Special Issue: Is there a need for Reforms in IMF?
India’s Growth Trajectory and Its Dynamics with International Monetary Fund Reforms

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Abstract
Since the Bretton Woods and the emergence of the International Monetary Fund (IMF) in 1947, developed countries had an upper hand in the dynamics of international financial management. The IMF has claimed to add insights about the developing and under-developed countries development. All over the world, the growth trajectory of the developing nations has been affected by the policies and procedures of the IMF. India got independence in the year 1947 and became an IMF signatory in the year 1945. Since then, India has been involved in the economic management on the parameters of the IMF. The growth story of India is a mixed response yet a success story until now. The recent phase of opening up the economy that started in 1991 has had a great impact on the growth trajectory of Indian economy. The present study aims to study the growth pattern of India and the economic reforms pushed by the IMF. Gross Domestic Product (GDP) and Current Account are considered as two variables for the study. Moreover, identification of structural breaks for Indian economy is performed with the use of econometric techniques.

Keywords: Growth; IMF reforms; Structural breaks; Current account.

1. INTRODUCTION
International Monetary Fund (IMF) came into existence with the Breton Woods Agreement in 1945. The disappointment of the world with the existing system created considerable problems in the world economic environment. However, with the inception of the IMF and the growth bust of the developed world, it became the dominant view that the IMF will be leading the world in the next phase of growth and development. In addition, for the newly independent states, it became not a choice but a natural alignment. India's story of growth is a mixture of vicissitudes yet it holds promising future. India got independence in 1947 and started opening up the economy that started in 1991 has had a great impact on the growth trajectory of Indian economy. The present study attempts to capture growth evolution of India and its dynamics with the IMF. The study is divided into eight sections. Section 2 deals with the review of the literature and expounds the theoretical considerations in the existing body of knowledge. Section 3 captures the trends in India's growth along with a discussion on structural breaks; whereas, Section 4 evaluates the linkages between India's Growth and IMF Reforms in the past. Sections 5-7 deal with the empirical investigation for structural breaks in the macroeconomic series. The study concludes in Section 8.
2. REVIEW OF LITERATURE

Several studies have been conducted on the growth pattern of India and the economic reforms undertaken. However, major studies by academia focus on the economic reforms that emerged after 1991 liberalization (Krueger and Chinoy, 2002; Panchamukhi, 2000; Joshi and Little, 1996; Ahluwalia, 2002). From independence until the decade of 1980s, India remained a closed economy characterized by strict government licensing. However, it is to be noted that India was the original signatory to IMF ratifications in the year 1945. In the late 1980s, India faced a severe balance of payments crisis and macroeconomic imbalances. Its forex reserves were considerably less to import oil from the international market. India had to continue with the stand by arrangement of the IMF as a responsible signatory of the IMF India on the verge of the downfall under the guidance and pressure of the IMF opened up its economy and agreed to further macroeconomic structural changes (Cerra and Saxena, 2002). From 1991, a chapter of economic growth and liberalization started for India under the watch of the IMF. Repeatedly, there arose a need for evaluation and re-evaluation of the performance of economic reforms. In the present times, economic restructuring has been synonymous to economic reforms in the sense that both target new objectives of aligning with international standards, monetary arrangements, balance of payments manual, etc. The restructuring experiment in India has witnessed a mixed response (Agrawal et al., 2016). It is generally accepted that the reduction in tariffs started owing to India’s agreement with the IMF in 1991 (Pursell, Kishor, and Gupta, 2007). The 1991 liberalization was not just accepted as it is, rather it was felt by some to be an imposition and a foreign rule. One of the prominent researchers considered it a breach of democracy and an indirect rule by the IMF-World Bank system (Chossudovsky, 1993). Economic Growth has remained as one of the most important concerns of the economy in order to open to the external economy. The most acceptable indicators of economic growth are Gross Domestic Product (GDP) and other measures of national income. Most of the studies focusing on economic growth have considered GDP as indicator (Grossman and Krueger, 1995; Castelló and Doménech, 2002). Work on structural breaks for India is relatively less confined to two or three studies. Study has been conducted on endogenous structural breaks in Foreign Direct Investment Inflows and Current Account Balance identifying a unique long run relationship between the series (Mukherjee, Chakraborty, and Sinha, 2014). It is to be noted that considerably less research work has been conducted on the structural breaks pertaining to Capital Account than Current Account of Balance of Payments. The decision to resort to IMF loan in order to tackle BOP crisis of 1970s was based on the principal argument that it would be a positive structural change in the economy as three years respite period would be provided by the IMF. This boosted exports and curtailed imports to an extent required to substantially reduce Balance of Trade deficit in the year 1970-1980 (Chandrasekhar, 1985). Structural breaks also help to define short run period for a country. It is determined as the period between two structural breaks based on trimming percentage (Rahman, 2016).

