Relationship between inflation, interest, and output assignment

Business

In a demand driven growth market, high growth implies a rightward shift in the IS curve which increases the income of the economy . With higher incomes at their disposal, the demand by the consumers also increase pushing the prices higher. Diagram 1 Diagram 2 Image source (http://web. Instate. Due/states/Economy/how/2009/key. HTML) The possible remedies could be to boost the supply chain network of the economy, infrastructural growth, and other such related growth which can raise the aggregate apply of the economy. Money supply is the main controller of prices in the economy.

However in the real world, it is easier to fix the nominal rates and allow the money supply to equilibrate accordingly. In the long run, the output level remains constant, the supply curve is perfectly inelastic and changes in aggregate demand affect the price level. In the short run, the supply curve is positively sloped and both supply and demand factors govern the general level of prices. High aggregate demand or adverse supply shocks or high expectation of future prices pull the inflation rates up. Prices adjust so that quantity demented equals the quantity supplied.

The classical theory relates the inflation and the nominal and real interest rates based upon the quantity theory of money. The IS Curve shows the relationship between the real interest rate and output for which investment equals savings. The ELM Curve shows the various combinations of the real interest rate and output that equilibrate the money market. It reflects the real interest rate necessary to equate real money demand and supply. When both the goods market and the money market are simultaneously in

equilibrium, there is a neural equilibrium which occurs at the point of intersection of the IS and ELM curves.

Let us see how the model works for a fluctuation in the exogenous variables. Suppose due to adverse supply shocks the associated costs rise which in turn pushes the price of the commodities high. As inflation rates soar, the key policy rates (CAR, Report) rise. An increase in interest rate meaner smaller money supply and eventually lower investment, lower industrial output, and higher unemployment. This, in turn, has the erect AT recycling Notation Ana rolling ten economy Tack to squalled um 5 Diagram 3 Image source (http://web. Instate. U/states/Economy/how/2009/key. HTML) Well, the Fisher equation states that: I = r + Tie In the goods and services market, Investment is a function of the real interest rates I = I (r) Or, I = I (I- Tie) 6 However, in the money market, the demand for money supply is a function of the nominal interest rate, thus, L = L (I) To capture both the markets, especially, in a dynamic setup where prices are not fixed, we can safely work with the nominal interest rate values assuming a constant shift in the IS curve to account for the inflation fluctuations.

EMPIRICAL STUDY VARIABLES The WHIP Index was chosen as a proxy for inflation rates. Theoretically, it reflects the price fluctuations in the wholesale market and shows better co-movements with the PIP growth rates. In India the Wholesale Price Index consists of a basket of 435 commodities (Base Year 1993-94) and 676 commodities (Base Year 2004-05) with varying weights according to the relative importance and necessity of each commodity in the Wholesale market.

It is calculated using the Lassoers Formula The PIP index was used as a proxy for the output in the economy. It is a single representative index which reflects the performance of the industrial sector of the economy. Also its monthly estimates are readily available unlike GAP estimates which are published only quarterly. The General index levels of the sector wise classification of PIP have been used for the study. For the purpose of interest rate analysis, the Implicit yield at cut off point for the 364 day treasury bills has been chosen as an indicator.

It is a better estimate than policy rates, like CAR or Report rate that are decided by the Central Bank often discretionary, in the fact that it is a market governed interest rate figure which shows synonymous fluctuations with the inflation and growth rates in the economy. The data for the purpose of statistical analysis have been collected primarily from the RIB Bulletin (http://bulletin. Rib. Org. In) and the website of the Office of the Economic advisor (http://industry. Nice. In). The sample period chosen for the study ranges from October 1997 till June 2010 covering a period of roughly 13 years.

