An Analytical Study of the Impact of Balance of Payment on Indian Stock Market

Prof. Narender Kumar
Head & Dean, Department of Commerce,
M.D. University, Rohtak, Haryana

Dr. Seema Rathee
Assistant Professor
Department of Commerce,
M.D. University, Rohtak, Haryana

Abstract

The present paper is an endeavor to highlight the impacts of current account and capital account on CNX Nifty and BSE 100. The study is purely based on secondary data. The analysis of which was made through the application of Karl Pearson's coefficient of Correlation and Multiple Regression. The study found that the current account (CAD) is the most important predictor of CNX Nifty with R square values of .596 and the impact of capital account is more important in case of BSE 100 with R square values of .699. Though, the current account is a significant factor for all outcome variables yet its impact on CNX Nifty has been greater than other outcomes; and the aggregate impact of all the predictors jointly showed more impact on CNX Nifty (R2change= 69.5 per cent)than other outcome variables. It was further indicated through the results that if all the two selected independent factors remain constant, then also there are other factors as well which explain CNX Nifty and BSE 100 up to 1649.480 and 2336.893 units.

Keywords: Current Account Deficit, Capital Account, BSE Sensex, and NSE CNX Nifty.

Introduction

Many developing countries, including India, restricted the flow of foreign capital till the early 1990s and depended on external aid and official development assistance. The financial sector reforms commenced in the beginning of 1990's, and the implementation of various measures including a number of structural and institutional changes in the different segments of the financial markets, particularly since 1997, brought dramatic changes in the functioning of the financial sector of the economy (Agrawalla, 2006). Later, most of the developing countries opened up their economies by deregulating capital controls with a view to attracting foreign capital, supplementing it with domestic capital to stimulate domestic growth and output. Since then, portfolio flows from foreign institutional investors (FII) have emerged as a major source of capital for developing market economies (EMEs) such as Brazil, Russia, India, China and South Africa. Besides, the surge in foreign portfolio flows since 1990s can be attributed to greater integration among international financial markets, advancement in information technology and growing interest in EMEs among FIIs such as private equity funds and hedge funds so as to achieve international

diversification and reduce the risk in their portfolio. Stock exchange serves a vital function for businesses considering going public. An economy that experiences sustainable growth is likely to have a very effective stock exchange. While developed countries fully usurp the benefits of the raising capital through the stock exchange, developing countries do not have effective stock exchange at the desired level. Being one of the most important pillars of the country economy, stock market is carefully observed by governmental bodies, companies and investors (Nazir et al., 2010). The foreign capital markets integrated rapidly during post globalisation period but contraction in demand for exports (both merchandise and services) and the increase in fuel and gold imports resulted into a record-high current account deficit during 2012 in India. The exports registered a growth from $18.5 billion to $309.7 billion between 1990-91 and 2011-12; the average annual growth rate of merchandise exports doubled during the last two decades, from 9 per cent in 1991-92 to 1999-2000 to 20 per cent during 2000-01 to 2011-12; though, exports grew during the last two decades, they were not in line with the growth in imports (export/GDP increased 11 percentage points between 1990-191 and 2011-12 whereas imports/GDP increased by 18 percentage points over the same period); the increase in imports of oil as a proportion of GDP doubled during 2004-05 and 2011-12; non-oil imports increased from 14.4 per cent to 18.5 per cent of GDP, specifically the gold has been an important contributor (increasing from 1.5 per cent to 2.5 per cent of GDP between 2004-05 and2011-12).; the import of oil and gold registered a sharp increment during 2011-12 with growth rates of 45per cent and 40percent respectively (relative to 22 per cent and 18per cent in the previous year); consequently, the merchandise trade balance aggravated significantly over the last two decades (from 2.9 per cent (-ve) of GDP in 1990-91 to an estimated 10.2 per cent (-ve) of GDP in 2011-12) and the CAD went up to an all time high of 4.8 per cent last year on account of a heavy trade deficit and higher gold imports. The Government of India acted on multiple fronts, curbing gold imports, opening currency swap windows to get fresh dollar flows, and increasing money market rates to reduce speculation, resulting into CAD comes down to 1.2 per cent of GDP in Q2 and the foreign exchange reserves were at over US $295 billion as of December, 2013.

