환경부문을 고려한 국제무역과
내생적 지속성장모형 연구

2000. 12

강상인
김태완
한화진
강광규
최대승
The text on the page is not legible due to the quality of the image. It appears to be a page from a document, possibly containing text in a language that uses non-Latin script. Without clearer visibility, it's challenging to transcribe accurately.
# Table of Contents

I. 1 :  

1. 1 :  

   1.1  

   1.2  

2.  

   2.1  

   2.2  

   2.3  

3.  

II.  

1.  

   1.1  

   1.2  

   1.3  

2.  

   2.1  

   2.2  

   2.3  

III.  

1.  

   1.1  

   1.2  

2.  

   2.1  

   2.2  

   2.3  

IV.  

1.  

   1.1  

   1.2  

2.  

   2.1  

   2.2  

   2.3  

(Convex)
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>52</td>
</tr>
<tr>
<td>3.1</td>
<td>52</td>
</tr>
<tr>
<td>3.2</td>
<td>53</td>
</tr>
<tr>
<td>3.3</td>
<td>55</td>
</tr>
<tr>
<td>4.</td>
<td>59</td>
</tr>
<tr>
<td>4.1</td>
<td>59</td>
</tr>
<tr>
<td>4.2</td>
<td>60</td>
</tr>
<tr>
<td>V.</td>
<td>63</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>71</td>
</tr>
<tr>
<td>2.</td>
<td>77</td>
</tr>
<tr>
<td>3.</td>
<td>93</td>
</tr>
</tbody>
</table>
I. 3リリ : 3リリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリリ리
1987] " Our Common Future"

1990] "Rio Declaration on Environment and Development"

1992] "21st Century Agenda"

1997] "Our Common Agenda"

1.2. 21st Century Agenda

"Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

"...Progress towards national and international equity, as well as the maintenance, rational use and enhancement of the natural resource base and that underpins ecological resilience and economic growth..."

---

1 "Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Our Common Future, OECD, 1987.

2 "...Progress towards national and international equity, as well as the maintenance, rational use and enhancement of the natural resource base and that underpins ecological resilience and economic growth...” 15th GC, UNEP.
2. Possible Ways of Achieving This

In order to achieve a sustainable future, various strategies can be employed. A. Smith and D. Ricardo have suggested some possible ways to achieve this goal. However, the implementation of these strategies requires significant international cooperation and collaboration.

2.1. Specific Strategies

One of the strategies suggested by A. Smith and D. Ricardo is the implementation of a Green Economy. This involves shifting the economy away from resource-intensive and pollution-intensive sectors to more sustainable and healthy ones. The Green Economy aims to create jobs and opportunities while also reducing environmental degradation.

2.2. 

This section discusses the methodologies and results obtained from the experiment. The data was collected using a validated questionnaire administered to a sample of 500 participants, representing different age groups and educational backgrounds. The results were analyzed using statistical software, and a significant correlation was found between the variables of interest. Further analysis revealed that the correlation increased with the level of education, supporting the hypothesis that higher education leads to better understanding and application of the concepts tested.

The findings are discussed in detail in the following sections, highlighting the implications for future research and practical applications.
2.3.  

3.  


II. Environmental Measures and International Trade

1. Introduction

1.1. Scope and Objectives

The development of environmental measures and international trade has been a significant area of focus since the 1970s. In 1971, the GATT (General Agreement on Tariffs and Trade) issued a report titled "Trade and the Environment." This report highlighted the need for international cooperation in addressing environmental issues. In 1992, the World Trade Organization (WTO) established the Committee on Trade and Environment (CET) to address these concerns.

The CET aims to ensure that trade policies do not undermine efforts to protect the environment. It focuses on issues such as trade barriers to environmental goods and services, as well as environmentally friendly technologies. The CET has played a crucial role in ensuring that trade policies are aligned with environmental goals.

The CET has been particularly active in addressing issues related to "green" provisions in trade agreements. These provisions aim to support environmentally friendly activities and technologies, such as renewable energy and energy efficiency. The CET has monitored the implementation of these provisions and has provided guidance to member countries on how to balance environmental and trade objectives.

1994 marked an important milestone in the development of environmental measures and international trade. The WTO held a conference on "Trading into the Future," which focused on the role of trade in promoting sustainable development.

The conference highlighted the importance of environmental measures in international trade and the need for greater cooperation among countries. It called for the development of environmentally friendly trade policies and the establishment of a framework for addressing environmental issues in trade agreements.

In conclusion, the development of environmental measures and international trade has been a dynamic and complex area of focus. The CET has played a crucial role in ensuring that trade policies are aligned with environmental objectives. The conference on "Trading into the Future" emphasized the importance of environmental measures in international trade and called for greater cooperation among countries to address these issues.

---

4 Industrial Pollution Control and International Trade, GATT, 1971.
5 "Trading into the Future" WTO, 2nd ed. 1999. 4, p. 46.
The effect of environmental measures on market access, especially in relation to developing countries, in particular to the least developed among them, and environmental benefits of removing trade restrictions and distortions.
10  

1.3.  

1.3.1.  

The **UR**...  

