CHAPTER 1

INTRODUCTION

Fiscal and monetary strategies, when executed lucidly, assume a conclusive part in general macroeconomic stability. The macroeconomic theory which assumes an ideal relationship between budget (or fiscal) deficit and current account (or trade) deficit is known as twin deficit hypothesis. The debate on the issue of twin deficit hypothesis has been revived in the previous decade by the ongoing global breakdown, and the resultant episodes of simultaneous budget deficit (BD) and current account deficits (CAD) in numerous countries, which have tempted significant consideration from researchers and policymakers in both developing and developed countries. As indicated by OECD (2011), the worldwide current account gap enlarged particularly in the years prior to the worldwide financial crises. Similarly, the crises itself lead its wake a renewed profundity of financial sin over the developing and developed countries. The unprecedented increase of the BD and the widening of CAD in the United States (US) in 1980s led to recognizing this situation as the "twin deficits" issue as both empirical methods and economic theory recommended an association between the two deficits. The worry is centered on the degree to which fiscal change can add to settling current account imbalances, particularly when it is persistent.

The relation in the economic literature between the BD and CAD continues to be questionable and unresolved. The Keynesian paradigm indicates that there is a significant association between these two deficits. Deficit expansion will contribute to internal absorption, thus rising domestic sales, contributing to a rise in imports and a widening of the current account deficit. The Mundell-Fleming model (Fleming 1962; Mundell 1963) is the cornerstone of the Twin Deficit Hypothesis, which implies that an improvement in the BD will contribute to an increase in the interest rate and the exchange rate. The spike in interest rates makes it easier for investments in the domestic sector to lure foreign investors. This raises internal demand and contributes to currency appreciation, that, in fact, makes imports cheaper and exports more costly. However, the domestic exchange rate will raise imports and cause a CAD (Leachman and Francis, 2002; Salvatore, 2006). However, the Ricardian theorem didn't support the Keynesian theory. He argues that there is no connection between the two deficits in an open economy and that the former does also not affect the latter. In other terms, tax reform will have little effect at all on interest rates and expenditure (Barro 1989; and Neaime, 2008). The inference here is that the patterns of customer consumption will be focused on the life cycle model established by Modigliani and Ando (1957), which means that current consumption relies not on the current income as indicated by the Keynesian model, but on the lifetime income expected. In addition, Milton Friedman's 1957 theorem of permanent wealth notes that private spending can only rise with a permanent increase in income. This suggests that a transient rise in revenue fueled by tax cuts or public investment funded by deficits would raise private investments rather than consumption (Barro, 1989:39; Hashemzadeh & Wilson 2006).

Monetary and fiscal policy has been subject to persistent debate in (Brazil, Russia, India, China and South-Africa) BRICS countries for a very long time, being an arm of macroeconomic strategy impacted by its perceived capacity to influence real economic activities and prices. The economic sustainability of the countries depends on fiscal and monetary balance. Various economies have indicated that the prolongation of macroeconomic instability can be described by budget and current account deficit. During the 2008-09 global economic crises, decline in government revenue and countercyclical spending reduces budget surplus and widens the deficits.

The following section (1.1) gives an economic overview of the BRICS countries over the past three decades. Section 1.2 will discuss the motivation of the research for this thesis. Section 1.3 gives the research objectives, which incorporate the hypothesis to be tested. Section 1.4 will give the statement of the original contribution to the empirical literature. Section 1.5 will give the organisation of the thesis.

1.1 Overview of the BRICS countries

BRIC are the four distinct emerging counties coined by Jim O'Neill, then of Goldman Sachs, in 2001. Jim O'Neill was searching for an approach to convey the fact that a significant part of the world's financial development would come from Brazil, Russia, India and China. The theory behind the grouping was that by 2050, China and India would become dominant producers of products and services for production and Russia and Brazil would dominate the supply of raw materials. In 2010 BRIC expanded to BRICS after including South-Africa as a fifth nation.

At present, more than 40 percent of the total population is represented by the five BRICS nations. Regardless of their current decline, over the last 10 years, Brazil, Russia, India, China and South Africa have accounted for half of the world's economic growth. The BRICS nations have also been recognized as one of the world's fastest emerging economies and the engine of global economic recovery, which underlines the evolving position of these economies on the globe (McGranahan and Martine, 2014; Lin and

Rosenblatt, 2012; Li and Carey, 2014). At the G20, they were powerful in shaping macroeconomic policies as a result of the continuing financial and economic crises. China is the biggest economy in the current decade, followed by India, among the five developing BRICS economies. Between 1980 and 2009, the Chinese economy expanded at a typical annual rate of 9.9 percent worldwide. After the global financial crises of the 1990s, the economic performance of Russia and Brazil basically improved. The economic success of the BRICS countries over the previous decade was further improved by ongoing economic reforms with macroeconomic stability (IMF, 2011). However, the BRICS economies' impressive highlights are their massive land and population size. It is widely seen that all BRICS economies have immense potential to create a thriving middle-income population that fills society as a stabilizing force. In the BRICS countries, the middle-income group is growing at varying rates, but the middle-income group will continue to rise both in size and sales, offering a solid base for continued expansion.