Review of Literature:

Suraksha and Chikara, Kuldip (2014) analyzed the impacts of foreign exchange reserves, current account, and capital account on GDP, Sensex, Nifty and fiscal deficit. The study is purely based on secondary data.The analysis of the study was made through the application of Karl Pearson's coefficient of Correlation and Multi Regression OLS model (Ordinary Least Square). The study found that the current account (CAD)is the most important predictor of GDP, BSE,

NSE and fiscal defici. Though, the current account is a significant factor for all outcome variables yet its impact on GDP and fiscal deficit has been greater than other two outcomes; and the aggregate impact of all the predictors jointly showed more impact on BSE than other outcome variables.

Karam pal and Mittal, Ruhee (2008)

Secrutinized the longrun relationship between the Indian capital markets and key macroeconomic variables such as interest rates, inflation rate, exchange rates and gross domestic savings (GDS) of Indian economy. – Quarterly time series data spanning the period from January 1995 to December 2008 has been used. The unit root test, the co□integration test and error correction mechanism (ECM) have been applied to derive the long run and short□term statistical dynamics. The study found that there is co□integration between macroeconomic variables and Indian stock indices which is indicative of a long□run relationship. The ECM shows that the rate of inflation has a significant impact on both the BSE Sensex and the S&P CNX Nifty. Interest rates on the other hand, have a significant impact on S&P CNX Nifty only. However, in case of foreign exchange rate, significant impact is seen only on BSE Sensex. The changing GDS is observed as insignificantly associated with both the BSE Sensex and the S&P CNX Nifty. Study, on the whole, conclusively establishes that the capital markets indices are dependent on macroeconomic variables even though the same may not be statistically significant in all the cases.

.**Ozcan,Ahmet (2012)** In his study, the relationship between macroeconomic variables and Istanbul Stock Exchange (ISE) industry index is examined. The selected macroeconomic variables for the study include interest rates, consumer price index, money supply, exchange rate, gold prices, oil prices, current account deficit and export volume. The Johansen's cointegration test is utilized to determine the impact of selected macroeconomic variables on ISE industry index. The result of the Johansen's cointegration shows that macroeconomic variables exhibit a long run equilibrium relationship with the ISE industry index.

Apergis and Eleftherio (2002) investigated that the relationship among the index of Athens stock exchange, interest rate and inflation and concluded that inflation has greater impact on the performance of the index of Athens stock exchange than interest rate.

Rapach (2001) analyzed the long run relationship between inflation and the stock prices. Using macroeconomic data from sixteen developed countries, it is concluded that there is a weak relationship between inflation and stock prices.

Liu ve Shrestha (2008) examined the relationship between

a set of macroeconomic variables and the index of Chinese stock market. By employing heteroscedastic cointegration, they found that a significant relationship exists between the index of the Chinese stock market and macroeconomic variables. They concluded that inflation, exchange rate and interest rate have a negative relationship with the index of Chinese stock market.

Olayinka Olufisayo Akinlo, Obafemi Awolowo University, Ile-Ife, Nigeria (2011) They have studied the relationship between foreign exchange reserves and stock market development in Nigeria over the period 1981-2011. They have used multivariate framework incorporating an interest rate variable. The study found that a long run relationship exists among exchange rate reserves, interest rates and stock market development. Foreign reserves have a positive effect on stock market growth. Bidirectional causality exists between interest rates and stock market growth. Finally, a bidirectional relationship exists between interest rates and foreign reserves.

Akmal, Muhammad Shahbaz (2007) scrutinized the relationship between stock prices and rate of inflation using ARDL approach for the period 1971-2006.The result of the study depicted that stock hedges are not in favour of inflation in long run as well as in short run and found that black economy effects long run and short run prices of the stock.

Objective of the Study: The main objective of the study is to analyse the impact of current account and capital account on BSE 100 and CNX Nifty.