3. INDIA’S GROWTH TRAJECTORY: TRENDS AND STRUCTURAL BREAKS

The growth story of India with respect to two macroeconomic variables should be evaluated, that is, Gross Domestic Product (GDP) and Current Account Balance (CAB). Although GDP is the standard indicator of economic growth, (CAB) is subject to sustainability and is important to indicate balance of payments problems. The IMF has always focused on the sustainability of Current Account Deficit (negative CAB). Trends in GDP and CAB will suffice for the overview of the growth story of India. However, the visible trends are the dynamic processes, and there can be certain change-point problem in the series. Such an issue of change-point problem in time series data has been captured by several studies (Banerjee, Lumsdaine, and Stock, 1992; Chu and White, 1992; Perron and Vogelsang, 1992; Andrews, 2003; Andrews and Ploberger, 1994; Vogelsang and Perron, 1998). This change-point problem in the series has been termed in subtle manner as structural change or break. The philosophy of structural change suggests that a series over a period of time may change dramatically for which there cannot be a uniform trend. It is difficult to capture visibly as it is required to check the trends of the stochastic processes. The macroeconomic policy changes in the economy may bring about structural changes but that is the limited understanding unless there is clear empirical evidence for the same. This clear evidence needs the usage of recent techniques of identifying structural
The existing literature on structural changes focuses on macroeconomic variables such as aggregate output, measures of national income, international trade, employment, money, and interest rates. With respect to India, most will agree to 1991 as the year of structural change (structural break) yet there is dearth of evidence for the same. Specifically, there is no such study conducted to identify empirically the years of structural breaks for India with respect to different macroeconomic series. Thus, there is a need for evidence in favor or against 1991 as the year of structural break. Moreover, this will be focused in Sections 6 and 7. Returning to the trends in India’s growth story, Figure 1 shows the GDP trends for the common sample period of 1970-2016 (2016 value for CAB not available). The two figures are taken separately owing to the huge variation in the scales of the two series.

From Figure 1, the trends in GDP of India are clear, and it suggests an overall increasing trend. However, it appears that the increase was sluggish until 2002, and after 2002 the rate of increase in GDP was much accelerated. From this trend, there can be certain structural breaks points assumed by the researchers. From the figure, it appears that 2002 (first red circle), 2009 (second red circle), and 2011 (third red circle) can be assumed to be the years witnessing structural breaks. The argument is that the series is abruptly changing the course. However, the limitation and the flaw in this approach is that visible identification is not subject to the undergoing white noise and stochastic processes. India has witnessed fluctuating growth rates in the course of growth trajectory. The highest growth rates (more than 10% on year-on-year basis) achieved by India were in the years 1973 (19.25%), 1974 (12.87%), 1977 (16.03%), 1978 (15.68%), 1980 (22.91%), 1994 (14.56%), 1993 (13.49%), 2003 (17.11%), 2004 (20.99%), 2005 (17.06%), 2006 (13.18%), 2007 (27.24%), 2010 (27.21%), and 2011 (13.40%). The mean value of GDP for the series is US$ 608583 million; whereas, the maximum and minimum values are US$ 2274998 million (2016) and US$ 59602 million (1970). However, the growth rate in 1991 appears as a negative of 11.36% indicating conformity of the pathetic economic
instability in the country. Other trends in Current Account Balance over the sample period should be studied as given in Figure 2.

