APPLICATION OF BENCHMARKING AND INDEX METHOD IN RESEARCH OF ECONOMIC SYSTEMS

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The paper deals with the process of modelling of behaviour of economic systems using benchmarking and index method. The objective of benchmarking is to understand and evaluate the current position of a business or organisation in relation to "best practice" and to identify areas and means of performance improvement. Any business process can be benchmarked. Benchmarking is a tool to help you improve your business process, to measure your own performance for each variable and begin comparing the results in an "apples-to-apples" format, to determine the gap between your firm and the best-in-class examples and to implement programs and actions for achieving needed result.

Key words: Benchmarking, Index Method, Research of Economic Systems

Introduction

The paper deals with the process of modelling of behaviour of economic systems using benchmarking and index method. The objective of benchmarking is to understand and evaluate the current position of a business or organisation in relation to "best practice" and to identify areas and means of performance improvement. Any business process can be benchmarked. Benchmarking is a tool to help you improve your business process, to measure your own performance for each variable and begin comparing the results in an "apples-to-apples" format, to determine the gap between your firm and the best-in-class examples and to implement programs and actions for achieving needed result.

Types of Benchmarking

Benchmarking involves looking outward (outside a particular business, organisation, industry, region or country) to examine how others achieve their performance levels and to understand the processes they use. In this way benchmarking helps explain the processes behind excellent performance. There are seven different types of benchmarking (Fig.1).
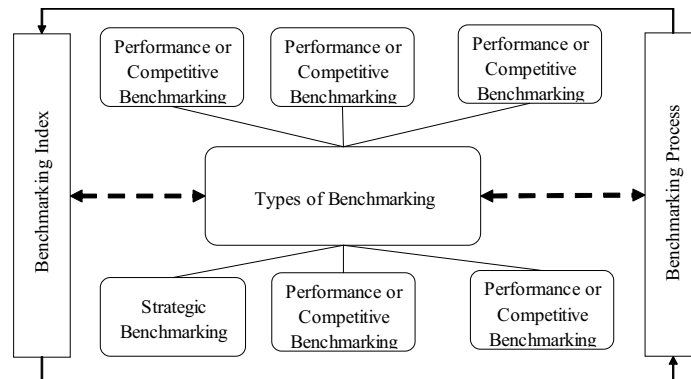

Fig. 1. Types of benchmarking

1. *Strategic Benchmarking* involves considering high level aspects such as core competencies, developing new products and services and improving capabilities for dealing with changes in the external environment.

2. *Performance or Competitive Benchmarking* considers businesses position in relation to performance characteristics of key products and services.

3. *Process Benchmarking* focuses on improving specific critical processes and operations. This type of benchmarking often is used for achieving improvements in key processes to obtain quick benefits.

4. *Functional Benchmarking* - improving activities or services for which counterparts do not exist.

This sort of benchmarking can lead to innovation improvements.

5. *Internal Benchmarking* - involves benchmarking businesses or operations from within the same organisation (e.g. economic sysrems in different countries). The main advantages of internal benchmarking are:
- access to sensitive data and information is easier;
- standardised data is often readily available;
- less time and resources are needed for results achieving.

6. *External Benchmarking* - involves analysing outside organisations that are known to be best in

class. External benchmarking provides opportunities of learning from those who are at the "leading edge". This type of benchmarking can take up significant time and resource to ensure the comparability of data and information, the credibility of the findings and the development of sound recommendations.

7. *International Benchmarking* - Best practitioners are identified and analysed elsewhere in the world, perhaps because there are too few benchmarking partners within the same country to produce valid results. Globalisation and advances in information technology are increasing opportunities for international projects. However, these can take more time and resources to set up and implement and the results may need careful analysis due to national differences.

