



DETAILED ANALYSIS ON BALANCE OF PAYMENTS ON CAPITAL ACCOUNT

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Abstract: An analysis of the data and a conclusion on its significance usually follow one another. Analysis's ultimate goal is to build a mental model in which all the necessary connections have been painstakingly made so that important and plausible inferences may be drawn. It's crucial to perform data analysis in a way that allows for a solid connection to be made between the findings and the study's stated goals. Considering the overarching principles and the consequences that flow from them is what we mean when we say that we are interpreting something. Both the implications of the study and its meanings become readily apparent when some thought is given to the interpretation of the data. You can't have an accurate interpretation without a thorough analysis, and you can't have a thorough analysis without an accurate interpretation. As a result, their existence is heavily reliant on the existence of the other. Actually, interpretation may be considered a part of the analytical process. In this research, the trend increases of the current bank element of the equilibrium balance of payments are investigated during the course of the time of interest covered by the study. The efficiency of the current account both during and after the implementation of the New Planning Commission was one of the objectives of the research, which aimed to assess the effectiveness of the New Economic Policy. A regression model, compound growth rates, and the Chow test were used in order to investigate how efficient the debit card really is.

Keywords: *“Capital account, pre-reform periods, post-reform periods”*.

I. Introduction

Capital Account

Deals involving public debt might include those which include borrowing additional money, loaning, receiving payback of capital, selling stocks, and purchasing assets by and for persons and governments located in other countries. The United States' capital account reflects the changes in its foreign liability and assets that were caused by transactions that were reported inside this current account. Transfers of money or other capital assets will also be shown in the capital account. As a direct result of the expansion of India's participation in global markets, fluctuations in the country's balance of payments have taken on a level of significance that was previously unimaginable in the contemporary era. The Indian economy saw relatively limited capital flows between 1947 and 1985 due to the low volume and value of its foreign trade transactions during that time period. This period of time spans the years 1947 to 1985. It should come as no surprise that during this time period, the capital inflows were neither required nor were they permitted to flow freely. In addition, the authorities of the government implemented stringent controls on foreign money, which was another factor that contributed to the restrictions placed on the movement of capital. Despite this, the most significant shifts in capital flows did not begin until after the decade of the 1990s as a direct outcome of the liberalisation process. It was now plainly evident that the deficit in the trade balance needed to be paid in one of two ways: either by borrowing from the sources on a commercial basis or by



borrowing from the government. When the supply of foreign funds came dangerously close to running out between the years 1989 and the early 1990s, the government of India found itself in the middle of a crisis scenario. In the year 1991, the situation was saved by a combination of factors, including the depreciation of the Indian rupee and the recently implemented comprehensive economic reform package. Therefore, the strategy has been to progressively liberalise capital accounts as part of the programme.

The strategy involves keeping a close eye on a number of preconditions and indicators, including monetary and fiscal discipline, currency rates, structural changes, and other similar factors. This is done on a deliberate and ongoing basis management of aggregate demand via stabilisation efforts as well as increased adherence to stringent budgetary and monetary discipline. Monetary policy with the goal of reducing the rate of increase in the money supply. In recent years, economic liberalization's numerous benefits have led to an increase in economic production and consumer surplus in India. Active capital flow management is required as a result of the capital account's recent changes. With the exception of portfolio inflows and temporary exchange credit to the general capital streams, the proportion of the sensibly consistent streams that encompasses all capital inflows had developed fairly to the degree of 67.4% in the year 2001-02. Additionally, the pace and order of the capital account liberalization need to be checked and changed frequently.

The term "capital account" encompasses "other capital inflows and outflows," as well as NRIs, commercial borrowings, rupee debt services, and foreign investment.

II. Literature Review

(Lin & Dyer, 2010a) It has been discovered that MapReduce is effective in addressing the challenges connected with distributed programming because it provides a layer of abstraction between the developer and the underlying hardware or software (such as locking of data structures or data starvation issues in the processing pipeline). The programming paradigm is simple to conceptualise due to its small number of components and intuitive interfaces. The MapReduce programming paradigm partitions a cluster of computers into logically distinct nodes, each of which performs a different part of the work. To do this, you'll need to do the following math: The former is within the purview of the developer, whereas the latter is managed by the runtime or execution framework. There should be a single round of planning and double-checking of the execution structure. As long as the designer keeps communicating computations inside the programming paradigm, the code will keep running as expected. The single design and accuracy verification is a benefit of this method.

