

**COMMENTS ON THE PAPER**  
**“China’s Measure in Real Term for Education”**

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**General comments:**

The national accounts of China are currently with base year 2005 and are rebased every five years. Therefore, constant price series of national accounts is at fixed base year. NBS estimates output and value added (VA) of services at current prices using production/income approaches. Constant price estimates are through single deflation. While this is the general procedure followed in several developing countries, some of them also use volume indicators to extrapolate the base year estimates to measure real output and VA of services.

NBS uses the 2005 Economic Census as the major data source for exhaustive measurement of output and GDP and also as benchmark estimates. For other years, benchmark estimates are extrapolated (or using a coefficient for total coverage) with data coming from a part of the total economy (such as budget documents, household expenditure surveys, data on employment, administrative statistics, accounts of corporations). This is an indirect method of estimation, which assumes the coefficients coming from Economic Census are constant in other years. There is also a possibility of emerging services and improvements in quality of services not being adequately covered in the estimates of output and VA, due to this procedure.

While measuring value added at current prices for non-market services, estimate of depreciation is added to the compensation of employees and taxes on production net of production subsidies. This data is not available in the government documents, as no allowance is made in budgets for the depreciation of fixed assets. NBS uses a ratio of 4% (assuming life of fixed assets with non-market producers as 25 years) of the value of fixed assets acquired during the year and the previous year’s depreciation, minus depreciation on written off assets. The procedure is different from the way most countries compile these estimates, which are based on perpetual inventory method and capital stock. The EC data on capital assets is based on book value or historical costs, and are not revalued to current prices, which may result in underestimation of GDP, if the inflation is high.

The deflators used for constant price estimates for compensation of employees are the consumer price indices for the particular activity, rather than the wage indices, which are more appropriate for non-market services. However, it is possible that the CPIs are used as wage indices by the government for salary hikes, as is the case for India for government employees. The procedure for deflating the depreciation estimates appears to be in order.

To sum up, improvements could be made by using labour input methods (provided annual employment data is available by industry) for the unincorporated and self-employed enterprises, for estimating the output and value added for market services.

For the non-market services, deflators used for compensation of employees could be based on wage index, if such an index is available, or the latest OECD recommendations on measuring non-market services. For the depreciation, future initiatives could be measuring Capital Stock based on PIM, and using estimated life for different assets.

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<sup>1</sup> Views expressed are the personal views of author

## Introduction

China rebases its national accounts every 5 years, and the general procedure for estimating output of services at constant prices is to apply price deflators on current price estimates. No volume extrapolators or outputs or outcomes are used to measure the real output of non-market education services. The procedure is same in India, but the difference is India tried volume indicators such as number of teachers, etc. but the same has been discontinued because it does not take into account productivity or quality improvements. India segments education services into (i) public sector, (ii) private organised sector and (iii) private unorganised sector, for measuring the output and value added. This procedure ensures application of proxy indicators on which current information is available, for the private unorganised sector. Yet another difference is the way depreciation is estimated for non-market producers.

## Coverage

Coverage is in line with ISIC Rev 4

## Current measuring method

Full coverage is ensured in the benchmark year using the EC results. For other years, estimates of output and value added for a segment of total enterprises/ establishments (on which reliable data is available annually) are blown up with the ratios in the benchmark year based on total output to the segment's output. This can also indirectly be stated that the benchmark estimates are extrapolated with the annual growth observed in the output of a segment of economy on which reliable annual data is available.

There are two observations on this - first, the coefficients become outdated and unreliable if the benchmark estimates are not updated at least once in 5 years and also when they are far away from the current year. Second, the coefficients do not take into account current performance of those segments of the economic activity, for which estimates are based on ratios. Further, if the contribution of output of these segments is significantly high in the total output, then the overall estimates for the activity could be unreliable.

## Source Data

Basic source for the annual estimates is the government budget documents. No current data is available on non-government sectors. Perhaps, if annual employment data is available, estimates of output and VA could be based on labour input method for the non-government part of the economy.

## Gross Output

The gross output is estimated by the production approach, but the value added is stated to be estimated by the income approach. In practice, apparently the same set of data is used for both the production and income approaches. The production approach GVA is divided into different components of value added.

The formula given for estimating the gross output needs to be re-written although the intention is clear.

### **Value-added at current price**

The income approach is followed for estimating the value-added of education service. The data on total compensation of employees in the current year available from the budget documents is blown up using the corresponding ratios in the EC year for complete coverage and to this, income in kind is added. For net taxes on production, the EC year's ratio of net taxes on production to total output in EC year, is applied on the current year's gross output.

This procedure assumes fixed tax rates in the entire series of national accounts, which in practice may be different. In India, the current year's taxes and production and production subsidies are allocated to different activities on the basis of capital stock data, in the absence of industry-wise distribution of current year's production taxes and subsidies.

Regarding depreciation, procedure could be improved by preparing capital stock data through the PIM, as and when sufficient number of years' capital formation data becomes available.

Similarly, operating surplus estimate (could be insignificant as education is mostly non-market) is based on the ratios built up in the EC year, therefore, there is no input data from the current performance. Alternatively, an effort could be made to estimate the operating surplus from a sample of annual accounts of market producers.

### **GO and VA at constant price**

The procedure is to adopt single deflation on both output and value added at current prices. The deflator used is the education price index in the CPI. For non-market production, the ideal deflator is the wage index, or using volume indicators based on outcomes.

### **Existing issues and improvement consideration**

The NBS feels that due to EC, under-coverage problem has been overcome as far as current price estimates are concerned. However, one needs to see whether the ratios built up through the EC for full coverage account for a sizable part of output, and whether they are constant over the years, particularly when government's role is reducing in comparison to the private sector's role in education, or due to the emergence of new educational services.

The gap between current data and indirect estimation being presently estimated through ratios, could be reduced by looking into alternative data sets which are available annually, such as employment in education. The procedures for estimating depreciation could also be improved by building up capital stock data. There is also no current data for estimating output of market producers in education. For the constant price estimates, NBS uses education price index in the CPI. However, NBS proposes to use separate deflators for market and non-market producers, by segregating output and VA between these two.

The NBS approach to estimate market producers' output and VA through sample surveys and deriving the output and VA of non-market producers as residual is a welcome step. However, it is always preferable to make independent estimates for both producers separately and the total arrived at as sum of these two. Apparently, NBS has least problems in estimating output for non-market producers at current prices. The proposed improvements of NBS to use price deflators for market production and volume indicators such as student-numbers weighted by average costs of levels of education, for constant price estimates are steps in right direction.