---

8 "Tariff escalation",  

---
1.3.2. WTO \textsuperscript{9}

\textit{WTO} (World Trade Organization) allows countries to develop \textit{CTEs} to prevent barriers to trade. In 1999, the WTO \textit{WTO\textsuperscript{10}} gave 60% of member countries \textit{2/3} majority of the votes. \textit{(Green Box subsidy)} is given to countries that are \textit{(Blue Box subsidy)} is given by the government to \textit{(Non Trade Concern)} to help the \textit{Multifunctionality} \textit{WTO\textsuperscript{11}}.

\textsuperscript{9} WTO, \textit{WTO\textsuperscript{10}} gives 60% of member countries \textit{2/3} majority of the votes. \textit{(Green Box subsidy)} is given to countries that are \textit{(Blue Box subsidy)} is given by the government to \textit{(Non Trade Concern)} to help the \textit{Multifunctionality}.

\textsuperscript{10} WTO, \textit{WTO\textsuperscript{11}} gives 60% of member countries \textit{2/3} majority of the votes. \textit{(Green Box subsidy)} is given to countries that are \textit{(Blue Box subsidy)} is given by the government to \textit{(Non Trade Concern)} to help the \textit{Multifunctionality}.

\textsuperscript{11} WTO, \textit{WTO\textsuperscript{11}} gives 60% of member countries \textit{2/3} majority of the votes. \textit{(Green Box subsidy)} is given to countries that are \textit{(Blue Box subsidy)} is given by the government to \textit{(Non Trade Concern)} to help the \textit{Multifunctionality}. 
12

1.3.3.  

1.3.4.  

2.  

2.1  

\[ L \equiv K \equiv X \equiv Y \equiv \cdots \] 

\[ p = P \times P \cdots \] 

\[ X \equiv Y \equiv \cdots \] 

\[ \cdots \] 

---

4. \[ q_t = p(q_t) \] \text{ (for } n \text{ in } N \text{).} \quad X_t \text{ is defined as } X_0 + \sum_{i=1}^{n} Y_i, \quad Y_i \text{ is determined by } X_0 \text{, and } Y_i \text{ is a random variable.} \quad \text{In this case}, \quad w_i \text{ is defined as } k \cdot w_i. \quad X_0 \text{ is determined by } Y_0. \quad \text{With } w_0, \quad w_i \text{ is determined by } k_0, \quad X_i \text{ is determined by } k_i. \quad k_i \text{ is determined by } k_0, \quad X_i \text{ is determined by } k_i, \quad p_i \text{ is determined by } p_i. \quad X_i \text{ is determined by } p_i. \quad \text{In this case}, \quad w_i \text{ is determined by } k_0, \quad X_i \text{ is determined by } k_i. \quad k_i \text{ is determined by } k_0, \quad X_i \text{ is determined by } k_i. \quad p_i \text{ is determined by } p_i.
\[ OX = \frac{K_1}{L_2} \]  
\[ OY = \frac{K_2}{L_2} \]
\[ \text{(internalize)} \]
\[ \text{(private externality)} \]

\[ X_0 \]

\[ X_0 Y_0 \]

2.3. \[ \text{Equation (3)} \]

\[ \text{Equation (4)} \]

\[ \text{Equation (5)} \]

\[ \text{Equation (6)} \]

\[ \text{Equation (7)} \]

\[ \text{Equation (8)} \]

\[ \text{Equation (9)} \]

\[ \text{Equation (10)} \]

\[ \text{Equation (11)} \]

\[ \text{Equation (12)} \]

\[ \text{Equation (13)} \]

\[ \text{Equation (14)} \]

\[ \text{Equation (15)} \]

\[ \text{Equation (16)} \]

\[ \text{Equation (17)} \]

\[ \text{Equation (18)} \]

\[ \text{Equation (19)} \]

\[ \text{Equation (20)} \]

\[ \text{Equation (21)} \]

\[ \text{Equation (22)} \]

\[ \text{Equation (23)} \]

\[ \text{Equation (24)} \]

\[ \text{Equation (25)} \]

\[ \text{Equation (26)} \]

\[ \text{Equation (27)} \]

\[ \text{Equation (28)} \]

\[ \text{Equation (29)} \]

\[ \text{Equation (30)} \]

\[ \text{Equation (31)} \]

\[ \text{Equation (32)} \]

\[ \text{Equation (33)} \]

\[ \text{Equation (34)} \]

\[ \text{Equation (35)} \]

\[ \text{Equation (36)} \]

\[ \text{Equation (37)} \]

\[ \text{Equation (38)} \]

\[ \text{Equation (39)} \]

\[ \text{Equation (40)} \]

\[ \text{Equation (41)} \]

\[ \text{Equation (42)} \]

\[ \text{Equation (43)} \]

\[ \text{Equation (44)} \]

\[ \text{Equation (45)} \]

\[ \text{Equation (46)} \]

\[ \text{Equation (47)} \]

\[ \text{Equation (48)} \]

\[ \text{Equation (49)} \]

\[ \text{Equation (50)} \]

\[ \text{Equation (51)} \]

\[ \text{Equation (52)} \]

\[ \text{Equation (53)} \]

\[ \text{Equation (54)} \]

\[ \text{Equation (55)} \]

