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MEASURING & EVALUATING THE MACROECONOMIC PERFORMANCE OF UNITED STATES

Gaurav Soin
Department of Management Studies, Vindhya Institute of Technology & Services, Satna , Madhya Pradesh, India
gauravsoinvits@gmail.com

Abstract: **The report reviews the macroeconomic performance of United States since 2012. It briefly summarises the key macroeconomic developments such as economic growth, inflation, monetary supply &exchange rate. This report also throws light on the computation of inflation rates by Consumer price index & total factor productivity. The relationship between Nominal interest rate & Real interest rate is also depicted through fisher effect. The correlation between money supply & inflation is also taken into consideration to reflect the impact of these variables on economic growth of the United States. The earnings & market capitalisation of BSE 500 index companies is also calculated to check the compatibility of Bombay stock exchange with that of US economy. The real appreciation & depreciation of Indian rupee in comparison to United States dollar has also been analysed. With the help of Interest rate parity theorem, the deviation between expected & actual changes in the exchange rate of Indian rupee & Unites States Dollar is also brought into concern. The report analysis past five year's data to form up a valid conclusion.**

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I REVIEW OF MACROECONOMIC DEVELOPMENTS

A. Economic Growth

Gross domestic product (GDP) growth rate in the US

The US has been through major fluctuations in the last five years. As per the statistical report, GDP marked at 1.7% in the year 2013, less than 0.5% in the year 2012 due to Sequestration. The growth rate went up to 2.6% in 2014 due to the end of quantitative easing. The growth rate increased to 2.9% in 2015 due to Trans-Pacific partnership and Iran's nuclear deal. The growth rate declined to 1.5% in 2016 due to Clinton versus Trump economic plans. The growth rate increased to 2.3% in 2017 due to the intervention of Trump's Taxation Plan.

Table 1: United States GDP by year

Year	Nominal GDP (trillions)	Real GDP (trillions)	GDP Growth Rate
2013	$16.692	$15.612	1.7%
2014	$17.428	$16.013	2.6%
2015	$18.121	$16.472	2.9%
2016	$18.625	$16.716	1.5%
2017	$19.387	$17.093	2.3%

Figure 1: US GDP Growth Rate

Table 2: India's & US GDP Growth Rate

Year	India's GDP Growth Rate	US GDP Growth Rate
2013	6.39	1.7
2014	7.51	2.6
2015	8.01	2.9
2016	7.11	1.5
2017	6.72	2.3

US GDP Growth Rate versus India's GDP Growth Rate

The Growth Rate of GDP in the BRIC countries: Brazil, Russia, India and China is far more larger than traditionally strong economies, such as US & Germany. Despite the world wide recession in 2008 & 2009, India records an impressive GDP growth rate due to the success of economic liberalisation and encouraged trade subsequent ending some public monopolies. India's GDP growth rate slowed down in recent years due to inflation but India's agricultural sector is still its global power for generating higher GDP growth rates.

Determining Economic Growth using Total Factor Productivity (TFP)

$$\% \text{ Change in GDP} = \frac{\text{Change in GDP}}{\text{GDP}} * 100$$

$$\% \text{ Change in Capital} = \frac{\text{Change in Capital}}{\text{Capital}} * 100$$

$$\% \text{ Change in Labour} = \frac{\text{Change in Labour}}{\text{Labour}} * 100$$

$$\text{Share of Capital} = \frac{\text{Total Capital}}{\text{Output}}$$

$$\text{Share of Labour} = \frac{\text{Total Labour}}{\text{Labour}}$$

TFP = % change in GDP – (% change in Capital*Share of Capital + %change in Labour*Share of labor)

Table 3: Change in Gross Domestic Product of US by years

Year	Real GDP (trillions)	Change in GDP	% Change in GDP
2012	$15.355	-	-
2013	$15.612	$ 0.257	1.673
2014	$16.013	$ 0.401	2.568
2015	$16.472	$ 0.459	2.866
2016	$16.716	$ 0.244	1.481
2017	$17.093	$ 0.377	2.255

