DISCLAIMER

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1. Scope of Work

Quantta was given a project to predict the GVA of India every month before the official announcements are made. Every month Quantta predicts the YOY and QOQ GVA.

We identified 100 such leading indicators which were reduced to 24 which actually showed high confidence in predicting the GVA.

2. Our Methodology

A. DATA COLLECTION PROCESS

For predicting the GDP of India every month, Quantta has been collecting sectoral data since October 2012. Data for the following sectors along with their sources are cited below:

- Eight core Industries (Production of Coal in Million Tonnes, Production of Crude Oil in Thousand Tonnes, Production of Natural Gas in Million cubic meters, Production of Petroleum Refinery Products in Thousand Tonnes, Production of Fertilizers in Thousand Tonnes, Production of Steel in Thousand Tonnes, Production of Cement in Thousand Tonnes) data is being collected from https://eaindustry.nic.in/.
- Automobile Sector (Sales of Commercial vehicle and sales of two wheeler) is being collected from FADA India. In absence of data being present in FADA, or delay in data published, the same is collected from Business newspaper articles(such as Economic Times, MoneyControl, etc). For validation, we check % growth/degrowth, of old trailing month articles.
- Energy Sector (Energy requirement and Supply, Energy Peak demand and Peak Supply) is collected from Central Electricity Authority ; https://cea.nic.in/.
- Aviation Sector (Passenger traffic and Airways Freight) is collected from Airport Authority of India; https://www.aai.aero/. In aviation sector, we take domestic+international total for both the variables.
- Railway Sector (Railway Earnings and railway Freight) is collected from Ministry of railway Board ; https://indianrailways.gov.in/railwayboard/.
- Foreign Trade (Export, Import and service in trade) is collected from data published on foreign trade by Ministry of Commerce and Industry.

- NSE Turnover & Market Cap : Is collected from NSE website : https://www1.nseindia.com/products/content/equities/equities/historical_equity_businessgrowth.htm

  Collecting data from official government websites, helps us more accurately predict the GVA very month.

B. GDP PREDICTING PROCESS:

Since we are studying L.I. and its impact on GVA, we de-trend the series and obtain the cyclical component of the 20 selected lead indicators using the Hodrick–Prescott (H.P.) filter. A business cycle describes changes in economic growth as measured by GVA. Each data series of the all L.I. is converted into logarithm form. We take the Standard Deviation (SD) of the cyclical component. The log form of the data series is divided by the SD. Average the standardized series across all components for each quarter to obtain the Quantta Index. Forecast the trend of L.I. based on the past values. Overlay trend and impact of GST/demonetization on Quantta Index and calculate Quantta Score y-o-y growth in Quantta score is predicted y-o-y growth in GVA.

Block Granger Test

A time series of L.I. is said to Granger Cause GVA if the lagged values of L.I. provide significant information about future values of GVA. Obtain Probability (p) values for each of the sub indicators. It is used to weigh the strength of the Indicators on GVA. The p-value is a number between 0 and 1. A small p-value (typically ≤ 0.1) indicates strong evidence of L.I. impact on GVA. A large p-value (> 0.3) indicates weak evidence/ impact of L.I. on GVA. A marginal p-value (0.1- 0.3) indicates medium impact of L.I. on GVA. P values is calculated for each time period. Lowest p value shows highest correlation between L.I. and GVA.

Products and Services are used in the process of value addition in the Indian Economy. Depending on the nature of the sector, different sectors contribute to the process of creating the product or output.

In order to measure the impact of a sector on the economy, we considered time lag, measured as T Minus from the period under study. For example, fertilizer is a sector that indicates the sentiment of the farmer to grow crops. The consumption of fertilizers show a narrow time lag between consumption and its impact on the economy making it a lead indicator about the state of the economy. The domestic passenger traffic on the other hand shows a significant lag indicating that people postpone travel when uncertainty increases and increase their travel when they have a positive outlook on the historic performance of their business and the economy. These signals are vital to understand the underlying trends in the economy.

3. Y-O-Y GROWTH ACTUAL VERSUS PREDICTED

Quantta has been able to closely mirror the actual outcome. We have been stress testing over 32 quarters. Some of the deviations have been because of the structural changes such as effect of Demonitization/ VAT etc.

Quarters	Predicted Growth in GVA	Actual Growth in GVA
Q1_FY15	8.19%	7.75%
Q2_FY15	8.30%	8.45%
Q3_FY15	6.43%	6.14%
Q4_FY15	6.53%	6.39%
Q1_FY16	7.55%	7.70%
Q2_FY16	7.75%	8.36%
Q3_FY16	7.51%	7.33%
Q4_FY16	9.25%	8.72%
Q1_FY17	8.34%	9.32%
Q2_FY17	9.02%	8.29%
Q3_FY17	7.80%	7.53%
Q4_FY17	6.18%	6.83%
Q1_FY18	6.09%	5.48%
Q2_FY18	5.94%	6.11%
Q3_FY18	6.60%	7.07%
Q4_FY18	7.66%	7.63%
Q1_FY19	7.49%	6.95%
Q2_FY19	5.75%	6.06%
Q3_FY19	5.82%	5.62%
Q4_FY19	5.46%	5.55%
Q1_FY20	4.55%	4.76%
Q2_FY20	4.81%	4.33%

Q3_FY20	3.31%	3.47%
Q4_FY20	2.98%	3.04%
Q1_FY21	-22.89%	-22.81%
Q2_FY21	-7.70%	-7.00%
Q3_FY21	0.73%	0.58%
Q4_FY21	6.58%	3.50%
Q1_FY22	45.52%	19.36%
Q2_FY22	27.07%	7.88%
Q3_FY22	15.46%	
Q4_FY22	8.43%	