Canzoneri, J. Valles and J. Vinals (1996), the vector of endogenous variables $\Delta x_t = [\Delta e_t, \Delta y_t]$ has a structural interpretation

$$\Delta x_t = C(L)\varepsilon_t, \tag{1}$$

where:

e_t – the nominal exchange rate,

y_t – the output (GDP or industrial production),

L – the lag operator,

$\varepsilon_t = [\varepsilon_{Nt}, \Delta\varepsilon_{Pt}]$ – a vector of serially uncorrelated structural shocks, with ε_{Nt} and ε_{Pt} being the neutral shock and non-neutral (or permanent) shocks, respectively.

The vector ε_t is to be recovered from an estimate of the moving average representation:

$$\Delta x_t = A(L)u_t, \tag{2}$$

where the polynomial $A(L)$ is the identity matrix and the disturbance vector u_t has an estimated variance-covariance matrix Σ.

Assuming a linear relationship, $u_t = c_0\varepsilon_t$, the 2×2 matrix c_0 makes it possible to recover the vector of structural shocks, ε_t, from the estimated disturbance vector, u_t. Combining three of the four restrictions that are required from the symmetric matrix $\Sigma c_0 c'_0$ and the fourth one along the lines of economic theory, the long-run representation of (1) can be written as:

$$\begin{bmatrix} \Delta e_t \\ \Delta y_t \end{bmatrix} = \begin{bmatrix} c_{11} & c_{12} \\ 0 & c_{22} \end{bmatrix} \begin{bmatrix} \varepsilon_{Nt} \\ \varepsilon_{Pt} \end{bmatrix}. \tag{3}$$

The long-run identifying restriction $c_{21} = 0$ implies that the neutral shock to exchange rate has no long-run effect on output. On the other hand, the permanent (or non-neutral) shock affects either output or the nominal exchange rate. It is common to assume that in a two-variable model, neutral shocks include monetary/financial market (LM) shocks, while permanent shocks are identified as supply shocks (Borghijs & Kuijs 2004, p. 9). Although using the long-run zero restrictions might be considered too stringent (Farrant & Peersman 2006, pp. 939–961), it is a good reference point for alternative approaches in identification of the shock-absorbing properties of exchange rate flexibility, such as short-run zero restrictions or sign restrictions.

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[1] The wealth effect refers to a direct relationship between the value of financial and other assets in real terms and output, with depreciation being restrictionary due to an increase in the price level (this link could be weakened by an increase in the value of foreign currency-denominated assets). The balance sheet effect implies that depreciation increases the real value of foreign debt, thus exerting the adverse effect on output.

Following the predictions of the Mundell-Fleming model, a positive permanent (supply) shock results in an increase in output and in exchange rate depreciation due to excess supply of home-produced goods (Masten 2002, p. 25). A positive nominal shock is associated with a decrease in the interest rate and nominal (real) depreciation and output expansion as well.

Empirical studies have been rather inconclusive, as results depend on the exact model specification and data used (Stążka 2006). Extra difficulties are created by the abovementioned use of variables in relative or direct form (Artis & Ehrmann 2006, pp. 874–893), the identification scheme or sample size used. For example, S.-S. Chen (2004, pp. 25–32) found that monetary shocks are more important in a longer sample set. The presence of shock-absorbing properties of a floating exchange rate is found for the U.S. (Juvenal 2009), Sweden and Canada, but not for Australia, New Zealand and the U.K. (Alexius & Post 2008, pp. 527–541). Using a new identification strategy of sign restrictions instead of more traditional long-run zero restrictions, K. Farrant and G. Peersman (2006, pp. 939–961) determined that shock-absorption properties are lost for the U.K., euro area, Japan and Canada *vis-à-vis* the U.S., though that was not the case in an earlier study by R. Clarida and J. Gali (1994, pp. 1–56). Consequently, the exchange rate can be considered to be a source of shocks rather than a shock absorber. M. Canzoneri, J. Valles and J. Vinals (1996) reached the same conclusions for a number of European countries, as supply shocks explain most output changes but can hardly explain exchange rate variation. Studying time series of the US *vis-à-vis* an aggregate of industrialised countries and splitting the supply shock into a traditional productivity and the cost push shocks[2], B. Gehrke and F. Yao (2013) confirm that the former are not an important driver of RER volatility (3–10%), but the latter account for up to 30% of the variability of the RER volatility.