The five emerging BRICS countries participate in the global economy in numerous ways. Brazil and Russia make up 36.1 percent of their overall exports and 22.3 percent of their total finished goods exports. Russia's exports are largely dominated by oil and mineral exports (67.4 percent), but Brazil's exports account for 61 percent of oil, mines and agricultural products. Total consumer goods exports account for 94.3% for China, 68.4% for India and 40.6% for South Africa. The increasing demand for manufactured goods in South Africa's has improved export performances and added to its economic development (See table 1.1). The rapid growth rate in five emerging countries (BRICS) since 1990s has been changed due to the global financial crises 2008.

Table 1.1: Composition of Exports in BRICS countries (2015)

Country	Merchandise Exports ($ billion)	Share in World Total Export	Commodities Share			
			Agriculture	Manufacturing	Fuel & Mining	Others
Brazil	191.1	1.2	41.9	19.1	36.1	3.0
Russia	340.3	2.1	8.0	67.4	22.3	2.3
India	267.1	1.6	13.2	15.7	68.4	2.7
China	2,775.0	13.8	3.2	2.4	94.3	0.1
South-Africa	81.7	0.5	11.7	29.8	40.6	17.9

Source: WTO Statistics Database.

Table 1.2 clearly shows the impact of financial crises 2008 on economic growth, the positive economic growth in 2006 followed with negative economic growth in Brazil (-0.12), Russia (-7.79) and South Africa (-1.53) in 2009. After 2010, BRICS countries have faced difficulties in their economic advancement due to economic external imbalances. After 2012, Russia has undergone a rapid fall in the rate of growth. In 2015, the economy shrank by -2.30 percent. With the economy contracting -3.5 percent in 2015, Brazil has undergone stagflation and followed up with optimistic growth of 1.11 percent in 2018. The development pace of South Africa has dropped under 2 percent since 2014 (See table 1.2).

Despite the fact that it is nice to see a relative high growth rate in China and India, both of them face structural and cyclical fluctuations. The BRICS economies' remarkable highlights, however, are their vast land and population scale, especially in China and India.

Table 1.2: GDP growth rate of BRICS countries annual percentage

Country	1991	1994	1997	2000	2003	2006	2009	2012	2015	2018
Brazil	1.51	5.33	3.39	4.38	1.14	3.96	-0.12	1.92	-3.54	1.11
Russia	-5.04	-12.56	1.39	10.0	7.29	8.20	-7.79	3.70	-2.30	2.25
India	1.05	6.65	4.04	3.84	7.86	8.06	7.86	5.45	7.99	6.98
China	9.29	13.05	9.23	8.49	10.03	12.71	9.39	7.85	6.90	6.60
South-Africa	-1.01	1.23	2.60	4.20	2.94	5.60	-1.53	2.21	1.19	0.78

Source: World Bank Database: data.worldbank.org

All the BRICS markets are generally seen to have enormous potential to create a prosperous middle-income community that fills society as a stabilising force. The middle-income group is rising at different rates in the BRICS countries, but the middle-income group will continue to rise both in size and income, providing a strong foundation for continued growth. With the worldwide financial downturn and the changes in the US Federal Bank's monetary policy system, export demand has become fragile internationally and a significant amount of investment is coming back to the US from emerging economies. Investment in R&D, fostering business and trade by tax reduction, it is crucial that BRICS nations shift their focal points back to their home economies and direct structural reforms.

Current account balance fluctuates noticeably among BRICS countries. This is largely attributed to the country's demand for imports and the increase in oil and mineral prices. Emerging countries (Brazil, India, and South-Africa) have experienced a widening of current account deficits due to increasing oil prices, macroeconomic instability and investment-driven growth in imports. On the other hand, Russia and China have current account surplus, the main reason for current account surplus is Russia is their biggest oil reserves and is the world's second biggest oil exporter (alongside Saudi Arabia). It has the world's biggest gas and coal reserves and is the largest exporter of gas. These assets, especially oil, have been a main impetus of the Russian economy for long economic wellbeing. Therefore, the key explanation for the current account surplus in Russia's economy is the strong exports of oil. By multiplying the effect on economic development, the revenues produced from oil reserves make a notable contribution. The obvious reason for the external surplus is that, by rising FDI inflows, the economy follows an export-driven growth model. China's demographic boom has created an economic miracle in the increasing tide of economies, enabling them to invest in education and skilled workers that will accordingly benefit the economy.

