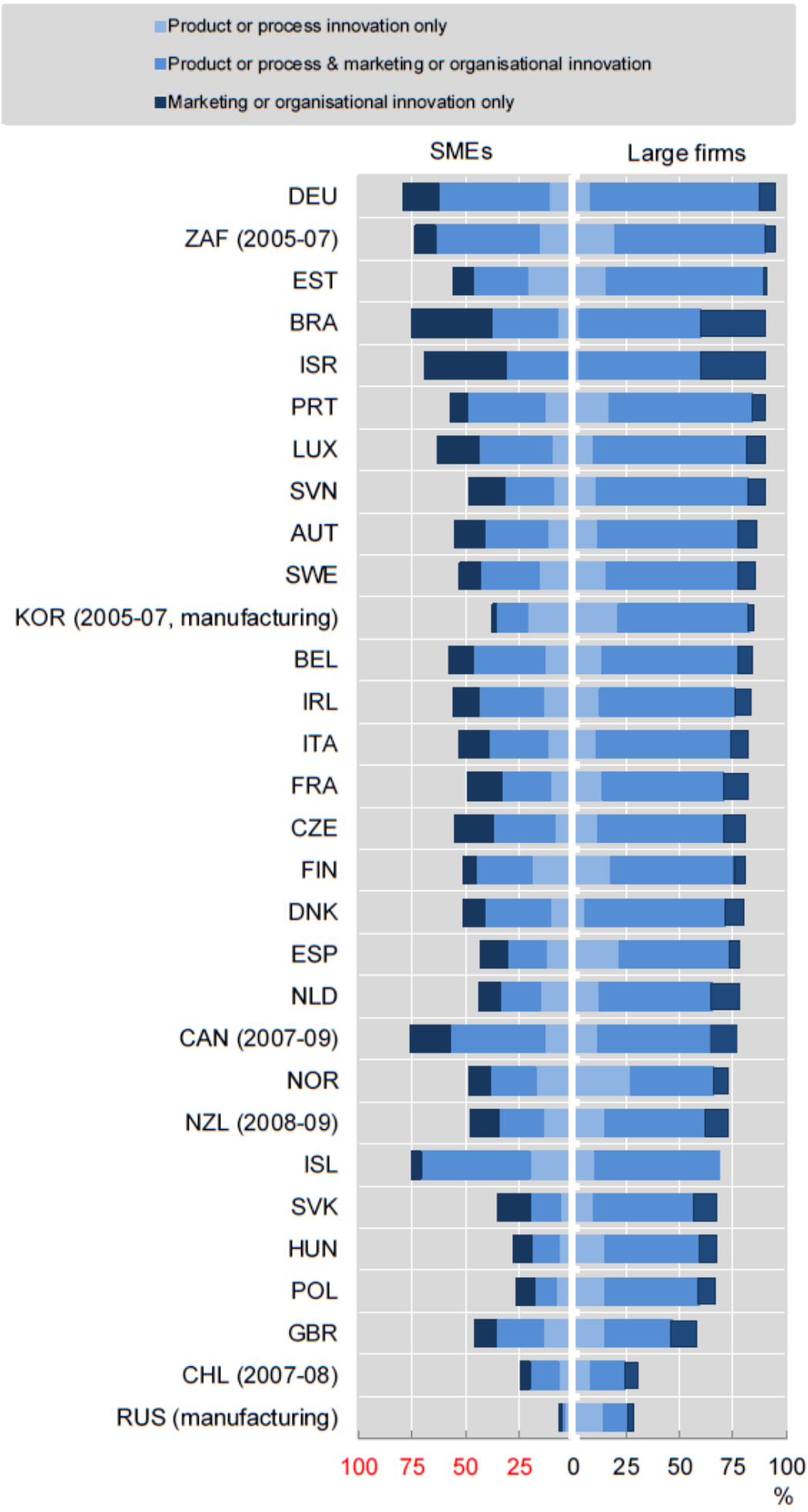
Technological and non-technological innovation

Technological innovations are usually associated with product and process innovation, whereas non-technological innovations are generally associated with organizational and marketing innovations. Technological and non-technological innovations are highly interconnected, as shown by firm-level innovation data.

