Proposed city GDP measurement framework: some suggestions

Kiran Limaye[1]

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Abstract: Smart Cities Mission, Ministry of Housing and Urban Affairs, Government of India has put forward a draft framework for the city GDP estimation. This brief provides some suggestions to be incorporated in the framework of city GDP estimation. The suggestions aim to improve nuance and accuracy of proposed 'labor input' based estimation of city GDP.

Introduction

The consultation paper put forward by Smart Cities Mission, Ministry of Housing and Urban Affairs (henceforth, consultation paper) has proposed 'labor input' based methodology to estimate the city GDP. This method takes Gross Value Added (GVA) in the state as a starting point. In this, to arrive at GVA per labour unit the state GVA is divided by total workers, which itself is an estimation based on National Sample Survey (NSS) and population census information. NSS employment and unemployment survey provides distribution of workers in different components (as per the National Industrial Classification (NIC)) which corresponds to components in sectors of GDP. In other words, using population census, NSS estimates and their extrapolation to subsequent years the consultation paper proposes to estimate city-specific and economic sector-specific worker estimates. Multiplying these estimated workers in every sector with per worker GVA of that sector can generate city GDP estimate. This proposed methodology seems to be the best choice given the constraints of information availability. The current policy brief is an attempt to improve the nuance and accuracy of the proposed framework through two specific suggestions.

Differentiating city domestic product and city resident product

In national income accounting, GDP is the total value added within the geographical boundary of a country for which the GDP is calculated. GNP is the total value added by the 'nationals' of the country for which GNP is calculated. GNP is comparable to Gross National Income (GNI) which is becoming a reporting standard in International organizations like World Bank for global comparisons.

There are parallels of these two aggregates at city level as well. Let City Gross Domestic Product (CGDP) be the total value added in the city boundary. Let City Gross Resident Product (CGRP) be the total value added by the residents of the city. CGDP reflects the buoyancy of the underlying economy while CGRP will reflect the purchasing power of the residents. Both measures have potential usefulness for policymakers.

The differentiation between CGDP and CGRP arises because for large number of urban workers their place (city) of work, where economic production take place, is likely to be

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[1] Assistant Professor at Sarla Anil Modi school of Economics, Narsee Monjee Institute of Management Studies, Mumbai and PhD student at Indira Gandhi Institute of Development Research, Mumbai, Email: kiran.limaye@nmims.edu.

different than their place (city) of residence. Some part of metropolitan regions will have less of economic activity (CGDP), yet large concentration of purchasing power (CGRP) while other parts of metropolitan region will have large economic activity (CGDP) but not much concentration of purchasing power (CGRP).

If GVA is estimated at metropolitan region level, then CGDP and CGRP are likely to be not very dissimilar. But such aggregation will hide the distribution of GVA within parts of metropolitan region, which will have implication for policies and hence it will be useful if it can be captured.

It is important that both CGDP and CGRP are to be estimated. As the consultation paper has pointed out, city GDP data is useful for the policymakers and private sector decision making. CGRP, reflecting purchasing power of the residents of the city, is likely to be the indicator appropriate for the policymaker. For private sector decision makers CGDP is likely to serve as an indicator of productivity.

It is possible to estimate CGDP by using the information from Economic Census. Economic Census reports the employment generated. The 6th Economic Census, conducted in 2013, has information at ward level for town and village for any district in India.[2] It also provides NIC classification of enterprises which will allow us to estimate GVA for every sector of city GDP as proposed in the consultation paper.

Accounting for different price levels across the cities

The second suggestion is to account for price level difference that exist across the cities in the same state. This difference is akin to 'purchasing power parity' difference across the countries. Generally, cities which are at the core of the metropolitan region are likely to have higher price level than cities which are peripheral to the metropolitan regions or not part of the metropolitan regions. If no adjustment for prices is made, then estimated CGRP at state-wide price level will overstate the purchasing power of cities at the core of metropolitan regions and understate the same for other cities.

Accounting for purchasing power differences arising out of varying expensiveness of cities will reduce the margin of error for policymakers and private investors. For example, forecast of the demand for public transport in peripheral parts of metropolitan region (which are likely to have lower income levels than central parts for most of the metropolitan regions in India) using city GDP information, which has not accounted for price level differences, will lead to overestimation (since demand for public transport is demand for inferior good) and can have serious financial consequences.

For example, in Mumbai Metropolitan Region (MMR), a common consumption basket of an average household will require higher expenditure in central part compared peripheral parts. CGRP for every town in MMR using average price for MMR will lead to overestimation of purchasing power in central parts and underestimation in peripheral parts. Private investment targeting discretionary consumer expenditure on life-style products (malls, modern gyms, eateries with global cuisines) targeting consumers from central parts using city CGRP information are then likely to overestimate the demand and revenue and might face serious solvency problems.

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[2] In 6th Economic census, central, state and local government offices, courts, tax offices, offices of Ministry of Defense, ESIC, EPFO etc. are not part of the census. Illegal economic activities are also not enumerated.

