

We estimate India's GDP growth for Q3 FY23 at 4.6%. This is based on an in-house SBI Artificial Neural Network (ANN) model. An Artificial neural network model is a computational network model that has artificial neural networks like biological neurons that are linked to each other in various layers of the networks. These neurons are known as nodes. SBI ANN model is developed with 30 high frequency indicators. **ANN has been trained for the quarterly GDP data from 2011Q4 to 2020Q4. The in-sample forecast performance of the model in the training period has been precise. Out of Sample Forecast Performance, of the last two quarters has also been precise. On the basis of the ANN model, we forecast that the quarterly GDP growth for the Q3 FY23 would be at 4.6%.**

Additionally, corporate results, ex BFSI, for Q3FY23 shows degrowth in EBIDTA by 9% yoy as against 18% EBIDTA growth in Q3 FY23, though the top line continued to grow at a healthier pace. Net sales grew by 15% in Q3 FY23 while bottom line down by around 16%. **Further, corporate margin seems to be under pressure, as reflected in results of around 3000 listed entities ex-BFSI, on account of higher input costs with decreasing EBIDTA margin, on aggregate basis, from 15.3% in Q3 FY22 to 11.9% in Q3 FY23. These could pull down the manufacturing growth in Q3 FY23.**

Meanwhile, the wide gap between the job vacancy rate (currently at 6.7%) and unemployment rate (currently at 3.4%) in the US currently indicates a strong labour market (also vindicated by significantly high quit rates). This is perplexing as ideally, the US labour market should have been showing signs of weakness by now.

Additionally, the geo-political uncertainty continues to rattle the global economic landscape. With the Russian aggression into Ukraine completing a year this week, we witness a domino effect coming in full force as tensions of formidable momentum, with meaty consequences for growth and prosperity for majority of world, take centre stage. Other than the lingering long war in Europe that dealt a heavy blow to food/energy/commodity security (with its pass-through effect yet to dwindle materially despite prices easing from their stratospheric highs seen in mid-22), there are fresh points of conflict erupting primarily in Korean Peninsula and Middle East. While the nuclear and missile capacity of North Korea has been a constant threat to the regional security of South Korea and Japan, the recent acts have precariously dented the half-hearted efforts to denuclearize the zone as per 1991 pledge.

While the US, with a sizeable presence in the Pacific through its bases from Okinawa to Yongsan is mulling over the changing dynamics, with a keen eye on developments in Taiwan Strait, shifting sands in the war-prone and mercurial Middle East are proving the Achilles heel, with the bonhomie between natural/strategic allies Iran and Syria posing new challenges to the majority nations of the Arabian Desert. Add the influence exerted by bigger powers like China and Turkey (eager to play a larger role in world affairs), the supply of arms and ammunitions could / might take/be taking precedence over supply of food or energy. This could also catapult the tensions brewing between US and China to new dimensions, its impact on trade and access to resources greatly directing the economic trajectory of many economies, with growth becoming a clear loser!

We anticipate the multiple aggressions in these 'points of conflict' zones should keep the world powers at tenterhooks, allocating more resources to build capacity lest they suffer on many fronts going forward in these days of frenzied cacophony and above all, repricing of risk by financial institutions amidst such tumultuous times which could significantly alter the terms of trade through the year 2023.

SBI Q3 GDP forecast at 4.6% is higher than the RBI estimates at 4.4%. Interestingly, SBI FY23 GDP forecast could see an upward revision from the current 6.8% towards 7.0%, as we anticipate revisions in GDP data for FY20, FY21 and FY22 that is going to be released on February 28, 2023. Additionally, there will be revisions in quarterly numbers of FY20, FY21, FY22 and even FY23 (Q1 & Q2).

GDP GROWTH & OUTLOOK: Q3 FY23

- ◆ In its January 2023 update of the WEO, the IMF revised global growth for 2023 upwards by 20 bps to 2.9% vis-a-vis its October projection. The revision takes into account positive surprises such as a stronger boost from pent-up demand, faster fall in inflation and the likely easing of financial conditions. Notably, a global recession is no longer the baseline assessment. Global inflation may ease grudgingly (from 8.8% in 2022 to 6.6% in 2023) of supply chains boost demand.
- ◆ In India, domestic consumption and investment stand to benefit from stronger prospects for agricultural and allied activities, strengthening business and consumer confidence, and strong credit growth. Supply responses and cost conditions are poised to improve even though inflation witnessed a rebound in January. The Union Budget 2023-24’s emphasis on capital expenditure is expected to crowd-in private investment, strengthen job creation and demand, and raise India’s potential growth.
- ◆ RBI has estimated Q3FY23 Real GDP growth would be 4.4% and full year FY23 estimated by NSO is 7.0%, . For 2023-24, RBI is projecting at 6.4% with Q1 at 7.8%; Q2 at 6.2%; Q3 at 6.0%; and Q4 at 5.8%.
- ◆ **GDP Growth as per SBI composite leading indicator (CLI):** The CLI Index (a basket of 41 leading indicators which includes parameters from almost all the sectors) based on monthly data shows declining economic activity after June 2022 to December 2022. The decline in economic activity in Q3 FY23 indicate GDP may grow in the range of 4.5-4.7%.