Table 1.3 gives the current account position of BRICS countries, it can be seen from the table 1.3 that Brazil, India, and South-Africa have current account deficits for most of the years from 1990 to 2018. These emerging countries mainly Brazil, India, and South-Africa got affected by the global financial crises 2008, the global economic slowdown and exports start declining which keep widening current account deficit.

It can be seen from the above table1.3 that after strong wind fall effect of financial crises, current account deficit increases more than 5 per cent of GDP in India, and South-Africa and above 3 per cent in Brazil. Another reason may be due to the rising oil prices and cyclical movement in the form of inflation and exchange rate volatility. The budget deficit (BD) has been expanding in emerging economies globally.

Table 1.3: Current account balance in the BRICS countries (Percentage of GDP)

Country	1991	1994	1997	2000	2003	2006	2009	2012	2015	2018
Brazil	-0.3	-0.3	-3.5	-3.8	0.7	1.2	1.6	-3	-3.3	-0.8
Russia	0.9	2.2	-0.2	17.4	7.6	9.3	4.1	3.2	4.9	6.8
India	-1.5	-0.5	-0.7	-0.9	1.4	-0.9	-1.9	-5.0	-1.1	-2.5
China	3.4	1.3	3.9	1.7	2.6	8.5	4.8	2.5	2.8	0.4
South-Africa	1.2	0.02	-1.5	-0.14	-0.9	-4.5	-2.7	-5.1	-4.6	-3.7

Source: World Bank Database: data.worldbank.org

In spite of the fact that the BRICS economy relies on oil exports, natural resources and foreign direct investment (FDI) for balanced economic growth. The budget deficit in Brazil increases continuously from 1990 to 2018. The budget deficit increases from -2.7 % of Gross Domestic Product (GDP) in 2007 to -7.2 % of GDP in 2018. In Russia budget deficit was increasing at a fast speed from 1990 onwards. Russia's economic growth rate tumbled to -14.5 percent, in contrast to -3 percent in the year 1991. However, in the following years, BD turns positive 2.47 percent the economic growth jumps to 10.07 percent in the year 2000. Further widening of the BD in 2009, the economic growth turns negative -7.79 percent. However, in the year 2017-18 the budget deficit continuously reduced (-7.79 to -1.5 % of GDP) from the year 2009 to 2017. In India the global economic fluctuation causes a drastic change in BD in recent years. In India, the budget deficit amounted to -6.8% of GDP in 1991 and dropped to -3.42% of GDP in 2018. It can be shown from table 1.4 below that there is an ongoing budget deficit in India from 1990 (-9.1% of GDP) to (-3.4% of GDP) in 2018. Despite the introduction of the FRBM Act

2003 aimed at strengthening fiscal positions, however, the Indian economy has continued to fight the fiscal deficit even today.

It was stated in the Chinese print media in the early 1990s that while the Chinese economy was rapidly expanding, deficits still existed. The budget deficit will rise from -2.6% of GDP in 1990 to -4.2% of GDP in 2018. The surplus in the current account grew to 9.23% of GDP, while the fiscal deficit was at its lowest (-0.41 percent of GDP in 2008). The negative shock of the BD raises the CAD and vice versa. Since 1990 to 2018, the BD and CAD have been gradually rising. The federal deficit is below 5% of GDP, and 60% of the domestic debt is below GDP. Low revenue collection and increasing expenditure in South Africa keep on moving the budget deficit higher than anticipated. The weak economic execution in South Africa has reduced export growth, increasing import growth and deterioration of exchange rate. The budget deficit has constantly increased from 1990 (-3.2) % of GDP to (-4.4) %of GDP in the year 2018.

Table 1.4: Budget deficit in the BRICS countries (Percentage of GDP)

Country	**1991**	**1994**	**1997**	**2000**	**2003**	**2006**	**2009**	**2012**	**2015**	**2018**
Brazil	-2.40	-3.87	-5.60	-3.32	-5.17	-3.57	-3.18	-2.52	-10.2	-7.10
Russia	-14	-9.5	-5.45	2.47	2.2	8.03	-7.9	-0.1	-2.4	2.7
India	-6.8	-6.9	-7	-9.2	-8.3	-5.1	-9.3	-7.4	-3.9	-3.42
China	-3.05	-2.3	-1.9	-2.8	-2.2	-0.8	-2.8	-1.5	-3.4	-4.2
South Africa	-3.9	-5.1	-3.8	-1.4	-2.2	0.6	-6.3	-5	-4.1	-4.4

Source: Data of each respective country is collected from Ministry of Finance.