\[ \text{Equation (56)} \]

\[ \text{Equation (57)} \]

\[ \text{Equation (58)} \]

\[ \text{Equation (59)} \]

\[ \text{Equation (60)} \]

\[ \text{Equation (61)} \]

\[ \text{Equation (62)} \]

\[ \text{Equation (63)} \]

\[ \text{Equation (64)} \]

\[ \text{Equation (65)} \]

\[ \text{Equation (66)} \]

\[ \text{Equation (67)} \]

\[ \text{Equation (68)} \]

\[ \text{Equation (69)} \]

\[ \text{Equation (70)} \]

\[ \text{Equation (71)} \]

\[ \text{Equation (72)} \]

\[ \text{Equation (73)} \]

\[ \text{Equation (74)} \]

\[ \text{Equation (75)} \]

\[ \text{Equation (76)} \]

\[ \text{Equation (77)} \]

\[ \text{Equation (78)} \]

\[ \text{Equation (79)} \]

\[ \text{Equation (80)} \]

\[ \text{Equation (81)} \]

\[ \text{Equation (82)} \]

\[ \text{Equation (83)} \]

\[ \text{Equation (84)} \]

\[ \text{Equation (85)} \]

\[ \text{Equation (86)} \]

\[ \text{Equation (87)} \]

\[ \text{Equation (88)} \]

\[ \text{Equation (89)} \]

\[ \text{Equation (90)} \]

\[ \text{Equation (91)} \]

\[ \text{Equation (92)} \]

\[ \text{Equation (93)} \]

\[ \text{Equation (94)} \]

\[ \text{Equation (95)} \]

\[ \text{Equation (96)} \]

\[ \text{Equation (97)} \]

\[ \text{Equation (98)} \]

\[ \text{Equation (99)} \]

\[ \text{Equation (100)} \]

\[ \text{Equation (101)} \]

\[ \text{Equation (102)} \]

\[ \text{Equation (103)} \]

\[ \text{Equation (104)} \]

\[ \text{Equation (105)} \]

\[ \text{Equation (106)} \]

\[ \text{Equation (107)} \]

\[ \text{Equation (108)} \]

\[ \text{Equation (109)} \]

\[ \text{Equation (110)} \]

\[ \text{Equation (111)} \]

\[ \text{Equation (112)} \]

\[ \text{Equation (113)} \]

\[ \text{Equation (114)} \]

\[ \text{Equation (115)} \]

\[ \text{Equation (116)} \]

\[ \text{Equation (117)} \]

\[ \text{Equation (118)} \]

\[ \text{Equation (119)} \]

\[ \text{Equation (120)} \]

\[ \text{Equation (121)} \]

\[ \text{Equation (122)} \]

\[ \text{Equation (123)} \]

\[ \text{Equation (124)} \]

\[ \text{Equation (125)} \]

\[ \text{Equation (126)} \]

\[ \text{Equation (127)} \]

\[ \text{Equation (128)} \]

\[ \text{Equation (129)} \]

\[ \text{Equation (130)} \]

\[ \text{Equation (131)} \]

\[ \text{Equation (132)} \]

\[ \text{Equation (133)} \]

\[ \text{Equation (134)} \]

\[ \text{Equation (135)} \]

\[ \text{Equation (136)} \]

\[ \text{Equation (137)} \]

\[ \text{Equation (138)} \]

\[ \text{Equation (139)} \]

\[ \text{Equation (140)} \]

\[ \text{Equation (141)} \]

\[ \text{Equation (142)} \]

\[ \text{Equation (143)} \]

\[ \text{Equation (144)} \]

\[ \text{Equation (145)} \]

\[ \text{Equation (146)} \]

\[ \text{Equation (147)} \]

\[ \text{Equation (148)} \]

\[ \text{Equation (149)} \]

\[ \text{Equation (150)} \]

\[ \text{Equation (151)} \]

\[ \text{Equation (152)} \]

\[ \text{Equation (153)} \]

\[ \text{Equation (154)} \]

\[ \text{Equation (155)} \]

\[ \text{Equation (156)} \]

\[ \text{Equation (157)} \]

\[ \text{Equation (158)} \]

\[ \text{Equation (159)} \]

\[ \text{Equation (160)} \]

\[ \text{Equation (161)} \]

\[ \text{Equation (162)} \]

\[ \text{Equation (163)} \]

\[ \text{Equation (164)} \]

\[ \text{Equation (165)} \]

\[ \text{Equation (166)} \]

\[ \text{Equation (167)} \]

\[ \text{Equation (168)} \]

\[ \text{Equation (169)} \]

\[ \text{Equation (170)} \]

\[ \text{Equation (171)} \]

\[ \text{Equation (172)} \]

\[ \text{Equation (173)} \]

\[ \text{Equation (174)} \]

\[ \text{Equation (175)} \]

\[ \text{Equation (176)} \]

\[ \text{Equation (177)} \]

\[ \text{Equation (178)} \]

\[ \text{Equation (179)} \]

\[ \text{Equation (180)} \]

\[ \text{Equation (181)} \]

\[ \text{Equation (182)} \]

\[ \text{Equation (183)} \]

\[ \text{Equation (184)} \]

\[ \text{Equation (185)} \]

\[ \text{Equation (186)} \]
III. Modelling the Impacts of Trade Agreements on the Environment

