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Linkage Between External and Internal Imbalance – The Case of Serbia[4]

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Abstract: *After a while almost all transition and emerging countries that have entered into the process of economic reforms became attractive for foreign direct investments and foreign loans. Consequently, huge amount of capital inflow lead to the surpluses in the financial-capital account. Capital that has entered the system usually converts into the local currency and thus contributes to the growth of money supply in the system. However, high level of money supply leads to internal imbalances such as relatively high inflation and unstable exchange rate. In this paper authors try to give an answer to whether above described scenario is characteristic for Serbian transition economy. In this process the paper use linear regression, vector auto-regression (VAR) and error correction model.*

Keywords: *External and internal imbalance, transmission channel, vector auto-regression, error correction model*

Veza između spoljašnje i unutrašnje neravnoteže – Primer Srbije

Apstrakt: *Skoro sve tranzicione zemlje koje su ušle u proces ekonomskih reformi posle određenog vremena su postale privlačne za strane direktne investicije i strane kredite. Posledično došlo je do velikog priliva kapitala koji je doveo do suficita u kapitalno-finansijskom bilansu. Kapital koji je ulazio u*

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zemlju često se veoma lako konvertovao u domaću valutu i tako doprinosio rastu ponude novca u sistemu. Međutim, visoka ponuda novca utiče na pojavu unutrašnjih neravnoteža kao što su relativno visoka inflacija i nestabilan devizni kurs. U radu ćemo pokušati da damo odgovor na pitanje da li je gore opisani scenario karakterističan za srpsku tranzicionu privredu. U tu svrhu korišćena je sledeća metodologija: linearna regresija, vektorska auto-regresija i korekcija greške ka ravnoteži.

Ključne reči: *spoljna i unutrašnja neravnoteža, kanal transmisije, vektorska auto-regresija, model korekcije ka ravnoteži*

1. Introduction

Compared to other Eastern European countries, Serbia entered the transition process rather late. However, the effects that occurred do not defer from effects in other transition/developing countries. Namely, the Serbian market became attractive for foreign investments after reforms in 2001 that resulted in the surplus of financial balance from then onwards. In theory and often in practice, abundant capital inflows lead consequently to a higher economic growth, higher consumption from import as stated Savić and Bošković (2011), and appreciation of the domestic currency. This is the most likely scenario for the majority of developing countries that offer new opportunities to investors. This pattern can also be identified in Serbia, as financial surplus over the recent years resulted in growth of foreign exchange reserves and increase in the money supply. It is well known that increased money supply compared to the needs of the economy, generates inflation and depreciation of the domestic currency. The research of this paper is two-fold. At first, authors investigate the hypothesis that relatively high growth of the Serbian economy after the transition outset instigates capital inflows in greater volumes. At the second stage, authors gauge whether high capital inflow led to increase in reserve money which eventually contributed to domestic money growth in the system.

The structure of this paper is as follows. After this introduction, a brief literature review and similar experiences in other transition/developing countries are elaborated. The third chapter explores the factors that caused the external imbalance. Methodology and hypothesis are explained in next chapter. Following chapter explains transmission channel from external to internal balance via linear regression and error correction models. The last chapter summarizes the conclusions.

2. Literature Review

Eastern European countries have been recipients of large amounts of capital as a result of various economic and social reform programs and constant economic growth. The inflow of capital strongly influences the country's growth, development and the level of net investments, Petrović (2011). For instance, Ahmed (2012) claims that direct investment play a significant role in Malaysia's economic growth, but this can also be a clear indication that country's external balance is disrupted. As a consequence it could eventually be expected that the external imbalance will influence internal equilibrium, i.e. exchange rate, money supply, inflation, interest rate etc. Another research from Makin and Narayan (2013) found evidence that net capital inflow has had a statistically significant negative impact on domestic real interest rates in Australia using EGARCH model.

However, a high capital inflow includes some side effects that are less desirable. Kamin and Wood (1997) were among the first who identified several factors that characterize high capital inflow. Their first observation is that high capital inflows in the form of foreign direct investment or foreign loans lead to the appreciation of the exchange rate, which reduces exports and increases imports. As a consequence, a deficit in the current account balance rises. Second observation is that capital inflows lead to increase in foreign exchange reserves and money supply. The excess of money supply stimulates domestic consumption and inflation and at the same time encourage import. Finally, the authors emphasize that capital inflows are often volatile. Namely, if capital enters into a country easily, it can also leave it in same way. In countries which are dependent on capital inflow this may generate a crisis in a very short time.