From Figure 2, it is clear that India has witnessed Current Account Deficit (CAD) and after 2004 it has widened. In recent years, it has even expanded. The mean value of CAD is US$ 10,051 million; whereas, the maximum and minimum values are US$ 8772 million (the positive denotes Current Account Surplus) and US$ 91471 million (Current Account Deficit), respectively. From the graphic visibility, few of the years may be assumed structural breaks though there may not be evidence for the same. The years that appear to be structural breaks may be 2003 (first blue circle), 2007 (second blue circle), 2009 (third blue circle), and 2012 (fourth blue circle). However, econometric testing is required to examine whether there is actually any structural break or not.

4. LINKAGES BETWEEN INDIA’S GROWTH AND IMF REFORMS

The trends presented in Section 3 and shown in Figures 1 and 2 are influenced by reforms pushed by the IMF. As has been reiterated, India is the original signatory to the IMF and has continuously sought assistance from the multilateral organization. Even before 1991, the IMF closely monitored India’s economic trajectory and at times highlighted the lacunas. The nationalization of the major banks in India in 1969, when 14 commercial banks in India were nationalized that accounted for 85% of the total deposits of the country, was under the close monitoring of the IMF. Soon after the nationalization, the IMF suggested several measures of further bolstering the economy. In the era of post liberalization (post 1991), the intervention by the IMF increased. In the period between 1992 and 1997 IMF monitoring was used to measure the changes in the economy in post liberalisation period. These reforms included further de-licensing of banking sector, adoption of rupee devaluation strategy, Capital Adequacy norms, and Prudential norms. In the period 1997-2003, the IMF reiterated its concerns of Central Banks (Reserve Bank of India) transparency and clear monetary policy. India responded to the suggestions and concerns of the IMF by implementing the recommendations of several committees setup for the matter such as Narasimha Committee. From time to time, the IMF tracked the trend in the macroeconomic variables of India and at times concerns or suggestions were raised to which India always responded positively. In this regard, the IMF country reports for India highlighted the same. The IMF remained committed to Current account sustainability, and the number of countries facing such crises went on increasing owing to Global Financial Crisis, Brexit, and European crisis. India also faced the same fate of widening Current Account Deficit. Figure 3 shows the Current Account sustainability position monitored by the IMF from 1991 to 2016.

The positive values denote the Current Account surplus as percentage of GDP, and the IMF considers the positive values as sustainable. However, in most of the years after 1991, India has witnessed a Current Account Deficit. The maximum ratio of CAB to GDP has been 1.5% in the year 2003 while the highest deficit in the year 2012 with a ratio of 4.9%. The liberal view with respect to CAB ratio as per IMF is 5% of GDP. Any

Figure 3. Current Account Sustainability.

Source: Prepared by researchers from dataset 1.

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ratio beyond this is bound to be considered as unsustainable. In case of India, still India has not crossed
the upper limit, but it has reached very close to 5% (4.9% in 2012). Still, considering the long-term trend,
there is no major concern from India with respect to Current Account constraint. The reforms pushed and
influenced by the IMF continued in India. In the period 2008-2013, India implemented the long awaited
Basel III norms for the banking sector and further liberalized the sectors for 100% automatic route Foreign
Direct Investment (FDI). Even in the sectors such as Defense and Railways, talks were held for liberalization
in the form of government route clearance for FDI. In totality, FDI and Foreign Institutional Investment
(FII) limits were extended after a long demand of the IMF. The term of Raghuram Rajan as the Governor
of Central Bank in India opened up a new phase of cooperation with the IMF owing to his past profes-
sional experience with the IMF as chief economist. As a Governor of Central Bank of developing country,
he highlighted the need for more inclusive and non-discriminatory policies of the IMF particularly in case
of appointing executives in the IMF. The period between 2013 and 2016 witnessed accelerated compliance
with the IMF. However, there remain lacunae on part of India as per the IMF. For example, in case of Bal-
ance of Payments Manual preparation, the latest manual to be complied is the sixth edition. India has still
not adhered to that requirement. Even the concern is that the last Balance of Payments manual published
by RBI was in the year 2010, and until now it has not been fully implemented.

For example, under Balance of Payments Manual6 (BPM) of the IMF, the reporting of goods includes
Net Exports of goods under Merchanting. However, in the present Balance of Payments (BOP) reporting
by India, this is not included in goods. On the contrary, it is shown as business services. Same is the case
with non-monetary gold, which is to be shown separately as per the IMF guidelines. However, India has not
shown it separately.

