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TOTAL FACTOR PRODUCTIVITY, TECHNOLOGY TRANSFER AND ABSORPTIVE CAPACITY IN DEVELOPING ASIAN COUNTRIES

By

CHUAH SOO CHENG

Thesis Submitted to
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ABSTRACT

Technological progress or total factor productivity (TFP) is the main factor in sustaining economic growth in the long run. As technological follower, technology transfer is the main source of technology progress in developing Asian countries. Effectiveness of technology transfer requires adequate human capabilities to absorb and adapt foreign technological knowledge. This study attempts to study the relative contribution of TFP growth to economic growth and technological absorption of human capital in the technology transfer process by looking into gender aspect at different levels of education. Solow neoclassical growth accounting method is applied to investigate the contribution of TFP growth to economic growth. The logistic technology diffusion model is used to determine the impact of human capital gender on TFP growth through dual dimensions – innovation and technology transfer for a sample of 12 developing Asian countries over the period of 1970 -2009 by using panel data pooled Ordinary Least Square (OLS), fixed/ random effects model. The growth accounting estimation supports the assimilation views that TFP growth has significantly contributed to the output growth of developing Asian countries. The empirical results indicated that the aggregate of female and male educations is significant in the technology transfer process. In terms of gender disaggregate educational levels, female and male tertiary education showed higher absorptive capacity in facilitating technology transfer. The results also showed that autonomous technology transfer has significant impact on TFP growth. This study shows the absorptive capacity of female and higher education in the technology transfer in enhancing the growth of productivity. As such, several policies may be implemented to enhance the effectiveness of technology transfer process by augmenting tertiary education, reducing the gender education disparity, enhancing the rate of female participation in labour force. Sustaining the economic growth which is based on productivity is important at accelerating the economic development of Asian developing countries.

Keywords: total factor productivity, human capital, technology transfer, absorptive capacity
ABSTRAK


Kata Kunci: produktiviti faktor keseluruhan, modal insan, pemindahan teknologi, kapasiti penyerapan
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# TABLE OF CONTENT

<table>
<thead>
<tr>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITLE PAGE</td>
</tr>
<tr>
<td>CERTIFICATION OF THESIS WORK</td>
</tr>
<tr>
<td>PERMISSION TO USE</td>
</tr>
<tr>
<td>ABSTRACT</td>
</tr>
<tr>
<td>ABSTRAK</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENT</td>
</tr>
<tr>
<td>TABLE OF CONTENT</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
</tr>
</tbody>
</table>

## CHAPTER ONE: INTRODUCTION

1.1 Background of Study .................................................. 1
1.2 A Glance at Developing Asian Countries ......................... 8
1.3 Problem Statement ...................................................... 22
1.4 Research Questions ...................................................... 25
1.5 Objectives of the Study .................................................. 26
1.6 Scope of the Study ....................................................... 27
1.7 Significance of the Study ................................................. 27
1.8 Organisation of the Study ................................................. 30

## CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction ................................................................. 31
2.2 TFP and Economic Growth ............................................. 31
2.3 Human Capital and Economic Growth ............................. 34
   2.3.1 Human Capital Role in Theoretical Model of Economic Growth .... 35
      2.3.1.1 Main Characteristics of the Solow Model .. 36
      2.3.1.2 Exogenous Growth Model – The Human Capital Augmented Solow Model .................................................. 37
      2.3.1.3 Endogenous Growth Model – Human Capital Accumulation .... 38
      2.3.1.4 Endogenous Growth Model – Stock of Human Capital and Technological Progress .............................................. 39
2.4 Theoretical Framework ................................................ 42
   2.4.1 The Standard Growth Accounting Framework .................. 42
   2.4.2 Technological Catch-up Model ..................................... 43
   2.4.3 Confined Exponential Technology Diffusion Model ............... 45
   2.4.4 Logistic Model of Technology Diffusion .................................. 46
LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1.1</td>
<td>Returns to Education by Gender</td>
<td>8</td>
</tr>
<tr>
<td>Table 1.2</td>
<td>FDI Inflow in Developing Asian Countries, 1970–2009 (US dollar in current prices)</td>
<td>11</td>
</tr>
<tr>
<td>Table 1.3</td>
<td>Imports of Machineries and Equipments in Developing Asian Countries, 1990–2009</td>
<td>12</td>
</tr>
<tr>
<td>Table 1.4</td>
<td>Government Spending on Education as % of GDP in Developing Asian Countries, 1970–2010</td>
<td>13</td>
</tr>
<tr>
<td>Table 1.5</td>
<td>Educational Attainment of the Total Population 15 Year and Above: Developing Asian Countries, Advanced Countries and Developing Countries, 1970–2010</td>
<td>15</td>
</tr>
<tr>
<td>Table 1.6</td>
<td>Educational Attainment Trends of the Total, Female and Male Population Aged 15 Years and Above: Developing Asian Countries: 1970–2010</td>
<td>18</td>
</tr>
<tr>
<td>Table 2.1</td>
<td>Studies on Absorptive Capacity and Technology Transfer (Based on Aggregate Data)</td>
<td>82</td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Descriptive Statistics, 1970–2009</td>
<td>110</td>
</tr>
<tr>
<td>Table 4.2(a)</td>
<td>Correlation Matrix: Aggregate Human Capital Level Specification</td>
<td>111</td>
</tr>
<tr>
<td>Table 4.2(b)</td>
<td>Correlation Matrix: Aggregate Gender-Separate Human Capital Level Specification</td>
<td>111</td>
</tr>
<tr>
<td>Table 4.2(c)</td>
<td>Correlation Matrix: Female Human Capital Composition Level Specification</td>
<td>112</td>
</tr>
<tr>
<td>Table 4.2(d)</td>
<td>Correlation Matrix: Male Human Capital Composition Level Specification</td>
<td>112</td>
</tr>
<tr>
<td>Table 4.3</td>
<td>TFP Growth Estimation of Aggregate Human Capital Based Absorptive Capacity, 1970–2009</td>
<td>115</td>
</tr>
<tr>
<td>Table 4.4</td>
<td>TFP Growth Estimation of Female and Male Human Capital Based Absorptive Capacity, 1970–2009</td>
<td>120</td>
</tr>
<tr>
<td>Table 4.5(a)</td>
<td>TFP Growth Estimation of Female Primary Education Based Absorptive Capacity, 1970–2009</td>
<td>125</td>
</tr>
</tbody>
</table>
Table 4.5(b)  TFP Growth Estimation of Female Secondary Education Based Absorptive Capacity, 1970–2009……………………………………127

Table 4.5(c)  TFP Growth Estimation of Female Tertiary Education Based Absorptive Capacity, 1970–2009……………………………………129

Table 4.6(a)  TFP Growth Estimation of Male Primary Education Based Absorptive Capacity: 1970–2009……………………………………132

Table 4.6(b)  TFP Growth Estimation of Male Secondary Education Based Absorptive Capacity, 1970–2009……………………………………134

Table 4.6(b)  TFP Growth Estimation of Male Tertiary Education Based Absorptive Capacity, 1970–2009……………………………………135

Table 4.7  Durbin-Wu-Hausman Test for the Endogeneity of Human Capital…………………………………………………………………..140

Table 4.8  TFP Growth Estimation of Aggregate Human Capital Based Absorptive Capacity, 1970–2009……………………………………142

Table 4.9  TFP Growth Estimation of Female and Male Human Capital Based Absorptive Capacity, 1970–2009……………………………143

Table 4.10(a)  TFP Growth Estimation of Female Primary Education Based Absorptive Capacity, 1970–2009………………………………145

Table 4.10(b)  TFP Growth Estimation of Female Secondary Education Based Absorptive Capacity, 1970–2009…………………………146

Table 4.10(c)  TFP Growth Estimation of Female Tertiary Education Based Absorptive Capacity, 1970–2009……………………………147

Table 4.11(a)  TFP Growth Estimation of Male Primary Education Based Absorptive Capacity, 1970–2009………………………………148

Table 4.11(b)  TFP Growth Estimation of Male Secondary Education Based Absorptive Capacity, 1970–2009…………………………149

Table 4.11(c)  TFP Growth Estimation of Male Tertiary Education Based Absorptive Capacity, 1970–2009………………………………150

Table 4.12  TFP Growth Estimation of Aggregate Human Capital Based Absorptive Capacity, 1970–2009………………………………152

Table 4.13  TFP Growth Estimation of Female and Male Human Capital Based Absorptive Capacity, 1970–2009…………………………153
Table 4.14(a)  TFP Growth Estimation of Female Primary Education Based Absorptive Capacity, 1970–2009…………………………155