It is also possible that large capital inflows could generate various shocks on asset prices. For instance, Tillmann (2013) investigated the impact of capital inflow shocks on property and equity prices in Asian economies using a panel VAR methodology. He found that capital inflow shocks significantly push up housing and stock prices. Also, Jinjarak and Sheffrin (2011) studied the link between house prices and the current account. However, they argue that current account deficits were unlikely to directly affect real estate prices in the US, Spain and Ireland. On the other hand, Kannan et al. (2011) have shown that after 1985 an aggravating current account balance was a strong leading indicator for house price busts in OECD countries. Since capital inflows primarily reflects on the monetary sphere, Mallick and Sousa (2012) provide evidence that monetary policy shocks effects real equity prices in large open economies such as Brazil, China, Russia and South Africa. Uncontrolled capi-

tal inflows have become a significant problem in some countries, so some authors as Ostry et al. (2012) analyzes the effects of prudential policies and capital controls on the financial-stability and risks associated with capital inflow surges. Their findings suggest that capital controls and various prudential policies can help decrease the risk of external liability structures and the volume of risky foreign-currency lending in the economy.

Up to date empirical evidence suggests that capital inflows have had different effects on the macroeconomic performance of the domestic economy, but also findings suggest that these effects are significant. In the following, authors will analyze these effects on the Serbian economy. Serbia has entered a process of transition in 2001; therefore it can expect that in a certain period Serbia had high levels of capital inflows. All assertions in this paper are based on econometric analysis, namely the CLRM (classical linear regression model), ECM (error correction model), and VAR (vector auto-regression).

3. External Imbalance – Causality and Repecussions

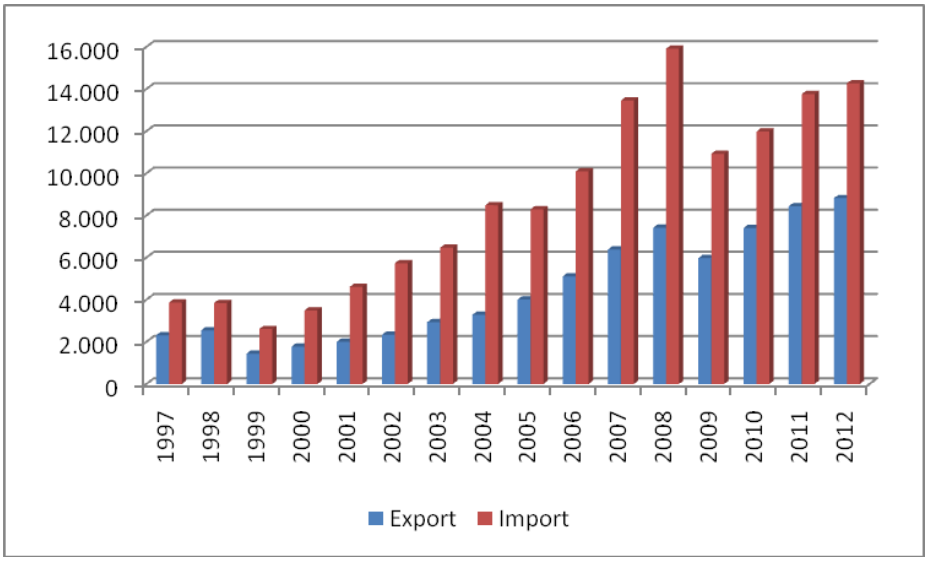
Theoretically, the external imbalance is associated with the balance of payments. What can be confusing is the fact that balance of payments is technically always in the equilibrium, so how imbalance occurs then. In other words, the sum of the financial-capital account (FA), current account (CA) and changes in foreign exchange reserves (FR) must be equal to zero (FA + CA + FR = 0). However, the balance of payments is in disequilibrium when its sub-balances are imbalanced, i.e. when the current/financial capital accounts have a surplus or deficit. If the sub-balances are approximately in equilibrium then the balance of payments is *de facto* in equilibrium, and external balance exists as well. What causes imbalances in sub-balances? Commonly, it could be expected that large capital inflows in small recipient economy cause financial balance surplus and probably higher import that lead to the current account deficit. This issue is closely linked to the domestic savings, because if domestic savings are not sufficient for the development then the necessary funds must be provided abroad.