(Dean & Ghemawat, 2010) According to the findings of the research, MapReduce automatically parallelizes software and distributes it over a large cluster of commodity computers. [Citation needed] The runtime system is responsible for a variety of tasks, including the management of data partitioning, the scheduling of program execution over several machines, the resolution of machine problems, and the management of essential inter-machine communication. Even if a rookie programmer has no prior experience working with parallel or distributed systems, they will still be able to make advantage of the resources provided by a big distributed system thanks to MapReduce's simplified interface. MapReduce is able to do analysis on terabytes of data by distributing it among tens of thousands, or even hundreds of thousands, of computers. More than one hundred thousand MapReduce jobs are completed by



Google's clusters on a daily basis. The technique is reportedly simple to implement, as stated by the programmers. MapReduce offers a variety of benefits over parallel database systems, which are listed below. In the event that an error occurs throughout the course of a long execution, the job does not have to be redone from the very beginning. In the first place, it offers fault tolerance on a more granular scale for operations of a greater size. Utilizing MapReduce to manage data processing and loading in a heterogeneous system that has a number of different storage systems is yet another fantastic approach to take use of the possibilities offered by MapReduce.

(Ma & Gu, 2010) According to the findings of the study, the MapReduce framework proved to be the most efficient method of parallelization in data centers that made use of commodity equipment. The open-source MapReduce framework, often known as Hadoop, has seen an uptick in both its development and its level of popularity. Researchers in fields such as bioinformatics, computational finance, chemistry, and environmental science use MapReduce and Hadoop to tackle data-intensive problems. Many cloud computing platforms provide MapReduce functionality. However, there are a number of important limitations associated with the MapReduce model. It is believed that MapReduce is more effective and requires less effort to implement compared to parallel database query solutions. According to the MapReduce paradigm, the accuracy of the operations is often reliant on the commutability, associativity, and several other properties of operations. In addition, the accuracy of the operations is frequently dependent on the input data.

(Lin & Dyer, 2010b) On conventional platforms, the programmer is responsible for addressing the majority of challenges, if not all of them; these systems are not suitable for parallel or distributed programming. When dealing with shared memory, the programmer has to be aware of common issues such as deadlocks and race conditions, and they need to make use of devices such as barriers and mutexes to explicitly control process synchronization and coordinate access to shared data structures. Libraries that implement the Message Passing Interface (MPI), which offers logical abstractions that conceal the intricacies of the operating system's synchronization and communication primitives, make it feasible to have parallelism at the cluster level. Despite these improvements, developers still have a responsibility to oversee the manner in which resources are made accessible to workers. The vast majority of these frameworks were developed in order to solve problems that need a lot of processing power, but they provide very little assistance in the management of very huge volumes of incoming data. When employing standard parallel computing techniques for the processing of massive amounts of data, programmers are required to spend a significant amount of effort on low-level system specifics. Because of this, they are hampered in their ability to solve more complex problems. One of the most significant benefits offered by MapReduce is the provision of an abstraction that shields the programmer from a wide variety of system-level duties.

(Ganguly, 2020) This study looks at both the techniques used to evaluate large amounts of data as well as the analysis of large amounts of data itself. Because it does not have sufficient processing capacity, the MapReduce algorithm is not suited for dealing with massive volumes of data. In conclusion, Apache Spark is superior than MapReduce when it comes to handling the data flows of the future generation because of its multi-iteration platform and its capacity to circumvent MapReduce's shortcomings. There are three different approaches to task



scheduling that may be used for data processing, and each one has its own set of benefits and drawbacks. The development of a brand-new algorithm known as the hybrid algorithm resulted in significant improvements to big data analytics. The findings of the studies indicate that, when compared to Hadoop Mapreduce and Spark, Apache Spark is the more effective big data analytics technique. In another instance, a word count application was developed using both mapreduce and spark, which enabled us to determine whether method, mapreduce or spark, is superior.

