

ESTIMATED LOWER BOUND OF RBI POLICY RATE IS 3.5% BUT CREEPING UP STEADILY: FISCAL MEASURES MUST AS AT LOW POLICY RATES FISCAL MULTIPLIERS HAVE MAXIMUM IMPACT

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Countries are taking unprecedented measures to combat the spread of Covid-19, while ameliorating its pernicious effect on the economy. One of such measures is an aggressive accommodative monetary policy. However, the problem is even after years of quantitative easing (QE), advanced economies have continued to undershoot even the minimum inflation targets. This motivates us to ask the broader question: what is the effective lower bound of policy rate? Given that subzero rates are technically feasible, in a 2018 NBER paper the authors empirically establish that effective lower bound is given by the "reversal interest rate", the rate at which accommodative monetary policy reverses its effect and becomes contractionary for output. If the central bank reduces the policy rate below such "reversal interest rate", the monetary policy rate depresses rather than stimulates the economy. Importantly, such reversal interest rate is not (necessarily) zero. **We use this 2018 paper to extend the concept of reversal interest rate in the Indian context with suitable modifications.**

Bank profitability is a function of 2 components. **Net Interest Income / NII and Capital Gains /CG.** Let us explain each one of them. A cut in the policy rate benefits banks with long-term legacy assets with fixed interest payments. As the central bank lowers the policy rate, banks can refinance their long-term assets at a cheaper rate (recently, banks have raised additional tier 1 bonds at the lowest rate since 2013). This increases the value of their equity; they are better capitalized, which relaxes their regulatory constraint and could clearly result in higher profitability. **We call this the Capital Gains impact on Bank Profitability that works in inverse direction with changes in policy rate.** However, a lower policy rate also negatively impacts banks' profits on new business, by lowering banks' net interest margins. If we assume that the financial market works without any frictions and is perfectly competitive, any monetary policy rate cut should be over time passed through equivalently to loan rate and deposit rate. **We call this the Net Interest Margin impact on bank profitability that works in same direction with changes in policy rate. Hence, the net impact on Bank Profitability can work in any direction, and herein comes the concept of "reversal interest rate".** In principle, reversal interest rate is defined as that rate where risk-taking ability of the banking sector through higher lending by lower rates is just adequate to cover the bank net worth. Any further rate cuts larger than reversal interest rate results in banks cutting back on their credit extension and forced increase in their safe asset holdings through the feedback loop.

Our estimated results (log-liner model) for India based on 15 year data indicate that a reversal repo rate below 3.5% will be detrimental for lending in an economy with the current capital constraint. Interestingly, the estimated 3.5% reversal repo rate also translates into the 1 year deposit not being lower by more than 25 basis points from the current levels. We believe the reversal repo rate is a much better and analytically powerful tool than Taylor Rule that requires the specification of both r^* (neutral or equilibrium real rate of interest) and the GDP output gap, both of which are unobservable. Both require judgment on the part of anyone applying the "rule."

Interestingly, we find clear evidence of reversal repo rate creeping up over time, and in that sense banks will always prefer to hold assets of longer duration. For example, if bank assets are of shorter duration, then a longer interest rate cut might lead to larger NII profit losses than fixed income capital gains. An exceedingly long period of low rates may end up lower lending from today onwards, amid feedback effects on the banks' valuations.

Against this background, we believe any further rate cuts will have the unintended impact on the economy. Instead, we strongly recommend for India an activist fiscal policy. There is a plethora of research to show that fiscal multipliers are always larger when monetary policy is at the lower bound as investors anticipate a prolonged period of low interest rates thus accommodating the fiscal response without any negative impact on macro variables. We only expect the government to make a credible commitment to regain fiscal space once the economy recovers from crisis. **But for now, fiscal expansion is a must.**