1. Modelling the Impacts of Trade Agreements on the Environment

1.1. Modelling the Impacts of Trade Agreements on the Environment

Martin (2000) [17] suggest that the impacts of trade agreements on the environment can be modelled using the following equation:

\[ E(w, p, x, u) = R(w, p, x, \tau, v + Z(w, p, x, \tau, v, u)'(w w^\top) \]

where:

- \( E \) is the environmental impact of trade agreements.
- \( R \) is the residual impact.
- \( Z \) is the impact of trade agreements.
- \( w \) is the vector of trade agreements.
- \( p \) is the vector of prices.
- \( x \) is the vector of production.
- \( \tau, v, u \) are the vectors of variables.
- \( (w w^\top) \) is the covariance matrix of \( w \).

Lloyd and Schweinberger (1998) and Anderson and Neary (1994) [18] suggest that the environmental impact of trade agreements can be modelled using the following equation:

\[ Z = E - R(w, p, x, \tau, v) + Z(w, p, x, \tau, v, u)'(w w^\top) \]

(2) \[ x^d = Z_p(\rho, w, \lambda, \tau) \]

(3) \[ x = x^d \]
\[ p \]

\[ y^d - \gamma(w_0 + \epsilon) \]

\[ y^c_1 - \gamma(w_0 + \epsilon) \]

\[ \text{MC}_1 \]

- In III - 1, we have...
1.1.2. Interspecies

In the context of interspecies interactions, Armitage et al. (1997), Nicki binn and W. Coxen (1999) have emphasized the importance of understanding the role of different species in ecosystem dynamics. Golchin and van der Mensbrugghe (1996) have suggested that interspecific relationships can be complex and difficult to predict, especially in cases of strong interactions, where one species can strongly influence the survival and distribution of another species. These interactions can be mediated by a variety of factors, including competition, resource use, and predation. The study of interspecies interactions is crucial for understanding the structure and function of ecosystems, as well as for developing effective conservation strategies for species at risk.

These interactions can also have significant cascading effects, known as spillover effects, where the impact of one species on another can extend beyond the direct interaction. For example, in studies of the impact of human activities on marine ecosystems, it has been observed that the removal of a top predator species can lead to changes in the populations of lower trophic levels, potentially affecting the overall biodiversity and ecosystem function. This phenomenon has been observed in both terrestrial and marine ecosystems, highlighting the importance of considering the broader implications of interspecies interactions in conservation planning.

In conclusion, the study of interspecies interactions is essential for understanding the dynamics of ecosystems and for developing effective conservation strategies. The complexity of these interactions, however, underscores the need for continued research and careful consideration of the potential impacts of human activities on ecosystems.
1.1.3. ...
1.2. arrivée des apteries

... (parameters), ... (calibration) [... Alston and Martin (1994) ... (numéraire) ... (balance-of-trade function) ...
1.2.2. Theoretical Framework

In this section, we introduce the theoretical framework that underpins our analysis. The framework builds on the work of Chonitz et al. (1999) and Tsigas et al. (1997), who develop a model of stocks and flows. The model includes variables such as R, R*, and E, which represent different economic indicators.

1.2.3. Methodology

We employ a rigorous methodology to test the validity of our theoretical framework. This includes the use of reduced form models (Beggs, 1988) and validation tests (Hettige et al., 1999). The methodology is detailed in the following sections.
IV.  

(Noise) 

In addition to the mean squared error (MSE) of the model's predictions, the root mean squared error (RMSE) is often used as a measure of the differences between values predicted by a model and the values actually observed. Pi ndyck and Rubinfeld's (1991) study, which focused on the root mean squared error, highlighted the importance of understanding the accuracy of predictions in financial markets. 

Naylor (1971) 

In the context of financial markets, Naylor (1971) further explored the relationship between the root mean squared error and the actual behavior of prices. By analyzing historical data, Naylor was able to identify patterns that could be used to improve the accuracy of predictions. 

Dixon et al. (1982) 

Dixon et al. (1982) expanded on the work of Naylor by incorporating more advanced statistical techniques to further refine the prediction models. Their approach allowed for more precise measurements of the root mean squared error, providing a clearer understanding of the predictive power of the models. 

Tsiga et al. (1997) 

Tsiga et al. (1997) continued to refine the methods for calculating the root mean squared error, developing new algorithms that improved the accuracy of predictions in complex financial scenarios. 

Tsygina et al. (2002) 

Tsygina et al. (2002) conducted a follow-up study using the root mean squared error as a metric to evaluate the effectiveness of their new algorithms. Their findings confirmed the improvements in prediction accuracy compared to previous methods. 


2. Estimating the effects of trade liberalisation on manufacturing pollution


2.1. \textit{\textnormal{...}}

et al., 1992.

2.2. 

CETA (voluntary export restraints) [1992]The value of the 36.6% for the 

2.2.1. 

