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Research on Innovation*

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Assessing Innovation Measurement

How accurately do we measure innovation and the
resultant outcomes delivered to society and the economy

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NCSES/CNSTAT Workshop

Advancing concepts and models of innovative activity
and STI indicator systems

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The challenge

- The Workshop
 - Identify questions that
 - Cannot be answered now
 - But could be with additional data
 - » That has a reasonable chance of being collected
- This presentation
 - Indicators to capture
 - The changing nature of innovation
 - Policy and other uses of innovation data and indicators
 - International comparison

Response – Two approaches

- What *can be done now* with the existing definition of innovation (Oslo Manual 3rd ed.) and existing data
- What *could be done* if changes were made to the definition in the revision of the OM and new data sources were developed

See www.merit.unu.edu/publications/working-papers/abstract/?id=5832 for more discussion and references

Now – Innovation for measurement purposes

- An *innovation* is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations (OECD/Eurostat 2005, para 146)
- A common feature of an innovation is that it must have been *implemented*. A new or improved product is implemented when it is introduced on the market. New processes, marketing methods or organisational methods are implemented when they are brought into actual use in the firm's operations (OECD/Eurostat 2005, para 150)

Changes leading to now

- The economy % of GDP (BEA)

	1947	2015
• Manufacturing	25.4	12.1
• Wholesale and Retail trade, Transportation and Warehousing	21.2	14.7
Total	46.6	26.8

- The classification SIC → NAICS
 - See NAICS 51: Information
- The Oslo Manual 1992, 1997, **2005**, (revision leading to 2017)

		Types of innovation			
Components	Product	Process (Production + Delivery)	Organisation	Marketing	
Product					
Process (Production + Delivery)					
Organisation					
Marketing					

Measurement now

- Four types of innovation, but they overlap
 - How to resolve
- Systems approach
 - More measures of linkages
 - Sources of information, collaboration and prototypes
- Business demographics
 - Size of firm, Age of firm, where are gazelles?
 - How do innovative gazelles differ from non-innovative gazelles?
 - Entry and exit, by size, by innovative or not.

Business demographics and innovation

	High entry	Low entry
High Exit	Volatile – new industries ICT services Exit might result from mergers	Structural change UK retail, UK pubs
Low Exit	New opportunities, disruptive innovation	Stable - audit, actuarial services, ...

More firms innovate than do R&D

Company characteristics	All Companies	Product or Process innovation	No. of innovative companies
	(000)	Per cent	(000)
All	1,220.1	14.3	174.5
With R&D	57.1	64.2	36.7
No R&D	1,163.0	11.8	137.2

Source: NSF 16-308

Policy now

- Promoting innovation in different sectors for different socioeconomic objectives
- Supporting gazelles through innovation and/or entrepreneurship policies
- Policy for non-R&D performers
 - SBIR, vouchers, state and municipal support
 - Innovation parks

Second approach

- Change/Generalise the definition to
 - Measure innovation in all SNA 2008 sectors
 - General government + public corporations = Public Sector
 - Household sector including individuals
 - Business sector (corporations financial and non-financial)

Changing/Generalising the definition

- Main changes
 - Process and the two methods become one process with three components
 - ‘improved’ becomes ‘changed’ avoiding normative statements
 - Market becomes ‘potential users’
 - Process change is linked more closely to potential users
- For the business sector, this makes little difference

A generalized definition

- An *innovation* is the implementation of a new or significantly **changed** product or process. A product is a good or a service. Process includes production or delivery, organisation, or marketing processes.
- A new or significantly changed product is *implemented* when it is **made available to potential users**. New or significantly changed processes are implemented when they are brought into actual use in the operation of the institutional unit, **as part of making product available to potential users**.

Outcomes

- Internationally comparable definitions of innovation for all SNA sectors
- Support for policy development in the Public and Private sector, and for monitoring and evaluation of implemented policies
- Stimulus for more analysis of innovation in all SNA sectors *and the interactions between them*

Restricted innovation

Are intentions realised?

- So far the focus has been on inferring the activity of innovation using internationally agreed definitions to support measurement
- Policy interest goes beyond just innovation
 - Sustainable innovation, green innovation, ...
 - Sustainable innovation for inclusive development
- To measure this ‘restricted’ innovation requires additional surveys, including social surveys, conducted at different times
 - As well as definitions of sustainable, inclusive, green. ...
- Additional time scales require a longer term measurement perspective.