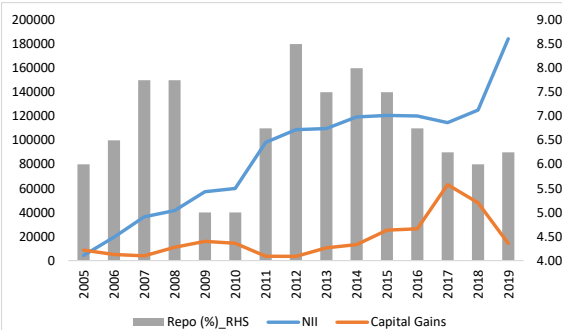
MONETARY POLICY RESPONSES TO COVID-19

- ◆ Countries are taking unprecedented measures to combat the spread of Covid-19, while ameliorating its pernicious effect on the economy. One of such measures is an aggressive accommodative monetary policy. Almost all major economies reduced their policy rates during Covid-19 (in the range of 15-275 bps), with India reducing its policy rate by 115 bps to 4.0%. The interest rates in some of the countries have reached very low levels of 0.5-1.0%.
- ◆ However, the problem is even after years of quantitative easing (QE) and ultra-low interest rates, advanced economies – particularly the Eurozone – have continued to undershoot even the minimum inflation targets. This motivates the broader question: what is the effective lower bound on monetary policy in the ultimate analysis that could stimulate the economy?
- ◆ Given that subzero rates are technically feasible, in a 2018 NBER paper by Markus K. Brunnermeier and Yann Koby titled, "The Reversal Interest Rate", the authors empirically establish that effective lower bound is given by the "reversal interest rate", the rate at which accommodative monetary policy reverses its effect and becomes contractionary for output. If the central bank reduces the policy rate below such "reversal interest rate", the monetary policy rate depresses rather than stimulates the economy. Importantly, the reversal interest rate is not (necessarily) zero.
- ◆ We use this 2018 paper to estimate and extend the concept of reversal interest rate in the Indian context and propose our own empirical model to estimate the said rate for India.

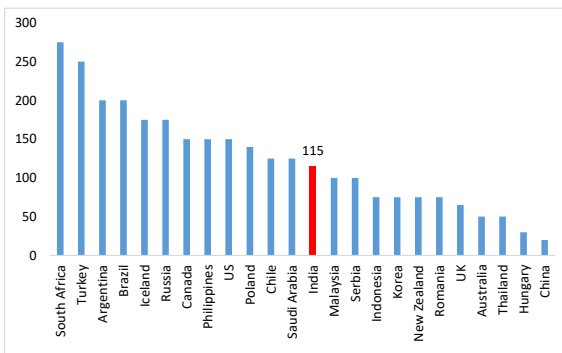
THE THEORY OF REVERSAL INTEREST RATE

- ◆ The bank profitability is a function of 2 components. Net Interest Income / NII and Capital Gains / CG. Let us explain each one of them in turn.
- ◆ A cut in the policy rate benefits banks with long-term legacy assets with fixed interest payments. As the central bank lowers the policy rate, banks can refinance their long-term assets at a cheaper rate (recently, banks have raised additional tier 1 bonds at the lowest rate since 2013). This increases the value of their equity; they are better capitalized, which relaxes their regulatory or economic constraint and could clearly result in higher profitability. Viewed differently, banks fixed interest holding experience capital gains, provided there is no binding constraint on liquidity. **We call this the Capital Gains impact on Bank Profitability that works in inverse direction with changes in policy rate.**

Movement of NII and Capital Gains (Rs Crore) with Repo Rate



Reduction in Central Bank Policy rates since Feb'20



Source: SBI Research

- However, a lower policy rate also negatively impacts banks' profits on new business, by lowering banks' net interest margins. If we assume that the financial market works without any frictions and is perfectly competitive, any monetary policy rate cut should be over time passed through equivalently to loan rate and deposit rate. **We call this the Net Interest Margin impact on bank profitability that works in same direction with changes in policy rate.**
- **Hence, the net impact on Bank Profitability can work in any direction, and herein comes the concept of "reversal interest rate".** In principle, any change in profits induced lower policy rates can feed back into lending if the risk-taking ability of the banking sector is not constrained by its net worth. If the net worth of banks is sufficiently strong and hence capital gains are strong enough to further increase the net worth, then only an interest cut generates the boom in lending that the central bank seeks to induce. However, if capital gains are too low to compensate the loss in net interest income, they limit banks' ability to take on risk. This is the reversal interest rate, and any further interest cuts from such level will generate a decline in lending through the net-worth loop. Banks will subsequently cut back on their credit in next period and are forced to increase their safe asset holdings that gives low returns and banks' profits decline even more, forcing banks to substitution of loans with safe assets in next period and we are in a perpetual loop.
- How does the bank avoid getting into such a perpetual trap? First, banks might be unwilling to cut deposit rates beyond a point and the bank might offer an attractive interest rate to ensure that the customer does not move onto a rival bank. We have seen this behavior in India, as banks vouch for retail deposits in a crowded market.
- ◆ The second option could be banks preferring to hold assets of longer duration. For example, if bank assets are of shorter duration, then a longer interest rate cut might lead to larger NII profit losses than fixed income capital gains. **In that sense, the reversal interest rate creeps up over time:** an exceedingly long period of low rates may end up lower lending from today onwards, amid feedback effects on the banks' valuations.