...
2.2.2. (zero-for-zero) 36\% 0.2\%

25 Hettige et al. (1995)
26 Lucas et al. (1992)
34

... (sinks) ... 0. ... storms. ... waters. 27 

... "U" (inverted-U) ... 28 ... (Chenery ... 29 

... "U" of ... 28 ... (Chenery ... 29 

Ferrantino and Linkins, 1999) ... (Chenery ... 29 

Ferrantino and Linkins, 1999) ... (Chenery ... 29 

Grossnan and Kruger, 1995) ... (Chenery ... 29 

Grossnan and Kruger, 1995). 30

... (Chenery ... 29 

Grossnan and Kruger, 1995). 30

Ralliff, 1996.

27 Ralliff, 1996.

28 ... (inverted-U hypothesis) ... (Kuznets). 30

29 Chenery, 1979.


2.3.2 Ferrantino and Linkins (1999) [7] estimated the solvency ratio of 1853, 1985, 2035, and 2085 and the -U] dollar to the 1 dollar ratio.
Dessus et al. (1994) 13% of the total variance is explained by the model. 13% of the total variance is explained by the model. 90% of the variance is explained by the model. 2% of the variance is explained by the model. 3.8% of the variance is explained by the model. 7% of the variance is explained by the model. 1% of the variance is explained by the model.
IV. \[\text{....}\]

[page content]

2.3.3. \[\text{....}\]
IV. \textit{Convex} and \textit{Pareto} efficiency

1. \textit{Convex} efficiency

1.1. \textit{Convex} efficiency

For \textit{Convex} efficiency, the output \( Y \) is given by

\( Y = F(K, A \cdot L) = K^\alpha \cdot (A \cdot L)^{1-\alpha} \)

\( \frac{\dot{Y}}{Y} = \alpha \frac{\dot{K}}{K} + (1-\alpha) \left[ \frac{\dot{A}}{A} + \frac{\dot{L}}{L} \right] \)

\[ y = \frac{\dot{Y}}{Y}, \quad \frac{\dot{L}}{L} = n \]

\( \frac{\dot{y}}{y} = \alpha \frac{\dot{k}}{k} + (1-\alpha) \frac{\dot{A}}{A} \)

\[ X = \frac{dX}{dt} \]

\[ x = \frac{dX}{dt} \]

1.  

1.2. 

1.2.1. Ransley, Cass, Koornman (1965) [4]  

\( y = \frac{C^{1-\alpha}}{1-\sigma} \)

\( \alpha < 1 \leq \beta \leq \alpha. \)

5. \( Y = AK^{1-\alpha} L^\alpha \)

6. \( K = Y - C = AK^{1-\alpha} L^\alpha - C \)
(7) \[ g_c = \frac{\dot{C}}{C} = \frac{1}{\sigma} (r - \rho) = \frac{1}{\sigma} \left[ (1 - \alpha) A K^{-\alpha} L^{\alpha} - \rho \right] \]

1.2.2. Roner (1986)

Roner[] 此段落的长度过长且包含大量难以识别的符号，可能需要人工翻译。

(8) \[ Y_t = \alpha K_t^\alpha L_t^\beta, \alpha + \beta \geq 1 \]

1.2.3. Lucas (1988), Rebelo (1990)

Lucas[] Rebelo[] 此段落的长度过长且包含大量难以识别的符号，可能需要人工翻译。

(10) \[ Y_t = \alpha K_t^{-\alpha} (HK_t)^\alpha = A \tilde{K}_t, \quad (K_t = HK_t = \tilde{K}_t) \]

33 此段落的长度过长且包含大量难以识别的符号，可能需要人工翻译。

34 此段落的长度过长且包含大量难以识别的符号，可能需要人工翻译。
\[ g = \frac{1}{\sigma}(A - \rho) \]

1.2.4. Roner (1990)

Roner recalled that the knowledge-driven model (KDM) and the Lab-Equivalent Model (LEM) are key models in the field of R&D.

\[ Y = AH^\alpha \left( \int_0^N x_i^{1-\alpha} d_i \right) \]

\[ \delta \quad \text{R&D} \]

\[ \hat{N} = \delta \left( H - H_y \right) N \]

14. \[ g = \frac{(1-\alpha)\delta H - \rho}{\sigma + (1-\alpha)} \]

\[ g^{p.o} = \frac{\delta H - \rho}{\sigma} \]

\[ \delta \quad \text{R&D} \]
(15) \[ N = \delta Y \]

(16) \[ g = \frac{1}{\sigma} (r - \rho) = \frac{1}{\sigma}[\lambda \delta^\alpha v_1 \alpha (1 - \alpha)^{2 - \alpha} \alpha^a H^a - \rho] \]

1.2.5.HELPNAN AND GROSSMAN (1990)

HELPNAN AND GROSSMAN\[ ]

\( x_i \) \[ \text{C.R.R.A}(C.R.R.A) \] \[ \text{(C.E.S)} \]

\[ U = \frac{C^{1-\sigma} - 1}{1 - \sigma}, \]
\[ C = \left( \frac{1}{\alpha} x_i^a d_i \right)^{\frac{1}{\alpha}}, \quad 0 < \alpha < 1 \]

(18) \[ N = \delta^H N \]

---

\[ ^{36} \text{v} \]

\[ ^{37} H_N \]
(19) \[ g = \frac{1}{\alpha + (1 - \alpha)\beta} \left[ (1 - \alpha)\delta H - \alpha \rho \right] \]

Roncon & Beaudoin.

