An analytical Study to determine the impact of CAD, REPO & WPI on the benchmark G Sec of India (June 2012 to May 2014)

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Abstract

Current Account is the sum of the balance of trade (exports minus imports of goods and services), net factor income (such as interest and dividends) and net transfer payments (such as foreign aid).[i] As the foreign aid and the import bills are usually on the higher side in India, so Current Account Deficit is a quite familiar term in the economy as a whole. In India, interest rate decisions are taken by the Reserve Bank of India's Central Board of Directors. The official interest rate is the benchmark repurchase rate. [ii]Historically, the wholesale price index (WPI) has been the main measure of inflation in India.[iii] However, in 2013, the governor of The Reserve Bank of India Dr.Raghuram Rajan had announced that the consumer price index is a better measure of inflation.

This study is done within a time frame of two years (starts on June 2012 ends on May 2014). The impact & relation of CAD, REPO & Inflation Rate with the 10 Year G Sec is established here.10 Year G Sec is the most traded debt security in India, and considered as a Benchmark security. Also, Risk Free Return is generally associated with this favoured segment. So the endevour here is to establish connection between the most important Debt Instrument with the three most talked about parameters from macroeconomics.

Key Words-10 Year G Sec[1], YTM[2], CAD[3], REPO[4], inflation

Review of Literature

Detailed work in a focussed manner is not available as of now for India; however there are some important works that are covered over here.

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2. Dr. Rakesh Mohan (2004), Infrastructure Development in India : Emerging Challenges, OUP
3. Anupam Mitra (2009), NSE News, Why Corporate Bond Market in India is in Nelson's low level equilibrium trap for so long
4. Dr. D.Subbarao (2009), "Global Financial Crisis Questioning the Questions" Speech delivered at the JRD Tata Memorial Lecture at the meeting of The Associated Chambers of Commerce and Industry of India, New Delhi on July 31, 2009
5. Dr. D. Subbarao (2008), "Mitigating Spillovers and Contagion – Lessons from the Global Financial Crisis", Speech delivered at the RBI-BIS Seminar at Hyderabad on December 4, 2008
6. Dr. Subir Gokarn, Deputy Governor, Reserve Bank of India atthe CII 7th Edition of Mutual Fund Summit 2011 on June 22, 2011 atMumbai. Inputs from Sudarsana Sahoo, Bhupal Singh and Deepa S.

Research Methodology

This study is based in Indian Market(Debt & Money).The duration of this study is from June 2012 to May 2014. In this time zone, the first part belongs to Mr. D V Subba Rao, as the Central Bank Governor (up to August 2013) and the later part (from September 2013) is under the tenure of former IMF Chief, and current Governor of RBI, Dr. Raghuram Rajan. 10 Year Government Bond is taken in to consideration, as that symbolizes the Risk free Rate in India. As 10 Year G Sec or GILT is in high demand from all the buyers from different segment so, the volume (TTA) is never under scanner.

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[1]G Sec is Government Securities or Sovereign Bonds
[2] YTM is Yield to maturity of a Bond, that signifies the internal rate of return of the security
[3]Current Account Deficit-deficit when imports are more than exports
[4] REPO or Repurchase is the Rate at which the Central Bank lends money to other commercial banks

In this study it is observed that how 10 Year G Sec YTM (Yield To Maturity, or, the IRR) has changed with Current Account deficit (CAD), Inflation (WPI) & Interest Rate (REPO). Logically it could be understood that all three are quite important parameters to determine the YTM of 10 Year G Sec in India.

Multiple Regression on the complete data set has been carried out (within the specified time zone)to understand the true relationship between the variables.

Dependent Variable- (Y)- YTM of 10 Year G Sec

First Independent Variable (X1)- REPO Rate (REPO)

Second Independent Variable (X2) Inflation Rate (WPI)

Third Independent Variable (X3) Current Account Deficit (CAD)

Hypothesis Formation for all three X Variables

X1

Ho- REPO & 10Y GILT YTM are not correlated at all during 2012June to 2014 May

Ha-REPO & 10Y GILT YTM are correlated during 2012 June to 2014 May

X2

Ho- Inflation & 10Y GILT YTM are not correlated at all during 2012June to 2014 May

Ha-Inflation & 10Y GILT YTM are correlated during 2012 June to 2014 May

X3

Ho- CAD & 10Y GILT YTM are not correlated at all during 2012June to 2014 May

Ha-CAD & 10Y GILT YTM are correlated during 2012 June to 2014 May

Outcome after analysis

Regression Statistics	
Multiple R	0.82516
R Square	0.680888

Adjusted R Square	0.633022			
Standard Error	0.002856			
Observations	24			

ANOVA

	df	SS	MS	F	Significance F
Regression	3	0.000348	0.000116	14.22467	3.41325E-05
Residual	20	0.000163	8.16E-06		
Total	23	0.000511			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95.0%	Occurrence %
Intercept	-0.020025	0.027157482	-0.73737	0.469463	-0.07667	0.03662	0.530537
X1 REPO	1.30504517	0.329782606	3.957289	0.000777	0.617130	1.99295	0.999222
X2 INF	0.0357447	0.086401456	0.413705	0.683493	-0.14448	0.21597	0.316507
X3 CAD	0.02367875	0.007563158	3.130801	0.005264	0.007902	0.03945	0.994736

Hypothesis Testing & Conclusion

Ho- REPO & 10Y GILT YTM are not correlated at all during 2012June to 2014 May

Ha-REPO & 10Y GILT YTM are correlated during 2012 June to 2014 May

T Stat falls after T Critical & in the tail part of the distribution curve, proves that Ho is rejected & Ha is accepted. P Value is very less for X1, makes the occurrence chance of the event as 99.92%.

