NCSES/CNSTAT Workshop on Advancing Concepts and Models of Innovative Activity and STI Indicator Systems

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Charles Edquist, CIRCLE on:

- Design of Innovation Policy (concepts),
- A Critical Assessment of the Innovation Union Scoreboard (innovation metrics), and
- Innovation-related Public Procurement (public sector innovation + measurement)

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What is **Innovation Policy?**

Innovation policy is all actions by public organizations that influence innovation processes

Reasons for policy intervention

Two conditions must be fulfilled for public intervention to be motivated in a market economic:

(1) Private actors must fail to achieve the objectives formulated; i.e. a **'problem'** must exist. An **innovation policy problem** is a low number for a certain category of innovations.

(2) Public actors must have the **ability** to solve or mitigate the problem.

Policy-makers need to know:

- Must identify innovation policy **problems** and their **causes**

- To identify whether a country or region is doing well or badly with regard to (certain kinds of) innovations = we need to **measure innovations**

- These innovation indicators must be **comparative** between countries and regions – since there is no optimality

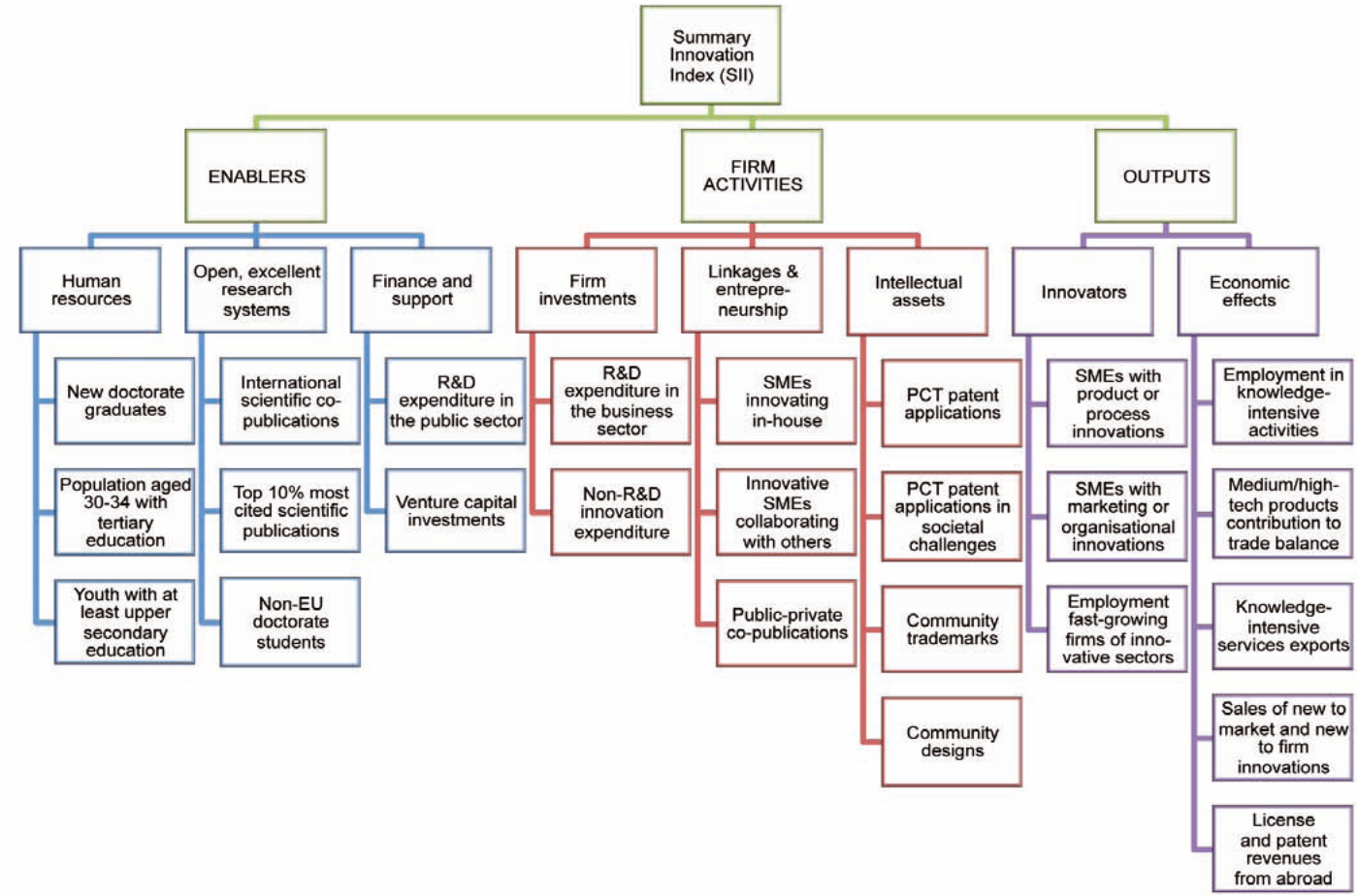
The **Innovation Union Scoreboard (IUS):**

- For the reasons discussed the European Commission created the Innovation Union Scoreboard (IUS)

- It is intended to have a real impact on policies

- Includes 25 individual indicators

IUS Indicators



Problems with IUS

- IUS claims to mesure ”EU Member States’ Innovation **Performance**” by calculating a **Summary Innovation Index (SII)**

- We claim that the **SII does not measure innovation performance at all**

- This means that the **SII is highly misleading** for politicians, policy-makers, researchers and the general public

Why does the SII not measure innovation performance?

