

Persistence in innovation behaviour.

A long-term perspective based on firm-level data from three waves of Community Innovation Surveys

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Research subject and hypothesis: The relevance of innovation for firm performance and competitiveness has long been acknowledged. For a long period the focus in this respect has been on research efforts (on the input side) and patents (on the output side) and hence R&D-based innovations. The innovation process in firms is however characterised by a large heterogeneity between firms with respect to innovation process, outputs and effects.

In the past years, the identification of different ‘modes of innovation’ has contributed to better understand this variety and the interdependences of different innovation related activities of firms (e.g. Battisti and Stoneman 2010, OECD 2009, Jensen et al. 2007, Arundel and Hollanders 2005, Hollenstein 2003, Tether 2001). This understanding also allowed to better capture the impacts of innovation on firm performance on a micro-level (Evangelista and Vezzani 2010, Frenz and Lambert 2009, Hall et al. 2009).

Another strand of innovation economics discusses the persistence of innovation. In the literature so far a mixed picture emerges with respect to the persistence of innovation activities in firms (Peters 2009, Roper and Hewitt-Dundas 2008, Malerba et al. 1997), particularly when it is related to patents (Cefisa and Orsenigo 2001).

In our paper we first address the question on the persistence of innovation of Austrian firms in the period from 1998 to 2006. In particular we address the question on changes in the innovation behaviour of firms over time (represented by differences in dominant innovation mode) and discuss the factors contributing to the persistence of innovation and innovation behaviour. The research question addressed is whether persistence in innovation activities of Austria firms can be observed and if so, whether there is persistence not only in innovation but in innovation mode.

Data: The Community Innovation Survey is the largest innovation survey globally that is conducted in a co-ordinated and comparable manner in the EU and is the basis for many similar innovation surveys internationally. The data for our analysis comes from three waves of Community Innovation Surveys (CIS) in Austria: CIS3 representing innovation behaviour in the period 1998 to 2000, CIS4 in the period 2002 to 2004 and CIS2006 in the period from 2004 to 2006. The dataset has been established in a project on behalf of the Austrian Federal Ministry of Economy, Family and Youth by JOANNEUM RESEARCH in cooperation with Statistik Austria.

Industries (NACE Rev. 1.1) covered are ‘mining and quarrying’ (NACE 10-14), ‘manufacturing’ (NACE 15-37), ‘electricity, gas and water supply’ (NACE 40-41), ‘wholesale trade’ (NACE 51), ‘transport, storage and communication’ (NACE 60-64), ‘financial intermediation’

(NACE 65-67), ‘computer and related activities’ (NACE 72); ‘research and development’ (NACE 73), ‘architectural and engineering activities’ (NACE 74.2) and ‘technical testing and analysis’ (NACE 74.3). Following the standard recommendations for the Community Innovation Survey, the dataset is restricted to enterprises with more than 9 employees.

Overall this dataset includes data on innovation activities of almost 7000 enterprises. The group of firms for whom information is available from more than one innovation survey is dominated by large-sized firms.

Methodology: The identification of different modes of innovation relies on current methods of factor analysis for categorical data that is the basis for a cluster analysis assigning each firm to a specific group based on the dominant innovation mode. This procedure allows to use data on expected innovation effects, innovation outputs and the innovation process from the CIS, which is primarily categorical, to be used for describing differences in innovation behaviour at the firm level based not on theoretical reasoning but empirical analysis.

Based on this categorisation the persistence of innovation can be discussed. In our paper this is done by describing different patterns of innovation behaviour over time given particular attention to changes in the innovation mode and factors potentially explaining these changes. The question on the conditions when firms start undertaking intramural R&D-activities is of particular interest.

Expected Results: For the first time our dataset allows to discuss changes in the innovation behaviour of Austrian firms in a long-term perspective based on data from the Community Innovation Survey. Hence changes in innovation strategies (as perceived by innovation behaviour) and persistence in innovation can be illustrated. Given our empirical approach, our paper can contribute to the discussion on the persistence of innovation, if not only R&D-based innovation is considered, and identify different factors influencing innovation persistence given differences in the innovation strategies by firms.

Selected references

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