ESTIMATED MODEL IN INDIA

- ◆ We estimated a simple but powerful model based on above theory to calculate the reversal interest rate. With the cut in interest rate, NII declines but capital gains increases. We impose the boundary condition that reversal rate is reached if NII decline \geq Equity Profit (EP). The empirical model is given alongside, which is self explanatory. Based on the Repo rate, NII (interest on advances minus interest on deposits) and Equity profit (Net profit/loss on sale of investments) data for ASCBs for the period of 2005-2019, we estimate reversal interest rate in terms of RBI policy rate.
- ◆ Our estimated results (log-liner model) based on 15 year data indicate that a **reversal repo rate below 3.5% will be detrimental for lending in an economy with a tighter capital constraint.**

WHY REVERSAL RATE IS A BETTER TOOL THAN TAYLOR'S RULE

- ◆ RBI has reduced the policy repo rate from 8% in Jan'15 to 4% now and during the same time the MPC targeted CPI inflation has followed several cycles; it continued to decline from 5.8% in June'16 to 1.5% in June'17, then increased to 4.9% June'18 and declined to 2.0% in Jan'19. There after it rose to 7.6% in Jan'20 and then declined to 6.9% in Jul'20. Since Dec'19, inflation has however crossed RBI's upper bound target of 6% for 7-months except in March'20, at 5.8%. Also, we believe the Aug'20 inflation may come above 7%.
- ◆ Interestingly, Taylor's rule is a proposed guideline for how central banks, such as the US Fed, should alter interest rates in response to changes in economic conditions. However, we believe that Taylor rule is not the ideal policy rule that emerging economies should follow, or even developed economies in the current fragile global environment.
- ◆ In principle, the Taylor Rule, requires the specification of both r^* (neutral or equilibrium real rate of interest) and the GDP output gap, both of which are unobservable, Both require judgment on the part of anyone applying the "rule." Thus, even if the rule were in some abstract sense "right," and factors other than current inflation, the output gap, and r^* were not significant enough to undercut the utility of the rule, material misspecifications of those variables could still lead to suboptimal policy.

Calculation of Reversal Rate of Interest / i^{RR}

The Theoretical Model:

Bank Profit = Net Interest Income/ NII + Capital Gains /CG,

such that if there are no capital gains, that is CG = 0, then the change in profits following a cut in policy rate is strictly negative, with no liquidity constraints. Thus,

$NII = \alpha 1 + \beta 1$ (Repo)

$CG = \alpha 2 - \beta 2$ (Repo)

Reversal Rate / i^{RR} is reached if and only if $NII - CG \geq 0$

i^{RR} is the rate such that a decline in the repo rate, i , stimulates lending if and only if the current policy rate is above the reversal interest rate i^{RR} .

Estimated Empirical Model for India

(Using data from 2005-2019):

$NII = 9.84 + 0.19$ (Repo)

$CG = 11.62 - 0.33$ (Repo)

Solving the above two equations by imposing the boundary condition provide us

$i^{RR} = 3.5\%$, with clear evidence of creeping up in a multi period model

HOW THE REVERSAL RATE IMPACTS THE LOWER BOUND OF DEPOSIT RATE

- ◆ With the fall in repo rate, both the deposits and lending rate of banks have continued to fall till the end of Dec'17 but there after they increased marginally with the rise in deposits rate to meet the short-term liquidity crunch. However, from Jan'19, both the rates are declining with RBI's cut in repo rate by 115 basis points. Banks have cut rates on fresh loans by 74 basis points. SBI has cut by an equivalent 115 basis points on its Repo linked product.
- ◆ As per the latest available data, the WADTDR, and 1yr MCLR have reached the lowest level of 5.96%, 8.35% and 7.45% in July 2020.
- ◆ **To know the impact of repo rate cut on bank's deposits rate, we estimated that 1% change in repo rate reduces deposits rate (weighted avg. deposits rate) by 67 bps.** However, due to the rigidity in deposits structure of the Indian banking system, banks are not able to cut equal amount in both the deposits and lending rates. **As per the estimated model for reversal rate, RBI has a maximum space to cut policy rate by up to 50 bps that translates into banks lowering deposits rate by upto 25 basis points for 1 year tenure.**

