CONSISTENCY BETWEEN INNOVATION INDICATORS AND INNOVATION PERFORMANCE IN THE CASE OF SMALL ECONOMIES

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ABSTRACT

Session: Innovation indicators

The paper bridges two approaches to assess national innovation performance based on European Innovation Scoreboard (EIS) composite indicators and the analysis of the factors that may be behind these indicators. The purpose of our paper is to explore, what factors have been the most influential in developing the different innovation performance in the case of small economies like the Baltic States. We follow the view that there is no single number or indicator to describe such complex phenomena as innovation (Archibugi 2009 et al; Arundel and Hollanders 2008; Rodriguez-Pose and Crescenzi, R. 2008). Therefore we analyse data from several sources to give a snapshot of different aspects of innovation, like the European Innovation Scoreboard (EIS) methodology does (Schibany and Streicher 2008). Additionally to the EIS we also elaborate our own methodological approach that bases on implementation of method of principal components (factor analysis). First, we try to find out, whether the most relevant factors behind the innovation performance are captured by the EIS. Second, we examine how sensitive are the national composite indicators to the changes of single indicators and factors behind them.

Concepts of innovation measurement have developed together with the theories of innovation. They basically started from science-push and market-driven innovation theories and end up with innovation theories, which imply that innovation is knowledge-based and dependent on different institutions and social networks. A broadly spread research branch is the one about national innovation systems (NIS) (Fagerberg

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Srholec, M. 2008; Filipetti and Archibugi 2010). Although the virtue of this research is that it is thorough, giving a good picture of the different policies and institutions of a country. At the same time this is a disadvantage for those who are not scholars and want to have a quick and comparative overview of innovation performances of different countries, like policy-makers. Policy-makers prefer scoreboards or aggregated indicators, which capture different information, but often aggregate this into a single number or country ranking. Of course, the aggregation has also well-known disadvantages. In our paper, we try to combine both approaches, to rely on composite indicators of innovation as well as analyse in detail some aspects of national innovation systems. In order to check for the robustness of aggregate indicators we implement the method of principal components.

We have chosen the Baltic States as investigation object, as these small economies are comparable in size, and they share similar geographic conditions and path-dependence. However, their innovation performance is different: according to EIS, Estonia belongs to moderate innovators group; Latvia and Lithuania belong to the group of catching-up countries. We are interested, what are the factors behind this different innovation performance.

Our analysis shows that remarkable measuring problems may occur by elaborating composite indicators of national innovation performance e.g. the inability to sufficiently capture the quality of human capital, the small economy effect, i.e. high dependence on single enterprises of a sector, data availability issues etc. The measurement results may also be biased by some self-reporting indicators. We got confirmation to this opinion by comparing the EIS evaluations with our assessment results based on the implementation of principal component method. We compared the EIS and the factor analysis results and obtained confirmation that the composite results for small countries, particularly for Estonia, are extremely sensitive to the self-reporting indicator of the CIS that reflects the role of non-R&D innovations in national innovation performance. The results are robust.

Our preliminary research results show that the level of human resources is quite similar in the Baltic countries, which gives a good starting platform for innovation. However, the firms’ innovation activities obtain considerably better results in Estonia than Latvia and Lithuania. This tells us that the innovation processes do not depend only on the high level of human resources, but also other enabling factors, which are influenced by different national policies. Based on our research, we can suspect that Estonian better
performance is connected to the tax policy and the origin of the foreign direct investments. At the same time, our results also show that the self-perception about innovation might be too high in Estonia.

Regarding EIS the problems we would like to turn attention to two main issues. First, the small economy effect in the indicators: small economies are highly dependent on single enterprises in one sector and therefore some indicators are very volatile. Secondly, the indicators about human resources often capture only some aspects of the education system, not the whole picture. The common problem for the Baltic States as small economies is the weak link between science and enterprises, which is also not fully captured by the EIS indicators. In future development of our research we follow a widespread belief that innovation is a necessary assumption for country’s economic growth and we will focus on examining the relationship between economic growth and innovation indicators.

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