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THE DETERMINANTS OF THE BALANCE OF PAYMENTS IMBALANCE OF SRI LANKA

Abstract

This research attempts to identify the highly influential determinants for Sri Lanka's Balance of Payments (BOP) imbalance. The study was based on time serious secondary data for the time spanning from 1990 to 2017. The operational methodology adopted is the multiple regression model on variables such as Imbalance of the Previous Year ($\beta_1 BOP_{t-1}$), Money Supply (MS_t), Economic Growth Rate (EGR_t), Inflation Rate (IR_t), Reserve Assets (RA_t), Exports (EX_t), Imports (IM_t) and Exchange Rate (EXR_t). The findings of the study revealed that money supply and exchange rate are the highest negatively influential determinants while reserve assets and export income highly positively influence on balance of payments imbalance. Research recommends uplifting the export income while declining the exchange rate to prevent from upcoming BOP deficit. Research suggests future researchers to analyse the impact of qualitative variables on BOP imbalance.

Keywords: balance of payments, imbalance, international trade

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Introduction

Sri Lankan government has used several policies to make a stable economic circumstance in the country. Capital formation, Inflation rate and exchange rate management, increase the employment opportunities, expansion of business and market structure are highlighted among them.

The concept of balance of payments was discussed during 1960s and 1970s (Rabin, Yeager, 1982). The deep study on the BOP provides more information about money demand and supply. It provides signals for international business partners of the country. Further, the data of BOP can be used to analyse the behaviour of the country in the international competitive economy (Howells, 2009).

According to the international Monetary Fund every country should keep the BOP in an equilibrium level to sustain the external economic stability. The total balance of all the sub accounts in BOP should be equal to zero (Rabin, Yeager, 1982).

The importance of Sri Lankan balance of payments was enhanced with the open economic policy which has being used since 1978. Sri Lanka is facing to a long-term BOP imbalance that is a huge challenge to sustain the external economic stability (Athapaththu, 2009).The deficit of current account was 1988 and 2009 US Dollars Million in 2014 and 2015. It has recorded 2309 US Dollars Million in 2017. There was a 1369 $ Million surplus of BOP in 2014. It has recorded 2771 US Dollars Million in 2017 (Lanka, 2015).

This research attempted to identify the high impactable determinants of the Balance of Payments imbalance of the country. Moreover, the applicability of the basic concepts of the Monetary Approach for balance of payments has been checked in this research. Further, research aimed to observe the recent behaviour of the determinants of the balance of payments imbalance. Research attempted to search the appropriate policy adjustments that can be applied to solve the BOP problem in the country. This research is important for the policy makers and investors. Based on the results it is possible to identify the appropriate policies that can be applied.

1. Literature Review

In 1952, Hume and Alexander, in 1968 Mundell, in 1975 Johnson discussed the monetary approach for balance of payments. According to the theory, the balance

of payments is basically a monetary phenomenon. BOP should be analysed regarding to the changes of money supply (Gureech, 2014).

A study in Sri Lanka has considered the relationship between exchange rate, competitiveness and balance of payments behaviour. Research has examined the productivity of the exchange rate policy to attain external competitiveness. However, research has explained only about the relationship between three variables. It does not examine the impact of exchange rate or trade balance on BOP imbalance (Alawattage, 2000).

There is a comparative study in India and is focused more to investigate how the balance of payments determines regarding to the exports and imports (Rana, Khurana, 2011). There is another descriptive analysis about how the balance of payments works regarding to the export and imports (Srivastava, Sinha, Geetu, 2016).

Another research in Kenya has examined the determinants of balance of payments using time serious data covering 38 years. It has been based on the monetary approach for balance of payments. It has concerned the money supply, openness of the economy, real interest rate, real exchange rate, gross capital formation, political stability as the determinants of the balance of payments (Gureech, 2014).

The research in Bangladesh reveals that barriers in imports should be removed slowly than removing barriers in exports. Further it has explained that liberal polices causes to increase imports expenditure than export income (Chowdhury, 2013).

Research in Nigeria has examined the applicability of using monetary approach for balance of payments with the intention of exploring the determinants of the balance of payments. It has revealed the competent of the theory and further explained the positive relationship between balance of payments and exchange rate (Tijani, 2014).

The empirical literature highlights the research gap and the necessity of observing the determinants of the balance of payments of Sri Lanka. Literature review reveals the applicability of using the monetary approach to investigate the determinants of the balance of payments imbalance. By considering the empirical literature, researcher selected the BOP of previous year, money supply, inflation rate, economic growth rate, export income, import expenditure, and exchange rate to be analysed to find the high impactable determinants of the balance of payments imbalance of Sri Lanka.