It can be *a priori* assumed that Serbia is a capital recipient. After the beginning of the transition in 2001, it is reasonable to expect that domestic savings have not been sufficient for economic development. Therefore, a realistic assumption is the existence of capital inflow or a financial balance surplus. Serbia is not an exception compared to other countries. Similarly, in other European transition economies (Poland, Hungary, the Czech Republic, Romania, Croatia, etc.) there was a very high level of foreign capital inflow after the economic liberalization (Lane and Milesi-Ferretti, 2007). This is not a surprising fact because in these countries new business environment creates

new opportunities for profit. Also could be applied for Serbia, because reduction of political risk and significant economic growth attracted large amount of capital which could indirectly have impact on internal stability via monetary sector. After the changes in 2000, economic reforms led to rather high and constant inflow of foreign capital, primarily in the form of foreign direct investment, foreign loans and remittances (level of remittances was high even before 2000).

Capital inflows contribute to economic development and reduction of unemployment. However, the inflows of capital also lead to higher domestic consumption and higher import. After country's opening and economic liberalization, new opportunities have appeared for domestic population and companies who increased consumption from abroad. A rapid growth in domestic consumption led to increase in imports approximately 15-20% each year. As compared to exports, imports were higher approximately more than 40% in the period before the crisis (see Figure 1).

Figure 1. Export and import in Serbia (in million Euros)

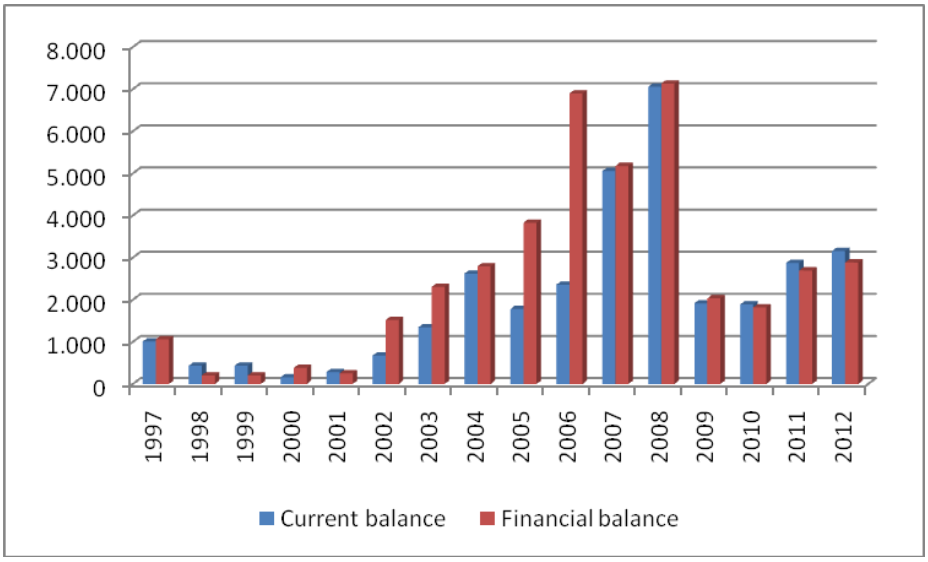


Source: Authors calculations based on data from National bank of Serbia official web page

High level of import created a growing deficit in the current balance and even larger surplus in the financial account (to avoid any confusion in Figure 1, it turns out that the import is greater than the balance of payments, although it is part of it. However, the current balance of goods and services is offset by current transfers (e.g. remittances) leading to lesser current account balance

than its own parts). This surplus was sufficient to fund growing deficit in the current balance as well as to prevent a greater depreciation of the exchange rate. It also influenced the growth of foreign exchange reserves. In Serbia there were significant capital inflows until the fourth quarter of 2008 when effects of the global crisis spilled over on domestic market. Figure 2 shows parallel movements of the current and financial balances from 1997 to 2011. After 2009 both capital and financial balance are much lesser than before the crisis.