The increasing government activities are affecting the macroeconomic stability of an economy has expanded noticeably throughout the years, as is understandable from the growing budget deficit figures for the BRICS counties reported in table 1.4. The rising budget deficit will crowd-out private investment, increase debt, interest rate, higher inflation, and eventually hampers economic growth. Increasing the current account deficits will give rise to exchange rate crises, exhaustion of worldwide reserves and transfer of wealth to other countries (IMF, 2015).

1.2 Research Motivation

In recent times, various countries have left on major structural changes in order to decrease BD, CAD, control inflation and stable macroeconomic condition conducive for growth. Despite these changes the government still inherit both the BD and CAD in many developing and developed countries, a positive budget and current account deficit remain difficult. The way in which deficits persist in a large number of nations is included in a reconsideration of the causal connection between the BD and the CAD.

Current account deficit has got significant importance in the ongoing occasions and has made the thought of current account sustainability gain strategy centrality with regards to the latest macroeconomic instability. Miller and Russek (1989) contend that the import/export imbalances infer a transfer of wealth to and reduce the standard of living and burden on future generations. In addition, the increasing CAD is considered to be one of the key factors influencing the volatility of the exchange rate (Edwards, 2005) and its related problems. It is claimed that the fiscal gap and CAD are counterproductive to the exchange rate, creating high interest rates, crises in the financial market and investment rates (Barro, 1989). The main aim of this thesis is the debate with respect to whether the fiscal or government policy markedly affects the CAD and whether the macroeconomic instability will cause budget and current account deficit in BRICS countries. In an open economy where there is perfect capital mobility, to revive the balance between savings and investments is met by the higher inflow of capital. Higher demand for assets brings an appreciation in the exchange rate. If capital mobility is imperfect, the reduction in deposits will lead to higher interest rates, lower domestic consumption and higher capital inflows will lead to domestic currency appreciation. Higher exchange rates cause a weakening of the current account balance in all cases.

The first linkage derived from Mundell-Fleming assumes that an increase in BD will give rise in interest rate, there will be an inflow of money and the exchange rate will grow and cause the CAD. The Keynesian absorption hypothesis assumes that a rise in the government's deficit will raise the domestic consumption, therefore growing imports and worsening the CAD. Contrary to the Keynesian preposition, the BD and the CAD are different in view of the fact that fiscal policies prompt inter-temporary redistribution of savings, interest rates, and assets sustain unchanged current account deficits (Barro, 1976). Indeed, no adjustment in the exchange rate and interest rate is caused by the fiscal deficit (Garcia and Ramajo, 2004) and, therefore, there is no effect on the current account balance. However, the rational consumer knows that if there is a decrease in tax this year, in coming years it will be increased. Hence, the fiscal policy remains comparatively ineffective in its ability to impact the macro-economy.

1.3 Objectives of the study

The key purpose of this analysis is to determine, as a countercyclical policy instrument, the adequacy of fiscal and monetary policy in the BRICS. The research investigates why an increase in the budget deficit allows the interest rate to increase, leading to the inflow of capital and the appreciation of the exchange rate and the current account deficit as described by the Keynesian absorption hypothesis, or contrary, whether fiscal policy behaves in a same manner that is consistent with Ricardian Equivalence (and there is no correlation between BD and CAD). The specific objectives of the study are as follows:

- To test the relationship between budget deficit and current account deficit in BRICS countries.
- To determine the extents to which this relationship is reliable with the Ricardian hypothesis or the twin deficit hypothesis.
- To assess the transmission mechanism between budget deficit and current account deficit via macroeconomic variables for BRICS countries.

The linkage between these two deficits is measured in the macroeconomic context for BRICS countries in order to achieve these objectives. This thesis considers the model based on Bernheim (1987) which is the most used consumption equation to test Ricardian equivalence hypothesis (REH). Additionally, independent variables have been considered based on the economic theory (Keynesian proposition and Ricardian equivalence). These variables are inflation, interest rate, money supply, exchange rate, tax revenue, private consumption and public consumption.

