

The Revival of the City through the Long-Term Legacy of Marshall: the Rise to Prominence of Input-Output Linkages, Labour Market Pooling and Knowledge Spillovers.

Author: Steijn, M. P. A.^{u,v}

Potential future co – authors: Koster, H. R. A.^{v,t}, Van Oort, F. G.^{u,e}

u: Section of Economic Geography, Universiteit Utrecht, Utrecht, the Netherlands

v: Department of Spatial Economics, Vrije Universiteit, Amsterdam, the Netherlands

e: Erasmus School of Economics, Erasmus Universiteit, Rotterdam, the Netherlands

t: The Tinbergen Institute, Amsterdam, the Netherlands

Contact: m.p.a.steijn@uu.nl

Extended Abstract

Many academic and policy accounts reveal that cities gaining renewed momentum as focal points of human activity. More than 50% of the world population lives in urban areas (UN, 2015) and the importance of cities as engines of economic growth has only been increasing over the last three decades (McCann, 2008). These observations are striking. As Marshall (1920) noted, the advantage of cities lies in reducing the transportation costs of people, goods and ideas. Technological improvements in the transportation possibilities and the development of telecommunications of the last decades suggest that the advantage of being in a city must have dissipated. Why then has the city “triumphed” (Glaeser, 2011) and has the “end of geography”, “death of distance” or “flat world” not materialized as predicted by respectively O’Brien (1992), Cairncross (1997) & Friedman (2007).

Academics like Gaspar & Glaeser (1998); Florida (2005); McCann (2008) and Glaeser (2011) propose the explanation of a seemingly contradictory trend of both globalisation and localisation. The academics in this line of work acknowledge globalisation facilitated by improving transportation and communication technologies in combination with the removal of trade tariffs. But on the other hand, they argue that proximity is in fact more important than ever thanks to, rather than in spite of, these developments. In analogy with the core-periphery model of the New Economic Geography (Krugman, 1991) stronger local agglomeration externalities and falling transportation costs lead to stronger concentrations in a more connected world (Leamer, 2007; Rodríguez-Pose & Crescenzi, 2008). The world that is increasingly spiky (Florida, 2005) curved (McCann, 2008) or mountainous (Rodríguez-Pose & Crescenzi, 2008) instead of flat!

The reasons why exactly localisation is occurring in times of globalisation are relatively unexplored. The most common argument is the increasing importance of face-to-face contact (e.g. Storper & Venables, 2004; Rodríguez-Pose & Crescenzi, 2008; McCann, 2008;

Glaeser, 2011). Along this line, McCann (2008, p. 357) argues that *“the time (opportunity) costs of not having continuous face-to-face contact have increased with the quantity, variety and complexity of the information produced.”* The literature gives good reasons why face-to-face contact cannot easily be replaced by telecommunication in fostering trust and understanding in collaborations (Storper & Venables, 2004; Glaeser, 2011), but is underdeveloped in terms of why the need for face-to-face contact has increased. Has the complexity of information indeed increased, as suggested by McCann (2008)? Has the need for trust or the number of collaborations increased? Are there possibly more reasons besides face-to-face contact to agglomerate?

Furthermore and not unimportantly, the reasons to agglomerate differ across industries (Faggio, Silva & Strange, 2014). The challenges of the digital age are likely different for each industry and therefore have a different impact on the degree and reasons of agglomeration. Heterogeneity over time and across industries has not been analysed sufficiently yet to reach the unambiguous identification of commonalities that sustain theories of agglomeration or creates new ones. This research focuses on exactly this issue. Understanding the mechanisms at hand is paramount as not all cities are “triumphing”. A wide range of degree of success exists in cities around the world. Shining success stories, like New York, are eclipsed by the faith of others, like Detroit.