Table 4: Change in Capital of US by Years

Year	Capital (Millions)	Change in Capital (Millions)	%Change in Capital
2012	$ 54720	-	-
2013	$ 55014	$ 294	0.537
2014	$ 57144	$ 2130	3.871
2015	$ 39451	-$ 17693	-30.962
2016	$ 40443	$992	2.514
2017	$ 41387	$ 944	2.334

Table 5: Change in Labour of US by years

Year	Labour (Millions)	Change in Labour (Millions)	% Change in Labour
2012	$ 154.98	-	-
2013	$155.39	$ 0.41	0.26
2014	$ 155.92	$ 0.53	0.34
2015	$157.13	$ 1.21	0.77
2016	$ 159.19	$ 2.06	1.31
2017	$ 160.32	$ 1.13	0.71

Table 6: Computation of Total Factor Productivity by years

Year	TFP = % change in GDP – (% change in Capital*Share of Capital + %change in Labour*Share of Labour	Total Factor Productivity (%)
2012	-	-
2013	= 1.673 –(0.537*55014/15612000 + 0.26 * 155.39/15612000)	1.671
2014	= 2.568 –(3.871 * 57144/16013000 + 0.34 * 155.92/16013000)	2.554
2015	= 2.866 –(-30.962 * 39451/16472000 + 0.77 * 157.13/1672000)	2.940
2016	= 1.481 –(2.514*40443/16716000 + 1.31 * 159.19/16716000)	1.475
2017	= 2.255 –(2.334*41387/17093000 + 0.71 * 160.32/17093000)	2.252

B) Inflation

The Fisher Effect

Table 7: Nominal & Real Interest Rate

Year	Nominal Interest Rate (%)	Real Interest Rate(%)
2013	2.891	1.431
2014	3.586	1.976
2015	-1.147	-1.267
2016	1.782	0.512
2017	4.859	2.209

Table 8: Calculation of Inflation rate using Consumer Price Index

Year	Current Year-Base Year*100 / Base Year	Rate of Inflation(%)
2013	232.95-229.59 *100 / 229.59	1.46
2014	236.7-232.95 *100 / 232.95	1.61
2015	236.99-236.7 *100 / 236.7	0.12
2016	240.01-236.99 *100 / 236.99	1.27
2017	246.38-240.01 *100 / 240.01	2.65

The United States Consumer Price Index

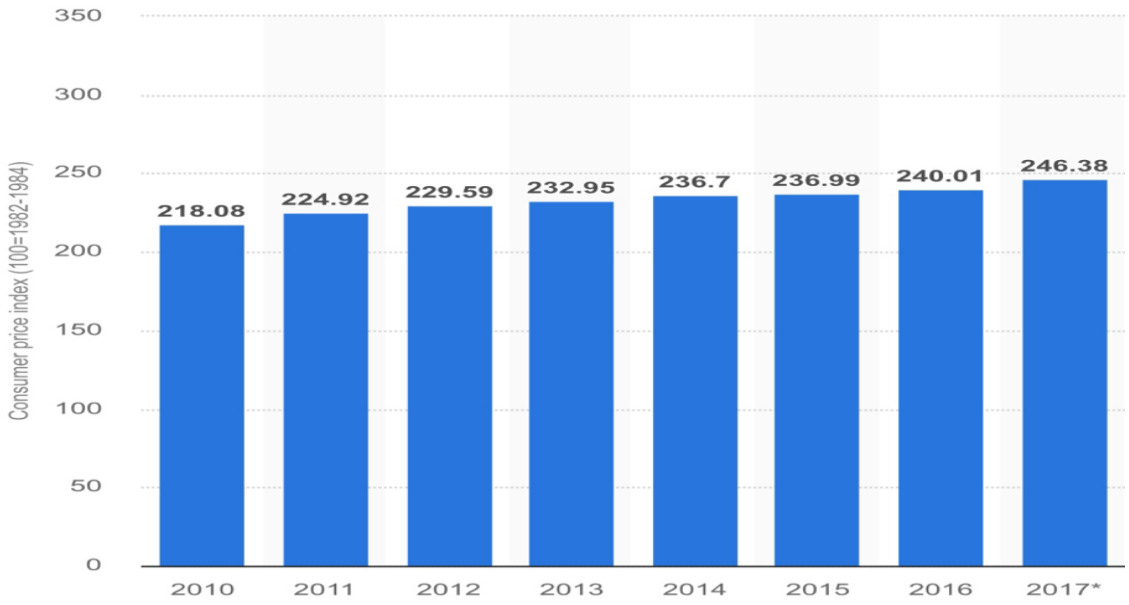

Figure 2: Consumer Price Index by year

C) The Quantum of Money Supply in US Economy

Table 9: Amount of Money Supply in the US

Year	M2 (trillions)	M2 Growth
2013	$11.0	5.4%
2014	$11.6	5.9%
2015	$12.3	5.7%
2016	$13.2	7.4%
2017	$13.8	4.9%

