

## MASTER'S THESIS

### Two essays on the economic impacts of high-speed railway in China

Chung, Man Kit

*Date of Award:*  
2014

[Link to publication](#)

#### **General rights**

Copyright and intellectual property rights for the publications made accessible in HKBU Scholars are retained by the authors and/or other copyright owners. In addition to the restrictions prescribed by the Copyright Ordinance of Hong Kong, all users and readers must also observe the following terms of use:

- Users may download and print one copy of any publication from HKBU Scholars for the purpose of private study or research
- Users cannot further distribute the material or use it for any profit-making activity or commercial gain
- To share publications in HKBU Scholars with others, users are welcome to freely distribute the permanent URL assigned to the publication

## **ABSTRACT**

The thesis contains two essays on the economic impacts of high-speed railway (HSR) in China. Utilizing a unique data set of towns in Dongguan, a city in South China, it provides empirical evidence on whether HSR affects economic growth and efficiency or not. The first essay uses the generalized method of moments (GMM) to estimate a dynamic panel data model of the town economies. The empirical results suggest that both HSR and expressway have a positive impact on the general economic development of the towns. However, HSR does not have a significant effect on the development of the manufacturing sector, while expressway does in this regard. These findings lend indirect support to the common argument that HSR can benefit the tertiary sector, but not necessarily other sectors. The second essay investigates the relationship between the advent of HSR and productive efficiency of the manufacturing sector. Using a stochastic frontier approach, it provides empirical evidence that proximity to expressway, rather than to HSR, enhances the efficiency of industrial enterprises.

## **ACKNOWLEDGEMENTS**

I would like to thank my principal supervisor, Dr. Cheng Yuk-shing for his supervision and guidance throughout the entire study period. He broadens my economic and political horizons, enlightens me as to the perspectives and techniques on analysing economic and social phenomena and offers me essential information about the most up-to-date academic development. Without his edification, I could not have transformed those hypotheses on the economic impacts of high-speed railway into my thesis. Gratitude is also given to the Head of Department, Prof. Woo Chi-keung and my co-supervisor, Dr. Li Sung-ko, for their encouragement and professional support on my study. My study group members, Mr. Chin Hok-ling, Mr. Kwok Tsz Chun and Mr. Qin Tao, have also given me valuable suggestions in building my academic ideas.

I would like to acknowledge the Department of Economics and the Dean's Office for providing me an invaluable opportunity to capture the essence of economics. Special thanks must be given to Ms. Salina Cheung and Ms. Claudia Tsui, to whom I owe their support on completing my studies.

I appreciate the help of Dr. Chan Man-hung on offering me a comfortable environment for conducting research and access to valuable information. His research insights have aroused my research interest on high-speed railway and the development of the Pearl River Delta region.

Above all, I am eternally grateful for the wholehearted support and encouragement from Miss Tse Man-ling, and I must also thank my family, friends and badminton coach for their encouragement. They have always been, and will ever be my greatest support.

# TABLE OF CONTENTS

<b>DECLARATION .....</b>	<b>i</b>
<b>ABSTRACT.....</b>	<b>ii</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>iii</b>
<b>TABLE OF CONTENTS .....</b>	<b>iv</b>
<b>LIST OF TABLES.....</b>	<b>vi</b>
<b>LIST OF FIGURES .....</b>	<b>vii</b>

## *Essay One: The Economic Impact of High-speed Railway: The Case of Dongguan*

<b>1. INTRODUCTION .....</b>	<b>1</b>
<b>2. LITERATURE REVIEW .....</b>	<b>4</b>
<b>3. INFRASTRUCTURE AND ECONOMIC DEVELOPMENT OF DONGGUAN CITY.....</b>	<b>6</b>
3.1. Characteristics of Dongguan’s Economy and Transport Demand.....	6
3.2. The Expressway Network in Dongguan .....	12
3.3. The High-speed Passenger Service of Guangzhou-Shenzhen Railway ..	14
3.4. Hypotheses .....	17
<b>4. METHODOLOGY, CONCEPTUAL FRAMEWORK AND DATA .....</b>	<b>17</b>
4.1. Estimation Approach.....	17
4.2. Data .....	21
<b>5. EMPIRICAL RESULTS .....</b>	<b>25</b>
5.1. Model Specification Tests.....	25
5.2. The Economic Impact of High-speed Railway and Expressway Infrastructure .....	27
5.3. Decreasing Dependence on Exports and Economic Restructuring.....	29
<b>6. CONCLUDING REMARKS.....</b>	<b>30</b>
<b>REFERENCES.....</b>	<b>33</b>

*Essay Two: The Impact of High-speed Railway on Manufacturing Efficiency: a Stochastic Frontier Approach*

<b>1. INTRODUCTION .....</b>	<b>44</b>
<b>2. LITERATURE REVIEW .....</b>	<b>46</b>
<b>3. INFRASTRUCTURE AND INDUSTRIAL EFFICENCY: METHODOLOGY .....</b>	<b>49</b>
3.1. Methodology .....	49
3.2. Data .....	52
<b>4. EMPIRICAL RESULTS .....</b>	<b>53</b>
4.1. Estimation of Production Frontier and Model Specification Tests .....	53
4.2. Technical Efficiency and the Impact of Infrastructure .....	57
<b>5. CONCLUDING REMARKS .....</b>	<b>60</b>
<b>REFERENCES.....</b>	<b>63</b>
<b>CURRICULUM VITAE .....</b>	<b>68</b>