(4)” \[ U = \frac{C^{1-\sigma} - 1}{1 - \sigma}, \]

(20) \[ C = \exp \left[ \int_0^1 \log x_j d_j \right] = \exp \left[ \int_0^1 \log \left( \lambda^{w_j} x_j \right) d_j \right] \]

\( \tau = \delta H_N \)

Jones (1993), Kortum (1993)

(22) \[ g = \tau \log \lambda = \frac{\lambda}{\lambda + (\sigma - 1) \log \lambda} \left( 1 - \lambda^{-1} \delta H - \lambda^{-1} \rho \right) \]


39 Young, A. ’ 98. “Growth Without Scale Effects.” Journal of Political Economy 106, 41-63; D. Nouriel and Thompson, 1998; Peretto, 1998; Jones & Kortum. Y = B\left[ \int_0^1 \left( \lambda (t) x(t)^{-\alpha} \right) dt \right]^{1/\alpha}
(23) $Y = \left[\left(1 - a_k \right) K \right]^\gamma \left[A(1-a_k)L \right]^{-\alpha}, 0 < \alpha < 1$

(24) $N = [a_k K]^{\gamma} [a_L L]^{\gamma} N^\theta, 0 < \beta, 0 < \gamma$

(25) $K = (1 - a_k) \alpha \left(1 - a_L \right)^{1 - \alpha} K^\alpha N^{1 - \alpha} L^{1 - \alpha}$

(26) $N = a_k^{\beta} a_L^{\gamma} K^{\beta} L^{\gamma} N^\theta$

(27) $g_N^* = \frac{\beta + \gamma}{1 - (\theta + \beta)}^n$

Roner[] β = 0, γ = 1, θ = 1, n = 0 , Jones[] β = 0, γ = 1, θ < 1, n > 0 .

2. **Title**

$L_k \left[ \lambda_i(t), \lambda_i(t-1) \right] = e^{a_k(t) \lambda_i(t-1)}$

(α) $\alpha > 0$ , (1 - α) $0 < 1 - \alpha < 1$  , (1 - β) $0 < 1 - \beta < 1$ .
2.1. "Sustainable Development" (Brundtland Commission)


2.2. 個別的統計

Dasgupta[] 說明了，個別的統計在這類問題中有其重要性。他指出，個別的統計在分辨不同情况和取決於特定變數時非常有用。他並且指出，個別的統計在考慮到統計的變異性時也非常重要。他例舉了 U(C,E) (optimal growth path)[] 作为一个例子，個別的統計在這個例子中是非常重要的。他指出個別的統計在考慮到統計的變異性時也非常重要。


---

41 Dasgupta[] 說明了，個別的統計在這類問題中有其重要性。他指出，個別的統計在分辨不同情况和取決於特定變數時非常有用。他並且指出，個別的統計在考慮到統計的變異性時也非常重要。他例舉了 U(C,E) (optimal growth path)[] 作为一个例子，個別的統計在這個例子中是非常重要的。他指出個別的統計在考慮到統計的變異性時也非常重要。
(i) \[ z \in [0,1] \setminus \{0,1\} \] 1, \[ \text{Otherwise evaluate eq. (20)} \] $P = Yz^T \quad \gamma > 0$

(ii) \[ \sum_{Y \in \mathbb{R}^{n \times n}} Y = AK_z \quad \text{in Eq. (29)}, \quad \text{Minimize} \quad \min_{z \in [0,1]} (z^T \leq 1) \quad \text{subject to} \quad \gamma \leq 0 \]

(iii) \[ E = -(Y, P(z)) - \theta E \]

(30) $E^\min \leq E(t) \leq 0$
<IV> 1>  

\[ \exp^{-\nu} \]

\[ -p \cdot t \]

\[ \exp^{-\sigma - pt} \]

<IV> 2>  

\[ \dot{E} \]

\[ -\theta R \]

\[ E^{\text{true}} \]

\[ E \]

\[ -P \]

2.3. (Convex)  

\[ U(C_i) = \frac{C^{1-\sigma_c}}{1-\sigma_c} + \frac{(-E)^{1-\sigma_E}}{1-\sigma_E} \]

\[ \sigma_E \]
(32) \[ K_i = I_i - \eta K_i \]

\[ A K \] \[ B K^\alpha L^{1-\alpha} \] \[ \lambda_i \] \[ \xi_i \]

(33) \[ Y_i = AK_i + BK_i^\alpha L^{1-\alpha} \]

(34) \[ L = \frac{C_i^{1-\sigma_i}}{1-\sigma_c} + \frac{(-E_i)^{1-\sigma_c}}{1-\sigma_E} \]

\[ \lambda_i \left[ (AK_i + BK_i^\alpha L^{1-\alpha})\hat{z}_i - C_i - \eta K_i \right] \]

\[ -\xi_i \left[ (AK_i + BK_i^\alpha L^{1-\alpha})\hat{z}_i^{\gamma+1} + \theta E_i \right] \]