Figure 2. The current and financial balances in Serbia (in million Euros)



Source: Authors calculations based on data from National bank of Serbia official web page

4. Methodological Framework for Research and Hypothesis

Capital inflow is evident in Serbia, but the real question is what has caused these trends. Looking at the first glance, it could be concluded that profit opportunities created in Serbia induced capital inflow. However, there is an obvious dilemma: does economic growth causes the capital inflow or capital inflow causes greater economic growth? Intuitively, it could be concluded that there is a mutual interdependence but it is necessary to examine what variable has greater impact on the other one. Having this in mind the first hypothesis is set up:

$H_{1:}$ There is interaction between economic growth and capital inflow, as well as a significant effect of GDP growth rate on investments in Serbia.

When economic theory provides a clear theoretical methodology for determining interdependence, modeling is easy. If the clear methodology is missing, the problem should be addressed alternatively. Consequently, in the paper the recursive vector auto-regression (VAR) model have been used introduced by Sims (1980) and applied the Impulse Response Function (IRF). The VAR model is a multivariate time series model, in which the interdependence between several variables is used to forecast each variable. The results from this model are derived from the IRF which shows the dynamic response of dependent variables over time to an unexpected innovation of a random variable. If reduced VAR model is used, then the variables in the model are likely to be correlated with the model error. However, reduced VAR is not adequate for assessments and for drawing conclusions. Alternatively, a recursive VAR model which overcomes the problem of error correlation through adding one regressor at time *t* in one of the equations is used. This way authors could determine the direction of the variables that have been observed. The Choleski factorization to orthogonalize variance-covariance matrix have been used so that the period-by-period response to an innovation in each variable can be examined without the errors being correlated. The classic specification of the standard Sims' unrestricted reduced-form VAR model of order *k* that has common lag length for each variable in the each equation is as follows:

$$Y_t = \sum_{i=1}^{k} A_i Y_{t-i} + BG_t + \varepsilon_t \quad (1)$$

where Y_t is a *(n×1)* vector of endogenous variables; *B* is a *(q×1)* vector of independent variables (in this case only constant), and ε_t is a *(n×1)* vector of reduced form residuals that are not correlated with each other. A and B represent *(n×n)* and *(n×q)* matrix of coefficients.

The paper approximates the financial balance observing it as the sum of its two most important parts which are most susceptible to economic growth: foreign direct investment and long-term loan capital (FDIL). In the model, authors have also used GDP growth rate (GDP). Data applied in the research are obtained from the official site of the National Bank of Serbia. The paper employs quarterly data from the first quarter of 2001 to the fourth quarter of 2011 (total of 44 time units). All series in the VAR model need to be stationary so Dickey-Fuller (1979) test of unit root presence have been performed.

Table 1. Dickey-Fuller (DF) and augmented Dickey-Fuller (ADF) statistics

Dependent variable	DF test	ADF test	Assessment
FDIL mill. €	-2.9495	-2.750819	stationary **
GDP growth rate	-3.8388	-2.952397	stationary *
* at probability of 95% ** at probability of 90%			

Source: Author

The first decision about VAR model is how many lags should be included into the model. Number of lags is determined on the basis of Akaike, 1974 (AIC) and Schwarz, 1978 (SIC) information criteria. Since the SIC criteria is stricter, the number of lags are decided upon it. The model is chosen base on the lowest AIC or SIC. Table 2 shows the number of lags in the VAR model and their related criteria.

Table 2. AIC and SIC for different lags

	2 lags	3 lags	4 lags	5 lags	6 lags	7 lags	8 lags
AIC	17.738	17.868	17.345	17.256	17.267	17.237	17.434
SIC	18.156	18.459	18.113	18.204	18.399	18.557	18.945

Source: Author

Since there is no matching in criteria assessment, authors decided that selection criterion will be stricter test (SIC), thus VAR model will include 4 lags. Based on the models, the impulse response function will be derived, which will show the dependent variable response to a sudden shock or innovation in the independent one. Thus, it can be estimated the intensity of the changes and the time interval needed for shock to disappear. Two recursive VAR models with four lags in the form of lag operators (L) are:

Direction: FDIL→DP (2)

$$FDIL_t = (\alpha_1 L+\alpha_2 L^2+\alpha_3 L^3+\alpha_4 L^4)FDIL_t+(\alpha_5 L+\alpha_6 L^2+\alpha_7 L^3+ +\alpha_8 L^4)GDP_t+\varepsilon_1$$
$$GDP_t=(1+ß_1 L+ß_2 L^2+ß_3 L^3+ß_4 L^4)FDIL_t+(ß_5 L+ß_6 L^2+ß_7 L^3+ +ß_8 L^4)GDP_t+\varepsilon_2$$