Borghijs and Kuijs (2004) find that exchange rates in CEE countries (aside from Poland) react more to monetary and financial shocks, while being unable to absorb real shocks. A. Stążka has reported on the stabilising properties of Poland's exchange rate (2006) while J. López and J. Chacón (2006) confirm that the exchange rate could be a stabilising tool for Poland and the Czech Republic, though not for Hungary. Earlier S. Dibooglu and A. Kutan (2001, pp. 257–275) concluded that nominal shocks determine a sizable proportion of real exchange rate (RER) variability in Poland (up to 63% on impact), but not in Hungary. I. Masten (2002) determined that the real exchange rate does not have a shock--absorbing role for Hungary as well as the Czech Republic, Slovenia, Denmark and the U.K. Recently, A. Volha and F. Brázdik (2012) have established for the Czech Republic that the shock-absorbing properties of the exchange rate outweigh

[2] Cost-push factors that affect a firm's marginal costs of production comprise factors such as labour market institutions, demographics, and international competition (Gehrke & Yao 2013).

their shock-generating counterparts. O. Arratibel and H. Michaelis (2014) have concluded that the Polish economy has become more resilient over time to monetary policy and exchange rate shocks.

Among studies for other CEE countries, N. Erjavec, B. Cota and S. Jakšić (2012, pp. 27–46) argue that the exchange rate in Croatia seems to be a shock absorber, as volatility of RER is mainly influenced by demand shocks, with the impact of supply shocks being insignificant. Z. Kontolemis and K. Ross (2005) find that the impact of real shocks upon the RER varies across CEE countries. S. Ahmed, C. Gust, S. Kamin and J. Huntley (2002) suggest that exchange rate movements may be more destabilising in developing countries than in industrial countries, regardless of the exchange rate regime chosen.

3. Data and Statistical Methodology

For empirical study, quarterly time series data are used for the Czech Republic, Hungary, Poland and Romania for the period 1999–2013, as provided by the online IMF's *International Financial Statistics*. Both nominal and real effective exchange rates, NEERt and REERt, respectively, are used as the exchange rate measure (Fig. 1). By using the RER, not just the nominal exchange rate, it is possible to take into account the adjustment through relative prices (Masten 2002, p. 2). For the Czech Republic and Poland, there is not much difference between the real and nominal rates, though a common trend in both indicators is quite different in both countries. While there is a clear nominal and real appreciation in the former, much higher exchange rate volatility in the latter does not imply any change in the equilibrium value. Exchange rate developments have been quite similar in Hungary and Romania over the last decade, despite different patterns in the nominal rates over the 1999–2004 period.

Output is proxied with the gross domestic product and industrial production, Y_t and IND_t, respectively (Fig. 2)[3]. Although most empirical studies specify output as relative to the corresponding variable of the large neighbouring area (it is based on the assumption that the exchange rate itself is a "relative" variable), this approach can identify only asymmetric shocks (Artis & Ehrmann 2006, pp. 874–893). Thus it is difficult to identify which country has to bear the adjustment costs, assuming that transmission mechanisms can differ between countries. Using the variables of the economies itself seems to be preferable in that case. However, output in relative terms is used later in our sensitivity analysis, thus

[3] A. Borgjis and L. Kuijs (2004) use industrial output expressed relative to the euro area to capture asymmetric shocks relative to the economic area against which the exchange rate is assessed.