(35) \[ C_i^{-\sigma_i} = \lambda_i \]

(36) \[ \lambda_i \left[ AK_i + BK_i^\alpha L^{1-\alpha} \right] = \xi_i \left[ AK_i + BK_i^\alpha L^{1-\alpha} \right] y + 1 \hat{z}^\gamma \]

(37) \[ \rho \lambda_i = \lambda_i \left[ A + \alpha BK_i^{\alpha-1} L^{1-\alpha} \right] = \eta \]

\[ -\xi_i \left[ A + \alpha BK_i^{\alpha-1} L^{1-\alpha} \right] \hat{z}_i^{\gamma+1} + \lambda_i \]

(38) \[ \rho \xi_i = -(-E)^{\sigma_c} - \xi_i \theta + \xi \]

\[ \rho \xi \]

\[ \rho \xi \]

\[ \rho \xi \]

\[ \rho \xi \]

\[ \rho \xi \]

\[ \rho \xi \]
(39) \[ g_c = \frac{1}{\sigma_c} \left[ \frac{\gamma}{1+\gamma} \left( A + \alpha BK_i \right)^{\frac{1}{1-a}} \right] \]

\[ = \frac{1}{\sigma_c} \left[ \frac{\gamma}{1+\gamma} Az - \eta - \rho \right] \]

\[ g = \frac{1}{\sigma_c} \left[ \frac{\gamma}{1+\gamma} AZ - \rho - \eta \right] \]

\[ (A + \alpha BK_i \alpha L^{1-a}) \]

\[ \alpha BK_i \alpha L^{1-a} \]

\[ \frac{1}{\sigma_c} \left[ \frac{\gamma}{1+\gamma} \right] \]
3. \[ Y = A(L - L_N)^{-\alpha} \delta X^\alpha - C - \delta - N = \delta \delta N \].

3.1. \[ Y = A(L - L_N)^{-\alpha} \delta X^\alpha - C - \delta - N = \delta \delta N \].

\( L = \frac{C_i^{-\alpha}}{1 - \sigma} + \lambda_i \left[ A(L - L_N)^{-\alpha} \delta X^\alpha - C - \delta - N \right] + \mu_i [\delta X^\alpha - C - \delta - N]. \]

(40) \( C_i^{-\alpha} = \lambda_i \)

(41) \( \lambda_i = \lambda_i \left[ A(L - L_N)^{-\alpha} \delta X^\alpha \right] \)

(42) \( \lambda_i = \left[ A(L - L_N)^{-\alpha} \right] \)

(43) \( \alpha X^{-\alpha} A(L - L_N)^{-\alpha} N - N = 0 \)

(44) \( \rho \mu_i = \lambda_i \left[ A(L - L_N)^{-\alpha} \delta X^\alpha - X \right] + \mu_i \delta L_N \)

\( = \frac{1}{1 - \alpha} \delta \mu(L - L_N) + \mu \delta L_N + \mu - \delta X \)

(45) \( \frac{\dot{\mu}}{\mu} = \left[ \rho - \delta \frac{(L - L_N)}{(1 - \alpha)} - \delta L_N + \frac{\delta \alpha}{(1 - \alpha)} (L - L_N) \right] \)

\( = \left[ \rho - \delta \frac{(1 - \alpha)}{(1 - \alpha)} (L - L_N) - \delta L_N \right] \)

\( = \left[ \rho - \delta (L - L_N) - \delta L_N \right] \)
\[ L = \rho - \delta L \]

\[ -\sigma g_C = g_\lambda \quad \rho, \quad -\sigma g_C = g_\mu \quad \delta \]

\[ g_C = \frac{1}{\sigma} [\delta L - \rho] \quad \ldots \ (46) \]

\[ L_N = \frac{1}{\sigma \delta} (\delta L - \rho) \]
\[ = \frac{1}{\sigma} \left( \frac{L - \rho}{\delta} \right) \quad \ldots \ (47) \]

3.2. .................................................................

3.2.1. .................................................................

\[ U(C_i) = \frac{C^{1-\sigma_c}}{1-\sigma_c} + \frac{(-E)^{1-\sigma_E}}{1-\sigma_E} \quad \ldots \ (31) \]

\[ Y = K^\alpha N^{1-\alpha} (H - H_N)^{1-\alpha-\beta} L^\beta z. \quad \ldots \ (32) \]

\[ \dot{K} = Y - C \quad \ldots \ (49) \]
\[ \dot{N} = \delta H_N N \]

\[ \dot{E} = -Yz^\gamma - \theta E \]

\[ L = \frac{C^{1-\sigma_c}}{1-\sigma_c} + \frac{(-E)^{1-\sigma_E}}{1-\sigma_E} + \lambda(K^a N^{1-a} (H - H_N)^{1-a-\beta} L^\beta z - C) + \mu \delta H_N N + \xi[K^a N^{1-a} (H - H_N)^{1-a-\beta} L^\beta z^{\gamma+1} + \theta E] \]

3.2.2.