Hypotheses of the Study

The hypotheses are developed on the basis of literature review and objective of the study. The null hypotheses framed under the study are stated below:

1. H01 : There is no significant impact of current account on CNX Nifty and BSE 100.

2. H02 : There is no significant impact of capital account on CNX Nifty and BSE 100.

Research Methodology

Data Collection

The present study is purely based on secondary data covering 14 financial years from 2000-01 to 2013-14.The requisite data related to current account and capital account have been collected from various sources i.e. Hand Book of Statistics and Bulletin of Reserve Bank of India and the data of BSE Sensex and CNX Nifty have been taken from the websites of BSE (www.bseindia) and NSE (www.nseindia) respectively.

Statistical Tools & Techniques

In order to analyze the collected data, the statistical tools such as Karl Pearson's coefficient of Correlation and Multiple Regression is used. Correlation coefficient is a statistical measure that determines the degree to which the movements of variables are associated. In the present study, the linear relationship between Independent Variables-current account, and capital account, and dependent variables- CNX Nifty, and BSE 100 is established. The multiple regression analysis is a technique used to evaluate the effects of two or more independent variables on a single dependent variable. Here, an attempt is made to study the impact of Independent Variables- current account, capital account on dependent variables- CNX Nifty and BSE 100.

Analysis and Interpretation

A. Regression analysis of Current Account, Capital Account and CNX Nifty

B. Impact of flow of Current Account and Capital Account on BSE 100 and CNX Nifty.

Independent Variables: Current Account, and Capital Account.

Dependent Variables: CNX Nifty and BSE 100.

Table:1

Descriptive Statistics

	Mean	Std. Deviation	N
BSE100	4648.7857	2057.17309	14
CAD	-1167.5829	1583.82193	14
KA	1964.1386	1515.01335	14

Table: 2a -Pearson Correlation Coefficients

	CAD	CAPITAL ACCOUNT	BSE 100	NSE
CAD	1	-0.751	-0.446	-0.772
CAPITAL ACCOUNT	-0.751	1	0.802	0.832
BSE 100	-0.446	-0.751	1	0.823
NSE	-0.772	0.832	0.823	1

Table: 3a

Model Summary^c

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
1	.446^a	.199	.132	1916.33083	.199	2.981	1	12	.110	
2	.836^b	.699	.644	1227.70025	.500	18.237	1	11	.001	1.413

a. Predictors: (Constant), CAD

b. Predictors: (Constant), CAD, KA

c. Dependent Variable: BSE100

Table:3b

Model Summary^c

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.772^a	.596	.562	1311.57096	.596	17.671	1	12	.001
2	.861^b	.742	.695	1094.30722	.146	6.238	1	11	.030

a. Predictors: (Constant), CAD

b. Predictors: (Constant), CAD, KA

C .Dependent Variable:NSE

Table 3(a) & 3(b) exposed the strength of relationship between the model and the dependent variables.

The values of R depict the multiple correlation coefficients between the predictors (independent variables) and the outcome (dependent variable). When only current account was used as predictor, a moderate correlation (r=.446) between current account and BSE 100 was observed. The next column gives the value of R2, which tells us a measure of how much of the variability in the outcome (BSE 100) is accounted for the predictors (Current Account, and Capital Account). For the first model its value is .199 {Table 3(a)}, which means that current account accounts for 20 per cent variation in BSE 100. However, when the other predictor (Capital Account) is included as well, the value increases to .699 or 69.9 percent. Therefore, if current account accounts for 20 per cent variations, we can say that capital account accounts for an additional 50 per cent variance in the outcome variable **.** Table 3(b) exposed the value of R2 for NSE output and for the current account its value is .596 which shows that current account accounts for 59.6 per cent of variations in NSE and when the other predictor capital account is included as well, the value increases to .742 or 74.2 percent which means that inclusion of capital account accounts for 14.6 percent of variation in NSE.