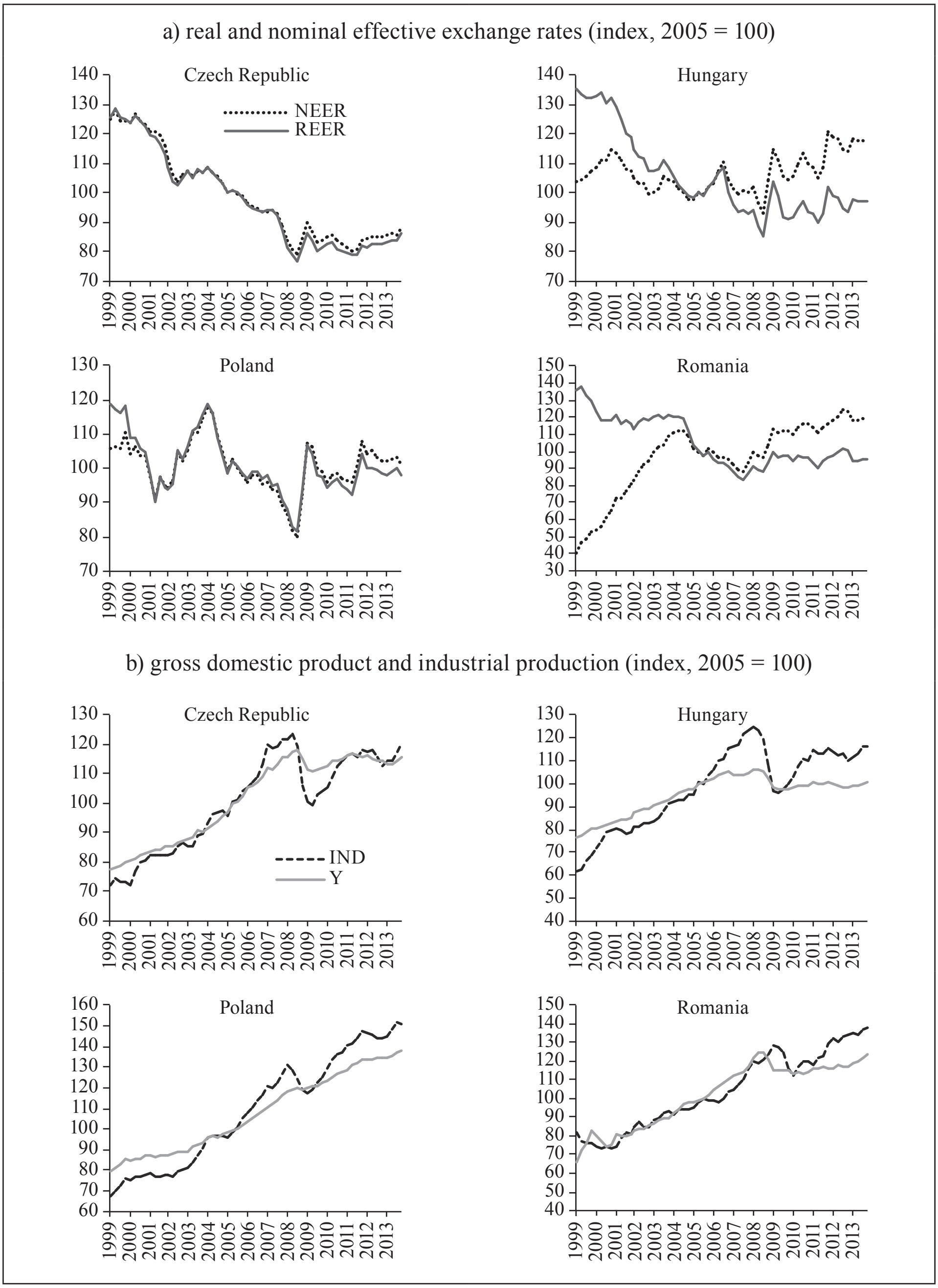

Fig. 1. The CEE Countries: Exchange Rate and Output, 2000–2013

Source: the IMF *International Financial Statistics* online database.

providing ground for useful comparisons between both specifications, in our particular case the four countries that make up the CEE.

With the trend and intercept included, the results of the Augmented Dickey-Fuller (ADF) test indicate that in almost all cases the (level) data are I(1) and not integrated of a higher order, as the null hypothesis of a unit root in the level of either a nominal (real) effective exchange rate or output (GDP or industrial output) cannot be rejected, while it is the opposite for the difference of both time series (Table 1).

Table 1. ADF Test Statistics

Variable	Czech Republic 1999Q1: 2013Q4	Hungary 1999Q1: 2013Q4	Poland 2000Q1: 2013Q4	Romania 2000Q1: 2013Q4
NEER	–2.28 -5.93^{*}	–2.57 -2.79^{***}	–2.46 -3.89^{**}	–2.68 -5.23^{*}
REER	–2.15 -5.10^{*}	–0.97 -3.83^{**}	–3.06 -3.94^{**}	–1.29 -5.71^{*}
Y	–0.34 -5.34^{*}	–0.81 -3.14^{***}	–1.88 -6.93^{*}	–1.23 -3.45^{***}
IND	–2.18 -5.27^{*}	–2.03 -4.09^{**}	–2.23 -3.87^{**}	–2.99 -5.52^{*}

Note: * null hypothesis can be rejected at the 1% level (**, ***at the 5% and 10% level, respectively). Lags are based on the automatic criteria selection by the Schwartz criterion.

Source: the author's calculations.

The model (3) is estimated in turn for each of four countries. Depending on the particular country, country-specific SVARs are estimated using two to three lags and a dummy for the 2008–2009 world financial crisis, ensuring that the residuals are stationary. As it is assumed that foreign output is exogenous, industrial output in Germany is included in the SVAR model. Among other independent variables, the lagged London Inter-Bank Offered Rate (LIBOR) is counted for in estimates for Poland. Identified SVAR models are used to recover the dynamic effects of the structural shocks on the nominal (real) exchange rates and output. First of all, the impulse response functions are obtained in order to gain a general picture of the neutral and permanent effects on the exchange rate and output. Then the variance decompositions are used to investigate the relative contribution of each of the identified shocks to the error variance in forecasting these rates. In order to test the robustness of the empirical results, a shorter subsample of the 2004–2013 period is first used to estimate the model (3), followed by an alternative specification of output.

4. Impulse-response and Variance Decomposition Results

Figures 2 to 5 present the impulse response functions for the nominal (real) effective exchange rate and output (GDP), respectively. The vast majority of the impulse responses are as expected. In response to the (positive) neutral shock, the nominal exchange rate uniformly depreciates in all countries, regardless of the output indicator chosen (Fig. 2a). Following a one standard deviation shock to NEER, there is an immediate depreciation in the nominal rate, which then edges down gradually in about four quarters. For Poland and Hungary, there is a local strengthening of the exchange rate with a two-quarter lag.

