Data Article

Regional free cash flow dataset: An approach to regional performance evaluation

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Abstract

This data article provides estimates on the Russian regions’ aggregate free cash flow, which is not covered by national statistics of major countries. A proper microeconomic model was adapted to regional level data to derive a synthetic indicator of a regional economy’s performance. The data contributes to the set of regional performance measures thus enabling a new look at studies of economic growth and development. Conventional economic growth indicators, such as GDP, fixed capital investment or industrial output, are widely criticized since they can have negative values only in terms of growth rates thus showing no evidence of value creation or deterioration. Our data on regional free cash flow eliminates this drawback.

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1. Data

This article is associated to a Microsoft Excel Worksheet as a supplementary material. The data contain time series of free cash flow values on the 85 Russian regions covering the period of 2006—2016. No transformation was applied, except for scaling (all in thousands of Russian rubles). Missing values (<0.1% of total quantity of levels) were mean-substituted.

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The data file has the “Model description” sheet containing the formalization of data retrieving procedure, the “0-FCF” sheet with the free cash flow indicator values calculated for each of the 85 regions through 2006–2016, sourced by eight factor-values sheets according to the methodology in use.

Factor data were retrieved from the Federal Statistics Authority of Russia online repository (http://fedstat.ru), formatted by us to the uniform structure, length and sequence of observations (regions). Appropriate links to indicators’ webpages are provided on respective data sheets.

2. Experimental design, materials, and methods

2.1. Data collection procedure

Proper foundations of the free cash flow use and different approaches to its calculation regarding the enterprise level are described in Lehn and Poulsen [4], Richardson [5], and Opler and Titman [6]. In line with the literature, we denote the free cash flow as the total worth of funds, generated by an economic system over a period, available to be withdrawn by all the types of capital providers “without harming a firm’s ability to operate and to produce future cash flows” [7].

Then, the regional free cash flow is the net worth of an increment to economic potential of enterprises localized within a territory of a given region. Economic potential in this case is treated as enterprises’ ability to maintain sustainable growth or to increase individuals’ wealth directly (through shareholder value) or indirectly (through the increase of tax revenue or labor demand) [8].
We calculate the regional free cash flow indicator using the following standard model [9] widely employed at enterprise-level valuations — see formula 1 and Table 1 for the indicator breakdown:

\[
FCFi,j = (Ri,j - Ci,j)(1 - T) + A_{i,j} - Fl_{i,j} + FS_{i,j} - ((AR_{i,j} + SI_{i,j} - AP_{i,j}) - (AR_{i,j-1} + SI_{i,j-1} - AP_{i,j-1}))
\]

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\]

Where \(i\) stands for a region, \(i \in [1; 85]\).

\(j\) stands for a year, \(j \in [2006; 2016]\).

Since we are unable to reliably determine a proportion of cross-regional operations of an enterprise, we assume that all the operations are localized in a region of incorporation.

2.2. Data use and interpretation rule

Positive free cash flow indicates an increase in value, while the negative means value deterioration, as follows from the cash flow-based methodologies described in Oded and Allen [10]. Yet, a negative free cash flow value in a specific period does not necessarily mean that a regional property complex is used inefficiently: capital expenditure undermines free cash flow directly but has a potentially positive

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Table 1

| Factor reference | Factor | Tab name in XLSX data file |
|------------------|--------|---------------------------|
| FCF              | Free cash flow | "0-FCF" |
| R                | Sales revenue   | "1-Sales revenue" |
| C                | Cost of goods sold | "2-COGS" |
| A                | Fixed assets depreciation and amortization | "3-D&A" |
| FI               | Fixed capital investment | "4-CAPEX" |
| FS               | Receipts from fixed assets sales | "5-Fixed assets sales" |
| AR               | Accounts receivable from operations | "6-Trade receivables" |
| SI               | Inventory book value | "7-Inventory" |
| AP               | Accounts payable from operations | "8-Trade payables" |
| T                | Corporate tax rate = 20% | — |

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**Fig. 1.** Free cash flow of the Russian regions depending on private sector share in total capital expenditure (GRP per capita used for diameters) in 2016.
lagged effect. On the other hand, permanently negative free cash flow together with positive operating profit can hardly be an anticipated characteristic of economic development of a region since income reinvestment rate is going to be 100% and above, meaning the increase of debt, thus limiting the possibility to increase quality of life and individuals’ wealth in the long-term perspective. The same remark is applicable to permanently positive values of free cash flow, if they are maintained by investment downturn.

The dataset with supplementary factors – GDP per capita and private sector share in total capital expenditure broken down by regions – allows to verify standard economic growth models from the value point of view. Combining the indicator with the private sector share in 2016-total capital expenditure gives a proper look at the data possible use (Fig. 1).

Thus, the data allow to reclassify regions according to their contribution to value creation and to detect cycles in individual and aggregate dynamics. Another possible use of the data is to trace a value growth pattern and to determine the development cycle of a region or of the whole economy (Fig. 2).

The tracer-chart indicates moderate value creation in 2008–2012 followed by significant volatility afterwards in terms of absolute changes. Matching with GDP or GRP dynamics can give an alternative view on growth and development.

Finally, the data can be decomposed into net operating profit and the net investment to estimate the two broad factors’ contribution to economic performance of a region, in response to Oguz and Knight proposition [11].

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Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.dib.2019.104175.

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