Efficiency Externalities of Foreign Direct Investment in China’s Industrial Sector

CHIN Hok Ling Hawkins

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Philosophy

Principal Supervisor: Dr. CHENG Yuk Shing
Hong Kong Baptist University
July 2012
This thesis examines whether foreign direct investment (FDI) makes any contribution to technical efficiency of China’s industrial economy. Special attention is given to how the absorptive capacity and technology gap affects the channels that FDI impacts on the domestic economy. The investigation will be conducted on two levels, namely, the domestic industrial economy as a whole and the electronics and telecommunication equipment industry. This is done using provincial panel data covering the period 2003-2007. The impacts of FDI are analysed applying a two-stage analysis (Data Envelopment Analysis and regression). The results for the Chinese domestic industrial economy as a whole show that R&D activities do not play any role in facilitating efficiency spillovers of FDI. In contrast, imported technology generates the most significant positive impact on the technical efficiency. Furthermore, evidences also show that high technological gaps tend to favour positive effects of foreign presence. For the electronics and telecommunication equipment industry, it is found that provinces with large absorptive capacity, measured by R&D expenditure, gain more benefits from foreign presence.
# Table of Contents

DECLARATION .................................................................................................................................................. i

ABSTRACT ......................................................................................................................................................... ii

ACKNOWLEDGEMENTS ......................................................................................................................................... iii

Table of Contents ............................................................................................................................................... v

List of Tables ...................................................................................................................................................... viii

List of Figures ................................................................................................................................................... x

Chapter 1  Introduction ........................................................................................................................................ 11

1.1 Background of the study ............................................................................................................................... 1

1.2 FDI and domestic economy of China ......................................................................................................... 2

1.3 FDI and indigenous innovation in China ...................................................................................................... 5

1.4 FDI and technical efficiency ......................................................................................................................... 7

1.5 The objectives and organisation of the thesis ............................................................................................... 9

Chapter 2  Literature Review ............................................................................................................................ 11

2.1 Introduction .................................................................................................................................................. 11

2.2 Technical efficiency and foreign direct investment ................................................................................... 12

2.3 A review of theoretical studies on the FDI spillover effect ....................................................................... 15

2.4 A review of empirical studies on the productivity spillover of FDI ......................................................... 25

2.5 Empirical studies of productivity spillovers of FDI in China’s electronics industry .............................. 37

2.6 Empirical studies of FDI and technical efficiency in China .................................................................. 39

2.7 Conclusion of the chapter ........................................................................................................................... 41
## Chapter 3 Methodologies, Hypotheses and Variable Description ........................................43

3.1 Introduction ...........................................................................................................................43
3.2 Some concepts about efficiency measurement ...........................................................................44
3.3 Data Envelopment Analysis (DEA) and advantages of measuring technical efficiency using DEA ..................................................................................................................................................46
3.4 DEA adjusting for macro environment and region-specific factors ......................................49
3.5 Empirical strategy ..................................................................................................................50
3.6 Model Specification ..............................................................................................................52
3.7 Data and measurement .........................................................................................................56
3.8 Conclusion of the chapter .....................................................................................................68

## Chapter 4 Efficiency Spillover Effects of FDI on Chinese Industrial Economy ...............69

4.1 Introduction ...........................................................................................................................69
4.2 Foreign direct investment in Chinese industrial economy .....................................................70
4.3 Technical efficiency scores of the domestic industrial sector ..............................................82
4.4 Tobit regression analysis .......................................................................................................91
4.5 Conclusion of the results ....................................................................................................114

## Chapter 5 The Efficiency Spillover Effects of FDI on the Chinese Electronic and Telecommunication Equipment Industry .................................................................116

5.1 Introduction ..........................................................................................................................116
5.2 Characteristics of China’s electronics and telecommunication equipment industry 117
5.3 Data for estimation .............................................................................................................131
5.4 Technical efficiency of Chinese electronics and telecommunication equipment industry ..................................................................................................................................................132