Direction: GDP→FDIL (3)

$$GDP_t=(\gamma_1 L+\gamma_2 L^2+\gamma_3 L^3+\gamma_4 L^4)GDP_t+(\gamma_5 L+\gamma_6 L^2+\gamma_7 L^3+\gamma_8 L^4)\ FDIL_t+\varepsilon_3$$
$$FDIL_t=(1+\delta_1 L+\delta_2 L^2+\delta_3 L^3+\delta_4 L^4)GDP_t+(\delta_5 L+\delta_6 L^2+\delta_7 L^3+\delta_8 L^4)FDIL_t+\varepsilon_4$$

The following pictures present two graphs of IRF. Both graphs show a proportional relation; when FDIL increases then GDP increases as well, and vice versa, and that is the first signal that the specification of the VAR model is valid. Figure 3 shows the movement of the impulse response function when

FDIL affect GDP. FDIL innovation (equal to one standard deviation of FDIL) has an immediate impact on GDP growth up to 5 quarters, and then slowly reduces the impact at a relatively moderate rate.

Figure 3. Response of GDP to One S.D. FDIL Innovation

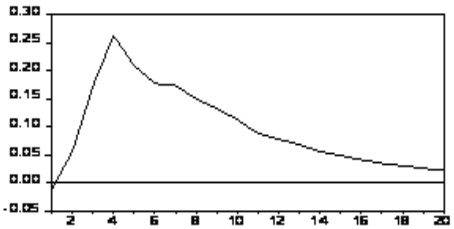
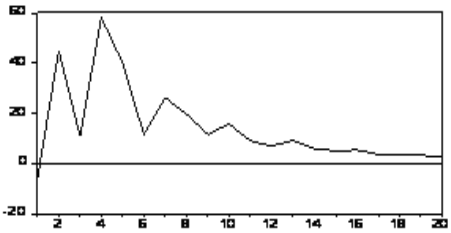


Figure 4. Response of FDIL to One S.D. GDP Innovation



Source: Author

On the other side, Figure 4 shows the impact of GDP on FDIL. It is evident that FDIL reacts more volatile when shock happens to GDP. This is because the possibility for profit creation (presented by the level of GDP growth) affects primarily the level of investment, and its movement is more subject to changes and expectations in the future trends of GDP growth. On the other hand, the impact of investments on GDP is more moderate because more variables affect GDP growth as well, such as the level of household consumption, budget deficit, technological advances, education and so forth.

In favor of this claim the effect of GDP on SDIK disappears more rapidly (after 8 quarters), while GDP reaches a peak rapidly and then declines at a fairly moderate rate. This results is in accordance with the empirical data in Figure 2 which shows that there is a sharp decline in financial balance in 2009 due to the crisis that seriously spilled over to the Serbian economy (similar is in 2010). GDP growth in these years was negative or very low. Consequently, the inflow of new FDI and long-term loans declined sharply. This can be interpreted as a high dependence of FDIL on GDP growth rate. Based on these results, the initial hypothesis that there is interaction of these two variables can be confirmed, as well as a significant effect of GDP growth rate on investments in Serbia. In other words, the surplus in the financial balance was a result of the relatively high growth rate of the Serbian economy that has been achieved after the opening up for foreign and domestic investors. The created surplus allowed the higher current balance deficit and affected the growth of foreign exchange reserves.

Another question is in what form the external imbalances affect the internal stability. Generally, the internal balance is defined as invariability and predictability of key macroeconomic variables in an economic system. Key macroe-

conomic categories, among others, are low and predictable inflation, the unemployment rate close to the natural one, a balanced state budget and a stable exchange rate. In this chapter, authors only pay attention to the nominal exchange rate, because the effect of the external imbalance is manifested mostly through the monetary sector. How do these effects transmit to the national economy? Although capital inflows bring many benefits for the economy, it hides a latent risk that is often overlooked and that, if unabated, could have serious consequences for macroeconomic stability.

After capital enters the country it transforms into reserve money mainly through autonomous flow, and thus increasing the money supply, which can be a generator of inflation and cause of the exchange rate instability. Incidentally, if a high level of dollarization/euroization exists in an economy then newly created money contributes to increased demand for foreign currency (due to lack of confidence in the local currency), thereby contributing to the growth of the exchange rate. Considering this, the second hypothesis have been set up:

H_2: The high capital inflow led to increase in reserve money which contributed to domestic money growth in the system.

