

# Exploring Performance of Monetary Condition Index (MCI) In Post-Liberalization Period of Indian Economy

Sayan Banerjee

Institute of Management Technology –Nagpur  
603, KhullarApartments, Byramji Town, Nagpur-440013

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## ARTICLE INFO

## ABSTRACT

The article explores the impact of monetary variables on the aggregate demand side of the economy and thereby the demand pull inflation rate in the post liberalization era of Indian economy. In this article a Monetary Condition Index (MCI) is constructed following a weighted sum approach, in which two pure monetary variables, namely, the short term interest rate and the official exchange rate are incorporated. The MCI is then tested against the inflation rate in the Indian economy. The results generated in this experiments shows that in post liberalization period, the monetary policy variables, short term rate and the exchange rate have not been as useful as one may have been expected them in affecting the aggregate demand side of the economy. This exercise questions the usefulness of MCI as a policy instruments for managing the real economy, specially stabilizing the inflation rate.

Corresponding Author:

**Sayan Banerjee**

Institute of Management  
Technology –Nagpur

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## I. Introduction

Before the financial crisis broke the US economy in 2007, it was more or less agreed upon among most of the economists that economic stability can be ensured by the central bank of a country following twin regime of inflation targeting and flexible exchange rate (Canuto and Cavallari, 2013). It was widely believed that central bank through its short term interest rate management could effectively regulate the inflationary pressure and thereby economic stability. The flexible exchange rate, on the other hand, could take care of shocks to the economy that arise from the external sector through an automatic adjustment process. So, it is not a wonder that from the

late 80s the predominant variable that was used by central bankers in keeping a watch over the economic stability were short term interest rate and the exchange rate. However, a few of the economist had felt that such simple way of persuasion of monetary policy may miss some of the important aspects of the instability within an economy. In an important research paper, Achlain and Klein highlighted the need to incorporate asset prices into measurement of impact of monetary policy as well as designing it (Achlain and Klein, 1973). Such a broader financial condition measure was pioneered by Bank of Canada (BOC) in the 1990s that included

exchange rate along with refinancing rate. Monetary Condition Index (MCI) was constructed by BOC by taking weighted average of its refinancing rate and the exchange rate. Over the late 1990s MCI was modified with larger number of variables included in it, e.g. long term interest rate, equity prices, house prices. Eventually these modified indicators were renamed as Financial Condition Index (FCI) in order to distinguish them from previous MCI. In recent times, analysis of monetary transmission mechanism “could be classified into two categories depending on the channels through which they operate” (Boivin et al., 2009). The first category is comprised of investment, consumption and trade channels of transmission. The second category, which is non-neoclassical set of transmission channels, incorporates a series of other factors. Some of the important ones are imperfections in credit supply due to government intervention, balance sheet constraints of the borrowers and institutional limitations on intermediaries. Both categories of transmission channels indicate a possibility of weak link between a single interest rate (typically interbank lending rate) and behavior of the economy. It is believed that the financial conditions that matter for economic activities are subject to shocks from the sources other than monetary policy. These shocks may consists of changes in the net worth of the lenders or the borrowers or in the relationship between asset prices and economic fundamentals. In addition, the relationship between policy tools and financial condition of the economy are dynamic. In cases where monetary policy tools are being deployed beyond their normal range of variation, this consideration becomes all the more important. Post-financial crisis, central banks around the world have been implementing non-conventional tools , namely, policy duration commitment , quantitative easing ( described as excess supply of money) and credit easing (change in the asset mix of the central banks) .

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The experience of such instruments is extremely brief (no central bank has exited from the QR or CE undertaken) and except for Bank of Japan (BOJ) no central bank had ever experimented with these instruments since the Great Depression. From a practical point of view, use of reduced from statistical techniques that are implemented to create FCIs (e.g. Rapach and Strauss,2011) is virtually only means currently available for assessing impact of policy choices at zero bound. Indian economy for a long time had followed a policy of high regulation of financial sector coupled with a monetary policy regime that was more or less complimentary to government’s fiscal policy. However, after liberalization of Indian economy in the early 90s, a substantial changes have been made in ensuring monetary policy independence and deregulation of the capital markets. It is therefore, of an interest to explore that post liberalization, do the monetary policy variables, namely the short term rate of interest and official exchange rate hold the same importance in influencing the aggregate demand. Such kind of study has been a very few so far.

However, a paper by R.P. Pradhan explores the nexus between financial development and economic growth in India. Following a vector auto regressive (VAR) model, he has identified a bidirectional relationship between money supply, market capitalization, foreign trade and economic growth (Pradhan, 2009). In the context of Indian economy, the effective monetary transmission mechanism has been explored by R. Bhattachaya, I. Pathak and A. Shah. Their paper found that the most effective route through which the monetary transmission mechanism works is through exchange rate (Bhattacharya et. al, 2011).