Benchmarking Index

The Benchmarking Index does not just highlight what is going wrong. One of it's main benefits is that it helps to set out a clear forward programme of action. The Benchmarking Index has been a great help in forming an overall picture of business. The Benchmarking Index is not only a powerful diagnos-

tic tool, it is also an effective marketing tool for business advisors. Tendencies of change of parameters (indexes) of one system (in the separate cluster) can be accepted by the best as an example for development of other systems entering in given cluster.

The Benchmarking Process

Application of benchmarking in investigation process involves four key steps:

1. understand in detail existing business processes;

2. analyse the business processes of others;

3. compare own business performance with that of others analysed;

4. implement the steps necessary to close the performance gap.

Benchmarking should not be considered a one-off exercise. To be effective, it must become an ongoing, integral part of an ongoing improvement process with the goal of keeping abreast of ever-improving best practice.
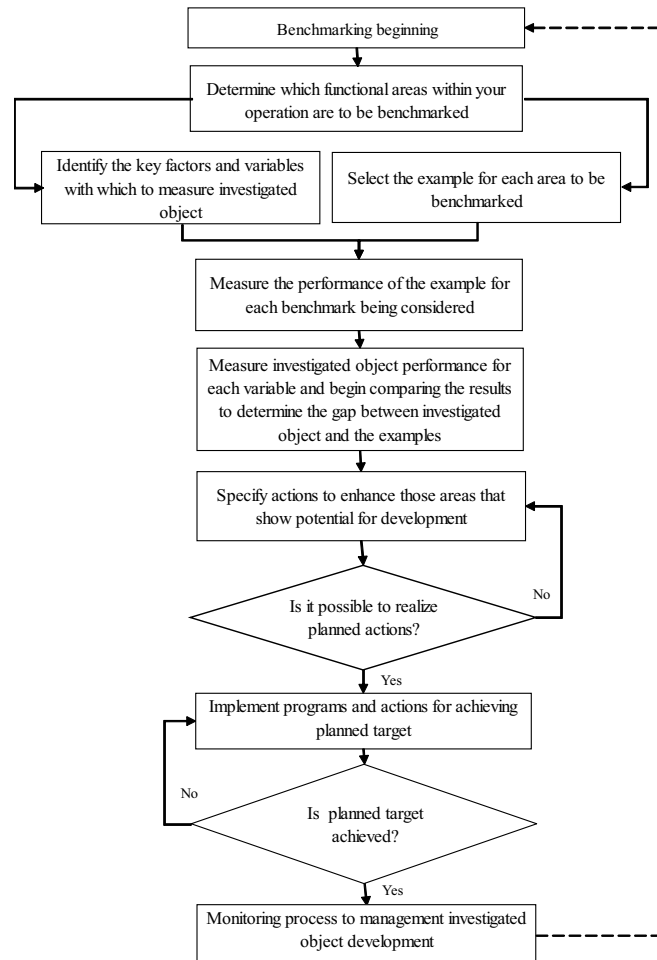
Algorithm of realization of benchmarking process:

Fig. 2. Algorithm of realization of benchmarking process

Instruction of using of indicators in the investigation process using benchmarking and index method:

1. The process of investigation of economic systems using benchmarking and index method should be based on:

- an explicit set of categories or an organizing framework that links vision and goals to indicators and assessment criteria;

- a limited number of key issues for analysis;

- a limited number of indicators or indicator combinations to provide a clearer signal of progress;

- standardizing measurement wherever possible to permit comparison;

- comparing indicator values to targets.

2. It is important to link investigation goals to movements of a small number of indicators. Single indicators can rarely be linked to any specific sustainability goal.

3. Linking the use of deterministic and qualitative modelling approaches is a useful means for projecting indicators and discerning important interdependences between factors. Indicator modelling work is most suited to identifying main linkages and implications on large systems. Modelling efforts should focus on such general policy-related tasks.