The (positive) permanent shock leads to a temporary appreciation of the NEER on impact in the Czech Republic and Hungary, but there is an opposite outcome in Poland and Romania (Fig. 2b). For all four countries, the exchange rate appreciates with a quarter lag, which is consistent with the predictions of a monetary model of the exchange rate determination, but since that point the convergence path to a steady state is different. The magnitude of NEER appreciation gradually decreases for two countries – Poland and Romania – where it is preceded with an initial depreciation, and there is depreciation of the exchange rate in the Czech Republic and Hungary, where an initial appreciation on impact is observed. However, any differences regarding the NEER reaction to a permanent shock on impact disappear in the specification with industrial production, with no possibility of further appreciation. Some similarities are seen in that the exchange rate depreciation on impact in both Poland and Romania is followed by local appreciation of the NEER.

Although it is assumed that neutral shocks do not have any long-run output effects, it is nevertheless interesting to compare relevant impulse response functions as a source of information on the direction of exchange rate effects (Fig. 3a). The responses of GDP (left panel) are smaller than those for industrial production (right panel), but display similar dynamics patterns. However, output does not react to exchange rate shock in a uniform and consistent way. For all countries, the directions of these responses are asymmetric at different lags. Temporary increases in GDP, as predicted by the Mundell-Fleming model, are found for the Czech Republic, Hungary and Poland, and followed by a restrictionary correction in two to five quarters. For Romania, the sequence of exchange rate effects is just the opposite. In general, the exchange rate effects are stronger in respect to industrial output than GDP. Permanent shock brings about an increase in output across all countries (Fig. 3b), though with a slight restrictionary correction in Romania and the Czech Republic (specification with industrial production).

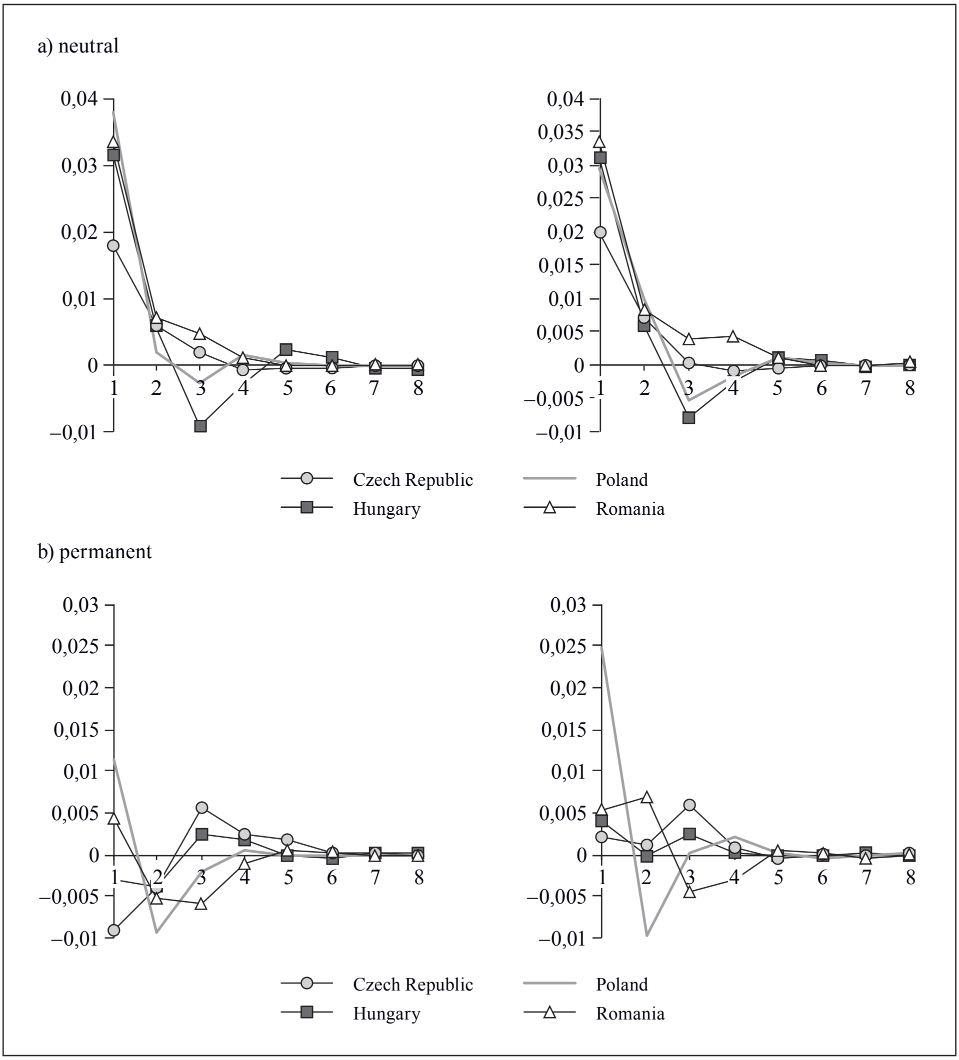

Fig. 2. Effects of VAR Shocks on the Nominal Effective Exchange Rate

Note: impulse responses for the nominal and real effective exchange rates are on the left and right graphs, respectively.