5. ECONOMETRIC MODELS AND ESTIMATION METHODS

The empirical objective of the study is to identify structural breaks in the macroeconomic constraints of India.
The underlying logic holds that structural breaks identified, if any, are in part due to the involvement of the
IMF and the reforms promoted by it. For the present study, two macroeconomic variables (about which IMF
is most concerned), that is, GDP and CAB, are selected. Identification of structural breaks may indicate either
single structural break or multiple structural breaks. However, the study has assumed in Section 3 based on
graphical representation that there are multiple breaks in the macroeconomic series. The natural selection
tends to multiple breaks tests. For identifying multiple breaks, Bai and Perron (1998, 2003a)'s breakpoint test
is used, as it provides computational and robust results that extend upon the Quandt-Andrews framework.
The test allows for multiple unknown breaks. For the sake of analysis, a standard multiple linear model
with T periods and m breaks (which generates m + 1 regimes) is considered. The breaks category selected
is Global l breaks versus none, which is the most comprehensive test developed by Bai-Perron (2003a). The
test assumes null of “no breaks” against an alternative of l breaks. The maintained null hypothesis is as follows:

\[ \vartheta_0 = \vartheta_1 = \ldots = \vartheta_{l-1} \ldots (5.1) \]

The model specification of Bai-Perron test (2003a) for multiple breaks is as follows:

\[ F(\hat{\vartheta}) = \frac{1}{T} \left( \frac{T - (l + 1)q - p}{kq} \right) \left( R \hat{\vartheta}^\prime (R \hat{\vartheta})^{-1} R \hat{\vartheta} \right)^{\dot{\cdot}} (5.2) \]

where \( \hat{\vartheta} \) is the optimal l break of \( \hat{\vartheta} \),

\[ (R \vartheta)^\prime = (\vartheta_0^\prime - \vartheta_1^\prime, \ldots, \vartheta_l^\prime - \vartheta_{l-1}^\prime) \ldots (5.3) \]

Moreover, \( \hat{V}(\hat{\vartheta}) \) is an estimate of the variance covariance matrix of \( \hat{\vartheta} \).
The test requires pre-specification of the number of breaks expected. The critical values of Bai-Perron (2003b) are used as response surface computations for various trimming parameters. It is up to the researchers to identify the number of pre-specification structural breaks. In the present study, three breaks are assumed as Global L breaks against the alternative of “no breaks at all.”

6. THE DATA

Two macroeconomic variables are selected for the study namely GDP and CAB for the sample period 1970-2016. Observations for CAB from 1970 to 1979 are taken from Reserve Bank of India Statistics; whereas, the remaining data (GDP and CAB) are taken from United Nations Conferences on Trade and Development (UNCTAD) database. The dataset 1 presents all the data and is given under the head annexures.

7. RESULTS

First GDP series is checked for structural breaks with the use of Bai-Perron breakpoint test (2003a) with the Global L Breaks versus None condition. To estimate GDP is regressed with a constant intercept while ignoring the presence of any endogenous parameter. The trimming is set at 15%, which indicates that the regimes are restricted to have at least 15% of the observations at a time. It indicates that in one regime at least seven observations will fall. The trimming outcome of 7 years difference is logical, as it is not considered a very long period in the macroeconomic cycle. Table 1 shows the output of structural breaks testing for GDP.

Table 1. Bai-Perron Multiple Breakpoint Test for GDP.

| Breaks | Sequential F-statistic | Significant F-statistic | UDmax determined breaks | WDmax determined breaks |
|--------|------------------------|-------------------------|-------------------------|------------------------|
|        | F-statistic            | F-statistic             | F-statistic             | Critical value         |
| 1*     | 258.9857               | 258.9857                | 258.9857                | 8.58                   |
| 2*     | 312.0280               | 312.0280                | 370.8034                | 7.22                   |
| 3*     | 298.4629               | 298.4629                | 429.6664                | 5.96                   |
| UDMax statistic* | 312.0280 | UDMax critical value** | 8.88                   |
| WDMax statistic* | 429.6664 | WDMax critical value** | 9.91                   |

*Significant at the 0.05 level.