4. Greater focus is required on modelling frameworks that can use incomplete data sets or qualitative information.

Indicators of the European Innovation Scoreboard

The indicators of the European Innovation Scoreboard (EIS) summarize the main elements of innovation performance. These five groups cover different dimensions of innovation performance with a limited set of indicators. The information delivered by these 5 groups allows to rapidly identifying the areas of weaknesses to be explored. Summary Innovation Index (SII) is a composite indicator which takes into account each indicators score. SII score and the ranks of development based on the SII are quite stable for most countries [3]. Benchmarking SII data 2006 by countries presents in Figure 3.
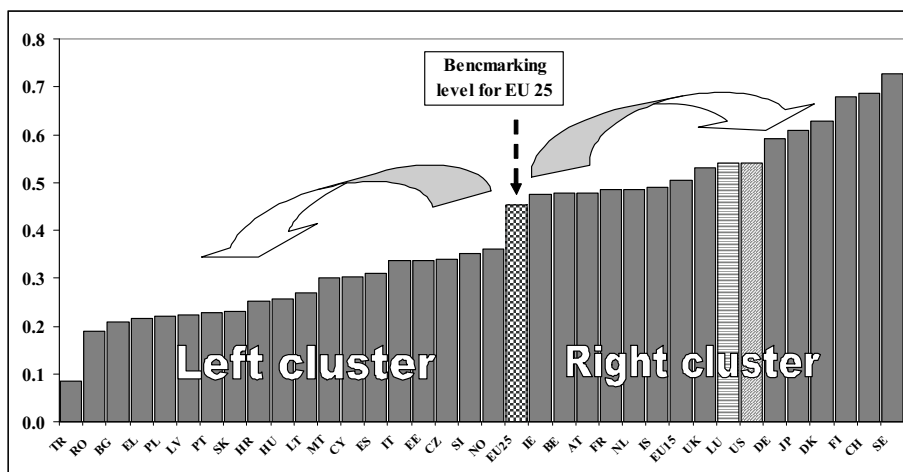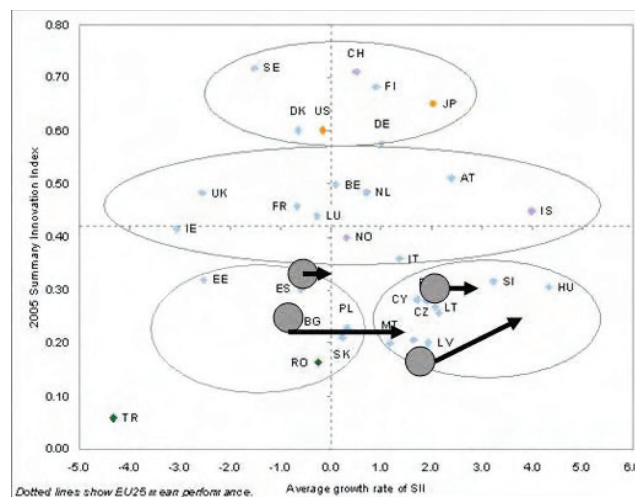

Fig. 3. Benchmarking SII data 2006

Fig. 4. Tendency of growth rate of SII of the countries in 2005

The Summary Innovation Index gives an "at-a-glance" overview of aggregate national innovation performance. The EIS report on Strengths and Weaknesses gives more detailed information on the strengths and challenges of each country.

Figures 4, 5 show the current performance as shown by the SII on the vertical axis against the short-run trend performance of the SII on the horizontal axis.

