12 THE SPATIAL CLUSTERING OF KNOWLEDGE-INTENSIVE SERVICES: COMPUTING SERVICES IN THE NETHERLANDS

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12.1 Introduction

Between 1994 and 2002, the number of computing services firms in the Netherlands increased by more than 150%, while the average growth in number of firms was about 30% (Statistics Netherlands 2003). The widespread adoption of the personal computer and the rise of the Internet stimulated the demand for computing services and, consequently, the sector grew very rapidly. The question is which regions have benefited from the quick growth in this relatively young industry? In theory, computing services firms can locate almost anywhere in the Netherlands. Entry barriers are low because entrepreneurs only need a computer and some programming skills to start a computing services firm (Haug 1991). Moreover, most firms are small and, consequently, they hardly need any start-up capital or office space (Sivitanidou 1999).

Nevertheless, empirical studies in the U.S. (Haug 1991; Sivitanidou 1999), Great-Britain (Coe 1999; Fingleton et al. 2004) and the Netherlands (Van Oort & Atzema 2004) all show that computing services firms tend to concentrate in space, contradicting the assumptions of a footloose industry. Agglomeration economies, which are the benefits of being located at the same place as other firms, are often suggested as an explanation for the clustering of industries. Firms operating in close proximity to other firms might have lower production costs because they can share the costs of infrastructure or specific services and have lower transportation costs and higher productivity because they can benefit from a large and specialised labour market. Since the 1990s, the literature on agglomeration economies has mainly emphasised the benefits of knowledge spillovers that are more likely to occur within a spatial concentration of firms (see Feldman & Audretsch 1999). While the more traditional agglomeration economies are called static externalities, knowledge spillovers are assumed to be dynamic externalities, because they stimulate learning dynamics (Glaeser et al. 1992). Firms that are co-located
are assumed to be more innovative because the spatial proximity facilitates knowledge spillovers and the firms obtain more external knowledge.

Most literature on agglomeration economies has been preoccupied with the spatial concentration of manufacturing industries, while services have been relatively neglected (Drejer & Vinding 2003). This is quite surprising, not only because services form a major part of the current economy, but also because both static and dynamic agglomeration economies are likely to affect the spatial pattern of services. In contrast to manufacturing firms, knowledge-intensive services do not develop material goods but instead provide customised and often innovative information, expertise and knowledge to other firms, generally with a view to solving customers’ firm-specific problems (Keeble & Nachum 2004). Knowledge-intensive services deal with complex and often non-standardised knowledge that is embodied in highly skilled employees. Exchanging such knowledge requires regular face-to-face interactions and these firms in particular are assumed to benefit from co-location (Storper & Venables 2004). In order to understand the spatial pattern of knowledge-intensive activities, both static externalities such as a location near a lot of potential customers and a highly educated labour market and dynamic externalities should be taken into account.

In this chapter, the spatial concentration of the computing services industry in the Netherlands will be empirically explored over time. The central question is: to what extent has the computing services industry in the Netherlands concentrated in specific regions between 1981 and 2001 and what characterises the regions where the industry has primarily developed? In other words, can we find empirical evidence that agglomeration economies affect the spatial pattern of computing services industry in the Netherlands? To answer this question, we will use an analysis comparable to Glaeser et al. (1992) and Henderson et al. (1995) in which the regional conditions of previous years are used to explain the employment growth in following years. Contrary to their studies, however, we will include both static and dynamic externalities because we assume that these factors can contribute to the employment growth in the computing services.

The chapter is organised as follows. Section 12.2 discusses the theoretical explanations for the clustering of knowledge-intensive services. Three factors are assumed to affect the employment growth in this industry: the demand for services, the availability of highly educated employees and knowledge spillovers between industries. Section 12.3 provides a detailed description of the dataset of this study. Using that data we will answer the first research question and describe the spatial dynamics of the computing services.