SBI ANN MODEL

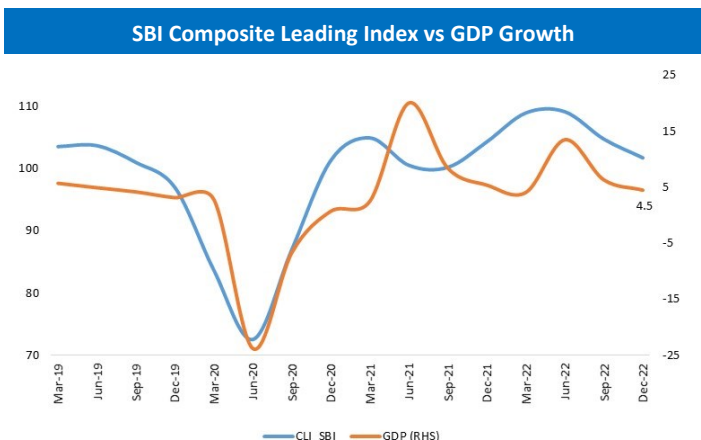
- ◆ SBI Artificial Neural Network (ANN) model which reflect the behavior of human brain, allows computer programs to recognize patterns and solve problem with machine learning.
- ◆ An Artificial neural network is a computational network based on biological neural networks that construct the structure of the human brain. Similar to a human brain has neurons interconnected to each other, artificial neural networks also have neurons that are linked to each other in various layers of the networks. These neurons are known as nodes.

| FY23 Real GDP Projections | | |
|---------------------------|------------------|-------------|
| | SBI | RBI/NSO |
| Q3 P | 4.6% | 4.4% |
| Q4 P | 4.0%-4.6% | 4.8% |
| Annual P | 6.8%-7.0% | 7.0% |

Source: RBI; SBI Research

| Mapping of Leading Indicators with GDP Growth | | | |
|---|---------|--------------------------------------|----------------|
| Year | Quarter | % of indicators showing acceleration | GDP Growth (%) |
| FY18 | Q1 FY18 | 59 | 6.1 |
| | Q2 FY18 | 70 | 5.3 |
| | Q3 FY18 | 71 | 6.7 |
| | Q4 FY18 | 80 | 8.9 |
| FY19 | Q1 FY19 | 73 | 7.5 |
| | Q2 FY19 | 73 | 6.5 |
| | Q3 FY19 | 63 | 6.2 |
| | Q4 FY19 | 48 | 5.7 |
| FY20 | Q1 FY20 | 41 | 4.9 |
| | Q2 FY20 | 35 | 4.2 |
| | Q3 FY20 | 34 | 3.2 |
| | Q4 FY20 | 39 | 2.8 |
| FY21 | Q1 FY21 | 19 | -23.8 |
| | Q2 FY21 | 29 | -6.6 |
| | Q3 FY21 | 50 | 0.7 |
| | Q4 FY21 | 59 | 2.5 |
| FY22 | Q1 FY22 | 75 | 20.1 |
| | Q2 FY22 | 70 | 8.4 |
| | Q3 FY22 | 61 | 5.4 |
| | Q4 FY22 | 61 | 4.1 |
| FY23 | Q1 FY23 | 88 | 13.5 |
| | Q2 FY23 | 76 | 6.3 |
| | Q3 FY23 | 69 | |

Source: SBI Research



Source: SBI Research

- ANN comprises of Node layers containing of An Input layer, hidden layers, and an output layer. Each individual node is composed of input data, weights, a bias (threshold) and an output. ANNs rely on training data to learn and improve their accuracy over time.
- Once input layer is determined and weights are assigned, all inputs are multiplied with their respective weights and then summed , afterward the output is passed through an activation function , which determines the output. If that output exceeds a given threshold, it activates the node passing data to the next layer in the network, thereby making output of one node becoming the input of next node.

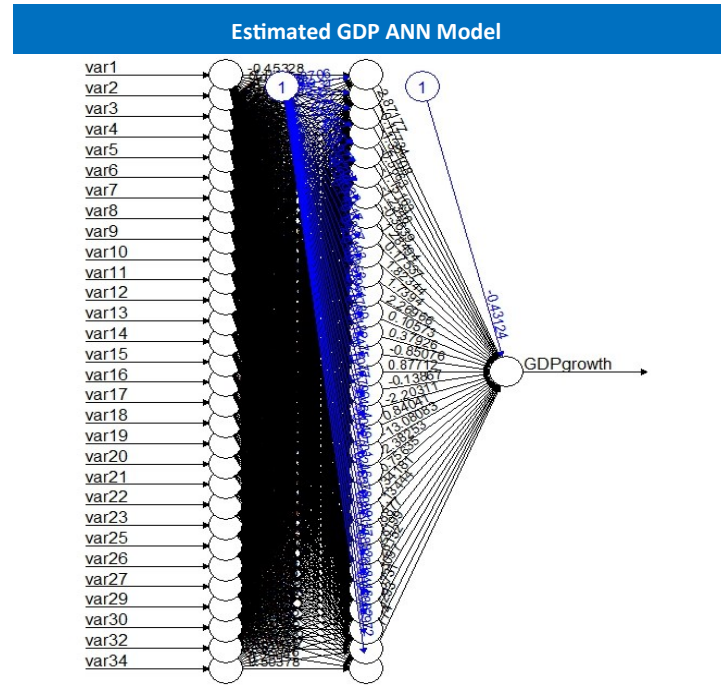
$$\sum_{i=1}^n w_i x_i + bias = w_1 x_1 + w_2 x_2 + w_3 x_3 + bias$$