**Bai-Perron (Econometric Journal, 2003) critical values.

Estimated break dates

1: 2007
2: 2003, 2010
3: 1987, 2003, 2010

Source: Prepared by researchers based on econometric analysis in eviews9.5.
From Table 1, it is clear that all the breaks are significant at 5% level of significance. The UDmax statistics shows the results as per unweighted maximized statistics. According to UDmax, maximum two structural breaks have been identified. It indicates that estimated structural break dates according to unweighted statistics are 1(2007) and 2(2003, 2010). On the other hand, WDmax suggests the determination of breaks on the basis of weighted statistics. According to WDmax, there are three breaks in the GDP of India. These dates are the options 1(2007), 2(2003, 2010), and 3(1987, 2003, 2010). All the three breaks are significant as the F-statistic is far more than the critical values, suggesting the rejection of the null hypothesis (Null being the presence of no structural breaks in GDP for India). Similarly, the identification of structural breaks is performed for CAB series of India for the sample period 1970-2016 (shown in Table 2).

**Table 2. Bai-Perron Multiple Breakpoint Test for CAB.**

| Sequential F-statistic determined breaks | 3 |
|----------------------------------------|---|
| Significant F-statistic largest breaks | 3 |
| UDmax determined breaks                 | 1 |
| WDmax determined breaks                 | 1 |

| Breaks | Scaled F-statistic | Weighted F-statistic | Critical value |
|--------|--------------------|----------------------|----------------|
| 1*     | 119.1287           | 119.1287             | 8.58           |
| 2*     | 62.14174           | 73.84711             | 7.22           |
| 3*     | 41.22864           | 59.35264             | 5.96           |
| UDMax statistic* | 119.1287 | UDMax critical value** | 8.88 |
| WDMax statistic* | 119.1287 | WDMax critical value** | 9.91 |

*Significant at the 0.05 level.

**Bai-Perron (Econometric Journal, 2003) critical values.

Estimated break dates:

1: 2008
2: 2004, 2010
3: 1980, 2004, 2010

**Source:** Prepared by researchers based on econometric analysis in eviews9.5.

**Table 3. Summarized Result for Structural Breaks in India’s Growth Trajectory.**

| Null hypothesis                      | Result                                                                 | Break dates with necessary condition | UDmax structural breaks | WDmax structural breaks |
|--------------------------------------|-----------------------------------------------------------------------|--------------------------------------|-------------------------|-------------------------|
| $H_{01}^*$: There is no structural break in GDP of India. | Rejected owing to significance at 0.05 | 1987, 2003, 2007, 2010 | 2 (2003, 2010) | 3 (1987, 2003, 2010) |
| $H_{02}^*$: There is no structural break in CAB of India. | Rejected owing to significance at 0.05 | 1980, 2004, 2010 | 1 (2008) | 3 (2008) |

**Source:** Prepared by researchers from Tables 1 and 2.
Table 2 testifies that all the breaks are significant at 5% level of significance. The UDmax statistics identifies one break that is 2008, and WDmax also identifies one break that is 2008. Overall, the three structural breaks are significant at 0.05 but not supported by UDmax and WDmax. The UDmax and WDmax conditions are not necessary and satisfactory but only satisfactory. Therefore, the three structural breaks are accepted, that is, 1 (2008), 2 (2004, 2010), and 3 (1980, 2004, 2010). All the three breaks for CAB of India are significant as the F-statistic is far more than the critical values, suggesting the rejection of the null hypothesis (null being the presence of no structural breaks in CAB for India). The summarized result is shown in Table 3.

8. CONCLUSION

The study has identified the linkages between economic growth of India and the reforms pushed by the IMF. There is substantial evidence for the key role played by the IMF in the liberalization of India in 1991. The GDP growth trend in India has remained positive. However, India has witnessed a widening current account deficit, which is now closely monitored by the IMF. Several reforms in India on IMF benchmarks, such as Basel norms III, Capital Adequacy norms, and Prudential norms, have been successfully implemented in India. With respect to the evidence for structural breaks, the assumption that India has no structural break is rejected. The structural break dates for GDP are 1987, 2003, 2007, and 2010, which show a fluctuating growth trajectory as well as indication for a transition economy. With respect to Current Account, the structural breaks were identified for the years 1980, 2004, and 2010. The common structural break for GDP and CAB is in the year 2010. The plausible explanation for common break may be the convergence of economic policies toward both the variables. However, the populist view that 1991 is a year of structural change is not accepted owing to lack of empirical evidence. This also indicates that the graphical appearance of structural break may be misleading. The future research can be conducted to include more macroeconomic variables for identifying structural breaks.

