A MEASURE FOR IDENTIFYING SUBSTANTIAL GEOGRAPHIC CONCENTRATIONS OF ECONOMIC ACTIVITY

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EVIDENCE FOR POLICY

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A MEASURE FOR IDENTIFYING SUBSTANTIAL GEOGRAPHIC CONCENTRATIONS OF ECONOMIC ACTIVITY[1]

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INTRODUCTION

A range of theoretical models show that the geographical concentration of competitive firms in specific industries provides advantages to the firms involved. For example, it is easier for firms to find suitable employees and to source a wider variety of inputs in agglomerations, and agglomerations also constitute a larger local market. Furthermore, it has been shown that such concentrations can set in motion virtuous development circles. This puts other areas that do not have industrial concentrations at a relative disadvantage. Consequently regional industrial policy tends to emphasise the notion of building on existing concentrations of competitive firms.

While the theoretical regional development literature tends to ignore the question of how to define a geographic concentration of economic activity, a number of empirical measures of concentration and specialisation are commonly used in applied research. However, these suffer from a number of significant drawbacks when used to inform regional industrial policymaking and planning. The existing measures do not provide a direct insight into the size or importance of individual concentrations. Being solely derived using employment data the existing measures do not account for the number of firms, which is a significant drawback as theoretical literature points to the interaction amongst multiple firms as the driver of agglomeration benefits. Furthermore, most existing indices do not take account of the size distribution of the concentrations and they also

tend to be applied to predefined administrative units, which rarely constitute economically meaningful functional areas.

A NEW MEASURE

This paper introduces a new measure of industrial concentrations that identifies substantial concentrations, and a new methodology for generating relevant, industry-specific, spatial units. The concentration measure incorporates both the number of plants and the scale of activity measured by employment in a concentration. Furthermore, the spatial extent of the concentrations is defined by identifying travel to work catchments for each industry around the locations of individual firms, which we refer to as the points based formula.

The method is applied using Irish data, which reveals striking differences across industries with respect to their spatial configuration, with some substantial concentrations encompassing the entire country while others are regional or local. The analysis also shows that the spatial extent of significant concentrations is smaller than that considered in previous analysis and does not match well with the eight regional authority areas.

Compared to the output of traditional indices, the measure produces fewer concentrations that are more suitable targets for industrial policy. Most of these concentrations encompass the main employment centres of the country. However, the output is not simply a reflection of the general employment distribution. The analysis highlights important differences across sectors and identifies concentrations of differing spatial extent.
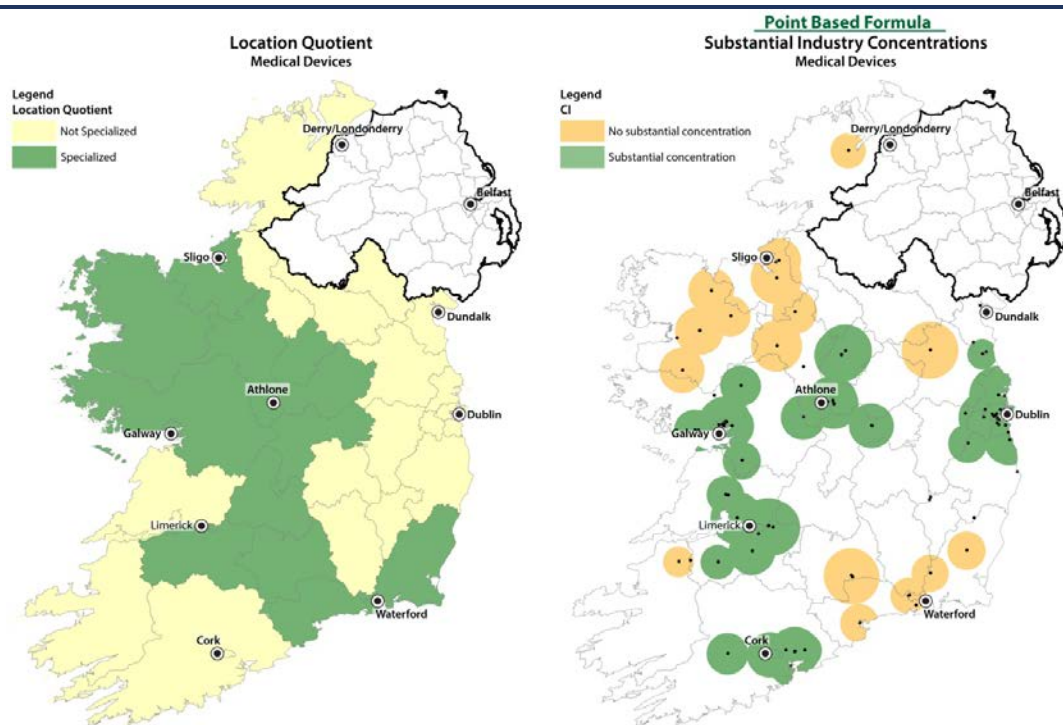
Figure 1 illustrates the results of applying the new concentration measure for the medical devices sector, compared to the more traditional location quotient method. The latter (shown in the map on the left) suggests that the medical devices industry is concentrated in a large area covering the western and midlands and southern counties. In contrast the new methodology when utilised with data on firms' precise locations and commuting data (i.e. "points based formula") identifies substantial concentrations in Dublin, around Athlone, around Galway and Limerick and Cork. The method also identifies concentrations that are not substantial (shown in orange) around a number of other centres.

Comparing the two maps shows the value of the new methodology. While the 'traditional' location quotient approach suggests the medical devices industry is concentrated in many counties, the new methodology shows that substantial concentrations are found in fewer locations. By utilising the actual locations of firms and actual commuting patterns the new method is able to identify

concentrations that cross county boundaries as well as those that cover areas that are smaller than a county.

Given the advantages inherent in clusters and agglomerations, industrial policy around the world has been heavily focused on the development of these. Importantly, the benefits of clustering and agglomeration have been found to arise only when a certain size threshold has been exceeded. For industrial policy this means that policymaking should focus on substantial concentrations, incorporating sizeable numbers of firms and workers. These are the concentrations which have the best potential for further development. Traditional measures of concentrations are not able to identify such substantial concentrations. In contrast the new measure is designed to identify substantial concentrations as well as those that are not substantial and the method also has the advantage of being able to delineate the geographic extent of substantial concentrations more accurately, allowing policy makers to target measures more accurately.

FIGURE 1   Substantial Concentration in the Medical Devices Industry

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