Transmission of Policy Rate

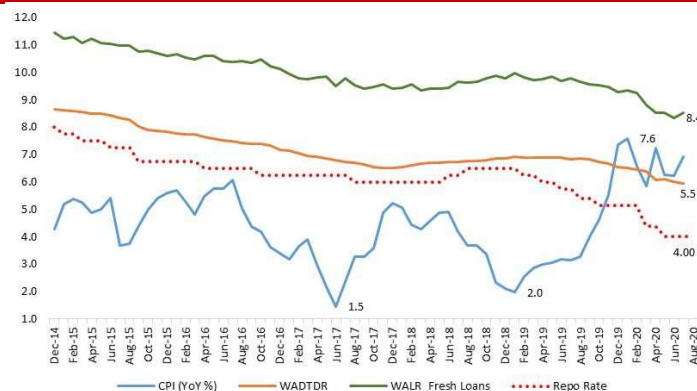
	February	Latest	Change (in bps)
Repo Rate	5.15	4.00	-115
Wt Avg. Lending Rate (WALR) on O/S Rupee Loans	10.11	9.71	-40
WALR on Fresh Rupee Loans	9.26	8.52	-74
Wt Avg. Domestic Term Deposits (WADTDR) on O/S Deposits	6.45	5.96	-49
ASCB-MCLR (1 Year)	8.21	7.45	-76
SBI EBLR	7.80	6.65	-115
SBI MCLR -6 Months	7.80	6.95	-85
SBI MCLR -1 Year	7.85	7.00	-85

Source: RBI, SBI Research

NEW POLICY TOOLKIT POST COVID-19 MUST ENCOMPASS FISCAL

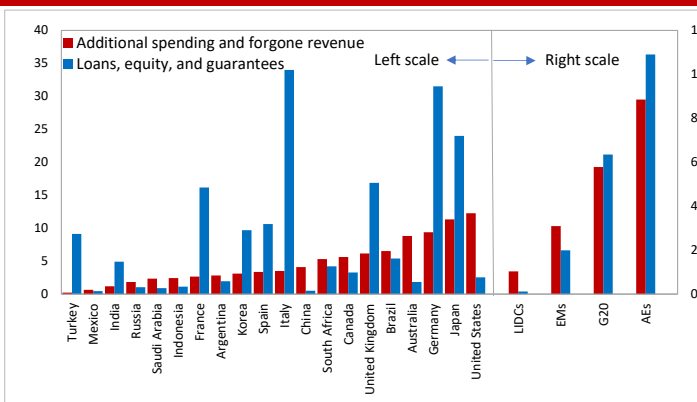
- ◆ Since the global financial crisis, there have been serious doubts about the theory that the economy functions best with “invisible hand” and it should not be jeopardized through government “intervention”. In particular, the discipline (read economics) has somehow rejected the pattern of simple policy prescriptions - which any standard economics textbook imbibes. The spread of Covid-19 is now compelling economists to devise innovative measures in economic thinking.
- ◆ Let us also consider the example of monetary policy. Even after years of quantitative easing (QE) and ultra-low interest rates, advanced economies – particularly the Eurozone – have continued to undershoot even the minimum inflation targets. Thus the long-standing assumptions about downward nominal wage rigidity of 1960-70s when organized labour were much stronger is clearly not in vogue now. Employees are willing to work even at a lower rate explaining much of the slower growth in labour productivity and a breakdown of Philips Curve. We are witnessing similar situation in India right now with minimum wage growth and declining productivity.
- ◆ On the other hand, is the issue of bloated Government debt. It is often argued that an expansionary fiscal policy crowds out private sector borrowings. As economists, we have been now following this debate for ages that combined savings of the Government is crowding out private sector investment in India. At the same time, we are also witnessing to the negative growth in FY21 because of demand destruction. Simple economics suggests these two cannot simply co-exist together. If growth is demand constrained, increase in private investment will only lead to higher output. And, a part of the higher output will be saved and, in return, will be sufficient to support private investment. Fact is, only when growth is capacity constrained, which apparently is not the case right now in India, any idea of crowding out can be argued as relevant.
- ◆ Similarly, there is a plethora of research to show that fiscal multipliers are always larger when monetary policy is at the lower bound as investors anticipate a prolonged period of low interest rates thus accommodating the fiscal response without any negative impact on macro variables including inflation.
- ◆ We thus believe that providing fiscal stimulus is the most effective solution in the current pandemic and it should be immediate as other countries did. Countries are providing sizable fiscal support through budgetary measures, as well as off-budget liquidity and the measures taken by Governments (in US and Europe) to protect vulnerable firms and employees during the lockdown have largely met their goals. As the exit phase begins, policy should pivot toward supporting the recovery. On the demand side, this may require further fiscal support clearly for India. On the supply side, this implies putting gradually more emphasis on backing up productive jobs and viable companies while beginning to phase out schemes that do not serve any purpose.

Movement of Interest Rates (%)



Source: SBI Research

Summary of Fiscal Measures in Response to the COVID-19 Pandemic (% of GDP)



Source: SBI Research

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