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Annexures

Dataset 1. GDP and CAB of India (US$ Millions).

| Year | Gross domestic product | Current account balance | CAB to GDP (%) |
|------|------------------------|-------------------------|----------------|
| 1970 | 59602.91               | −594.000                | −0.996596      |
| 1971 | 63944.12               | −669.000                | −1.046226      |
| 1972 | 69555.67               | −403.000                | −0.579392      |
| 1973 | 82947.35               | 1444.000                | 1.740863       |
| 1974 | 93619.18               | −1198.000               | −1.279652      |
| 1975 | 97386.17               | −206.000                | −0.211529      |
| 1976 | 98121.94               | 1001.000                | 1.020159       |
| 1977 | 113854.6               | 1313.000                | 1.153225       |
| 1978 | 131706.9               | −290.000                | −0.220186      |
| 1979 | 145750.6               | −685.000                | −0.469981      |
| 1980 | 179148.2               | −1785.130               | −0.996455      |
| 1981 | 191091.5               | −2698.330               | −1.412062      |
| 1982 | 195115.4               | −2523.540               | −1.293358      |
| 1983 | 212886.2               | −1936.940               | −0.909848      |
| 1984 | 210861.1               | −2311.070               | −1.096015      |
| 1985 | 219581.2               | −4140.580               | −1.885671      |
| 1986 | 240583.2               | −4567.700               | −1.898594      |

(Continued)
| Year | Gross domestic product | Current account balance | CAB to GDP (%) |
|------|------------------------|-------------------------|----------------|
| 1987 | 266236.9               | -5171.170               | -1.942319      |
| 1988 | 294526.9               | -7143.230               | -2.425324      |
| 1989 | 291585.0               | -6812.770               | -2.336461      |
| 1990 | 316868.7               | -7035.650               | -2.220368      |
| 1991 | 280882.0               | -4291.730               | -1.527948      |
| 1992 | 282077.5               | -4485.220               | -1.590066      |
| 1993 | 275359.0               | -1875.800               | -0.68122       |
| 1994 | 315459.6               | -1676.280               | -0.531377      |
| 1995 | 358024.1               | -5563.230               | -1.55387       |
| 1996 | 377347.3               | -5956.140               | -1.578424      |
| 1997 | 409736.2               | -2965.200               | -0.723685      |
| 1998 | 412355.4               | -6903.110               | -1.674068      |
| 1999 | 439605.4               | -3228.020               | -0.734299      |
| 2000 | 453578.2               | -4601.250               | -1.014434      |
| 2001 | 468297.1               | 1410.180                | 0.301129       |
| 2002 | 489608.0               | 7059.500                | 1.441868       |
| 2003 | 573369.8               | 8772.510                | 1.529992       |
| 2004 | 693726.3               | 780.196                 | 0.112465       |
| 2005 | 812058.9               | -10283.500              | -1.266349      |
| 2006 | 919117.9               | -9299.060               | -1.011737      |
| 2007 | 1169473                | -8075.690               | -0.690541      |
| 2008 | 1254803                | -30972.000              | -2.468276      |
| 2009 | 1297597                | -26186.400              | -2.018068      |
| 2010 | 1650635                | -54515.900              | -3.302723      |
| 2011 | 1871856                | -62517.600              | -3.339872      |
| 2012 | 1862249                | -91471.200              | -4.911867      |
| 2013 | 1923751                | -49226.000              | -2.558855      |
| 2014 | 2046257                | -27451.600              | -1.341552      |
| 2015 | 2116239                | -22456.000              | -1.061128      |
| 2016 | 2274998                | NA                      | NA             |

Source: UNCTAD Statistics; 1970-1979 CAB data from Reserve Bank of India Statistics.