METHODOLOGICAL PROBLEMS IN COLLECTING AND ANALYSING DATA FOR CIS COUNTRIES

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Paper Presented at the International Seminar on S&T Statisitics
Tashkent, Uzbekistan, April 23-24, 2013

ROOTS OF THE METHODOLOGICAL PROBLEMS

- Key elements of research systems were created in the Soviet times (government-controlled research institutes, financing from the state budget, division between research and learning activities)
- Reality ‘does not correspond’ with Frascati classifications in some cases
- Legal system in R&D area is not harmonized with international one with international standards in some countries due to pressure from the side lobbying groups.

SOME SPECIFIC FEATURES OF R&D GOVERNANCE IN R&D SECTOR

- In some countries Ministries and the state agencies, which have to support R&D, have overlapping functions, which are not clearly defined. This leads to problems with collecting of reliable data on some aspects of research activities.
- The procedures of evaluation and selection of R&D projects are not transparent and fair for potential participants.

CONTRADICTORY CHANGES IN RESEARCH ACTIVITIES IN RECENT 20 YEARS

- Decline or growth in a number of research establishments, while decline in research personnel was significant. Creation of organisations of the new types (NGOs and others)
- Substantial decline of the ‘branch’ or industrial sector (remains largely unreformed in some states). Changes in functions of these institutes
- Introduction of the formal grant system (but in practice less than 1% of the state research budget is distributed through grants in Ukraine, up to 6% in Russia)
- Creation of the legal basis for S&T and innovation development in majority of the Post-Soviet states

CONTRADICTORY CHANGES IN RESEARCH ACTIVITIES IN RECENT 20 YEARS -2

- Transformation of research organizations to the “Western format” (abolishment of national academies of sciences in some states)
- Creation and development of national protection of IPR (breaks in ‘time series’)
- Preservation of statistical departments and surveys, based on censuses
- Migration to other sectors, which is difficult to reflect
- ‘Blurred’ frontier between the state and the business sector

WAYS OF SOLVING THE PROBLEMS

- Transfer to new standards, when it is possible
- Preservation of existing statistical standards and their utilization along with new standards (statistics of scientific degrees holders)
- Preservation of some specific indicators, which could be used for internal purposes (‘public academies’, programmes, number of research projects and so on)

SOURCES OF INFORMATION:

- Traditional statistical forms (not all forms in line with new realities)
- Data from sociological surveys (often – fragmented)
- Information from special databases (sometimes - not in adequate format)
- Information from foreign sources

(not oriented on the needs of the country - DHS)

SECTORAL DISTRIBUTION OF SCIENTIFIC ORGANIZATIONS

SOVIET-TYPE STANDARDS

- Academies of sciences
- Universities and colleges (Higher Education)
- Branch sector
- Enterprise sector

INTERNATIONAL STANDARDS

- Government sector
- Higher Education sector
- Business sector
- Private non-profit sector

INDICATORS OF CADRE POTENTIAL

- Types of personnel (distribution by categories)
- Full-time equivalent (problems with information about the real level of employment)
- Degree's comparability
- General data on R&D manpower
- Calculations 'per head' and different approach to FTE calculations
- Traditional system of the Soviet-type degrees and its transformation in the post-Soviet states

CATEGORIES OF PERSONNEL

- Researchers
- Technical and equivalent staff
- Other support staff
- Other staff – non existent in the international standards

- Another problem is how to calculate university personnel, who are not assigned to the officially registered research projects

CALCULATIONS OF THE FULL-TIME EQUIVALENT (FTE)

- Key statistical problem in the post-Soviet states: head count (HC) is lower than full-time equivalent (FTE)
- Source of problem: general system of accounting, which differs from the system in developed countries
- Problem: how to take into account the work of ‘part-timers’ (sovmestitely), as their number is comparable with the number of those , who are involved in R&D in their ‘primary ‘ places of work

WAYS OF SOLVING FTE PROBLEM 1

- Step1: calculate the number of those, who are involved in R&D in their primary place of work
- Step2: calculate the number of those, who are involved in R&D in their secondary place of work, while in their primary place of work is not registered as part of R&D personnel
- Step3: be sure that the person, who are involved in R&D in several places, will be registered as a member of R&D staff once only
- This will open the way for more correct calculation of HC in R&D

