Improving GDP Measurement

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Gross Domestic Product (GDP) is the most used statistic of macroeconomic performance of a country. Good quality data on GDP is a crucial input for effective policymaking. In 2015 the Central Statistics Office (CSO) revised the way GDP is calculated in India. According to the new series, India is the fastest growing large economy in the world. Other trusted measures of the state of the economy convey a discordant picture. Two important macroeconomic indicators of the health of the economy are private sector investment and exports. From 2012 to 2017, growth in exports and private corporate investment has been stagnant. The GDP data of the old series was in sync with micro datasets on firms. From 2012 onwards firm sales and profit have performed poorly. These discrepancies have raised questions and doubts about the accuracy and veracity of the GDP estimates and dented their credibility.

Following are some of the key problems that may have led to overestimates of growth rates in the new GDP series.

The Problem

1. *Enterprise vs. Establishment approach*: The methodological changes for the manufacturing sector and consequently the data revisions have been substantial. Various authors (Nagaraj, 2015a, 2015b, 2015c; Rajakumar, 2015; Nagaraj and Srinivasan, 2016; Sapre and Sinha, 2016) have questioned the reliability of the new estimates on several grounds. In the new series the GDP of the private corporate sector is estimated using the financial statements of enterprises as a whole as opposed to the earlier method of using industrial output of factory establishments. The enterprise level information is now taken from the Ministry of Corporate Affairs' (MCA21) database. The MCA21 database does not offer clear identifiers of economic activity such as manufacturing, trading or other services to classify enterprises. This has the potential of misclassification of companies which can lead to incorrect sectoral estimates of growth rates.

2. *Blowing-up factor*: The MCA21 database is used to compile a set of 'active' companies, which have filed their annual financial returns at least once in the past three years. The problem is that for any given year, information from several active companies remains unavailable. The estimates of available companies have to be blown-up to account for the missing ones. There are multiple issues in this blowing-up method. The year wise number of available and active companies in manufacturing is not publicly available. Hence, the exact number of companies for which the estimates are blown up every year is not known. A large fraction of the MCA21

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active set are fictitious, shell companies that exist only on paper. In that case or in the case where the unavailable companies perform worse than the average, the blowing-up method is likely to result in an overestimation of growth rates.

3. *Double-deflation*: In the GDP series, the real figures are derived by taking nominal data and deflating them by price indices. If the deflators used are inappropriate, the estimated real magnitudes will be distorted. Nearly every major country of the world (with the exception of China and India) follow a practice of double deflation. In this method, nominal outputs are deflated using an output deflator, while inputs are deflated using a separate input deflator. Then, the real inputs are subtracted from real outputs to derive real value added. In India we follow single deflation wherein first nominal value added is calculated and then it is deflated using a single deflator. The problem is that if input prices diverge from output prices, single deflation can overstate growth by a big margin. In India whenever there is a sharp fall in oil prices for example, nominal GDP growth will be inflated because the commonly used deflator (wholesale price index or WPI) assigns a high weight to oil.

4. *Service sector deflator*: Deflator problems also plague the estimates for the service sector, which accounts for the bulk of GDP. Currently, the CSO uses a combination of WPI and consumer price index (CPI) to deflate the nominal values for this sector. Using WPI as a deflator is erroneous because the weight of services in the WPI basket is negligible. Reliance on WPI to deflate services can overstate GDP growth (Sengupta, 2016a).

   The problems of using WPI to deflate services, as well as of single deflation have existed for a long time even before the new GDP series was released. It is just that the distortions they create have come to the fore with the new GDP series (Sengupta, 2016b). This is because, around the time of release of the series, oil prices fell sharply. This got mirrored in the WPI series which in turn led to significant overestimation of the real GDP growth rates.