Adjusted R Square is decent, F Value is normal; Significant F should be close to zero,

Here it is close to zero.

X1 i.e. REPO &X3 i.e. CAD are both having significance here.

Ho- CAD & 10Y GILT YTM are not correlated at all during 2012June to 2014 May

<u>Ha-CAD & 10Y GILT YTM are correlated during 2012 June to 2014 May</u>

T Stat falls after T Critical & in the tail part of the distribution curve, proves that Ho is rejected & Ha is accepted. P value is very less for X3 as well, makes the occurrence chance of the event as 99.47%.

T Critical is found to be 2.068658 in this Multivariate Analysis.

So, it can be concluded that REPO change truly determined the movement of 10Y GILT during the above mentioned time frame. This outcome is quite expected as well.

On the other hand the Inflation factor seems not quite aligned with 10Y G Sec YTM.

This result is quite the reverse from the perspective of the common notion.

The common perception is this that when inflation goes up, to suck the liquidity from the system the central bank starts issuing new bonds with relatively higher coupon.

So, that means inflation & interest rates will have a perfect positive correlation. Very interestingly this study finds the coefficient of correlation between inflation & REPO as weak negative (-0.16) during the study period of 2 years, namely from June 2012 to May 2014.

So, it can be concluded that CAD change truly determined the movement of 10Y GILT during the above mentioned time frame. This outcome is quite expected as well.

So, both CAD & REPO are playing the important part in the determination of the future YTMof the Benchmark 10Y G Sec in India. Between CAD & REPO, the coefficient of REPO (1.30504517) is substantially higher than that of CAD (0.02367875), so, the impact factor for REPO on 10 Year G Sec's YTM is more than that of CAD.

This study reveals very interesting outcome. CAD & REPO are in feeble positive correlation.

However, YTM of 10Y G Sec & CAD are in strong positive correlation. 10 Y G Sec is strongly correlated too with REPO. Inflation and REPO, though logically should be having positive correlation in real are having feeble negative correlation.

Limitations of the Study

1. This study is done within the time zone of June 2012 to May 2014.
2. Only three X Variables, namely REPO, Inflation & CAD is considered
3. This is a period of transition of RBI Governor role (In fact the new Governor elect had joined earlier as an officer on special duty; 5-6 days prior his appointment as Governor)
4. This period also covers a sudden dollar appreciating spree for two weeks (Aug 2013)
5. Political instability & Governance factors are not considered

Recommendation

1. A broader analysis (longer time zone) could yield different interpretation
2. A period with unchanged RBI Governor could yield different interpretation
3. Two different economies could be compared from the similar economic strata (BRIC)
4. More independent variables which could influence the YTM of 10 Year G Sec could be considered

References

A. Web Site from reputed & credible sources
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   ii. http://rbidocs.rbi.org.in/rdocs/Bulletin/PDFs/02SPBL090811F.pdf
   iii. http://rbidocs.rbi.org.in/rdocs/Speeches/PDFs/FCMP12112009.pdf
   iv. http://www.dnb.co.in/FESConfTool/Uploads/Downloads/77/Debt%20Markets%20RM.pdf
   v. https://www.ccilindia.com/Research/CCILPublications/Lists/CCILPubRakshitra/Attachments/214/Rakshitra%20December.pdf
   vi. https://www.ccilindia.com/Research/CCILPublications/Lists/CCILPubRakshitra/Attachments/220/RAKSHITRA%20May%202014.pdf

B. Books & Journal Articles
- i. Asifma(2013),India Bond Market Roadmap
- ii. Datt & Sundharam (2014), Indian Economy, 69th Edition

Teachings Notes

1. Economic link establishment between key economic variables
2. To establish relations between YTM of 10 Year G Sec with CAD, REPO & Inflation
3. To understand the impact of CAD, REPO & Inflation on YTM of 10 Year G Sec

Key Take Away

1. REPO impacts YTM of 10 Year G Sec the most between CAD, Inflation & REPO
2. CAD impacts YTM of 10 Year G Sec, lesser than REPO but more than Inflation
3. Inflation & REPO are having feeble negative correlation
4. CAD & REPO are in feeble positive correlation

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[i] http://www.tradingeconomics.com/india/current-account

[ii] http://www.tradingeconomics.com/india/interest-rate

[iii] http://www.tradingeconomics.com/india/inflation-cpi