III. Discussion

TABLE: “INDIA’S EXPORTS DURING THE PRE-REFORM AND POST REFORM PERIOD FROM 1980-81 TO 1990-91 TO 1991-1992 TO 2001 TO 2022 TO WHOLE PERIOD 1980-1981 TO 2001-2002”

Model	Period	Year	a	b	t	R2	Absolute growth rate	Compound Growth Rate
	Pre-reform	1980-81to 1990-91	-1806.63	1267.73	10.27	0.81	1268	-
Linear	Post-reform	1991-92 to 2001-02	9746.33	3610.36	5.04	0.64	3610	-
	Whole period	1980-81 to 2001-02	-8454.06	2348.28	11.00	0.75	2348	-
	Pre-reform	1980-81to 1990-91	6.6410	0.2800	8.634	0.78	-	32.22
Log-linear	Post-reform	1991-92 to 2001-02	9.3757	0.1416	4.436	0.58	-	15.23
	Whole period	1980-81 to 2001-02	7.1722	0.1820	13.22	0.80	-	20.00

Source: Estimated by the Researcher

Capital account balances in India grew at a pace of Rs. 1267 crores per year before to the reform era, as shown in Table 5.3, but at a rate of Rs. 3610 crores per year after the reform. In terms of capital account balances, the annual rate of increase was 2.34 billion Indian rupees (\$234.8 billion) throughout the whole time period under consideration. Capital account significance testing reveals a first-period t-value of 10.37 and a subsequent t-value of just 5.04 between the two periods. The t-values for both time segments were statistically significant.

Coefficient of determination (R²) values were consistently high throughout the investigation. As shown by this experiment, the imported estimated model provides a close fit to the data. The drop in nett capital inflows during 2000–2001, which totalled Rs.45713 crores, was due to the outflow of funds for foreign assistance and commercial lending borrowing. In the year



2000, the State Bank of India received US\$5.51 billion in India Millennium Deposits (IMD) from foreign commercial banks and non-resident Indians. The influx of monies from overseas investors and depositors was satisfactory.

A large rise over the previous year's number of 68.2% was seen in 2001-2002, when steady streams accounted for 88.1% of total capital streams. Portfolio inflows and fluctuating foreign-exchange credit are not considered stable streams.

“Position of capital account before and after the adoption of New Economic Policy”

“Chow Test”

When examining patterns across two time periods, the Chow test is an effective tool. The information was analysed to discover whether there was a difference in the amount of money flowing into India both before and after the revised economic plan was put into place in 1991.

$$F = S5 / k / S4 / (n1 + n2 - 2k)$$

TABLE: “CHOW TEST FOR THE INDIA’S TOTAL CAPITAL ACCOUNT”

Steps	Values
I	S1 = 766692032.70 R2 = 0.75
II	S2 = 15569303.25, S3 = 440270538.34, S4 = 455839852.70
III	S5 = 1222531900.51
IV	F = 24.14

“F = 24.14”

“At 5% level, F(2,18) = 3.55”

The Chow test suggests that there was a structural change in India's capital account between 1980–1981 and 2001–2002. This indicates that the intercept and slope coefficient have been stable across the time period under consideration, as shown by regression analysis.

IN PERIOD 2001-2010 to 2011-2020

Indications that the US Federal Reserve (FED) would begin to taper its quantitative easing (QE) policy in May 2018 and signals of a positive outlook for the US economy had an impact on the capital account and led to an outflow of capital in the amount of USD 13 billion during the period of June-August 2018. Because of this, the value of the rupee fell by 24.0 percent from May to August of 2018, putting pressure on the currency. The remedial efforts implemented by RBI, such as the provision of swap plan to enhance NRI deposits in 2018, resulted to an increase in total NRI deposits from 14.8 billion USD in 2001-2010 to 38.9 billion USD in 2011-2020. (Figure 4.1). In addition, steps were taken to limit gold imports by increasing customs taxes; in August 2018, these rates were raised from 8% to 10% for gold and from 6% to 10% for silver. These actions helped to halt the depreciation of the rupee and imports.

During the years 2017–2018 and 2019–20, the European Central Bank (ECB) had outflows of funds since repayments were higher than new borrowings. Additionally, the National Retail Investor (NRI) saw outflows of deposits because of redemptions in 2018. FDI nett flows were stable from 2017-18 all the way through 2019-20, whilst FPI had nett outflows during 2017-18 but a minor recovery during 2019-20. (Figure 4.2). Because the CAD shrank, it became



much easier to fund the deficit despite the fact that capital was leaving the country. The policy uncertainties surrounding BREXIT, US Presidential elections, and signs of hikes in FED policy rates may be connected to the volatility seen in capital flows, particularly FPI.

