

Innovation in Enterprise Clusters: Evidence from Dutch Manufacturing
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The innovation survey data collected by Statistics Netherlands for the Community Innovation Survey (CIS) pertain to enterprises. However, enterprises are, in fact, often subsidiaries, daughter or sister enterprises, or part of a conglomerate. When the associated legal entities are majority-controlled by a group leader, it is likely that key decisions will be taken with a view to benefiting the whole group. A model of optimizing behaviour that is appropriate at the group level may be inadequate to describe the decisions taken at the component level. When it comes to key issues like research and development (R&D), even legally independent firms may form networks, R&D joint ventures or technological alliances, in which part of the R&D is conducted jointly for reasons of cost sharing, risk sharing and complementarities. There is therefore justification for asking how appropriate it is to relate the characteristics of enterprises to their R&D or innovation decisions, as is usually done using innovation survey data. Would it not make more sense to relate innovation outcomes to determinants measured at the group level?

For example, suppose an enterprise is established in the Netherlands and has a subsidiary in China and another in the United States. The R&D is conducted mainly at the home base, but much of the product sales originating from this R&D investment is done in foreign markets through the Chinese and US subsidiaries. Dutch innovation data would record the R&D conducted at home and the product sales of the Dutch parent company, but would ignore the production and sales emanating from the foreign subsidiaries. Put simply, if R&D is conducted in one place and production in another, no link between R&D and innovation would appear in the data.

This chapter explores the aggregation problem and illustrates its relevance using data for the Netherlands from the third Community Innovation Survey (CIS3), and production and financial statistics. It compares the results of an innovation output equation that was estimated using data on enterprises (*bedrijfseenheid*), domestic enterprise clusters (*onderneming*), and those enterprise clusters with foreign inward or outward investments.