2. Methodology

Eight hypothesises were made when doing the research. It was assumed that there is an impact from selected variables for the variance of the dependent variable. The conceptual framework of the research reveals the nature of the hypothesises (Figure 1). Research used the multiple regression model and the model was based on the standard econometric model of monetary approach for balance of payments. The dependent variable of the model was the imbalance of balance of payment of the country (BOP_t) while the independent variables were the Imbalance of the previous year (BOP_{t-1}), Money Supply (MS_t), Economic Growth Rate (EGR_t), Inflation Rate (IR_t), Reserve Assets (RA_t), Export Income (EX_t), Import Expenditure (IM_t) and the Exchange Rate (EXR_t).

$$BOP_t = \beta_0 + \beta_1 BOP_{t-1} + \beta_2 MS_t + \beta_3 EGR_t + \beta_4 IR_t + \beta_5 RA_t + \\ + \beta_6 EX_t + \beta_7 IM_t + \beta_8 EXR_t + \varepsilon_t.$$

Figure 1. The conceptual Framework
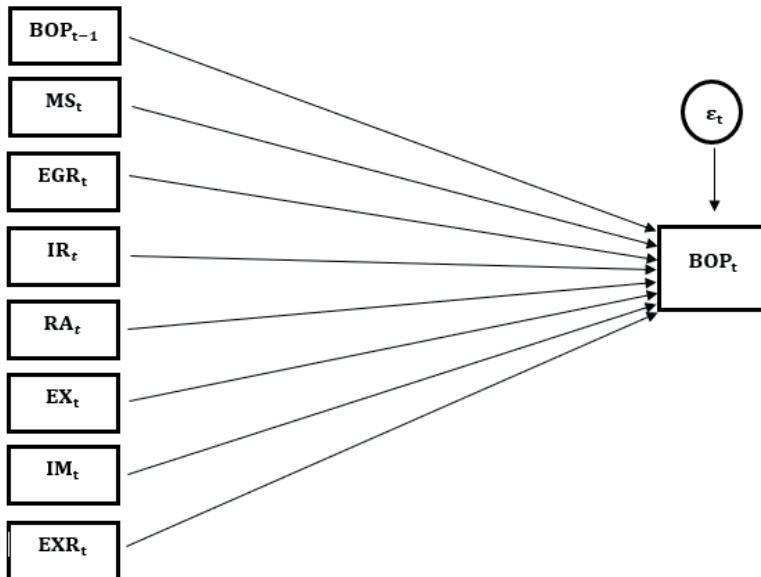
Source: author's computation.

Research has used the time serious analysis to observe the recent behaviour of the determinants of balance of payments imbalance of the country. All the variables that have been concerned in the research are quantitative variables and secondary data were used from the central bank annual reports from 1990 to 2017 covering 28 years. In the pre-estimation tests multicollinearity, autocorrelation and the normal distribution of the residual have been checked.

3. Results and Discussion

The highest deficit that has been recorded during the 1990–2017 is RS Million 145,795. The highest surplus that can be seen during the period is RS Million 397,126. The medium imbalance that has been recorded in the BOP is RS Million 46,448.3456 (Table 1).

The multiple regression model which was used in the research reveals the impact of considered variables on the variance of dependent variable. According to the analysis, the estimated model is as follows.

$$BOP_t = 199{,}561.053 - 0.606\ BOP_{t-1} - 837.885\ MS_t - 9{,}442.575\ EGR_t - 493.943\ IR_t +$$
$$+ 0.858\ RA_t + 1.204\ EX_t - 0.606\ IM_t - 5{,}378.362\ EXR_t.$$

Table 1. Maximum, Minimum and mean values of variables

Variable	Total sum	Maximum	Minimum	Mean
BOP_t	1,300,553.70	397,126.00	–145,795.00	46,448.3460
BOP_{t-1}	982,778.90	397,126.00	–145,795.00	35,099.2460
MS_t	6,175.10	902.50	14.50	220.5390
EGR_t	148.80	9.10	–1.50	5.3140
IR_t	238.93	22.60	2.10	8.5332
RA_t	14,921,978.00	1,829,304.00	34,271.00	532,927.7860
EX_t	19,022,156.60	1,732,440.00	79,481.00	679,362.7360
IM_t	31,195,997.80	3,198,572.00	107,626.00	1,114,142.7790
EXR_t	2,565.27	152.46	40.06	91.6168

Source: author's computation.