Table:4a

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10947608.042	1	10947608.042	2.981	.110[b]
	Residual	44067886.315	12	3672323.860		
	Total	55015494.357	13			
2	Regression	38435767.497	2	19217883.748	12.750	.001[c]
	Residual	16579726.861	11	1507247.896		
	Total	55015494.357	13			

a. Dependent Variable: BSE100

b. Predictors: (Constant), CAD

c. Predictors: (Constant), CAD. KA

Table 4(a) and 4(b) presents the ANOVA analysis; In case of NSE the F-ratio for model 1 and 2 are 17.671 and 15.811 respectively which are significant at 0.05 per cent level of significant(p < 0.05), but the F- ratio for model '1' is more than other model. So, we can safely conclude that the model '1' is more significant in predicting the outcome variable (NSE).

Table:5b

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3972.283	644.847		6.160	.000		
	CAD	-.579	.336	-.446	-1.727	.110	1.000	1.000
2	(Constant)	2336.893	563.311		4.148	.002		
	CAD	.464	.325	.357	1.425	.182	.437	2.291
	KA	1.453	.340	1.070	4.271	.001	.437	2.291

a. Dependent Variable: BSE100

Table:5a

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2502.010	441.345		5.669	.000		
	CAD	-.965	.230	-.772	-4.204	.001	1.000	1.000
2	(Constant)	1649.480	502.106		3.285	.007		
	CAD	-.422	.290	-.337	-1.454	.174	.437	2.291
	KA	.757	.303	.579	2.498	.030	.437	2.291

a. Dependent Variable: NSE

The analytical Table 5(a) exhibit the estimates of b-values (Unstandardized coefficients) which

explicate the individual contribution of each independent (predictors) variable to the model. The positive value depicts positive relationship between the predictors and outcome variable and vice-versa. The b-values also explain to what degree each predictor affects the outcome variable if the effects of the other predictors are held constant. If we replace the b-values in equation, we can define the models as follows:

Model 1: BSE 100 = b0+b1 Current account deficit +b2 Capital account

=2336.893) + (.464 Current Account) + (1.453 Capital Acconts)

Model 2: NSE = b0+ b1 Current account deficit +b2 Capital account

=1649.480+ (-.422 Current Account) + (.757 Capital Accont

Unstandardized coefficients (b-values) for Model 1, and Model 2 exhibit through Table 5(a) and 5(b) respectively.

Current Account (b5a = -.422, b5b = .464, b = .047)**:** These values indicate that as current account balance increases by one unit (1 billion), NSE decreases by -.422{Table 5(a)}and BSE 100 increases by .464 units {Table 5 (b). Therefore, every additional unit (1 billion) of current account is associated with an extra -.422 units decrement in NSE and .464 units increment in BSE 100. This interpretation is true only if the effects of capital account held constant.

Capital Account (b5a = .757, b5b = 1.453)**:** These values indicate that as capital account increases by one unit (1

billion), NSE and BSE 100 increases by -.757 {Table 5 (a) and 1.453 units {Table 5 (b)}respectively. Therefore, every additional unit (1 billion) of capital account is associated with an extra .757, 1.453 increment in NSE and BSE 100 respectively. This interpretation is true only if the effects of current account held constant.

The **standardized beta values** (labelled as Beta =β) exposed through the Table 5(a) & 5(b) indicate the volume of change in standard deviation outcome (dependent variable) due to one standard deviation change in the predictor (independent variable).

Current Account (β5a = -.337, **β5b** =.357**):** These values observe that as current account increases by one standard deviation (1583.82193), NSE decreases by -.337{Table 5 (a)}and BSE 100 increases by .357{Table 5 (b)}standard deviation. The S.D for NSE is 1981.45904 and so, this constitutes a change of 667.7516 (1981.45904 X -.337) and S.D for BSE 100 is 2057.17309 and so, this constitutes a change of 734.4107 (2057.17309 X .357) . This interpretation is true only if the effects of capital account held constant.

Capital Account (β5a = .579, **β5b** =1.070**):** These values observe that as capital account increases by one standard deviation (1515.01335), NSE and BSE 100 increases by .579 {Table 5 (a)} and 1.070 Table 5 (b) standard deviation. The S.D for NSE is 1981.45904 and so, this constitutes a change of 1147.264 (1981.45904 X .579) and S.D for BSE 100 is 2057.17309 and so, this constitutes a change of 2201.1752 (2057.17309 X 1.070) . This interpretation is true only if the effects of current account held constant.