Namely, the inflow of foreign currency affects the growth of foreign exchange reserves, and via conversion causes increased domestic money supply. The level of the exchange rate plays an important role, because the higher exchange rate is, the more local currency (in case of Serbia dinars – RSD) is created through autonomous flows and vice versa. More money in the system has negative influence on demand-pull inflation and recurrent effect on exchange rate. The first assumption is that money supply in Serbia has been generated mostly through autonomous flows. To check this hypothesis, authors assess classical linear regression model (CLRM) in which co-integrated movements of foreign exchange reserves and the nominal exchange rates RSD/€ as independent variables, and the movement of monetary aggregate M1 as dependent one are observed. The model was evaluated using ordinary least squares (OLS) methodology. If cointegration between series exists then additional model – error correction model could be used.

5 Empirical Results

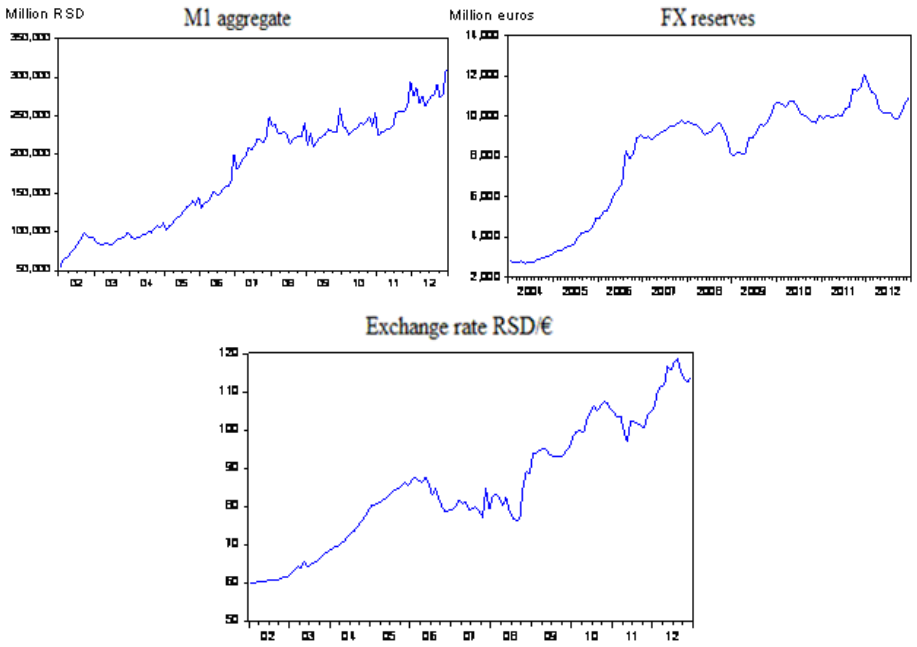
Both long-run and short-run relationships often co-exist in time series data. Such dynamics could be modeled by introducing error correction mechanisms (ECM) to enable a simultaneous evaluation of both processes (Banerjee et al., 1986; Engle and Granger, 1987). The narrow linkage between co-integration and error correction models originate from the Granger representa-

tion theorem. According to this theorem, two or more integrated time series that are co-integrated have an error correction representation, and two or more time series that are error correcting are co-integrated. The two concepts are isomorphic, as each implies the other one. However, this isomorphism only holds with integrated time series processes. For that purpose authors have conducted the unit root tests for all series intended to use in the model. EC model takes a following form:

$$\Delta Y_t = C + \sum_{j=1}^{m} \gamma_{1,j} \Delta X_{t-j} - \omega_1 u_{1,t-1} + \varepsilon_{1,t} \quad (4)$$

Where C is a constant, γ and ω are estimated parameters, ε is an error term, Δ is a first difference operator and $u_{1,\,t-1}$ is the error-correction term obtained from the long-run equilibrium equation.