There is an inverse relationship between the BOP of previous year and the BOP imbalance of the current year. When the BOP of previous year is increased by Rs Million 1, the BOP imbalance of current year is decreased by 0.606 Rs Million while the other variables are constant. The BOP imbalance of current year is decreased by 837.885 Rs Million when the Money Supply is increased by 1 Rs Million while the other factors are constant. It reveals that there is an inverse relationship between the Money Supply and balance of payments imbalance as well. When the Economic growth rate is increased by 1 Rs Million, the BOP imbalance is varied negatively by Rs Million 493.943. There is a positive relationship between the reserve assets and BOP imbalance. BOP imbalance is varied positively by Rs Million 1.204 when the export income is varied by 1 Rs Million while the others are constant. The relationship between the import expenditure and BOP imbalance is negative. When the Import expenditure is increased by 1 Rs Million, the BOP imbalance is varied negatively by 0.606 Rs Million while the other factors are constant. When all the other variables are constant, the BOP imbalance is decreased by 5378.362 Rs Million while the exchange rate increase by one unit with regards to the 1 $. According to the analysis the value of the β_0 is 199,561.053. it reveals the mean impact of the unconcerned factors when the selected variables are constant. According to the analysis the highest impactable determinants of the BOP imbalance are Money Supply, Economic Growth Rate, Inflation Rate and Exchange Rate (Table 2).

The R Square value can be used to check the fitting goodness of the multiple regression model. The estimated model shows that the R^2 value is 0.832. It reveals that the model explains the 83.2% of the total variance of the Balance of Payments imbalance (Table 2). As a result of that the percentage that is explained by residuals is only 16.8%.

ANOVA table can be used to check the total significance of the estimated model. The model is statistically significance in 5% significance level since the P value is lower than to the 0.05.

Tolerance and VIF values have been used to check the multicollinearity of the model. If the tolerance is lower than to the 0.1 and VIF is greater than to 10, the model would be consisted with Multicollinearity. According to the analysis there is a minimum level multicollinearity in the model. Yet there is an interrelationship between economic variables in nature and it has not been a huge impact to the model. Therefore, the model has been kept without changes. The Durbin-Watson value

is used to check the autocorrelation of the model. When the value is close to 2, it is assumed that model is settled out from the autocorrelation issue. The Durbin-Watson value of this model is 1.297 and it is close to 2. Therefore, it is assumed that there is no autocorrelation issue in the model.

Table 2. Coefficients of the estimated model

Variable	β value	Standard error	P value	Confidence intervals		Collinearity statistics	
				lower bound	upper bound	tolerance	VIF
Constant	199,561.053	93,142.738	0.045	4,611.061	394,511.044		
BOP	−0.606	0.129	0.000	−0.876	−0.337	0.656	1.524
MS_t	−837.885	211.672	0.001	−1,280.921	−394.850	0.049	20.509
EGR_t	−9,442.575	6,777.249	0.180	−23627.521	4,742.370	0.749	1.335
IR_t	−493.943	2,643.983	0.854	−6027.862	5,039.997	0.704	1.420
RA_t	0.858	0.154	0.000	0.531	1.180	0.024	41.016
EX_t	1.204	0.499	0.026	0.161	2.248	0.002	440.726
IM_t	−0.606	0.186	0.004	−0.996	−0.216	0.004	225.525
EXR_t	−5,378.362	2,177.865	0.023	−9,936.686	−820.038	0.026	39.142

Source: author's computation.

According to the hypothesis testing it was proved that 6 hypothesises were accepted while two are rejected. According to the analysis there are statistically significance impact from BOP previous year, Money Supply, Reserve Assets, Export Income, Import Expenditure and Exchange Rate on the BOP imbalance. Yet the impact from Economic Growth Rate and Inflation Rate on BOP imbalance is not statistically significance.

The time serious analysis explained the long-term increase of the money supply, reserve assets, export income, import expenditure and exchange rate. Yet there is a trend of declining in the inflation rate. However, there is an irregular variance of the BOP imbalance and the economic growth rate.

Conclusions and Recommendations

Research concludes that the statistically significant highest negative impact on the BOP imbalance is from the money supply and exchange rate. The highest positive statistically significant impact is from reserve assets and export income.

Thus, the reserve assets and export income should be increased when there is a deficit in the balance of payments. If it is expected to reduce the surplus of the balance of payments, research concludes to decline both export income and reserve assets.

To finance the deficit of Sri Lankan balance of payment, the most appropriate determinants that should be declined are money supply and exchange rate. When there is a surplus in the BOP, if the governments wanted to remove the surplus, it is recommended to increase the money supply and exchange rate.

