Assessment of gross urban product in Russian cities and its contribution to Russian GDP in 2000–2015 ☆

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Abstract

The article presents a new methodology for estimating gross urban product (the gross domestic product by city or metropolitan level) in Russia under extremely low statistical data availability about economy performance at the local level. These estimates provide new analytical instruments for assessing disparities in economic development between more than 1,000 Russian cities and other areas, and cities' contributions to GDP as well as for comparing indicators of Russian cities with those of foreign countries.
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1. A methodology for measuring gross urban product

Contemporary economic growth is based on innovation, science, and developing new areas of economic activity, which are concentrated primarily in cities. Russia is facing an important challenge for developing methodological tools to measure the gross domestic product by city or metropolitan level and adapting them to the national statistical system.

Gross domestic product (GDP) is the sum of the market value of goods and services produced in an economy, such as a metropolitan area, country, or the world. GDP of national economies is measured by constructing a system of national ac-

counts[1] that consist of detailed information about such indicators as production, consumption, savings, and investments. GDP is usually estimated by comparing any economic performance indicator at regional (state), city, or metropolitan level (such as incomes or value added by industries) with an analogous indicator by national level. For example, the U.S. Bureau of Economic Analysis annually produces GDP by state and metropolitan area[2] statistics using Local Area Personal Income (LAPI) data. Because earnings (wage and salary disbursements, supplements to wages and salaries, and proprietors' income) usually represent over 60% of GDP by industry in the U.S., they are considered as reasonable indicators of relative levels of economic activity for most industries across geographic areas.[3]

Although several publications have attempted to measure GDP by city or metropolitan level (hereinafter, gross urban product, or GUP) in order to tackle this challenge with respect to Russian cities (see, e.g., Chekavinsky and Gutnikova, 2012; Kolechkov, 2014; Krinichansky, 2013), Russia is still at the initial stage of developing valid measurement tools from both methodological and methodical points of view. Foreign research on GUP measurement is more extensive (see, e.g., Dobbs et al., 2011; Zhang, 2011; Cadena et al., 2012; Dobbs and Remes, 2012; Parilla et al., 2014; Litynski, 2016). Because the Russian state statistical framework lacks a system to account for the gross value added of companies, sectors of the economy, and other components essential for measuring the gross product of the urban economy, a measurement methodology must be proposed based on available municipal statistics.[4] To ensure an acceptable level of comparability between the GUP of Russian cities and the country's GDP, we need to select a GDP measurement approach used in the System of National Accounts (SNA) methodology that would be most effectively applied to Russian municipal statistics, from the following:

- production approach (based on aggregate value added across all industries [gross output less intermediate consumption] and net taxes on products);
- expenditure approach (based on consumption, savings and investments, government spending, and net export);
- income approach (based on employee compensation, gross corporate profits, gross mixed income, and taxes less subsidies on production and import).

We now consider the usability of these approaches in measuring GUP. It should be noted that we are not dealing with a direct GUP calculation by building a system of accounts (akin to the national accounts) for urban economies, but rather with a methodology for measuring GUP based on aggregated components, similar to the GDP.

The first approach requires compiling a production account to calculate the gross value added generated by each sector of the economy as the difference

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[1] The System of National Accounts (SNA) is the internationally agreed-upon standard set of recommendations on how to compile measures of economic activity. The SNA describes a coherent, consistent, and integrated set of macroeconomic accounts in the context of a set of internationally agreed-upon concepts, definitions, classifications, and accounting rules. Source: https://unstats.un.org/unsd/nationalaccount/sna.asp

[2] A metropolitan statistical area is a standardized county-based area having at least one urbanized area with a population of 50,000 or more plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties (official definition of the Office of Management and Budget).

[3] See detailed methodology description here: https://www.bea.gov/regional/methods.cfm

[4] Pursuant to Section 1.33 Municipal Statistics of the Federal Statistical Plan (approved by Russian Government Decree No. 671-r, dated May 6, 2008, as amended), official statistics are being compiled (falling within the competence of the Federal State Statistics Service [Rosstat]) with a breakdown by municipalities. The statistical database descriptive of the condition of the economic and social environment of a municipality, which provides data on each of the 22,800 municipalities (as of January 1, 2015), is based on statistics compiled in respect of municipalities.