The circles in Figure 3, 4 identify the four main country groupings: top = leading countries (Innovation leaders), middle = average performers (followers), bottom right = catching up, and bottom left = losing ground (trailing). This creates four quadrants: countries above both the average EU-25 trend and the average EU-25 SII are moving ahead, countries below the average SII but with an above average trend performance are catching up, countries with a below average SII and a below average trend are falling further behind, and countries with an above average SII and a below average trend are losing momentum.
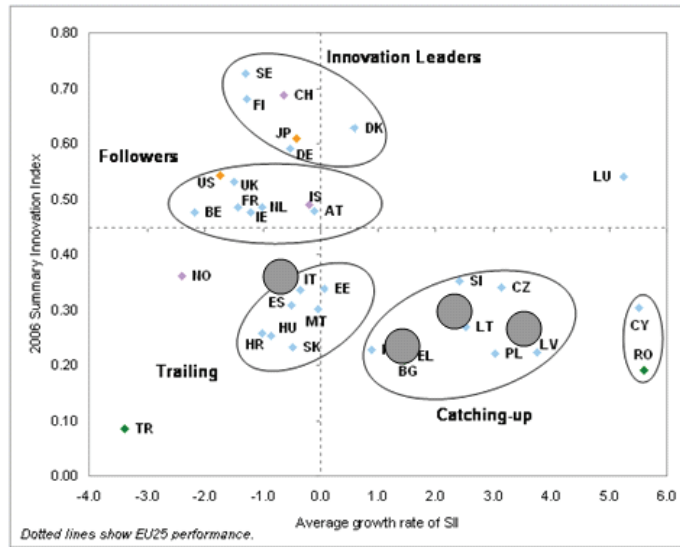

Fig. 5. Average growth rate of SII of the countries in 2006

Interindependence between Summary Innovation Index development and Economic development

Revealing of correlation dependence between a parameter describing a level of innovational development of the state (Summary Innovation Index (SII)) and a parameter of economic development of economy of the state (Gross Domestic Product (GDP)) is actual. Interindependence between Summary Innovation Index development and Economic development has been investigted by using of scenario modelling. Scenario modelling were realized combining 2003-2005 SII data with 2002-2006 GDP per capita data and planned by the Ministry of Economics of Latvia of rates of growth GDP for the period till 2011. Due to the EU system of innovational indexes and estimations of GDP the opportunity of revealing the dependence between summary parameter SII and GDP value becomes possible (Fig. 6).
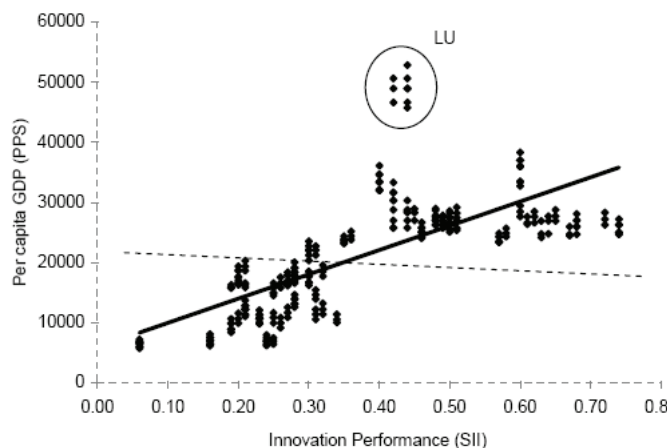

Fig 6. Innovation performance and per capita GDP – panel data

Table 1 summarizes the regression results for four simple linear regressions between the SII and per capita GDP.

Table 1. Regression results between SII and per capita GDP

	Constant	Coefficient b SII	Adjusted R^2
No dummy	5725	38725*	0.638
dummy	21843	10599*	0.791

* Coefficients are significant at the 1%-level/5%-level

A 0.01 point increase in the SII would lead to an increase in per capita GDP of about 100 to 400 euros. But this result should be interpreted with care, as it is highly dependent on the number of countries included (adding Luxembourg would raise the elasticity) and the use of the country dummy. The regression without a dummy gives an elasticity almost 4 times as high as the regression including a dummy.