However, the thesis attempts to explore the relationship on a comparative basis, examining it separately for all the constituent countries of the block. The explanation behind comparative is on the grounds that these economies vary significantly from developed nations in different manners including market structure, monetary policies, economic and financial path etc. Indeed, even inside the BRICS nations, there is heterogeneity in exchange rate regime, capital control, policy targets and others.

Secondly, it also takes into consideration that BRICS countries have different macroeconomic regimes, which obviously impact the relationship between BD and CAD. For instance, some countries follow inflation-target regimes with flexible exchange rates, others have fixed exchange rates and specific rules for setting the governmental interest rate; they have different laws regarding public spending and investment etc.

The time period for the study is 1990-2018, based on the availability of data. The empirical model is based on the cointegration framework, employing Johansen's cointegration method or autoregressive distributed lag (ARDL) model for short-run and long-run estimation, Granger causality for causal relationship and Impulse response function for forecasting and to check the robustness of results.

1.4 Contribution of the study

The study conducted in this thesis facilitates an exploration of the feasibility of the twin deficit theory in BRICS countries. In the macroeconomic context for BRICS nations, there is a lack of empirical work on the twin deficit hypothesis. Also, most analytical work concentrating on the twin deficit hypothesis and Ricardian hypothesis was taken into account in the early 1990s. In this thesis, we have investigated Ricardian theorem by two ways, the first one is based on the direct relationship between BD and CAD and the second one is based on the Bernheim (1987) consumption function.

The study uses time-series data from 1990 to 2018. However, it is important to highlight that the BRICS nations have gone through structural changes over this time. From 1960 onwards these economies were largely regulated, with business subject to inflation control, fixed exchange rate regime, tariff protection, and trade barriers. But, the period from 1980s onwards were witnessed a huge reform, with floating exchange rate, credit creation mechanism, interest rate, removal of trade barriers, Liberalization Privatization and Globalization (LPG), foreign direct investment, foreign trade inflows, subsidies and lower tariffs.

With the development of international trade, economies became more integrated into worldwide markets in the course of recent decades especially capital markets. As international trade and public expenditure have increased-with macroeconomic instability, the countries would either more exports or imports or higher expenditure than revenue. If the country has more import than exports means current account deficit and if the country has more expenditure than revenue implying a budget deficit. In this situation one may notice twin deficit or Ricardian manner. It is expected that the estimation results from the sample indicates whether BD and CAD or vice versa. Further, the light is shed on whether other independent variables have become more or less significant determinants of twin deficits.

The ongoing development in the time series data has perceived that structural breaks can provide biased cointegration results. While Augment Dickey-Fuller (1979) and the Phillips-Perron test (1988) test for unit root are applied, further advanced Zivot and Andrews (1992) one structural break unit root test is applied to those countries who have greater variation in data. This will give us more information about the timing of the break in the economies.

1.5 Organisation of the study

The thesis is structured as. Chapter 2 comprises of six sections, segment 2.2 gives the evolution of the twin deficit hypothesis. Section 2.3 gives the twin deficit theory based on the national income accounting method, subsection considering twin deficit and Keynesian proposition. Section 2.4 discusses the Mundell Fleming approach for twin deficit, followed by the Ricardian hypothesis in section 2.5. Section 2.6 includes the number of subheadings, the empirical literature on twin deficit hypothesis, Ricardian equivalence, and studies related to BRICS countries. Final section 2.7 gives conclusion of that chapter.

Chapter 3 discusses the model specification and methodology that will be used in the thesis. The first section will give model specification and the second part will give the detail about the methodology used in the study.

The thesis will give separate chapters for each country (Brazil, Russia, India, China & South Africa), which consists of introduction, theoretical foundation, macroeconomic variables, data information, econometric model, methodology and results.

Chapter 4 discusses the twin deficit hypothesis and Ricardian equivalence for Brazil. It gives introduction, trend analysis for variables, data information, econometric methodology and results. Chapter 5 discusses the twin deficit hypothesis and Ricardian equivalence for Russia. It gives introduction, trend analysis for variables, data information, econometric methodology and results. Chapter 6 discusses twin deficit hypothesis and Ricardian equivalence for India. It gives introduction, trend analysis for variables, data information, econometric methodology and results. Chapter 7 discusses twin deficit hypothesis and Ricardian equivalence for China. It gives introduction, trend analysis for variables, data information, econometric methodology and results. Chapter 8 discusses twin deficit hypothesis and Ricardian equivalence for South Africa. It gives introduction, trend analysis for variables, data information, econometric methodology and results. Chapter 9 gives comparison of the result among the BRICS countries and then summarises the thesis. After reviewing the results, policy implication arises and further research are suggested.