The monthly statistics of each of these macroeconomic parameters totaled nearly 1 50, sufficient enough to perform time series regression analysis. The base year for the measurement of WHIP and PIP indexes has been chosen as 1993-94. The software used for the analysis is Views 6 portable. 0 7 16 12 8 098 990001 02 05 06070809 10 Diagram no. 4 Inflation 14 12 1086420-298990001 020304050607080910 Diagram no. 5 INTEREST 11 10987654398990001 020304050607080910 Diagram no. 6 -4 98990001 lip

0203040506070809 10 Diagram no. 7 The graphical representation of the time series presents some interesting outcomes.

PIP growth rates and Inflation rates show a significant trend stationary. There is a structural shift in the graph of " P, dipping down significantly around the year 1999 when Indisputable war happened and also during the 2008-09 global recession. WHIP Inflation rate also follows a similar pattern. Interest rate also follows a similar trend but with a time lag. Note that in periods of high inflation, the interest rate is also pushed high which makes savings more profitable and, thus, reduces the demand of money in the economy and brings down the prices.

As stated earlier, the output growth rates and the inflation rates show a good commitment, I. E. High growth rates are coupled with high inflation and vice-versa, indicating that ours is a demand driven economic setup, lacking supply chain infrastructure. The interest rate study also shows that the Indian markets have become relatively more liberalized in the ewe millennium, with the high interest rates in late ass's giving way to an eased rate policy in the recent times except during the 2008-09 supreme mortgage crisis. 111. 3.

STATIONARY TEST 9 The most famous and recent approach to test the stationary of a time series is the Augmented Dickey Fuller test having a high power approaching 0. 33 which makes it more effective than other such methods for the same purpose like Philips Person test or ten Dickey Huller test. Bettor analyzing ten Augmented Dickey Fuller test, let us consider the time dependent model: yet= + ɥalt + UT – CEQ. 1 ND, UT = out-I + Et – CEQ.

2 Here, Et is a covariance stationary process with zero mean. The above model can be simplified as: yet= y+ 6th+ ATT-l + Et – CEQ. Where, y = ЏO(1-a) and 6 = Џl(l-a) . The above equation has a unit root if a = 1. In that case, the effect of any shock on the variable would be permanent and regression analysis often yields biased results. Thus, making a time series stationary before applying regression analysis is an utmost task . Len the light of this information, we can now discuss the results of the Augmented Dickey Fuller test which was performed on Views 6 software. UDF Test (Trend and Intercept Model) VARIABLE PIP 1st dif. PIP Inflation 1st dif. Inflation Interest 1st dif.

Interest I-STATISTIC -3. 09-23. 13 -3. 18-9. 23-1. 71 -11. 55 P-VALUE 0. 11 0. 00 0. 09 0. 00 0. 74 0. 00 Table 1 OBSERVATIONS Non-Stationary Stationary Non-Stationary Stationary Non-Stationary Stationary Critical Values for PIP, Inflation and Interest Rates: 1 % level: -4. 02, 5 % level: -3. 44 & 10 % level: -3. 14 The UDF test null hypothesis is that the variable has a unit root and is, thus non- stationary. Clearly, the level values of PIP growth rates and Interest rates do not reject he hypothesis and are, therefore, non-stationary time series.

However, their 1st difference value series' UDF statistic is greater than the 1 % critical level, and thus, they become stationary. Variables which reject the null hypothesis at 1% level automatically do so at 5% and 10% critical levels. In the case of, Inflation rate series, the statistic is marginally greater than the 10 % critical level but considering the 5 % or 1 % critical level, the given hypothesis cannot be rejected, and it has been assumed to be a non

stationary series in its level values. The problem is solved if the SST difference values are considered where the statistic is way above the critical levels.

The UDF tests in Intercept model and Without Trend and Intercept model showed similar results. Traditionally, econometricians believe that if an explanatory variable x precedes an endogenous variable y, then it may cause y, however, it will not happen the other way. By the help of time series data, we can investigate if the past values of x help to explain y. The Granger Causality Test captures this spirit and incorporates the lagged values of both the explanatory and the endogenous variables to explain any granger causality between the variables.