

**UNIVERSITÀ CATTOLICA DEL SACRO CUORE  
MILANO**

**Scuola di Dottorato in Politica Economica**

**Ciclo XXVIII**

**S.S.D. SECS-P/02, SECS-P/06**

**Distance Matters:  
Three essays in Spatial Economic Analysis**

**Tesi di Dottorato di Elena Calegari**

**Matricola:4110838**

**Anno Accademico 2014/2015**



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**Coordinatore: Ch.mo Prof. Luigi Campiglio**

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# Introduction

Waldo Tobler, with his first law of geography stated "Everything is related to everything else, but near things are more related than distant things" (Tobler, 1970). If it was certainly true in 1970, this belief has been called into question in an era of development of Information and Communication Technologies (ICTs). In the debate over globalization processes, several scholars and journalists argue indeed that, with the increasing speed of telecommunications, physical distance is losing its explanatory power as determinant of socio-economical relationships. It has been pointed out that ICTs decrease communication costs, shorting distances with several consequences on trade, job market and governance (Cairncross, 2001; Friedman, 2005). Friedman (2005), for instance, asserts that companies are nowadays able to localize everywhere and to compete or cooperate globally, making borders and barriers lose their relevance and shaping a "flatter" world. Alongside academics that predicted "the death of distance" and "the end of geography" (Cairncross, 2001; O'Brien, 1992), there are others that resolutely criticize these forecasts, underlining their lack of empirical evidences and endorsing the opposite prediction (Stiglitz, 2007). Although ICTs have in fact changed the perception of distance, it has been shown that geographical distance maintains a relevant role in explaining spatial dynamics, still being a good predictor of industry activities and trades (Polèse and Shearmur, 2004; Disdier and Head, 2008). Moreover, since ICTs are built on tangible infrastructures with a physical cost based on distance, Tranos and Nijkamp (2013) argue that a dual relationship exists between ICTs and geographical distance, and therefore that internet influences geography but also that physical distance influences ITC connections. According to this line of research, the result of this mutual influence is that, since connection costs increase with distance, ICTs will lead to an even increasing relevance of agglomerations and of the role of cities as medium-sized hub (Gaspar and Glaeser, 1998; Brakman and Marrewijk, 2008; Pastor-Satorras and Vespignani, 2007).

This dissertation aims to give a contribution to this debate, partially answering to the broad question "*Does distance still matter?*" and to draw possible policy implications. The purpose is to show the role of geographical distance in three different economic environments, characterized by diversified size of the unit of analysis. The studies are conducted with different methodologies, in order to apply in each case the most suited empirical strategy.

Chapter 1 focuses on the effect that agglomeration economies and other spatial characteristics of the local labour market have on commuting behaviour. The research question of the chapter is relevant to the debate over the role of distance, because it aims to show if, in spite of the development of ICTs, agglomerations and cities still have a relevant role in explaining travel-to-work behaviour, hence confirming the results of Brakman and Marrewijk (2008). The chapter is founded on the evidence that, despite the introduction of new technologies that allow to work from home, the amount of daily commuting flows is increasing over time, inducing several externalities and concerning both local and national government (European Commission, 2011).

Chapter 2 has a wider geographical unit of analysis and aims to quantify the spatial dimension of the drivers of regional innovation. In a context of "death of distance" innovation should indeed have a large-scale diffusion across space, but evidences suggest that this process is subject to a distance decay effect (Ponds, van Oort, and Frenken, 2010; Anselin, Varga, and Acs, 2000). The objective of the chapter is to estimate this spatial effect for two different innovative processes and to evaluate if geographically-related characteristics are still relevant in knowledge diffusion, confirming the results of Gaspar and Glaeser (1998).

TABLE 1: Features of the three applications of the dissertation

	Chapter 1		Chapter 2	Chapter 3
Unit of analysis	Local		Regional	Global
Methodology	Two-stage Model	Spatial	Spatial Panel Model	Discontinuity Analysis
Specific research question to contribute to overall research question of the dissertation	Do agglomerations have an impact in commuting behaviour in an era of development of ICTs?		Does innovation diffusion have a geographical component in an era of technological improvements?	Does distance have an impact on frequent flyers' travel decisions in an era of faster routes and lower travel costs?

The last application has an even wider unit of analysis and aims to look at the distance on a global scale, focusing on movements of individuals by plane. Faster routes and the development of low cost Airlines indeed stimulated both the average amount and length of individuals' travels, with an effect of increasing perception of the shortage of distances. Starting from this evidence, Chapter 3 analyses the effect that a Frequent Flyer loyalty Program has on the amount of flights taken by travellers, investigating if the benefits included in the program make them more willing to travel. The analysis gives a contribution to the overall research question of the dissertation, testing if the travel distance still has a role as a deterrent in consuming behaviour of frequent flyers or if the incentives involved in the loyalty program influence the behaviour disregarding the geographical distance.

In Table 1 the main characteristics of the chapters are summarized.