Source: the author's calculations.

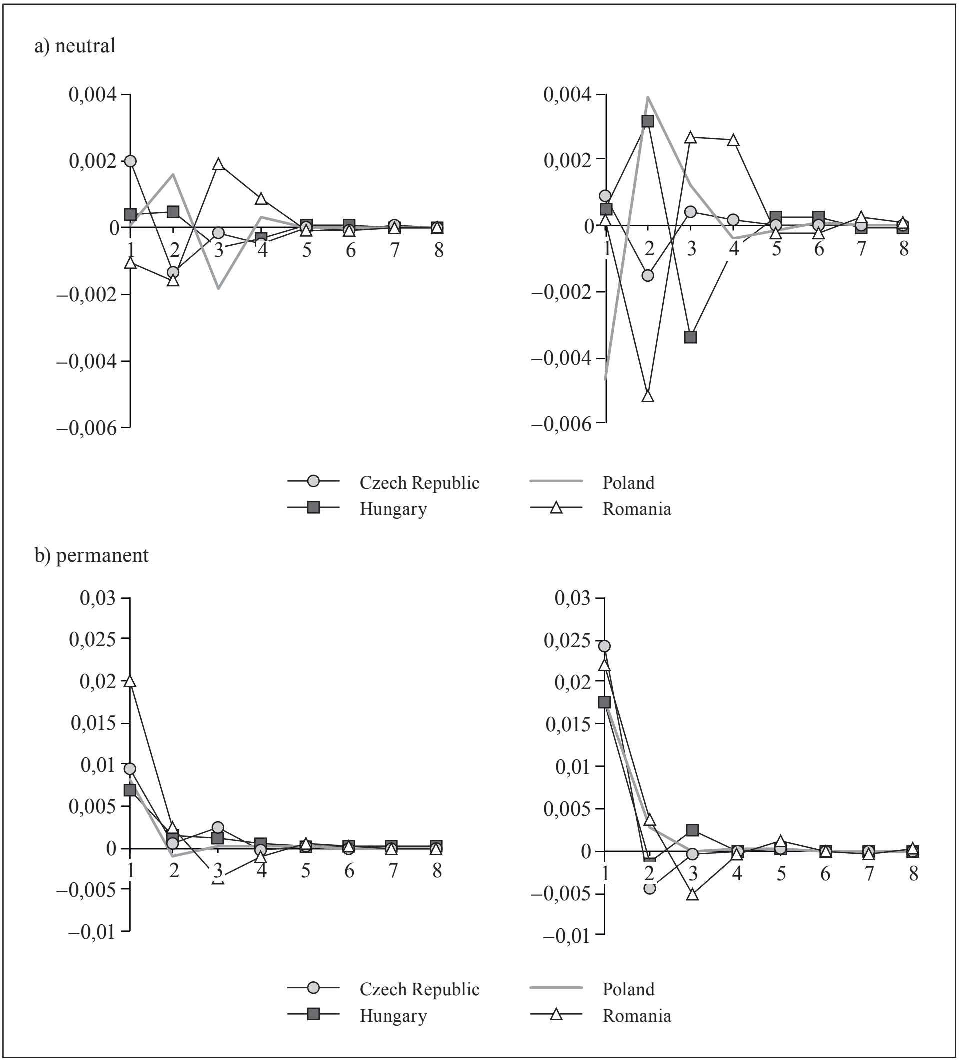

Fig. 3. Effects of VAR Shocks on Output (Specification with NEER)
Source: the author's calculations.

The pattern of neutral effects for the RER is not much different from that obtained for the NEER, i.e. depreciation on impact followed by a short-lived (and much weaker) appreciation with two to three quarter lags (Fig. 4a). The permanent effects follow almost the same pattern as the NEER estimates, especially for Hungary, Poland and Romania. For the Czech Republic, the initial appreciation on impact is stronger and there is no such abrupt correction of a subsequent depreciation as in the case of NEER estimates.