WAYS OF SOLVING FTE PROBLEM 2

- For FTE counting coefficients of involvement in R&D could be used
- “Palliative” solution: use diminishing coefficients to the personnel , who is working in the ‘secondary’ places and apply them to head count data. This will lead to the situation, when FTE will be smaller than HC.
- However, this will not solve the problem of adequate reflection of employment in R&D according to FM standards

WAYS OF SOLVING FTE PROBLEM 3

- “Ideal” solution:
- Ask every person, who are involved in R&D in the primary (or secondary place of work, if the first one is not related to R&D) on the involvement in R&D in other places.
- Calculate the share of time, devoted to R&D in different places of work, bearing in mind that any person could be considered more than ‘one R&D personnel unit’
- Use diminishing coefficients for different jobs

PROBLEMS WITH INTRODUCTION OF FTE CALCULATIONS

- Extra burden on statisticians and administration of the R&D institution or division
- Inconsistency with existing accounting practice
- Negative reaction from the side of researchers , who are not ready to reveal data on their secondary employment
- ‘Gap’ in time series on research personnel

STATISTICS OF MIGRATION AND WORK FOR FOREIGN CONTRACTORS

- Sources of data (research institutes, Ministry of Internal Affairs, alternative: foreign sources)
- The need to update the existing forms:
- Introduction of new forms to catch ‘temporary’ (‘contract’) migration (periods of visits, countries)
- Changes in existing forms to obtain data on migration of young scientists and graduate students
- New forms and surveys to understand ‘Bangalore-type’ activities: probably, to introduce special survey

COMPARABILITY OF SCIENTIFIC DEGREES

- Existence of two level scientific degrees is common in some post-Soviet countries
- For purposes of statistical reporting, the numbers of candidates of sciences and doctors of sciences should be added up and allocated to ISCED 1997 level 6 and compared with PhDs
- Specialist degree could be considered as master equivalent at the moment for the purposes of comparability (ISCED 1997 level 5A).

COMPARABILITY OF SCIENTIFIC DEGREES-2

- A more radical solution for post-Soviet countries would be a total re-evaluation of specialists with scientific degrees, with the participation of foreign experts.
- This would enhance the legitimacy of the procedure for adoption of the one-level system.
- However, this approach could result in conflicts within the scientific community, which could have negative implications for science development in these countries.

STATISTICS OF EQUIPMENT AND INFRASTRUCTURE

- Problems with selection of the right set of indicators (financial versus physical)
- The age of equipment: the rate of depreciation – problem of capitalization of R&D results (depreciation is not included into R&D statistics!)
- Expenses on equipment in the R&D budgets
- Level of renewal of equipment
- Access to communications (utilization of new indicators – example with Internet access)
- Old indicators : are they relevant (example: number of computers)

OUTPUT INDICATORS

- Problems with calculations of the number of publications (international statistics versus internal statistics): how to calculate ?
- Possible solution: to use international data (first of all, Thomson-Reuters database) along with national data. However: relatively high expenses for CA countries.
- Propositions on changes in statistical forms
- Patent statistics (national patens, European patens, US patents, 'tryadic family' patents)
- Other output indicators (capitalization of R&D results ?)

INDICATORS OF PATENT ACTIVITIES

- It is possible to use national patents and corresponding time series, if rules of patenting have not been changed in the past (example of Ukraine)
- Data on international patenting have to be included into statistical reports (WIPO data and other sources)
- It would be important to use indicators of international patenting (for instance, according to PCT procedure or patenting in the USA and the EU)

NEW INSTRUMENTS OF MEASUREMENT OF S&T AND INNOVATION ACTIVITIES

- European Innovation Scoreboard (18-29 complex indicators of innovation development plus Innovation index as an integral indicator)
- Similar OECD Scoreboard
- Indicators of Competitiveness and similar indicators (their innovation and technological components: IMI, UNCTAD, WB)

Problems:

- Regular changes
- Lack of data
- Political orientation of some indicators and their 'non-statisitcal nature'

CONCLUSION

- The need of implementation of the international standards for the purposes of comparative analysis. This would require changes in existing statistical forms and methods of data collection and aggregation (samples instead of census).
- The need to preserve (partially) ‘old’ indicators, as they reflect local realities. Thus, ‘local’ and ‘international’ indicators would co-exist for (at least) some period.
- The need to develop new indicators , which will reflect real processes in R&D and innovation spheres better, than existing ones.

THANK YOU FOR YOUR ATTENTION !