How important are technological and non-technological innovations?

Technological and non-technological innovations are highly interconnected. The commercialisation of technological product innovations often requires the development of new marketing methods. Similarly, a new production technique will typically increase productivity only if is supported by changes in organisation. Firm-level innovation data reveal the majority of innovative firms (both large firms and SMEs) introduce technological innovations (i.e. process and product innovations), as well as non-technological innovation (i.e. marketing and organisational innovations) (Figure 1).

Figure1. Types of innovation by firm size, 2006-08
(% all SMEs and large firms)


Product or process innovation only
Product or process & marketing or organisational innovation
Marketing or organisational innovation only
SMEs
Large firms
DEU
ZAF (2005-07)
EST
BRA
ISR
PRT
LUX
SVN
AUT
SWE
KOR (2005-07, manufacturing)
BEL
IRL
ITA
FRA
CZE
FIN
DNK
ESP
NLD
CAN (2007-09)
NOR
NZL (2008-09)
ISL
SVK
HUN
POL
GBR
CHL (2007-08)
RUS (manufacturing)
100 75 50 25 0 25 50 75 100
%

OECD (2011), “Mixed modes of innovation”, in OECD Science, Technology and Industry Scoreboard 2011, OECD Publishing. http://dx.doi.org/10.1787/sti_scoreboard-2011-44-en. Source: OECD, based on Eurostat (CIS-2008) and national data sources, June 2011. See chapter notes. StatLink: http://dx.doi.org/10.1787/888932487058

What are the policy implications of technological vs. non-technological innovations?

Identify innovation drivers and hinderers. Identifying the factors that drive the different types of innovation and those that hinder them is of value for understanding the innovation process and for formulating innovation policy. Indeed, objectives and barriers vary by type of innovation. For instance, objectives, such as replacing products being phased out or increasing the range of goods and services, are more likely to drive technological innovations than non-technological innovations. On the contrary, objectives like increasing the ability to adapt to different client demands are more likely to drive non-technological innovations (e.g. marketing and organizational innovation) than technological innovations. Barriers to innovation can also be related to a specific type of innovation or to all types. For example, cost factors can be relevant for all types of innovations, while R&D incentives, IP (intellectual property) rights, legislation, regulations, and standards are likely to affect more significantly technological innovations than non-technological innovations.

Consider technological vs. non-technological innovations. Taking into consideration the different impacts of and the interactions between technological and non-technological innovations is also important when formulating innovation policy. Technological and non-technological innovations, for instance, might differ in their impacts on firm performance (e.g. turnover, cost reduction, and productivity) as well on socioeconomic performance (e.g. contribution to growth and job creation). Policy tends to favour technological innovation, yet evidence suggests that success often also depends on accompanying non-technological innovation. Policy-making agendas should therefore be broadened to take into account non-technological innovation.

References

- OECD (2011), “Mixed modes of innovation”, in OECD Science, Technology and Industry Scoreboard 2011, OECD Publishing. http://dx.doi.org/10.1787/sti_scoreboard-2011-44-en [1]
- OECD (2010), “Innovation trends” in The OECD Innovation Strategy: Getting a Head Start on Tomorrow, OECD Publishing. doi: 10.1787/9789264083479-en;
- OECD (2009a), “Non-technological innovation”, in OECD Science, Technology and Industry Scoreboard 2009, OECD Publishing. http://dx.doi.org/10.1787/sti_scoreboard-2009-41-en [2]
- OECD (2009b), Innovation in Firms: A Microeconomic Perspective, OECD Publishing. doi: 10.1787/9789264056213-en
- OECD/Eurostat (2005), The Measurement of Scientific and Technological Activities—Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd ed., OECD Publishing. doi: 10.1787/9789264013100-en

Links
[1] http://dx.doi.org/10.1787/sti_scoreboard-2011-44-en

[2] http://dx.doi.org/10.1787/sti_scoreboard-2009-41-en