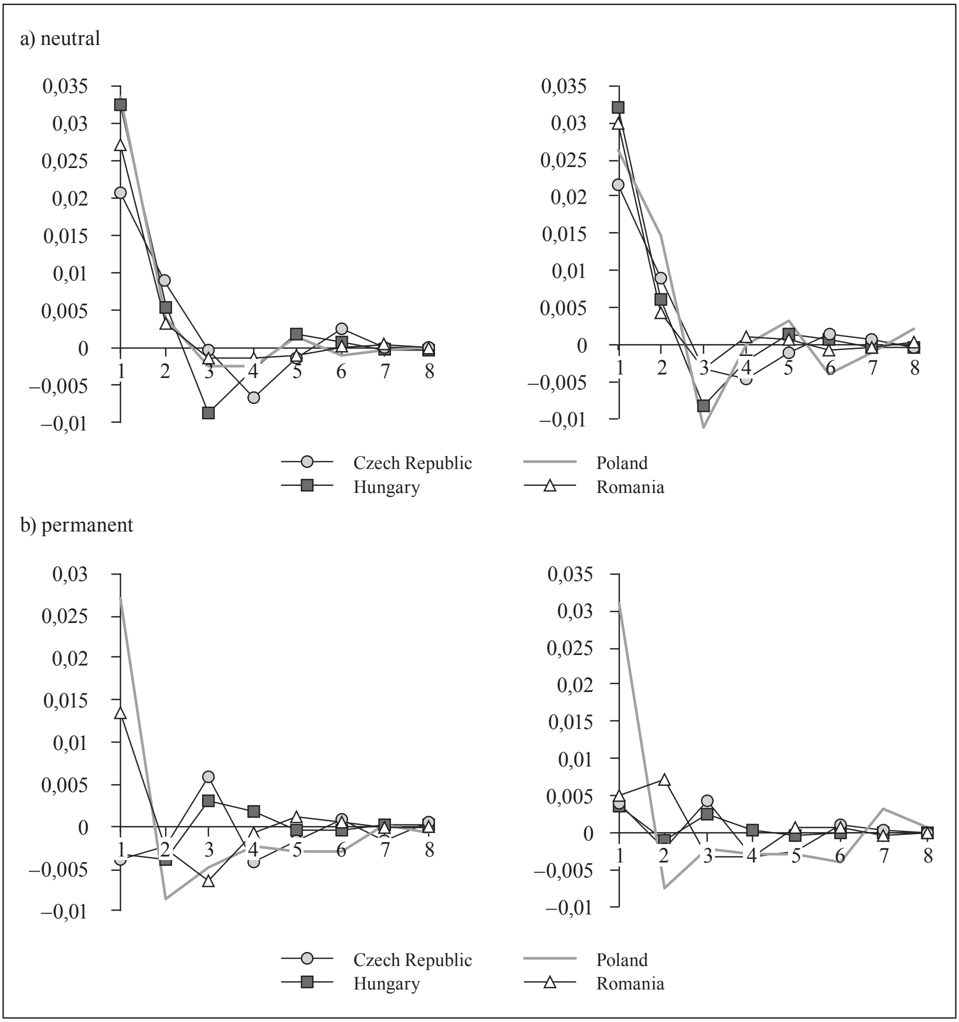

Fig. 4. Effects of VAR Shocks on the Real Effective Exchange Rate

Note: impulse responses and variance decomposition are on the left and right graphs, respectively.

Source: the author's calculations.

For the Czech Republic, Hungary and Poland, the RER effects on output (Fig. 5a) are not significantly different from the NEER estimates. As for Romania, the neutral shock effects reveal a stronger but shorter restrictionary effect on impact regarding GDP estimates. Similar to NEER estimates, the RER effects on output are asymmetrical over a year time span, which does not bode well for the use of the exchange rate as a stabilisation policy tool, even if the nominal (real) exchange rate does react significantly to permanent (supply) shocks. Permanent shock is expansionary and not persistent (Fig. 5b).