The relationship between Money Supply & Rate of Inflation

The model of money market equilibrium builds a link between money growth and Inflation. In money market equilibrium, inflation is equal to the growth rate in the Nominal money supply minus the growth rate in real money demand. If the growth rate of the Nominal money supply is equal to the growth rate of money demand then inflation is equal to zero. Money demand grows primarily because the real economy grows over time. As income increases, individuals consume more and thus need more money to conduct transactions. The above facts clarify that the Nominal interest component does not contribute much to the growth rate of the money demand and is not a good prediction model for inflation.

Earning Yield of BSE 500 index companies

The Earning Yields of BSE 500 index companies are increasing which shows that companies are generating higher earnings on the amount of investment made by investors.

Table 10: Calculation of Earning Yield of US

Year	PE Ratio (times)	Earning Yield Ratio (%)
2013-14	23.81	1/23.81= 4.20
2014-15	20.62	1/20.62= 4.85
2015-16	20.18	1/20.18 = 4.95
2016-17	18.73	1/18.73= 5.34
2017-18 (till feb 2018)	17.38	1/17.38= 5.75

D) Exchange Rates

Table 11: Yearly Average Exchange Rate of USD in terms of INR

Year	₹ for 1 unit of $	Appreciation/Depreciation
2012	₹55.911	-
2013	₹60.936	Depreciate
2014	₹63.469	Depreciate
2015	₹66.768	Depreciate
2016	₹69.956	Depreciate
2017	₹67.809	Appreciate

Calculation of Real Appreciation/Depreciation of Indian Rupee

1 USD = 60.936 INR on 2013 (Base Rate)

1USD = 65.04 INR on 19th March 2018 (Current Rate)

$$\text{Percentage change} = \frac{\text{Base Rate-Current Rate}}{\text{Base Rate}} * 100$$

$$= \frac{60.936 - 65.04}{60.936} * 100 = -6.735\%,$$

The INR is depreciated by 6.735% as on today (19th March 2018) is compared to the average yearly exchange rate of 2013.

Did interest rate parity hold during this period?

If the spot exchange rate on 19th March 2013 between USD/INR is INR 54.38/$, 5 years forward rate on 19th March 2018 available at INR 65.04/$.The interest rate in India 7.28% and interest rate in the US is 0.40% (average of interest rates of past five years) Interest rate differentials between India and US is (7.28%-0.40%) = 6.88% .Forward rate differentials between US spot and the forward market is ((65.04 – 54.38)/54.38 *100)= 19.60%

Interest Rate deferential 6.88%< Forward Rate deferential 19.60%, the interest rate parity does not hold good because the opportunity of generating arbitrage profit does not exist in India. It's interest rate differentials is lower than forwarding rate differentials which leads to the existence of uncovered interest rate parity.

The expectation deviates from actual changes in the exchange rate in a below direction.

II CONCLUSION

For the year 2017, Real GDP increased to 2.3% compared with 1.5% in 2016. The increase in Real GDP in 2017 reflected an increase in consumer spending, business investment, export, housing investment and government spending. There contribution were partly offset by an increase in inflation, decline in inventory investment & increase in imports. By keeping in view the future economic development, we will recommend to expand the business to United States.

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BIOGRAPHY

Mr. Gaurav Soin is a professor of Accounting & Finance at Vindhya Institute of Technology & Science, Satna, Madhya Pradesh, India. He graduated from Devi Ahilya Vishwavidyalaya Indore, with bachelor degree in commerce in 2012. After graduation he completed his Master degree in commerce from Awadhesh Pratap Singh University, Rewa.