In this project, it is argued that there is an increase in both the amount of non-routine technical and problem-solving skills required in production processes, as in the amount of collaborations between agents. The market for workers who embody the tacit knowledge required to perform non-routine analytical duties has extended for multiple reasons. First of all, technological progress made those workers more productive and allowed for the substitution of workers performing more routine tasks (Acemoglu & Autor, 2011). The combination of technological process, increasing competition related to globalisation, and an increase in wealth on the demand side made firms switch to more flexible production structures which can better cater to fragmented niche markets and are more resilient to volatile demand (Storper & Scott, 1992; Pine, 1993; Kotha, 1996; McCann & Acs, 2009). These flexible production structures require much more specialised highly educated workers. Not only on the work floor but also due to the larger efforts of human resource management (Kotha, 1996), the stronger emphasis on product and process innovation (Bertschek, 1995; Bloom, Draca & Van Reenen, 2016), the increasingly volatile nature of markets (Hitt, Keats & DeMarie, 1998), the increasing importance of financial products and services (Epstein, 2005), the increased pace of technological change resulting in shortening of product life cycles (Sanchez, 1995; Kotha, 1996), and the identification of niche markets for product differentiation and concomitant marketing (Pine, 1993). The competitive advantage is held by firms that can get the right combination of production factors, including specialised labour, at the right time, in the right circumstances.

The extended market for skilled workers has led to a deeper division of labour (Smith, 1776; Kim, 1989). In increased competition workers increasingly specialise (Kim, 1989). At the same time as knowledge accumulates workers are driven to specialise as to limit the educational burden. To still be able to recombine knowledge collaborations are vital (Jones, 2009) As a result, the number of job occupations has increased drastically since the early 80’s (Berger & Frey, 2016).

In this paper, three progressing inter-related trends for firms are identified that together explain why more tacit knowledge is communicated and more working relationships are needed, and thus consequently more face-to-face contact is required over the past technologically and communicative burgeoning decades:

- *Complexity*, which relates to the amount of tacit knowledge involved,
- *Variety*, which relates to the variety of inputs, be it skilled labour, products or services required, and the variety of outputs demanded by markets,
- *Uncertainty*, which relates to the volatility of market and production conditions a firm faces, be it in labour or other production factors required, the threat of competition or the opening of new niche markets.

Firms characterised by these trends not only benefit of proximity through the facilitation of face-to-face contact, but more generally through the three sources of Marshallian agglomeration forces: input-output linkages, labour market pooling, and knowledge spillovers. Obviously, as face-to-face contact facilitates the transfer of tacit knowledge and builds trust, firms characterised by these trends profit more by co-agglomerating with suppliers, customers, and firms that employ similar workers and similar technologies. Shorter input-output linkages increase the efficiency and punctuality of the exchange of specialised goods or services; a larger labour market pool improves the match between workers and the specialised vacant jobs and hedges firms for the idiosyncratic shocks of the volatile markets; in a more competitive market the importance of knowledge spillovers on new product or process innovations and the activities of competitors increases.

To test these predictions, an empirical analysis is thought out following the line of previous work by Ellison, Glaeser & Kerr (2010), Jofre-Monseny, Marín-López & Viladecans-Marsal (2011), and Faggio, Silva & Strange (2016). These authors use proxies for each of the sources of Marshallian agglomeration forces to test their relative importance in firm location choices. Although Faggio et al. (2016) do account for heterogeneity of industries, this research would be the first to incorporate both heterogeneity of firms (industries) as the long-term time dimension. This constitutes a methodological advantage as fixed effects estimation allows for a less biased estimate of the coefficients. The changes over time in the industry-specific prediction power of the three sources of Marshallian agglomeration forces are explained on the basis of proxies for the industry-specific trends in complexity, variety and uncertainty. These indicators are not independent but should be seen as facets of the same phenomenon.

Where Ellison et al. (2010) and Faggio et al. (2016) evaluate the tendency of industries to co-agglomerate on the basis of input-output linkages, labour market pooling and knowledge spillovers. Jofre-Monseny et al. (2011) evaluate the number of firms entering a region on the employment in the supplying industries, customer industries, industries that use similar workers and technologically related industries. This research follows the line of Jofre-Monseny et al. (2011) as the expectation is that not solely the presence of another industry is becoming more important due to the trends mentioned but also the sheer size of the pool of suppliers, customers, workers and potential knowledge spillovers. There are no results yet but the hypothesis is that the prediction power on the entry of firms of the three Marshallian sources of agglomeration on increases over time as the complexity, variety or uncertainty within the respective industries increases.

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