Although it is explained in economic theories to decline the import expenditure when there is currency depreciation, Sri Lanka has not yet practiced that policy successfully. Because research reveals that the import expenditure has been increased year by year although there is a continuous currency depreciation. Moreover, it is showed that a strong positive correlation between the import expenditure and exchange rate.

The basic concepts of monetary approach for balance of payments are applicable in Sri Lankan context. Since there is a positive relationship between BOP and reserve assets, and a negative relationship between BOP and money supply like the theory explained.

The theory of Demand-Pull Inflation is not applied in Sri Lankan context because there is an inverse relationship between money supply and inflation rate. According to the theory money supply causes to increase of inflation rate and it is the behind logic of the demand-pull inflation theory. Therefore, the basic reason for the increase of inflation rate is the cost push circumstance of the production culture.

Export differentiation, starting import substitutable industries, enhancing the reserve assets, maintain the inflation rate in a one value further, upgrading the value of Sri Lankan currency regarding to the US dollars are major recommendations to manage the Sri Lankan balance of payments.

Research highlights the necessity of managing the negative relationship between economic growth rate of the country and balance of payments. It is recommended

the starting import substitutable industries. Utilizing local human and physical resources will provide a support to decline the import expenditure when facilitating for the growth. Further, research recommends to future researchers to analyse the impact of qualitative variables on the balance of payments imbalance by covering a long time.

References

Alawattage, U.P. (2000). *Exchange Rate, Competitiveness and Balance of Payment Performance*. Central Bank of Sri Lanka, Staff Studies, Vol. 34, No. 1. Retrieved from: https://ss.sljol.info/article/10.4038/ss.v35i1.1234/.../download (24.02.2019).

Athapaththu, D. (2009). *Economics 2*. Matara, Sri Lanka: Department of Economics, University of Ruhuna, Sri Lanka.

Chowdhury, R. (2013). Bangladesh's Balance of Payments: an Econometric Analysis. *European Academic Research*, *1/4*, 337–350.

Gureech, M.A. (2014). *The Determinants of Balance of Payments Performance in Kenya*. Research Project Submitted in Partial Fulfilment of the Requirments for the Degree of Master of Arts in Economic Policy Management of the University of Nairobi, Kenya.

Howells, P. (2009). *The Money Supply in Macroeconomics*. Working Papers 0904, Department of Accounting, Economics and Finance, Bristol Business School, University of the West of England, Bristol.

Lanka, C.B. (2015). *Annual Report*. Colombo.

Rabin, A.A., Yeager, L.B. (1982). Monetary Approaches to the Balance of Payments and Exchange Rate. In: *Essays in International Finance*. New Jersey: International Finance Section, Department of Economics, Princeton University.

Rana, K.S., Khurana, D. (2011). Comparative Analysis of Balance of Payments: Indian Perspective. *International Journal of Transformations in Business Management*, *1/1*.

Srivastava, L., Sinha, A., Geetu, Y. (2016). A trend Analysis of Trade Imbalance of Indian Balance of Payment. *Indian Journal of Research*, *1* (5).

Tijani, J. (2014). Empirical Analysis of Balance of Payment Adjustment Mechanisms: Monetary Channel in Nigeria, 1970–2010. *Mediterranean Journal of Social Sciences*, *5* (14), 67–76. DOI: 10.5901/mjss.2014.v5n14p67.

DETERMINANTY NIERÓWNOWAGI BILANSU PŁATNICZEGO SRI LANKI

Streszczenie

Celem badań jest zidentyfikowanie czynników wpływających na równowagę bilansu płatniczego na Sri Lance. Badanie zostało przeprowadzone na danych wtórnych z lat 1990–2017. Przyjęta metodologia to model regresji wielokrotnej dla zmiennych takich jak dysproporcje w latach ($\beta_1 BOP_{t-1}$), podaż pieniądza, wskaźniki wzrostu gospodarczego, stopa inflacji, aktywa rezerw, eksport, import oraz kursy walut. Otrzymane wyniki wykazały, że takie determinanty, jak podaż pieniądza i kursy walutowe, mają silnie negatywny wpływ na bilans płatniczy, podczas gdy aktywa rezerw oraz dochody z eksportu mają bardzo pozytywny wpływ na równowagę bilansu płatniczego. Autor badania zalecałby podniesienie dochodów z eksportu przy jednoczesnym zmniejszeniu poziomu kursu walutowego, aby zapobiec deficytowi bilansu płatniczego (BOP) na Sri Lance. Uważa również, że powinny być podjęte badania nad wpływem zmiennych jakościowych na równowagę bilansu płatniczego.

Słowa kluczowe: bilans płatniczy, nierównowaga, handel międzynarodowy

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Cytowanie