5. *State-level GDP estimates*: The revised GDP series brought about new challenges for compiling state level GDP estimates. After the introduction of the MCA21 database, estimates of the organized manufacturing and service sectors are available only at the all-India level. This is because consolidated financial statements of enterprises are not available as per geographical regions, plant locations and products. As a result, state level GDP for the organized manufacturing and service sectors is driven largely by allocation rather than actual estimation done in each state. Relying on an allocation method poses serious measurement issues as the estimates do not entirely reflect ground realities.

The task of the new government would be to recognise these multidimensional problems in the system of GDP measurement and adopt comprehensive measures to produce a credible GDP series for the economy.

Solutions

1. *Statistical audit of the new series*: There is an urgent need to thoroughly re-examine the changes brought about in the new GDP series. A detailed statistical audit of the new series needs to be conducted. For this purpose an independent committee of national and international experts must be constituted, with the mandate and authority to diagnose the problems with the new

series and recommend ways to resolve them. The findings of the committee must be made publicly available for the sake of accountability and transparency. The end objective should be to come up with a statistically sound and credible method of GDP measurement so that the data accurately reflects the conditions in the economy.

In this context, two specific issues must be carefully dealt with, over and above the methodological and data related concerns. First, care must be taken to maintain continuity of the revised series with the old series. In absence of such continuity, historical data on the country's GDP becomes irrelevant as has happened with the new series. Secondly, it is important to figure out ways in which the data sources can be aligned across national and state level GDP estimates.

Till the time the committee submits its recommendations, the new series must be discontinued and the old GDP series, which despite its own limitations was closer to other macroeconomic indicators of the state of the economy, should be reinstated.

2. *MCA21 database*: The shift to the MCA21 database has been at the heart of the debate on measurement issues in the new GDP series. Several issues need to be addressed before continuing with this database for estimating the manufacturing sector GDP.

    (a) Greater clarity and transparency need to be provided about the MCA21 database and about the methodology used to compute the manufacturing sector estimates. The database should be made publicly available. Documents should be released explaining the precise method and parameters used for blowing up the sample estimates for the universe of companies. This is needed so that anyone can verify the estimates.

    (b) Information on the number of active and available companies every year by industry or sector, must be released to provide a sense of the companies contributing to GDP.

    (c) Given the gaps in MCA21 database, one idea could be to utilise only the portion of the database that pertains to companies whose accounts are consistent and reliable.

    (d) Alternatively, the blowing-up factor needs to be revisited. The blowing-up factor needs to take into account the size, industry or ownership of the unavailable companies. Instead of scaling-up the data on the available companies, alternative methods for blowing-up should be explored.

    (e) The classification of companies in the MCA21 database needs to be reviewed to ensure they are categorised appropriately.

3. *Deflation*: There appear to be recurrent problems in estimating the GDP deflator in India. Steps need to be taken to revise the method of deflation and come up with new, appropriate deflators.

    (a) Services constitute the bulk, around two-thirds, of India's economy. Currently there are no good service sector deflators. The CSO uses a combination of the WPI and the CPI for deflating nominal service sector estimates. Using WPI to deflate service sector estimates is problematic because WPI does not capture the service sector. Instead the relevant components of the CPI can be used to deflate the service sector estimates. The change to CPI makes sense in the services sector, because the CPI has extensive information on price movements in the various services subsectors. Down the road, an appropriate service sector price index needs to be developed.

(b) In most countries, nominal values are deflated using the producer price index (PPI). India lacks a PPI, so the CSO uses the WPI instead. This is problematic for reasons mentioned earlier. WPI does not measure the price of services and is heavily weighted towards commodities, especially oil. When oil prices fall, the WPI falls, and this leads to measured deflation in the services sectors (notably finance and trade) even if service costs could actually be rising. As a result, growth in services could be overstated by a large margin. Efforts must be taken to develop a Producer Price Index (PPI) which would be an ideal deflator for nominal GDP estimates. This is in sync with the practices followed in the developed countries.

(c) The method of double deflation needs to be adopted to calculate real growth rates. CSO needs to conduct thorough research (either internally or commission external research) to look into the feasibility of adopting this approach and make the findings of the study publicly available.