Consumers in central areas will be charged higher for utilities like electricity while consumers in peripheral areas will be charged lower if their purchasing power is assessed with CGRP without considering price variation across the locations. Such pricing is likely to lead to welfare loss.
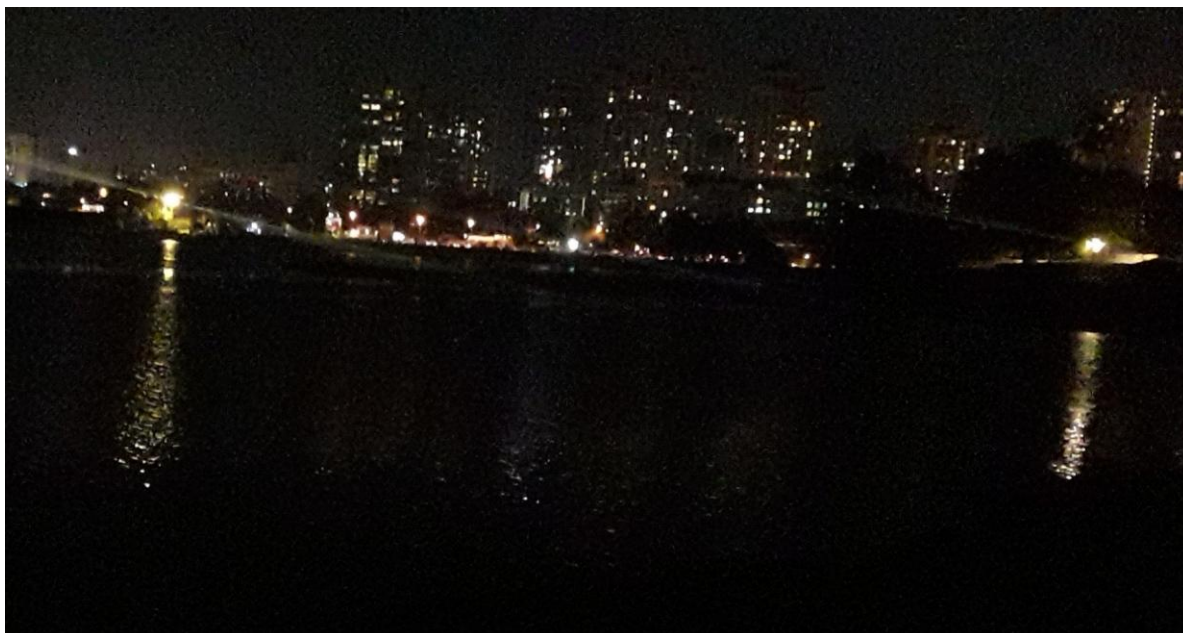
A Mumbai Evening across Powai

One innovative way to approximate the varying price levels across the cities is to use the average prices of 'standard food items' like a plate of 'steamed rice' using information from food delivery apps. This is same in spirit with the 'Big Mac Index' published by 'The Economist' using prices of burger sold by McDonald. Ideally, value of standard basket of goods and services across the cities should be used to capture the differing expensiveness of cities. But information on prices at city level is difficult to obtain for many commodities and services. Considering the prevalence of food delivery apps, information on food items is available for all the towns where food delivery apps functions.

To compare the price level variation across the cities, we will need a commodity whose attributes are unchanging across the different cities. In 'Big Mac Index', the Big Mac hamburger is a commodity sold with almost similar specifications across the McDonald stores in the world. In Big Mac indies, the ratio of prices of Big Mac in two countries is compared to currency exchange rate.

For Indian cities, only ratio of prices of underlying commodity will be required. As incomes of countries are expressed in US dollars, income of Indian cities can then be expressed in city/state/Indian urban rupees. For example, suppose per capita CGRP in Pune is ₹ 150000 and in Mumbai is ₹ 165000. The price of 'standard food items' is ₹ 80 in Pune (average across locations in Pune) and ₹ 88 in Mumbai (average across locations in Mumbai). It follows that the purchasing power of a rupee in Pune is 1.1 times of a rupee in Mumbai. So, in Mumbai rupees, both cities have per capita CGRP of 165000 or in Pune rupees both cities have per capita CGRP of 150000. Taking average of prices of standard food items in all the cities in the state/India, CGRP can be expressed in state/Indian urban rupees as well.

Only very simply food items can be assumed to unchanging attributes across the cities in a given state. Standard food items can vary across the state but should be same for all cities of

given state. For example, across the cities in Maharashtra, restaurants serve 'roti' or 'steamed rice' which are of similar specifications. But in a city in a southern state like Kerala 'roti' or 'steamed rice' might be available at very few eateries and hence can have very high prices. In that case, a different standard food item should be considered.

Standard food item-based price comparison will require further fine-tuning as food items are but a fraction of urban consumption basket. But given data paucity, it can be a starting point.

Conclusion

In the computation of proposed city GDP in India by Smart Cities Mission, this policy brief has provided two suggestion. One is to improve the nuance by differentiating the CGDP and the CGRP. The second is to improve its accuracy by accounting for price level differences across the cities by using a standard food item as a starting point.

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