The aim of this article is to construct a Monetary Condition Index (MCI) following a weighted sum approach, in which only the pure monetary variables, namely, the short term interest rate and official exchange rate are incorporated. The MCI then be tested against the inflation rate in the

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economy, in order to capture the influence of monetary variable and the real economic activities. The underlying assumption is if changes in monetary variables are successful in causing fluctuations in the aggregate demand (AD), then that could be captured in the changing values of the inflation in the economy (as measured by the consumer price index: CPI). The results generated in this experiments may be useful in assessing importance of monetary policy instruments for managing the real economy, specially stabilizing the inflation rate.

## II. DATA AND METHODS

For construction of the MCI, data used are secondary in nature and all of them are compiled from the World Bank open data. The time period considered for this analysis is from 1995 to 2015 as this period belongs to the post liberalization era in India. Two variables, namely the short term interest rate and official exchange rate are the two independent variables, the dependent variable is the GDP of the economy. The Inflation rate is measured in terms of consumer price index (CPI). In construction of MCI, weighted sum approach of Goodhart and Hoffman (2002). An IS curve estimate has been explored from the time series data of 20 years (1995-2015) taking into consideration two independent variables of immediate interest. Namely, the short term rate and official exchange rate. These two variables are part of standard Monetary Condition Index (MCI). However, construction method of weighted sum is not a standard method for developing it.

The equation for estimation is as follows:

$$Y_t = \alpha + \beta_1 EX_t + \beta_2 R_t + \mu_t \quad (1)$$

Where,  $Y_t$  = GDP at the time t

$R_t$  = Rate of Interest (Inflation adjusted short term rate of interest) at time t

$EX_t$  = Official Exchange Rate (adjusted against U.S. Dollar)

From the estimate, the monetary condition index for India has been constructed following weighted sum approach:

$$FCI_t = \sum W_{it} (r_{it}) \quad (2)$$

Here the weights ( $W_{it}$ ) have been assigned on the basis of relative impact of ( $r_{it}$ ), which is real rate of interest, real exchange rate and value of shares traded, on the aggregate demand. It is important to note here that the weights of real rate of interest ( $W_r$ ), official exchange rate ( $W_{ex}$ ) add up to one and has been calculated from the coefficient of equation (1) which equals:

$$W_{ex} = |\beta_1| / (|\beta_1| + |\beta_2|), W_r = |\beta_2| / (|\beta_1| + |\beta_2|)$$

An MCI, that includes short term rate of interest and real exchange rate, should demonstrate volatility in explaining the inflation rate variation. One of the ways to examine the usefulness of the index constructed is to run a correlation test against the inflation rate. In this paper, consumer price index (CPI) for the time period between 1995 and 2015 has been used for this purpose.

**Table 1.** Correlation between Monetary Condition Index (MCI) obtained with Consumer Price Index (CPI): (1995-2015)

Correlations		
	CPI	MCI
CPI Pearson Correlation	1	-.208
Sig. (2-tailed)		.367
N	21	21
MCI Pearson Correlation	-.208	1
Sig. (2-tailed)	.367	
N	21	21

Data Source: World Bank Open Data

([www.worldbank.org](http://www.worldbank.org))

## III. DISCUSSIONS

The multiple regression model, in which GDP is the dependent and short term real interest rate and official exchange rate are independent variables, the standardized coefficient for  $\beta$  for the

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independent variables are obtained as -0.445 and 0.762 respectively. The tests are highly significant with P value for them is less than 0.01( $P < 0.01$ ). In table 1, the Pearson's coefficient of correlation is obtained between the MCI constructed by this method and CPI. The value of the coefficient (-0.208) shows that there is a negative and weak correlation exists between MCI and the CPI in this analysis.

The traditional approach to managing the business cycle in an economy, for a central bank has been to use short term rate and exchange rate as policy instruments. It is believed that by varying the interest rate and maintaining a near free exchange rate regime the central bank could be effective in controlling the aggregate demand (AD) side of economy and thereby, the inflation that arise due to fluctuations in the AD. The results that is observed in the above tables, in terms of correlation between the MCI and the CPI in the economy tends to show a different relationship. The correlation seems to be not significant, even when they are negatively co-related (as could be expected from the traditional theories).

## CONCLUSIONS

The traditional central banking management, which is based on controlling and manipulating the short term rate and leaving (for most part) exchange rate determination to the free forces of market, may not be the ideal way as far Indian economy is concerned. The experiment with MCI and CPI correlations in the post liberalization era in India shows a very weak trend. This highlights that there is more to the Aggregate Demand (AD) in Indian economy than merely cost of credit and exchange rate volatility. The central bank (and the policy makers in the govt.) has to look deeper into the inflation dynamics vis-à-vis MCI. Perhaps widening the scope of this index, by incorporating more number of variables that reflect the development in the financial sector could help

provide a better instrument for managing and monitoring the economy.

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