Besides the ongoing debate surrounding the new GDP series, there are many longstanding methodological issues that were not addressed in the latest revision. Some of these concerns can be addressed through the following solutions:

1. *Frequency of surveys:* A substantial part of GDP estimates come from quinquennial surveys of the National Sample Survey Organization (NSSO). Key surveys such as the Employment & Unemployment, Unincorporated Non-Agricultural Enterprises, Consumption Expenditure etc are available with a significant time lag. This necessitates undue reliance on other high frequency indicators that convey a partial pciture of the state of the respective sectors. The frequency of these surveys needs to be increased and the time lag between successive rounds needs to be brought down. This will improve the accuracy of the estimates.

2. *Non-alignment of output and price series:* The revision of base year of the GDP series must always be aligned with that of all the price series. Otherwise the use of dated price series to deflate revised GDP estimates will produce incorrect figures.

3. *Capturing the unorganised sector:* A vast portion of the economic activity of the country is concentrated in the unorganised sectors. The information on enterprises and persons engaged in informal and unorganised activities is primarily available from the Economic Census. Given the time lag, the Census results become inadequate for an annual assessment of the state of employment and contribution of the unorganised sector. In most cases, the unorganised sector's contribution is treated as a residual and several approximations on employment and output per worker are done to account for the sector's contribution. Instead, other surveys which are at present infrequently conducted, such as the Directory of Establishments, Own Account Enterprises and updation of Business Registers need to be conducted more frequently and on a regular schedule. This will facilitate the collection of systematic data on different entities operating in the unorganised sector.

4. *Revision metrics:* Actual data on economic activities is not readily available for the computation of GDP estimates for any given year. In order to facilitate policymaking, preparation of annual budgets, and to provide a continuous assessment of the state of the economy to various stakeholders, the CSO computes several intermediate GDP estimates. These intermediate estimates later get revised based on actual data availability. A detailed study of historic revisions in India's

annual GDP data, both at the aggregate and sectoral levels reveals that there have been large and unpredictable revisions in growth rates (Sapre and Sengupta, 2017). This raises concerns over data reliability. CSO needs to figure out ways to contain the magnitude of revisions. In keeping with international best practices, CSO must undertake a systematic analysis of the historic revisions using quality assessment metrics and make the findings of such analyses publicly available for the benefit of all data-users.

5. *Data standards*: Statistical agencies in all developed countries have adopted a Code of Practice (CoP). This CoP subjects the official statistics to standards of data quality, and periodic reviews of methodology, and mandates a consistent policy on updating data sources and methods. In India, the National Policy on Official Statistics makes a beginning in this direction but does not include a code of practice for statistical agencies at the national and state levels. Taking lessons from the international experiences, a CoP suitable to the Indian landscape needs to be put in place. All statistical agencies, both at the national and at the state levels must be made to adhere to this CoP.

6. *Engagement with stakeholders*: A consistent communication policy to regularly engage with data users is of crucial importance. The release of the new GDP series, and the ensuing controversy has eroded the credibility of the CSO. One way to re-establish the credibility of the institution and of the GDP estimates is to keep the data users informed about the changes in data sources and estimation methods in a timely manner. This calls for greater transparency on part of the CSO. Another aspect of the engagement is to provide research support to academic experts to encourage research on measurement issues in national accounts statistics.

7. *Exploring new data alternatives*: GDP estimation relies primarily on data generated through administrative processes and sample surveys. With rapid changes in the nature and volume of economic activities, traditional sources of collecting data will eventually fall short of the requirement. New systems like the Goods & Services Identification Network (GSTIN) and digital transaction records that generate detailed product or service level information on three key items, value, volume and prices, need to be explored. Data from these systems can be used to produce reliable price indices and consumer expenditure estimates. The latter can feed into the expenditure approach of measuring GDP.

Readings

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