Table 4.14(b)  TFP Growth Estimation of Female Secondary Education Based Absorptive Capacity, 1970–2009…………………………156

Table 4.14(c)  TFP Growth Estimation of Female Tertiary Education Based Absorptive Capacity, 1970–2009…………………………157

Table 4.15(a)  TFP Growth Estimation of Male Primary Education Based Absorptive Capacity, 1970–2009…………………………158

Table 4.15(b)  TFP Growth Estimation of Male Secondary Education Based Absorptive Capacity, 1970–2009…………………………159

Table 4.15(c)  TFP Growth Estimation of Male Tertiary Education based Absorptive Capacity: 1970–2009…………………………160
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1.1</td>
<td>Regional Total R&amp;D Expenditure (GRED) as Percentage of World R&amp;D Expenditure, 2002, 2007 and</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Figure 1.2</td>
<td>Developing Asia’s Share of World GDP and Exports, (1980 – 2010)</td>
<td>10</td>
</tr>
<tr>
<td>Figure 1.3</td>
<td>GDP per Capita, Developing Asian Economies versus Industrial Economies</td>
<td>14</td>
</tr>
<tr>
<td>Figure 2.1</td>
<td>A Monotonic Technology Model (Rogers, 2004)</td>
<td>45</td>
</tr>
<tr>
<td>Figure 4.1</td>
<td>Contribution Shares of Economic Growth, 1970–2009</td>
<td>106</td>
</tr>
<tr>
<td>Figure 4.2</td>
<td>Individual Countries’ Average Annual TFP Growth, 1970–2009 (percent)</td>
<td>107</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>TFP</td>
<td>Total Factor Productivity</td>
<td></td>
</tr>
<tr>
<td>FDI</td>
<td>Foreign Direct Investment</td>
<td></td>
</tr>
<tr>
<td>NIEs</td>
<td>Newly Industrialised Economies</td>
<td></td>
</tr>
<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
<td></td>
</tr>
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<td>ADB</td>
<td>Asian Development Bank</td>
<td></td>
</tr>
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<td>APO</td>
<td>Asian Productivity Organisation</td>
<td></td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
<td></td>
</tr>
<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
<td></td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
<td></td>
</tr>
<tr>
<td>OLS</td>
<td>Ordinary Least Square</td>
<td></td>
</tr>
<tr>
<td>FEM</td>
<td>Fixed Effects Model</td>
<td></td>
</tr>
<tr>
<td>REM</td>
<td>Random Effects Model</td>
<td></td>
</tr>
<tr>
<td>LSDV</td>
<td>Least Square Dummy Variable</td>
<td></td>
</tr>
<tr>
<td>VIF</td>
<td>Variance Inflation Factor</td>
<td></td>
</tr>
<tr>
<td>PWT</td>
<td>Penn World Table</td>
<td></td>
</tr>
<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
<td></td>
</tr>
<tr>
<td>IIASA</td>
<td>International Institute for Applies Systems</td>
<td></td>
</tr>
<tr>
<td>VID</td>
<td>Vienna Institute of Demography</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER ONE
INTRODUCTION

1.1 Background of Study

One of the overriding objectives of a nation is to achieve sustained economic growth because it enables the nation to enjoy greater economic prosperity over time which, in turn, elevates the standard of living of its population. If this is the case, then what does it take to attain sustained economic growth? In the past, nations have competed with each other primarily through the political means (i.e. through the colonial power). In the modern world, however, nations choose to compete with each other mainly through the economic means (i.e. through growth-oriented policy). Smith (1776) once posed the question “what determines long-term economic growth rate and hence the prosperity of nations?” Since then, the search for the fundamental determinants of growth has become a continuing research theme.

Basically, a country’s economy grows with the combination of factors of production such as capital, labour, land and natural resources. However, economic growth is not just determined by factor accumulation alone, but also by total factor productivity (TFP) which represents the relative efficiency of a country to produce goods and services. TFP is commonly referred so as a measure for technological progress. It incorporates the impact of technological change and other factors that rise further than the quantified contribution of factor accumulation (Solow, 1957).

TFP growth is crucial for sustaining an economy’s long-run growth. A country could not sustain its growth by relying on factor accumulation alone because it is subject to diminishing marginal returns. The law of diminishing marginal returns
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