- The IUS calculates a simple average of the 25 individual indicators (and they give all the same weight)
- **If we want to measure performance, such as efficiency or productivity of a firm, a country, a region or an innovation system, we must <u>always</u> have a ratio or a fraction between a nominator and a denominator.**
- **For example** $\text{Productivity} = \frac{\text{total production}}{\text{number of employees}}$
- The 25 indicators include **input** indicators (e.g. R&D expenditures) a well as **output** indicators (e.g. actual product innovations) **– No** distinction is made between them. **They have no nominator and no denominator: A serious methodological mistake!**
- The SII method is like taking the average between total production and number of employees in a firm= **it has no meaning**

Our alternative:

- We defined performance (efficiency, productivity) of innovation systems
- We singled out 4 input indicators and 8 output indicators – (used only IUS data)
- **Innovation input indicators** refer to the resources (human, material and financial; private as well as governmental) which are used to create innovations, including bringing them to the market.
- **Innovation output indicators** refer to new products and processes, new designs and community trademarks as well as marketing and organizational innovations, which are either new to the market and/or new to the firm and are adopted by users.
- We divided outputs with inputs = we calculated the **efficiency** of national systems of innovation
- And we got **very, very** different results – which are in the paper.

Conclusions so far

- **If** summary indicators shall be calculated, the **conceptual and theoretical basis** is absolutely key.

- However, the best analysis is to use **all** all many of the different (25 or more) indicators to understand the **details** of the dynamics of the innovation systems: weaknesses and strengths

- **That would be a way to identify ”problems” and their ”causes”**

- Then policy **instruments** can be selected to solve or mitigate the problems (if we know the main causes of the problems).

How innovation policy should be developed in the future – my view

- Innovation **researchers** have **abandoned** the **linear** view
- It has been replaced by the **Systems of Innovation** view

BUT:

- A survey that I did for the European Commission showed that the European innovation **policies are still dominantly linear**
- **Supply** policies (such as R&D) **dominates** and **demand** side policy instruments are **not used much at all – in practice**
- Also the Lisbon Agenda and the Barcelona Agreement are examples of linear innovation policies

CONCUSION:

- **Innovation policy is far behind innovation research! This is a gigantic failure of interaction between innovation theory and innovation policy**

We need a holistic innovation policy

- Defined as **a policy that integrates all public actions that influence or may influence innovation processes** in a coordinated manner

- It **includes** actions by public organizations that **un**intentionally affect innovation (e.g taxes, environmental demands, etc.)

- It requires a very **broad** view of innovation systems, including all the determinants of innovation processes.

This is such a **broad** view of the innovation system:
10 important Activities in innovation systems

1. **R&D**
2. **Education and training**
3. **Formation of new product markets**
4. **Articulation of quality requirements**
5. **Creation and changing organizations**
6. **Interactive learning**
7. **Creating and changing institutions**
8. **Incubation**
9. **Financing of innovation processes**
10. **Consultancy services**

Public procurement

- 10-20 % of GDP = 2.3 trillion Euros in the EU
  = 40-50 times the public R&D budgets

- In Sweden, almost no public procurment **demands** radical innovation (any longer)

- And innovation is even **impossible** in most public procurement - since most orders are described in product terms – even obsolete products are described

Public procurement for innovation

- If the procurement demands are descibed in **functional terms or in terms of describing problems to be solved**, the potential is enormous. Buy a decibel level – not a fence to prevent traffic noise!

- This will increase creativity, innovation and competition. It may become **the most important source of innovation in the public sector**: increases quality.

- If 25 % of public procurement can be used to enhance innovation, this would mean resources **five** times larger than all publicly funded R&D in Sweden

A powerful innovation policy instrument

- What I have descrived is actually starting to happen in Sweden – systematically used as an innovation policy insrument (in a new national procurement strategy)

- And the good news that the cost is basically zero

- This means that public procurement that enhances innovation may develop into the most powerful innovation policy instrument available

Data?

- Most knowledge about innovation-related public procurement is based upon case studies
- Almost no reliable statistics are available
- This is because of a lack of a conceptual basis (taxonomy) to create data on innovaton-related procurement

The Swedish National Innovation Council (NIC) – chaired by the Prime Minister

- The Swedish NIC has existed for 16 months
- The innovation procurement ideas have been developed there
- One important issue that is discussed is how innovation policy can be transformed from linear to holistic – innovation procurement is one way
- Another important pre-condition for this is that innovation policy is distinguished from research policy

The three papers drawn upon:

- Edquist, C. (2011). **Design of innovation policy through diagnostic analysis: Identification of systemic problems (or failures).** *Industrial and Corporate Change*. (It has been republished in the book "Innovation, Technology and Economic Change", 2015. Cheltenhamn: Edward Elgar Publishing, edited by Jan Fagerberg and David Mowery.)

- Edquist, C. and Zabala-Iturriagagoitia, J.M (August 2015). **The Innovation Union Scoreboard is Flawed : The Case of Sweden - not the innovation leader of the EU- updated version.** (CIRCLE Working Paper 2015/27). Lund University, Sweden.

- **Innovation-related Public Procurement as a Demand-oriented Innovation Policy Instrument**,(CIRCLE Working Paper 2015/28). Lund University, Sweden.

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