Figure 5. FX reserves, M1 aggregate and Exchange rate in Serbia 2002-2012



Source: Authors' calculations based on data from National bank of Serbia official web page

Fig. 5 shows monthly dynamics of observed variables (FX reserves, M1 aggregate and exchange rate RSD/€) from 2002 to 2012. The conclusion that can be derived on the basis of the visual display is that these are non-

stationary series, that is they have at least one unit root, but co-integration relation could exist. All series have upward dynamics, so expected sign of the coefficients in the model should be positive. Authors decide to observe monetary aggregate M1 because it includes transaction money that has most affect on the rise of inflation and exchange rate. First, a stationarity of time series used in the model have been evaluated. If time series are integrated at level one I (1), authors additionally assess whether there is possible co-integration. If it exists, then it can be used the error correction model (ECM) that provides a deeper insight into the relation between M1, foreign exchange reserves and the nominal exchange rate.

In contrast to the previous model, authors observe monthly data from January 2002 to April 2012 (124 observations). The evaluation of stationarity and co-integrated CLR model is as follows:

Table 3. Dickey-Fuller (DF) and augmented Dickey-Fuller (ADF) statistics

Variables	DF test	ADF test	Results
Monetary aggregate M1 in RSD mill.	-0.857807	-0.122353	Nonstationary
Foreign exchange reserve in € mill.	-1.971460	-1.225169	Nonstationary
Nominal exchange rate RSD/€	-0.306052	-0.268811	Nonstationary

Source: Author

M1 = -14144.55 + 4.097 FXR + 544.641 NEXR **(5)**

t: (-2.1284) (9.8398) (4.90288)

$\overline{R}^2$ = 0,901; JB = 0.125; BG (7) = 83.198; DW = 0.460; DFR = -3.677

where:

M1 – monetary aggregate M1 in millions of dinars
FXR – Gross foreign exchange reserves in millions of euros
NEXR – nominal exchange rate RSD/€

Model (5) confirms the assumption that there is co-integration between these variables because DFR = -3.677 statistics (Dickey-Fuller for residuals) is less than critical value (-3.388). To put it the simple terms, money creation in Serbia a heavily impacted by the level of FX reserves and foreign exchange rate. Residuals of the model are stationary at significance level of 5% (critical value is -3.3864), and a long-term relation exist between them. However, the model includes non-stationary time series with a unit root, which leads to doubts about the adequacy of the high value of adjusted R-squared coefficient. It is possible that this is a spurious regression; the hint about that also could be a

high serial autocorrelation which indicate the Breusch–Godfrey (BG) and Durbin–Watson (DW) tests. However, the model (5) indicates a long term link between variables which allows assessing further short-term relation. The directions of parameters are statistically significant and have prefixes in accordance with the initial assumptions of their interdependence with the M1 aggregate. Nevertheless, the foreign exchange reserves parameter cannot be interpreted straightforward because M1 is expressed in RSD and foreign reserves in Euros. It would mean that the increase in gross foreign exchange reserves of 1 million Euros generates 4.1 million Dinars, which is extremely low. Also, model suggests that exchange rate growth of one RSD leads to increase of money in circulation of 545 million RSD. This parameter could overemphasize the importance of the exchange rate, but it shows that the changes in the exchange rate are also an important factor that affects the money supply. Residuals have a normal distribution, which can contribute to validity of parameters.

Since series are co-integrated, additionally ECM model have been used, which provides further explanation of the observed relation from the short term stand point of view. ECM model observes differentiated time series and the first step is evaluation of their stationarity.

Table 4. Dickey-Fuller (DF) and augmented Dickey-Fuller (ADF) statistics

Variables	DF test	ADF test	Results
∆ M1 in mill. RSD	-17.060	-10.601	Stationary *
∆ FXR in € mill.	-10.326	-6.907	Stationary *
∆ NEXR RSD/€	-11.797	-7.301	Stationary *
* at a probability of 99%			

Source: Author

$$\Delta M1 = 22.070 + 3.005\Delta FXR + 905.50\Delta NEXR_{-1} - 0.22889\,\varepsilon_{-1} \quad (6)$$

t: (0.0536) (2.3371) (4.3041) (-3.8762)

Error! Bookmark not defined. $\overline{R}^2 = 0{,}2393$; BG(7) = 23.0084; JB=21.2629

where:

ΔM1 – First difference M1 in RSD mill.
ΔFXR – First difference gross foreign exchange reserves in € mill.
ΔNEXR – First difference of nominal exchange rate RSD/€
ε – residual from the model (5)

Model (6) is relatively well specified; all parameters are statistically significant and prefixes are appropriate. As stationary series have been applied, adjusted R-square coefficient is much lower and more realistic. Given values indicate that there is a space for model improvement. Similarly to equation (5), the

front parameter of ΔFXR could not have logical explanation because series are presented in different currencies. However, in equation (6) (indicates short run relation) this parameter is lower for one unit than the value in the model (5) (indicates long run relation), which could indicate that most of money supply (even ¾ = 3.005/4.097) creates in a month (because ΔFXR is observed in current time) when the foreign exchange reserves increase happens.

