

# Returns to Education in the Russian Federation: Towards Evidence Based Decision Making with Social and Private Returns to Education

Ekaterina Melianova\* | Suhas Parandekar\* | Artëm Volgin\*

This paper presents a preliminary analysis of a dataset distributed by the Ministry of Education of the Russian Federation that provides information on graduate salaries. The data is merged with information on income and fee revenue of colleges and universities to provide estimates of costs and benefits at an institutional level and private and social returns to education at a regional level. As the length of the data series on graduate earnings will grow over time, the estimates presented in this paper can be updated to provide sharper estimates of the costs and benefits of attending a particular institution.

## KEYWORDS

Returns to Education, Higher Education, Cost-Benefit Analysis

JEL Codes: I23, I26

## 1 | DESCRIPTION OF DATA

The Ministry of Education provides information regarding the salaries obtained by graduates and other related information at the website "<http://graduate.edu.ru>". A key purpose of this website is to provide accurate information to prospective university students and their families about the prospects of graduates from each of the universities or colleges. The Ministry of Finance collects information from all education establishments and others providing public service as a

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### 1.1 | Graduate.edu portal

Our final set of data consists of 1909 colleges, 423 universities, and 2975 pairs of university-study areas with information about the graduates earning in them. We filtered out universities and colleges with less than 100 and 50 graduates in 2013, respectively. Salaries in 2014 and 2015 were adjusted to the prices of 2016.

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## 1.2 | Bus.gov portal

We obtained financial data about the colleges and universities from the open data section on the <https://bus.gov.ru>. It contains information about the total cash receipts of an organization for a given year and provides data on the income subcategories, such as cash receipts from paid services, target subsidy, budget investments, state (municipal) tasks. In our research, we approximated fee payments through the information about cash receipts from the paid services and used it together with the number of graduates for the calculation of the private education cost. To estimate the social cost of education we used total cash receipts in an organization.



## 2 | REGIONAL ESTIMATES OF SOCIAL AND PRIVATE RETURNS

In the first part of our research, we focus on calculating the social and private regional internal rate of return by using the following methodology. We utilize the average wage in each age from 2014 to 2018 Rosstat Survey to calculate the potential earnings profiles and then add the mean social and private cost estimates for the regions to the beginning of that profile. We also adjust for the foregone earnings of graduates by adding to the educational cost the potential wage that graduates missed due to the enrollment in the university or college, we took average wage in the region as the approximation of such earnings.

Below you can see an estimate of social and private IRR of university graduates by regions of Russia. Both types of returns have high dispersion across the country: from around 40% IRR in Magadanskaya and Ulyanovskaya oblast to the less than 15% in Kurganskaya and Kurskaya oblast. It is interesting to notice that although Moscovskaya oblast has substantially high social and private returns, the Moscow lacking behind in that ranking with only 20% of IRR. That may happen due to the circular migration from Moscovskaya Oblast to Moscow - people in Moscovskaya Oblast can get access to the cheaper education inside their region and still be able to work in the nearby capital.

### **PLOT Social and Private Returns by region, Higher education**

The next graph demonstrates the social and private IRR of colleges. As you may notice the regional variation is still present, but not to the same extent as in universities - returns are lying between 20-30% in most of the regions.

### **PLOT Social and Private Returns by region, Vocational education**

The average levels of social returns of college and university graduates in a region are highly correlated - regions with a high level of university returns tend to have higher rates of college returns. Nonetheless, there are some exceptions: for example, Respublika Tatarstan has above average social returns of college graduates, but lacking behind in university returns. The situation in Sahalinskaya Oblast is directly the opposite - the region is characterized by one of the highest levels of social university returns, but the college returns are a lot lower than in most of the other regions. You can see a distribution of returns by two levels of education in the scatterplot below.

### **PLOT Social Returns by regions**

## 3 | INSTITUTIONAL RETURNS FOR COLLEGES AND UNIVERSITIES

Data provided by graduate.edu allow us to calculate IRR directly for each educational organization. As in the previous part we use social and private cost as the cost part of the IRR specification, but now we utilize graduate salaries in 2014, 2015, and 2016 as the benefits obtained by the graduates. Resulting IRR estimations have a negative sign for most of the organizations since we have access only to the 3 years of observations after graduation. Although obtained results represent only short-run returns they still can be used to compare universities or colleges within each other.

Below, you can the tables with Top-10 and Bottom-10 universities and colleges ranked according to the level of social IRR.

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The provided data allow us to map the educational organizations according to their precise coordinates. We can observe a few examples of such plotting for Moscow universities and Saint Petersburg colleges with an indication of the level of social returns for each organization.

**PLOT Map Social IRR of universities in Moscow**

**PLOT Map Social IRR of colleges in Saint Petersburg**

Another aspect that can influence the rate of returns substantially is the education area of the organization. Technical specialization has the highest social internal return rate for both college and university and art specializations are amongst less returnable once for both educational levels. Medical universities in Russia, in opposite to their American counterparts, are also having one of the lowest internal return rates.

**PLOT Boxplots with social returns by specializations**

We estimate the factors which are explaining the difference in returns between organization by conducting 4 separate linear regression models with 1) Social IRR in colleges, 2) Private IRR in colleges, 3) Social IRR in universities, and 4) Private IRR in universities as dependent variables. We are going to use 1) the specialization of organization, 2) the number of graduates, 3) the number of staff, 4) the average wage in the organization, 5) the proportion of income obtained from paid services and 6) the average wage in the region as the main predictors for these models.

Tables with linear regression estimates for the Social/Private returns of Higher/Vocational education are depicted below.

## Список литературы

Psacharopoulos, George. 1995. *The Profitability of Investment in Education: Concepts and Methods*. World Bank Washington, DC.