



**Analyseinstitut for Forskning**

## **Agglomeration of Firms**

**English summary of MSc. thesis:  
"Virksomheders geografiske koncentration"**

**Kasper Skjødt Nielsen**



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Analyseinstitut for Forskning

The Danish Institute for Studies in  
Research and Research Policy  
Finlandsgade 4  
DK-8200 Aarhus N  
[www.afsk.au.dk](http://www.afsk.au.dk)

## Resumé

Marshall proposed three different sources of localized agglomeration back in 1920. Does these sources still lead to agglomeration today? Marshall argues that Technological Spillovers, Intermediate Inputs and Labour Pooling are the main reasons for localized agglomeration. This paper presents three different theoretical models in turn, each using one of Marshalls sources as the driving force of localized agglomeration.

Before turning to an actual analysis of the driving forces behind agglomeration however, two simple simple indices for testing for localized agglomeration is presented. The first index is proposed by Krugman and uses localized Gini Coefficients, based on the proportion of the geographical units employment in a specific industry, which is used as an evidence of the degree of geographical concentration, and hence localized agglomeration. The second index is proposed by Ellison and Glaeser. Their index is based on the simple Gini Coefficients, but also includes a Herfindahl index as a measure of the degree of competition in an industry.

The three models each of which uses one of Marshalls sources for agglomeration are completely independent models. Technological Spillovers are presented in a game theory framework originally proposed by Gersbach and Schmutzler. The model shows evidence that under some assumptions Technological Spillovers can lead to localized agglomeration, despite model-specific forces that leads the economy away from agglomeration. The model which uses Labour Pooling primary force driving agglomeration, is a partial micro-model proposed by Helsley and Strange. The model uses matching between skills of the workers and the firms demand for skills, and the driving force of agglomeration. The model implements a second best solution, in which the firms actuately tend to agglomerate more than their profit maximizing level. The last of Marshalls sources of localized agglomeration, access to Intermediate Inputs, is presented in a model proposed by Amiti. The model is a complete micro specification of an economy, with two imperfectly competitive industries, and one industry (agriculture) with perfect competition. The two imperfectly competitive industries are called the upstream and downstream industries. The upstream industry produces a product that is used as an intermediate input in the downstream industry. The agglomeration forces drives the two industries to co-agglomerate, despite forces in the economy that drives them to two separate locations.

In the last part of the paper a small analysis of two selected industries in Denmark is conducted. The two industries are ICT (Information and Communication Technology) and MM (Medical and Medico). The analysis is merely an illustration of the uses for the simple Gini Coefficients. The ICT sector does not show evidence of any localized agglomeration, while the MM sector seems

to be highly agglomerated. No investigation of the sources of the agglomeration is made, but results of two other analysis of American industries are presented. Both of these shows evidence of all of Marshalls three sources. The stongest evidence seems to be in favour if Labour Pooling followed by Technological Spillovers, while there is only vague (if any) evidence that Intermediate Inputs drives agglomeration in the US.