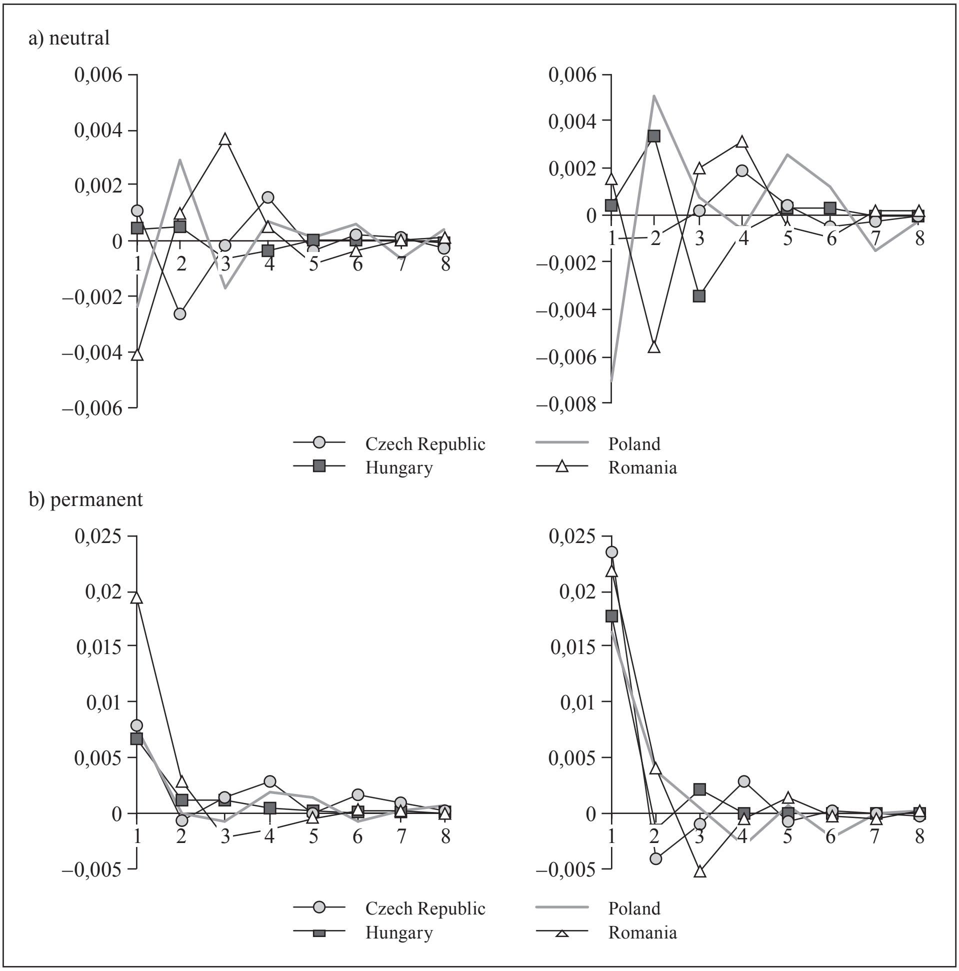

Fig. 5. Effects of VAR Shocks on the Output (Specification with RER)

Source: the author’s calculations.

Table 2 reports the variance decompositions for the estimated model at a horizon of 4 quarters, which is the horizon over which monetary policy and exchange rate flexibility are presumed to be most potent. Similar to other studies

(Borgjis & Kuijs 2004), at least three quarters of variability in the NEER is explained by the neutral shock, except for the somewhat lower share for the Czech Republic at 72%, which is not surprising as this country has employed a floating exchange rate regime since 1997. At the same time, the neutral shock is responsible for 87% of the variance decomposition of Poland's nominal exchange rate, another well-known floater among the CEE countries. Using the real exchange rate, the share of its own shock in the variance of the exchange rate decreases to 61% in the specification, which is a much better indication of the shock-absorbing properties of a floating exchange rate regime. Also, the neutral shock becomes responsible for up to 21% of the variance of GDP.

Table 2. Forecast Error Variance Decomposition for the Exchange Rate and Output (in Percentage)

Variable	Czech Republic		Hungary		Poland		Romania	
	N	P	N	P	N	P	N	P
NEER	72	28	97	3	87	13	95	5
Y	6	94	2	98	7	93	4	96
RER	88	12	98	2	61	39	80	20
Y	13	87	2	98	20	80	8	92
NEER	91	9	98	2	60	40	92	8
IND	1	99	7	93	8	92	7	93
RER	91	9	98	2	53	47	90	10
IND	1	99	7	93	15	85	9	91

Note: N is for neutral shock and P is for permanent shock.

Source: the author's calculations.

For Romania, the share of permanent shock in the variance of the RER increases to 24% compared with just 7% for the NEER. In contrast to Poland, there is no significant increase in the share of nominal shock in explaining the variance of GDP, suggesting much weaker stabilising properties. The Czech Republic is different from Poland and Romania in that the RER is more dependent on its own shock compared to the NEER. Our results contrast with estimates by A. Volha and F. Brázdik (2012), who found that the nominal shock determines about 50% of the RER variance, though its share in the changes of GDP is the same. There is no difference in variance decomposition between NEER and RER estimates for Hungary.

Using industrial production as a proxy for output led to no significant changes in the variance decomposition for Hungary. The share of permanent shock in the decomposition of NEER and RER decreases substantially for the Czech Republic, while being even higher for industrial production. This further strengthens the suggestion that output does not react to the nominal shock. Romania showed no change for the variance decomposition in specification with the NEER, while arguments (albeit weak ones) in favour of the shock-absorbing properties are completely lost in specification with the RER. Poland is the only country where using industrial production instead of GDP as the output indicator improves the shock-absorbing properties of exchange rate in both aspects: (i) reaction of the exchange rate to permanent shocks and (ii) output effects. The share of permanent shock in the variance decomposition of the RER is as high as 49% in the specification with the RER, while it determines 22% of variation in industrial production. However, the depreciation is contractionary on impact, while a short-lived expansionary effect is obtained with a quarter lag.

5. Robustness Check

Our sensitivity analysis regards sub-sample stability and the use of alternative definition for output. Table 3 reports the variance decompositions for the estimated model at a horizon of 4 quarters for the shorter sample of the 2004–2013 period. Except for the Czech Republic (specification with the GDP), there is no significant difference between the estimates of the variance decomposition for the 1999–2013 and 2004–2013 periods across three other countries. It is especially the case for specifications with the GDP as a proxy for output. Using industrial production, there is some weakening of stabilisation properties for nominal and real exchange rates in Poland, but the difference is not substantial. As for the Czech Republic, there is an increase in the share of permanent shock in the variance decomposition of either nominal or real exchange rates, while changes in the GDP reveal stronger reaction to the nominal shock. However, the specification with industrial production does not support the assumption that exchange rate flexibility exhibits shock-absorbing properties. To sum up, empirical estimates for a shorter sub-sample do not suggest that the transmission of exchange rate and output shocks have changed significantly over time.