Conclusion

At research of complex systems on macroeconomic level there is an opportunity of benchmarking the social (qualitative) indexes describing activity of complex social and economic systems (states). On Figures. 7, 8, 9 the dynamics of change of indexes of political stability, control corruption and government effectiveness for states Latvia, Bulgaria, Luxembourg is presented.
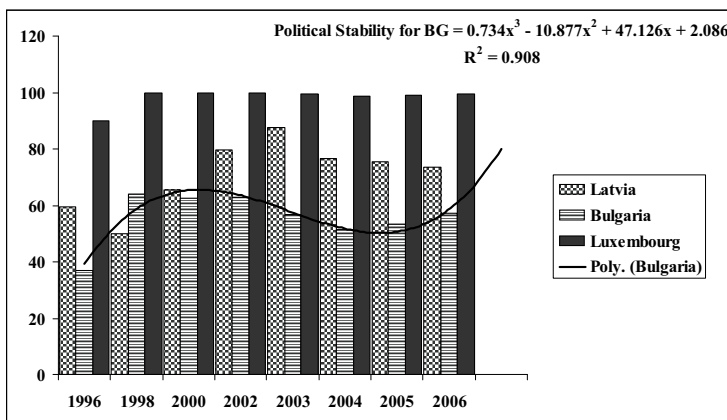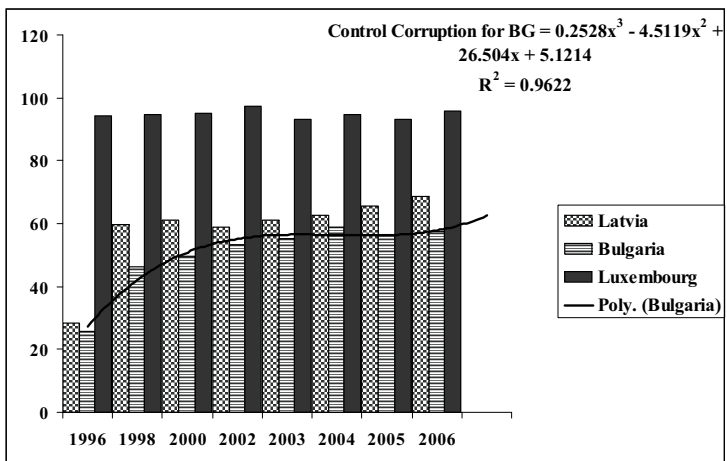

Fig. 7. Political stability dynamics

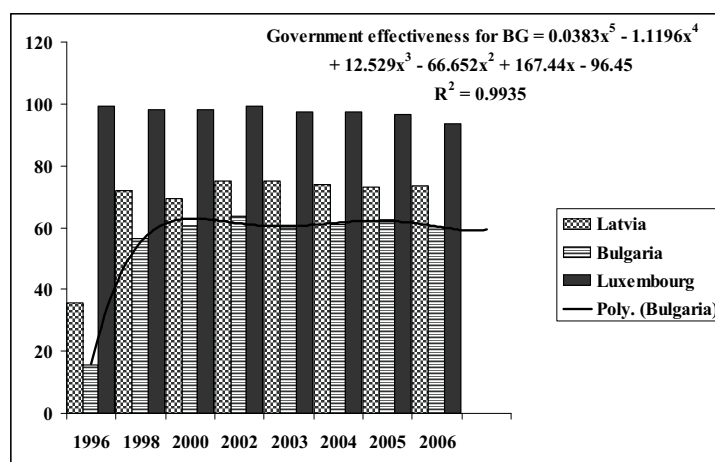**Fig. 8. Control corruption dynamics**

Fig. 9. Government effectiveness dynamics

Use benchmarking and index method at research of complex social and economic systems allows to compare values of the parameters (indexes) describing activity of studied systems. Tendencies of change of parameters (indexes) of one system (in the separate cluster) can be accepted by the best as an example for development of other systems entering in given cluster. Research of tendencies of change of parameters (indexes) of development of the best representative in certain cluster (Figure 3, 4, 5), enable to develop and realize the program of the actions directed on perfection of functioning of investigated social and economic system, and also constantly to analyze the processes occuring in investigated system, comparing the given changes with the changes occuring in reference system. Besides there is an opportunity of research of influence of social (qualitative) parameters (indexes) on change of complex parameters of economic activities social and economic systems, in particular on character of change GDP.

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