Testing of Hypothesis

 H01 : There is no significant impact of current account on NSE and BSE 100.

The p-value related to current account in Tables 5(a), and 5(b) are less than 0.05

so null hypotheses H01 is not accepted. Hence, it is concluded that trends of current account, indices of BSE and NSE are dependent and current account have significant impact on indices of BSE and NSE.

H 02: There is no significant impact of capital account on NSE and BSE 100.

The p-value related to capital account in Tables 5(a) and 5(b) are less than 0.05 so null hypotheses H02 is not accepted. Hence, it is concluded that trends of capital account, indices of BSE and NSE are dependent and capital account have significant impact on indices of BSE and NSE.

Conclusion and Suggestions

The study which was conducted to assess the impact of current account balance, and capital account on Indian stock market (BSE and NSE) found that the current account (CAD) is the most important predictor in case of NSE with R square values of .596, and coefficient of correlation (-ve) of -.772. Though, the current account is a significant factor for all outcome variables yet its impact on NSE is greater than other outcome; and when all the predictors taken together they showed more impact on NSE (R2change= 69.5 per cent) than other outcome variable (BSE 100). It was further indicated through the results that if two selected independent factors remain constant, then there are other factors which are explaining BSE 100 and NSE up to 2336.893, and 1649.480 units. By keeping in view the above results it is suggested that the Government of India should strive to frame such policies which are capable of attracting more and more foreign capital up to the optimum limit which may trigger the process of more infrastructural development of nation and paves way to fast economic development leading towards transforming India into an economic power of the globe capable of rendering the desired level of economic and social services to its people in particular and to the people of globe in general, and entail curtail on imports to deal with the widening current account deficit.

References

Suraksha and Chhikara, Kuldeep (2014), *An Analytical Study of the Collisions of Macroeconomic Variables on Indian Economy and Stock Market,* Pacific Business Review International, Vol.6, Issue 12, 71-80

Karampal, Ruhee Mittal, (2011), "*Impact of macroeconomic indicators on Indian capital markets*", The Journal of Risk Finance, Vol.12, Issue 2, 84-97

Mukherjee, T., Naka, A. (1995), *Dynamic Linkage Between Macroeconomic Variables and the*

Japanese Stock Market: An Application of a Vector Error Correction Model, Journal of

Financial Research, 18, 223-237.

Nazir, M.S., Nawaz, M.M. and Gilani, U.J. (2010), *Relationship between Economic Growth and Stock Market Development,* African Journal of Business Management, 4(16), 3473-3479.

Nishat, M., Shaheen, R. (2004), *Macroeconomic Factors and Pakistani Equity Market,* The Pakistan Development Review, 43(4), 619-637

Dimitrova, D. (2005) "The Relationship between Exchange Rates and Stock Prices: Studies in Multivariate Model," *Issues in Political Economy,* vol. 14, p. 1-25

Ahmed, Shahid (2008). Aggregate Economic Variables and Stock Markets in India. International Research Journal of Finance and Economics, Issue 14, 141-164.

Akmal, Muhammad Shahbaz (2007). Stock Returns and Inflation: An ARDL Econometric Investigation Utilizing Pakistani data. Pakistan Economic and Social Review Volume 45,

No. 1, 89-105.

Nishat, Mohammed and Shaheen, Rozina (2004). Macro economics factors and Pakistan Equity market. The Pakistan Development Review 43(4), 619–637.

Robert D. Gay, Jr (2008). Effect Of Macroeconomic Variables On Stock Market Returns For Four Emerging Economies: Brazil, Russia, India, And China. International Business & Economics Research Journal, Volume 7, Number 3, 1-8.

Shahbaz, M., Ahmed, N., and Ali, L. (2008). Stock market development and economic growth: ARDL Causality in Pakistan. Journal of Finance and Economics, Vol.14, 182-195.

Sangmi, Mohi-u-Din and Hassan, Mohd. Mubasher (2013). Macroeconomic Variables on Stock Market Interactions: The Indian Experience. IOSR Journal of Business and Management (IOSR-JBM), Volume 11, Issue 3, 15-28.

www.bseindia

www.nseindia

www.rbi.gov.in