$$Output = \begin{cases} 1 & \text{if } \sum_{i=1}^n w_i x_i + bias \geq 0 \\ 0 & \text{if } \sum_{i=1}^n w_i x_i + bias < 0 \end{cases}$$

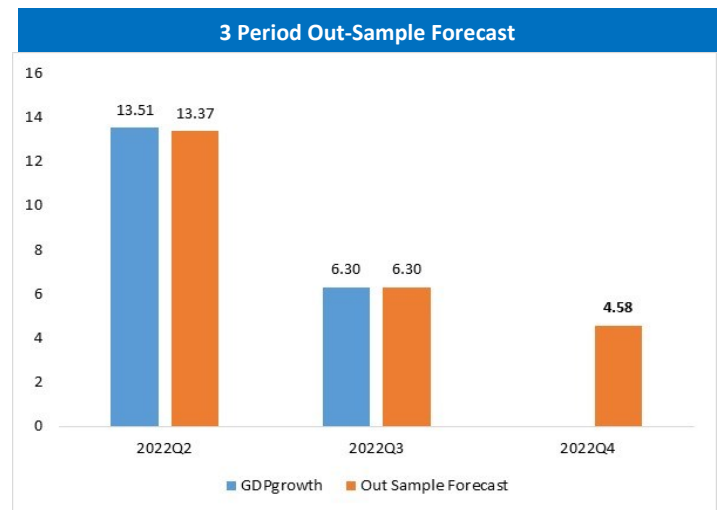
- We have developed a ANN model with 30 high frequency indicators. ANN has been trained for the quarterly GDP data from 2011Q4 to 2020Q4. The in - sample forecast performance of the model in the training period has been precise.
- Out of Sample Forecast Performance, of the last two quarters has also been precise. On the basis of the ANN model, we forecast that the quarterly GDP growth for the Q3FY23 would be at 4.6%.

CORPORATE RESULTS—Q3FY23

- Corporate results, ex BFSI, for Q3FY23 shows degrowth in EBIDTA by 9% yoy as against 18% EBIDTA growth in Q3FY22, though the top line continued to grow at a healthier pace. Net sales grew by 15% in Q3FY23 while bottom line down by around 16%.
- Further, corporate margin seems to be under pressure, as reflected in results of around 3000 listed entities ex BFSI, on account of higher input costs with decreasing EBIDTA margin, on aggregate basis, from 15.25% in Q3 FY22 to 11.95% in Q3 FY23.



Source: SBI Research



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| Corporate Results Key Parameters | | | | | | | | |
|----------------------------------|-------------|--------|--------|-----------------|----------------|--------|-------|--|
| Qtr. | Rs in crore | | | EBIDTA Margin % | Growth % (YoY) | | | |
| | Net Sales | EBIDTA | PAT | | Net Sales | EBIDTA | PAT | |
| Q3FY20 | 1382408 | 173730 | 80250 | 12.57% | | | | |
| Q4FY20 | 1321402 | 66091 | 15988 | 5.00% | | | | |
| Q1FY21 | 847287 | 88668 | 971 | 10.46% | | | | |
| Q2FY21 | 1184166 | 199323 | 112157 | 16.83% | | | | |
| Q3FY21 | 1374044 | 234382 | 126936 | 17.06% | -1 | 35 | 58 | |
| Q4FY21 | 1572680 | 256828 | 162508 | 16.33% | 19 | 289 | 916 | |
| Q1FY22 | 1399820 | 247137 | 127880 | 17.65% | 65 | 179 | 13063 | |
| Q2FY22 | 1632594 | 269390 | 175014 | 16.50% | 38 | 35 | 56 | |
| Q3FY22 | 1808870 | 275784 | 162656 | 15.25% | 32 | 18 | 28 | |
| Q4FY22 | 1974550 | 275590 | 187507 | 13.96% | 26 | 7 | 15 | |
| Q1FY23 | 2112567 | 264254 | 141429 | 12.51% | 51 | 7 | 11 | |
| Q2FY23 | 2156660 | 235292 | 137116 | 10.91% | 28 | -14 | -23 | |
| Q3FY23 | 2152011 | 257099 | 139738 | 11.95% | 15 | -9 | -16 | |

Source: SBI Research; Cline; around 3000 listed entities ex BFSI

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