This is consistent with economic logic and the assumption that autonomous flows at the most cause an increase in money supply. The coefficient in front of the exchange rate is observed for the period t-1 because its t-statistics is higher. This shows that under the influence of the exchange rate 906 million RSD in average has been created during two months (in time t and t-1). This is in accordance with the previous model, because for two months it is created almost twice amount of money than in one month. An error correction parameter (ε_{-1} = -0.22889) is statistically significant and has a good prefix, indicating that the impact of short-term imbalances on the movement of M1 is significant. In other words, the deviation of M1 from long-term balance is reduced by 23% per month; long-term balance is achieved in approximately four months. The model does not have problems with autocorrelation, but its residuals do not follow normal distribution as in model (6).

The results are in line with economic theory, but sheer results could be questioned because both models are very simple and each has its imperfections. Because of that more testing should be done in order to achieve more reliable parameters which eventually could help policy-makers in their decisions. The next studies devoted to this subject could try to include more independent variables; some non-linear models could be deployed using other methods of estimation as maximum likelihood, quasi maximum likelihood, generalized methods of moments (GMM) and so forth. Also, since the paper examined influence of the exchange rate on aggregate M1, it would be interesting to check for the reverse effect of the monetary aggregate M1 to exchange rate.

6. Conclusion

This paper analyzes the spillover effects from external imbalances to internal balance. Particularly the paper analyze the effect from capital inflow to monetary aggregate M1 in Serbian economy. The inner and outer balances are two sides of the same coin, so it could be expected that the external imbalance reflects on the internal imbalance. These effects are largely manifested in the monetary sphere, i.e. the increased foreign exchange reserves and in this regard, rise of the money supply. Some findings stands in that line as in the Kamin and Wood (1997) survey who found that substantial capital inflows contributed to rapid monetary growth, real appreciation of the peso, and the

widening of Mexico's current account deficit. Therefore, the first step in the paper was to find a connection between the relatively high growth of Serbian transition economy and the surplus in its financial-capital balance. On the basis of what is found in this paper the following conclusions can be drown:

Recursive VAR model and the IRF show that the relatively high GDP growth rate had a significant effect on long-term capital inflows in Serbia in the last 10 years. In this manner, the first hypothesis that interaction between economic growth and capital inflow exist in Serbia is confirmed, i.e. the surplus in the financial balance has been caused by improved prospects for profit on the Serbian market. Although VAR model shows that there is mutual influence between GDP and FDIL, the GDP growth rate have had a more direct impact on the inflow of investments and loans than *vice versa*.

The classical linear model, ECM and VEC model proved second hypothesis that high capital cause increase in reserve money which reflects to domestic money growth in the system. Applied models corroborate that there are long-term and short-term relation between foreign exchange reserves, the exchange rate and monetary aggregate M1. This confirmed the assumption that there is a transmission from external to internal imbalances. Presented models have showed that money in Serbia has been created mostly independently of monetary authorities and the cause was the external imbalance. The papers' findings stand in line with surveys conducted by other authors. For instance, Gruben and McLeod (1996) analyze a multi-country set of annual data to assess the effects of different types of capital flows on macroeconomic performance in some emerging Asian and Latin American countries. They found considerable evidence of two-way causation between capital flows and output growth. Also, Antzoulatos (1996) focused on the impact of capital flows on the components of domestic demand in a multi-country panel of annual data in Latin American countries. He showed that higher volume of investment significantly affect the level of international reserves.

Finally it should be noted that the results found in this study may be used for future research to focus on some other topics that have not been touched in this paper. For example, it will be interesting to see how crisis in 2008 impact the inflow of capital and analyze the behavior of the exchange rate and inflation in the pre and post-crisis. Also, the analysis can be extended to other countries in the region and Eastern Europe in order to examine the panel over whether the effects explained in this paper are intrinsic to other countries in transition.

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