



Borsa İstanbul Review

Borsa İstanbul Review xx (2017) 1–8

<http://www.elsevier.com/journals/borsa-istanbul-review/2214-8450>

Full Length Article

The term structure of interest rates and macroeconomic factors; evidence from Indian financial market

K. Hassan Shareef*, Santhakumar Shijin

Department of Commerce, School of Management, Pondicherry University, Pondicherry, 605014, India

Received 11 October 2016; revised 25 May 2017; accepted 4 June 2017

Available online ■■■

Abstract

The term structure of interest rate per-se is not impeccable for explaining the behavior of the future economic conditions and hence incorporating macro factors in the term structure model is more tractable. The study uses monthly data of macro factors for a period of eighteen years from April 1998 to May 2016. Using structural vector auto regression estimates, Granger causality/block exogeneity wald test along with impulse response functions and forecast error variance decomposition analysis the study tests the proportion of term structure attributable to macro-economic shocks. The findings of the study show that short term rates are mainly influenced by the fiscal deficit present in emerging economies while long term rates get affected when market participants revise their expectation on yields. In addition, the output growth of the country is mainly depended on long and short rates and exchange rate fluctuations have a significant role in the fiscal deficit of the country. Copyright © 2017, Borsa İstanbul Anonim Şirketi. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

JEL Classification: E43; E31; E2

Keywords: Term structure of interest rates; Inflation; Output growth; NEER; Monetary policy rate

1. Introduction

The need for examining the whole of the term structure of yield using few parameters gained prominence since Milton Friedman (1977). A parsimonious model of yield curve under no-arbitrage affine term structure conditions can predict the majority of the variations in the yield curve. Short rates as predictors of forward rate readily generate the typical yield curve shapes forming solution for the differential yield curve. The empirical yields model of Nelson and Siegel (1987) shows that spot rates in a differential equation forecast forward rates as a solution to the equation. Although

the model gives a useful statistical description of yield curve Diebold-et al. (2005) questions the economic rationale behind the movements. In response to critics, Rudebusch and Wu (2008) adds macroeconomic fundamentals through a monetary policy reaction function using popular Taylor rule, in which short rate depends on inflation and output. Movements in yield curve are an outcome of the expectations of the market, which capture the changes in key macroeconomic fundamentals; namely inflation, growth and monetary policy. Therefore, the shape of the yield curve is a good reflector of monetary policy effectiveness, during inflation and growth in an economy.

The exponential three-factor affine term structure of interest rates of Balduzzi, Rajan Das, Foresi, and Sundaram (1996) shows that short rate, mean and volatility are the three factors that can explain the term structure fluctuations. The short rate posits dominant factor for entire term structure and gratifies

* Corresponding author.

E-mail addresses: hassanshareefkl@gmail.com (K.H. Shareef), shijin.com@pondiuni.edu.in, shijin.s@gmail.com (S. Shijin).

Peer review under responsibility of Borsa İstanbul Anonim Şirketi.

<http://dx.doi.org/10.1016/j.bir.2017.06.001>

2214-8450/Copyright © 2017, Borsa İstanbul Anonim Şirketi. Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please cite this article in press as: Shareef, K. H., & Shijin, S., The term structure of interest rates and macroeconomic factors; evidence from Indian financial market, Borsa İstanbul Review (2017), <http://dx.doi.org/10.1016/j.bir.2017.06.001>

the role of macroeconomic scenario. It serves as a benchmark for all other assets with different maturities since the long rates are the weighted average of current and expected short rates. Since the deployment of capital is a lengthy process, investment decisions mainly depend on long rates. The short rate stands for opportunity cost for holding money as in [Mankiw, Goldfeld, and Shiller \(1986\)](#) and is the key instrument for the monetary policies of the central banks. Further, it also helps to understand how monetary policy affects the real economic activities. Hence, term structure of interest rate conjectures the prediction as well as forecasting of interest related instruments within the framework of no-arbitrage condition ([Hordahl, Tristani and Vestin 2006](#)).

Nevertheless, macroeconomists observe the relationship between the interest rates and macroeconomic factors. According to [Fama \(1990\)](#), the information in the term structure provides the ex-ante values of the macroeconomic variables such as short rates and inflation. Similarly, [Mishkin \(1990\)](#) and [Ang, Piazzesi, and Wei \(2006\)](#) explains that the long run term structure contains information regarding future inflation. The slope factor or the spread between short and long rates can explain the future dynamics of inflation. Further, the nominal term structure of interest rate with long maturity explains not much about the real interest rates whereas the short end of term-structure is able to explain the real interest rates.

