CASA0012 Dissertation Book

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CASA0012, MSc Spatial Data Science and Visualisation Dissertation

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Repository: https://fang-zeqiang.github.io/CASA0012-Dissertation/

This dissertation is submitted in part requirement for the
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Abstract

Some abstract text

Declaration

I, Zeqiang Fang, hereby declare that this dissertation is all my own original work and that all sources have been acknowledged. It is xxx words in length

Acknowledgements

I would like to thank blah blah

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Abbreviations

Term	Abbreviation
Digital Elevation Model	DEM
Digital Surface Model	DSM
Digital Terrain Model	DTM

Chapter 1

Introduction

1.1 Background

1. tech cluster development
2. dynamics cause better performance
3. industry clustering pattern and economics performances

1.2 Research Question and Objectives

How does tech clusters' dynamics pattern change in UK from 1998 to 2018? / What factors can affect tech clusters' dynamics pattern change in UK?

To what extent will dynamic change affect tech clusters'performance

1.3 Report Structure

1. data clean
2. tech cluster recognition
3. dynamics index generation
4. hypothesis (OLS estimation)

5. regression
6. residual analysis
7. result interpretation

Chapter 2

Literature Review

2.1 Industry Cluster & Tech Cluster

Tech clusters like Silicon Valley play a central role for modern innovation, business competitiveness, and economic performance. This paper reviews what constitutes a tech cluster, how they function internally, and the degree to which policy makers can purposefully foster them. We describe the growing influence of advanced technologies for businesses outside of traditional tech fields, the strains and backlash that tech clusters are experiencing, and emerging research questions for theory and empirical work.

2.2 Cluster Dynamics

Industrial dynamics and clusters: a survey, regional research. This article reviews clusters and their impact on the entry, exit, and growth of firms, as well as the literature supporting the evolutionary dynamics of cluster formation. This extensive review shows strong evidence that clusters promote the entry of manufacturers, but the evidence that clusters can promote the growth and survival of firms is rather weak. From a number of open-ended questions, this

research extracts various future research paths that emphasize the importance of manufacturer heterogeneity and the exact mechanism that supports the localized economy.

2.3 Location Quotient

On average, companies in large cities are more productive. There are two main explanations: corporate choice (big cities strengthen competition and only allow the most productive people to survive) and agglomeration economies (big cities promote interaction and increase productivity), which may be strengthened by the natural advantages of localization. In order to distinguish them, we nested a general version of the easy-to-handle company selection model and a standard agglomeration model. Stronger choices in large cities cut the distribution of productivity to the left, while stronger gatherings move to the right and expand the distribution. Using this forecast, French firm-level data, and new quantile methods, we show that firm choices cannot explain differences in spatial productivity. The results are applicable to various departments, city size thresholds, institutional samples and regional definitions.

2.4 How location affect entry pattern in UK/Global

2.5 How time affect entry pattern in UK/Global

2.6 Other factor can affect dynamics pattern in UK

Chapter 3

Methodology

3.1 Research Framework

1. Data Clean & Select
2. Tech Cluster Filter
3. Measuring the Dynamics

3.2 Data Source and Processing

1. Data Source
2. Data Clean
3. The large dta file is handled with `read_stata` and `get_chunk` 15GB
4. `primary_uk_sic_2007` `int32`
5. 2007 sic code ons.gov.uk Science and Technology Classification

2007 (Office for National Statistics, 2015)

Science and Technology Classification Science and Technology indicator 2007 sic code 168 16% 5 Digital Technologies, Life Sciences & Healthcare,

Publishing & Broadcasting, Other scientific/technological manufacture and Other scientific/technological services

Office for National Statistics, 2015. Identifying Science and Technology Businesses in Official Statistics. [online] London, UK: Office for National Statistics, pp.10-14. Available at: <https://webarchive.natio [Accessed 28 July 2021].

1. Tech Firms Finding —— 5 digital sic7 code & UK
2.

3.3 Quatitative Analysis and Methods

3.3.1 Time Range Selection

3.3.2 Tech Cluster Identifying

Why I choose ttwa

Why ttwa can work as a firms' cluster

3.3.3 Dynamics Measuring Index

$$Entry\ Rate_{i,t} = \frac{Incorporating\ Firms_{i,t}}{Total\ Firms_i}$$

Where i means location(travel to work area), t means year

3.3.4 Dynamics Analysis

3.3.5 Location Quotients

3.4 Limitations

1. missing data `diss_year` have 99% missing value

3.5 Ethical Statement

Chapter 4

Results

4.1 Visualisation and Analysis of Tech Cluster

4.1.1 Distribution

4.1.2 Descriptive Analysis

4.2 Visualisation and Analysis of Dynamics

4.2.1 Regression

Chapter 5

Discussion

Short introduction to the chapter, reviewing the previous chapter and detailing what this one aims to achieve and build upon.

To be done

5.1 Research significance

5.1.1 Global development goals

5.1.2 Local policy

5.1.3 Academic research

5.2 Limitations

To be done

5.3 Transferability

To be done

Chapter 6

Conclusion

Short introduction to the chapter, reviewing the previous chapter and detailing what this one aims to achieve and build upon.

To be done

References

Kerr, William R., and Frederic Robert-Nicoud. 2020. “Tech Clusters.”Journal of Economic Perspectives, 34 (3): 50-76.https://www.aeaweb.org/articles?id=10.1257/jep.34.3.50

Frenken, K., Cefis, E., & Stam, E. (2015). Industrial Dynamicsand Clusters: A Survey. Regional Studies, 49(1), 10-27.doi:10.1080/00343404.2014.904505Frenken K., Cefis E. and Stam E.

Combes, P.-P., Duranton, G., Gobillon, L., Puga, D. and Roux, S. (2012),The Productivity Advantages of Large Cities: Distinguishing AgglomerationFrom Firm Selection. Econometrica, 80: 2543-2594.https://doi.org/10.3982/ECTA84427

Appendix A Classification Form

Science and Technology Classification

Appendix B Proposal