Using the alternative definition of output as relative to Germany's GDP and industrial production, Y/Y^* and IND/IND^*, respectively, the variance decomposition in respect to nominal and permanent shocks for the extended sample of the 1999–2013 period is presented in Table 4. In general, the share of the nominal shock in the variance decomposition of output increased, especially for Hungary and Poland. The significance of the permanent shock in changes of a nominal exchange rate increases for Romania (specification with GDP), while decreasing for the Czech Republic. Shock-absorbing properties become almost perfect for

Poland in the specification with industrial production, but this result does not hold in the specification with GDP.

Table 3. Forecast Error Variance Decomposition for the Exchange Rate and Output (in Percentage), Sub-sample of the 2004–2013 Period

Variable	Czech Republic		Hungary		Poland		Romania	
	N	P	N	P	N	P	N	P
NEER	46	53	96	4	99	1	81	19
Y	17	83	2	98	9	91	7	93
RER	61	39	96	4	89	11	86	14
Y	41	59	12	88	18	82	4	96
NEER	92	8	97	3	75	25	96	4
IND	1	99	4	96	5	95	7	93
RER	83	17	98	2	79	21	97	3
IND	3	97	3	97	5	95	11	89

Note: N is for neutral shock and P is for permanent shock.

Source: the author's calculations.

Table 4. Forecast Error Variance Decomposition for the Exchange Rate and Relative Output (in Percentage), the Sample of 1999–2013 Period

Variable	Czech Republic		Hungary		Poland		Romania	
	N	P	N	P	N	P	N	P
NEER	95	5	92	8	84	16	88	12
Y/Y*	15	85	25	75	22	78	4	96
RER	96	4	98	2	86	14	70	30
Y/Y*	14	86	25	75	24	76	10	90
NEER	89	11	98	2	32	68	94	6
IND/IND*	10	90	12	88	34	66	2	98
RER	87	13	94	6	29	71	91	9
IND/IND*	5	95	12	88	40	60	2	98

Note: N is for neutral shock and P is for permanent shock.

Source: the author's calculations.

6. Conclusions

One of the most persistent arguments in favour of a flexible exchange rate regime is its hypothetical ability to absorb asymmetric real shocks. Based on quarterly data for the 1999–2013 period, this was not found to be the case for all CEE countries, as more than 80% of variability in the nominal exchange rate over the four-quarter horizon is explained by the neutral shock (except for the Czech Republic and Poland), while variability in output (GDP and industrial production) is mostly determined to the same extent by the permanent shock, as it is extracted from a two-variable SVAR model based on the familiar Blanchard-Quah decomposition. For Poland, the shock-absorbing properties of the exchange rate look more credible when the RER for specification of a neutral exchange rate shock and industrial production for specification of the permanent shock are used, especially for a shorter subsample of the 2004–2013 period. The contribution of the permanent shock to the variance of GDP ranges from 80% in Poland to over 90% in the other three CEE countries in the baseline specification (Table 2). This result was also confirmed for a shorter sample of the 2004–2013 period (except forthe Czech Republic, in the specification with real exchange rate and GDP).

As empirical results suggest that the nominal exchange rate does not respond to the shocks that seem to cause the bulk of fluctuations in output, it is possible to conclude that the exchange rate does not serve as a shock-absorber for Hungary and Romania, although this conclusion is somewhat weaker in the case of Poland and the Czech Republic (to a lesser extent). It is worth noting that using relative output strengthens the shock-absorbing properties of the exchange rate for Poland, while the results for other countries are not much changed.

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Właściwości amortyzacyjne płynnego kursu walutowego w gospodarkach Europy Środkowej i Wschodniej

(Streszczenie)

Biorąc pod uwagę znane zalety kursu płynnego jako amortyzatora niekorzystnych wstrząsów makroekonomicznych, otrzymane rezultaty na podstawie modelu SVAR z dwoma zmiennymi sugerują, że oczekiwane teoretycznie korzyści od większej giętkości kursu walutowego nie są obserwowane dla Węgier i Rumunii, ponieważ więcej niż 80% zmienności nominalnego (realnego) kursu walutowego w obrębie roku jest wyjaśnione przez neutralny wstrząs strukturalny. Jednocześnie zmienność produkcji zależy głównie od własnych wstrząsów permanentnych. Świadczenia na korzyść stabilizacyjnych właściwości kursu walutowego są bardziej wiarygodne dla Polski i Czech (w mniejszym stopniu), gdzie od 30% do 40% zmian nominalnego (realnego) kursu walutowego można tłumaczyć permanentnymi wstrząsami ze strony sektora realnego. Otrzymane wyniki zależą jednak od wykorzystanych danych.

Słowa kluczowe: system kursu walutowego, SVAR, dekompozycja Blancharda-Quah, gospodarki transformacyjne.