[Mankiw and Miron \(1986\)](#) evidenced that the predictive power of yield spread prior to the setting up of Federal Reserve in 1915. Whereas after that spread predictive power was diluted, and short rate showed random walk behavior indicating the interest rate smoothening by the Federal Reserve. According to [Mankiw and Summers \(1984, pp. 223–247\)](#), the term structure of interest rate is the inevitable, for the monetary policy evaluation. The monetary authority has direct control over the short rate where the aggregate demand relates itself with the long rate. Hence, term structure is useful in understanding the monetary policy transmission.

The no-arbitrage term structure factors with macroeconomic data can better explain term structure factors per se ([Rudebusch & Wu, 2008](#)). Conversely, as opined by [Ang and Piazzesi \(2003\)](#), the time varying risk premia, accounts for both macro variables and latent factors. The macro factors are able to predict the short and medium term structure significantly in long run, with the major portion of level and slope factors assigned to inflation. [Dewachter and Lyrio \(2006\)](#) postulates that the level factor denotes the agents' long-term inflation expectations, slope factor implies the future economic conditions and curvature embody the monetary policies respectively. The slope of the nominal yield curve as in [Kung \(2015\)](#) is empirically a strong predictor of economic growth and inflation, at business cycle frequencies.

Joint macro-term structures of interest rate models provide the structural relationship between macro economy and the financial markets. In line with this intuition, [Dewachter, Lyrio, and Maes \(2006\)](#) contend that macroeconomic factor such as

inflation and output gap per se is not sufficient to explain the behavior of the long end of the yield curve. The term structures with macro factors are necessary for explaining those latent factors. [Diebold, Rudebusch, and Boragan Aruoba \(2006\)](#) examined the dynamic behavior of the latent term structure factors such as level, slope and curvature with macroeconomic factors. The study found that the future behavior of the term structure driven is by the macroeconomic factors. Along with macroeconomic factors, varying risk premia serves as the building blocks to reject the expectation theory.

As elucidated by [Gürkaynak and Wright \(2012\)](#) along with time-varying risk premia, the inflation uncertainty plays a major role for the variations in the term premia. Hence, the term structure of interest rate with macro factors relinquishes the anomalies of the term structure of interest rates. The impact of inflation and economic activity on the term structure factors such as level, slope, and curvature as in [Joslin, Priebisch, and Singleton \(2014\)](#) confirm inflation and output risks. Similarly, [Bekaert, Cho, and Moreno \(2010\)](#) establish the structural relationship of entire term structures with macroeconomic factors.

In the Indian context, studies like [Kanjilal \(2011\)](#), [Sahoo and Bhattacharyya \(2012\)](#), [Sensarma and Bhattacharyya \(2016\)](#) examined the term structure of interest rates with macroeconomic factors. Further, the study of [Sensarma and Bhattacharyya \(2016\)](#) focused on the impact of monetary policy variables on term structure factors than the macroeconomic variables. Unlike [Sensarma and Bhattacharyya \(2016\)](#), the present study considered gross fiscal deficit in the macro-finance model, since the fiscal deficit has a pivotal role in the macroeconomic framework for Indian economy meaning that the fiscal deficit either financed by monetizing or by issuing government dated securities.

The current study in this direction, tests the dynamic relationship between the term structures of interest rate factors such as level, slope and curvature with the macroeconomic factors namely output growth, inflation, gross fiscal deficit, nominal effective exchange rate (NEER) and the call money rate (CMR) as a monetary policy indicator. Since the shape of the term structure is in tandem with the macroeconomic developments of the economy, the current study attempts to test the macroeconomic repercussions on the term structures of interest rates. In addition, very few studies have tested the role of term structure in the presence of macroeconomic factors in emerging markets with a large amount of fiscal deficit. In this context, present study tries to analyze the term structure of interest rates with the macroeconomic factors to explain the dynamic interrelationship of interest rates.

The remaining sections are as follows, section two stands for data and methodology, section three explains the theoretical aspects of term structure under structural vector auto regression (SVAR) framework, section four devotes to results and discussion and section five concludes the study.

Download English Version:

<https://daneshyari.com/en/article/7341687>

Download Persian Version:

<https://daneshyari.com/article/7341687>

[Daneshyari.com](https://daneshyari.com)