

U1 TH  
D 211



**A PURELY THEORETICAL STUDY ON ECONOMIC  
GROWTH IN SMALL OPEN ECONOMIES**

**BY**

**THUY THI BICH DAO**

Thesis presented for the degree of Doctor of Philosophy, Faculty of Economics,  
University of Adelaide, Australia.

September 2000

## ABSTRACT

This thesis is a theoretical study on economic growth in small open economies. The motivation for economic growth theory is to explain the persistence of world economic growth and the existence of large differences in cross-country income levels and growth rates. In order to explain these facts, growth theory seeks to answer the question of what factors determine the growth rate of an economy and how they can be influenced. Growth theory has been developed to cover the issues in both closed and open economy contexts.

Our objective is to explore the open economy issues in the areas of international capital movements, foreign investment and technology transfer in relation to economic growth. In the study, we construct economic growth models in a small open economy context to study the issues of convergence, the role of education, the role of foreign investment in technology transfer and how government policies can influence the growth rate of an economy. This thesis raises the interrelationships between foreign investment, technology transfer and human capital accumulation of the host countries, a topic not adequately addressed in previous literature.

The thesis is comprised of seven chapters where the original contributions are in four chapters along with the introduction, literature review and conclusion chapters. Differential equations and control theory are techniques used in the thesis. We use Mathcad Software computer program to run simulations.

# TABLE OF CONTENTS

<b>Chapter 1: Introduction</b>	1
<b>Chapter 2: Literature Review</b>	7
<b>1. Growth models in a closed economy context</b>	8
1.1. Neoclassical growth models	8
1.2. Endogenous growth models	14
<b>2. Issues on economic growth in an open economy context</b>	24
<b>Chapter 3: Capital Flows and Economic Growth in a Small Open Economy</b>	30
<b>1. Introduction</b>	31
<b>2. The models</b>	32
2.1. The Solow-Swan open economy model	32
2.2. The extended Solow-Swan open economy model	37
2.2.1. The dynamics	42
2.2.2. The steady state	45
2.2.3. The transition: the speed of convergence	46
2.2.4. Comparative statics: the impact of changes in the saving rates on the steady state variable	56
<b>3. Conclusion</b>	62

<b>Chapter 4: Capital Flows, International Technology Transfer</b>	<b>65</b>
<b>and Economic Growth in a Small Open Economy</b>	
<b>1. Introduction</b>	<b>66</b>
<b>2. The model</b>	<b>68</b>
2.1. The dynamics	72
2.2. The steady state	76
2.3. The transition: the speed of convergence	78
2.2.4. Comparative statics: the impact of changes in the saving rates on the steady state variable and the growth rate	83
<b>3. Conclusion</b>	<b>89</b>
<b>Chapter 5: Optimal Foreign Borrowing, Physical and Human</b>	<b>91</b>
<b>Capital Accumulations and Technology Transfer</b>	
<b>1. Introduction</b>	<b>92</b>
<b>2. The model</b>	<b>93</b>
2.1. The optimal solution	98
2.2. The market solution	107
2.3. The role of the government	115
<b>3. Conclusion</b>	<b>121</b>
Appendix A	123
Appendix B	124

<b>Chapter 6: Direct Foreign Investment, Technology Transfer and</b>	126
<b>Economic Growth in a Small Open Economy</b>	
<b>1. Introduction</b>	127
<b>2. The model</b>	129
2.1. Autarky economy	129
2.2. Open economy	135
<b>3. Conclusion</b>	147
<b>Chapter 7: Conclusion</b>	150
<b>REFERENCES</b>	156