IV. Findings

Up until 1988-89, before the New Economic Policy, the financial account had really been growing steadily. Slope co-efficient was 1267.73, which indicated a 10-fold growth in capital checking accounts between 1980–1981 and 1990–1991. Capital stock increased at a CAGR of 32.22 percent.

After the implementation of the New Economic Policy, the amount of capital accounts increased at a quicker clip. Slope co-efficient was determined to be (3610.36). From fiscal years 1991–92 through 2001–02, capital account growth averaged 15.23 percent annually. Capital account surpluses and deficits reflect an abundance or scarcity of resources generated by sources such public interest expense, external loans, modest savings, provident fund, and third-party loan repayments.

From fiscal years 1980–1981 to 2000–2001, the capital account grew at a compound annual rate of 2,348.18 percent. Statistically, the estimated value of the regression is significant. An R2 of 0.86 was found. The yearly rate of expansion was 20.00%. Changes in India's capital account ratio relative to the country's overall balance may be seen throughout the research period. Foreign direct investment (FDI), deposits from nonresident aliens (NRIs), and earnings of foreign currency reserves all contributed to its continued growth. Throughout the research period, fluctuations may be seen in the capital account's share of India's gdp balance.

The succeeding time period (2001-2010), which saw an increasing proportion of invisibles in the current account, is referred to as "the subsequent period." Nearly sixty percent of the total invisibles inflows were supplied through private transfers and software services (referred to as remittances). India's external sector fared well, as evidenced by the country's surplus in current accounts for the period in question. This was achieved through a combination of constant inflows of foreign capital, access to foreign markets in the context of increased economic output on a global scale, domestic policy assist, and stable market prices.

Despite the fact that the most recent period (2001-2010 to 2011-20) saw a significant decrease in the current account deficit owing to falling oil prices, the global headwinds imply that challenging times are ahead for India's external sector. There is a growing concern that India's services exports and remittances would suffer as a result of the rise in nationalist impulses, as well as the growing anti-globalization and anti-migration attitudes. The statistics indicated that there was a decrease in remittances as a result of decreased economic activity in the Gulf area (due to the fact that it is strongly associated with oil prices and exports) and higher return migration (stricter immigration rules and local hiring requirements). In the midst of technological upheavals and upgrades as well as growing trade barriers, particularly with the United States, the performance of software services, which are still another major component of the current account, was lacklustre throughout the time in question.

By using Chow test it has been found out that position before and after New Economic Policy the balance of payment was not the same in the two time periods, that is, from 1980-81 to 1990-91 and 1991-92 to 2001-02 to 2001-2010 to 2011-20.



The result of this analysis shows that the current deficit is balanced by capital account surplus till the year 2020. But in 2002 the BOP has got surplus in current account.

V. Conclusion

The liberalisation of India's external sector over the preceding decade, which started in 2008 in reaction to the crisis of that year, has stabilised the country's balance of payments and set it on a sustainable course. Because to these changes, the Indian economy is now more open to international trade and investment, especially from other developing countries. However, a great deal of effort is still required. Even when compared to its "peer competitors," India's economy is still relatively closed. Investment and economic expansion in India would benefit from further domestic policy change, the removal of tariff protection, and the liberalisation of capital flows. The most important lesson learned from the '90s is that a liberalised current and capital account makes the balance of payments more flexible and stable. The same is true for trade, the MLT debt market, equity capital, and non-visibles. This thesis confirms the efficacy of the exchange rate in reducing India's trade gap. It also shows that BOP difficulties are not anticipated to be exacerbated by capital flight. The impact of government waste on the trade deficit is difficult to pin down due to developments in the global economy. Therefore, it largely operates via the risk premium demanded by foreign (and local) investors and lenders in light of prevalent perceptions of the economy. This means it is more likely to affect the domestic current account than the trade surplus. In other words, the growth rate of the economy and the domestic financial sector are more likely to experience the long-term repercussions of budgetary profligacy in the future.

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