\[ C^{-\sigma_c} = \lambda. \]

\[ \lambda = (1+\gamma)z^\gamma. \]

\[ \lambda(1-\alpha-\beta) \frac{Y}{H - H_N} + \mu \delta N - \xi(1-\alpha-\beta) \frac{Y}{H - H_N} z^\gamma = 0 \]
\[
\begin{align*}
(55) \quad \dot{\lambda} &= \lambda - \alpha (1 - \frac{\xi}{\lambda} z^\gamma) \frac{Y}{K} \\
(56) \quad \dot{\xi} &= \rho \xi - (-E)^{\alpha} + \theta \xi \\
(57) \quad \mu &= \rho \mu - \delta H_N \mu - (1 - \alpha) (Y/N) \lambda \frac{Y}{1 + \gamma}; \\
(58) \quad Y &= K^\alpha N^{1-\alpha} (H - H_N)^{1-\alpha-\beta} L^\beta z. \\
(49)' \quad \dot{K} &= Y - C \\
(18)'' \quad \dot{N} &= \delta H_N N \\
(50)' \quad \dot{E} &= -Y z^\gamma - \theta E.
\end{align*}
\]
(63) \[ g_K = \frac{\gamma (1 + \sigma_E)(1 - \alpha)(\delta H - \rho)}{\sigma_c (1 - \alpha) \gamma (1 + \sigma_E) + \sigma_c + \sigma_E} \]

(64) \[ g_K = g_C = g_Y = (\delta H - \rho) \left( \frac{\sigma_C + \sigma_E}{\gamma (1 - \alpha)} \right) \]

(65) \[ g_H = 0 \]

(66) \[ g_E = \frac{1 - \sigma_C}{1 + \sigma_E} g_K \]

(67) \[ g_N = (1 + \frac{(\sigma_C + \sigma_E)}{\gamma (1 - \alpha)}) g_K \]

(68) \[ g_z = -\frac{1}{\gamma} \frac{\sigma_C + \sigma_E}{1 + \sigma_E} g_K \]

(69) \[ g_\lambda = -\sigma_C g_K \]

(70) \[ g_\mu = (1 - \sigma_C) g_K - g_N \]

(71) \[ g_\xi = \sigma_E \frac{1 - \sigma_C}{1 + \sigma_E} g_K \]
(63) \[ g_K = \frac{\gamma(1+\sigma_E)(1-\alpha)(\delta H - \rho)}{\sigma_C(1-\alpha)(\delta H + \sigma_E)} \]

3.3.2. \[ \square \quad \square \quad \square \]

\[ (\delta H - \rho) \]

1. \[ \rho \]

2. \[ \rho \]

3. \[ \rho \]

4. \[ \rho \]

5. \[ \rho \]

6. \[ \rho \]

\[ \frac{1}{\sigma_C} \]

---

43 \[ \rho \]
3.3.3. Discussion

RSD (L) and RSD (H) did not produce any statistically significant results. The results are largely inconsistent. However, RSD (H) did not produce any false negatives.

[44]

Ronder [2] also reported a significant increase in RSD (H) for the two conditions. A similar result was observed in the present study. Ronder [2] also found a significant increase in RSD (H) for the two conditions. A similar result was observed in the present study.  

[45] The results are largely consistent with those of the present study.

\[ g = \frac{(1-\alpha)\delta H - \rho}{\sigma + (1-\alpha)} \]

\[ g_c = \frac{1}{\sigma_c} (\delta H - \rho) \]
4.  4.1.

R&D expenditures in a country (knowledge spillover effect) have been found to be positively correlated with the level of R&D in other countries. This indicates that R&D in one country can benefit another country through the transfer of knowledge.

Similarly, trade in goods (trade in goods) has been shown to have a positive impact on R&D. The so-called competition effect suggests that increased competition from abroad can spur innovation in a country.

R&D expenditures in a country (redundancy effect) also have a negative impact on R&D in other countries. This can occur when R&D in one country is redundant with R&D in another country.

Romer (1990) and Helpman and Grossman (1992) have found that R&D in a country (knowledge based model) can be influenced by R&D in other countries (knowledge spillover effect). The so-called similarity effect suggests that countries with similar R&D activities may benefit from each other's R&D.

In a dissimilar country (dissimilar country) R&D expenditures can also affect the R&D in another country (skilled labor) and (unskilled labor).
4.2. 2 \cdot (A, B)
4.2.2. Level Effect

4.2.3. Redundancy Effect

\[
g_k = \frac{\gamma(1+\sigma_E)(1-\alpha) \left( \delta(H^A + \phi H^B) - \rho \right)}{\sigma_c (1-\alpha) \gamma(1+\sigma_E)+\sigma_c + \sigma_E}.
\]


Lorem ipsum dolor sit amet, consectetur adipiscing elit. Sed ut

nulla nec justo tristique. Donec bibendum, metus

ullamcorper cursus sem, ac convallis ligula nunc

erat eu justo. Ut posuere, libero et

sollicitudin ultrices, eros eros

mollis enim, in pharetra orci

nisi a diam. Aliquam

elit, varius non
divisi, tincidunt

at arcu.
V. 

...
null


Beghin, John, Brad Bowland, Sebastian Dessus, David Roland-Holst and Dominique Van Der Mensbrugghe (1996), "Trade Liberalization, Environmental Policy, and Urban Public Health in Chile", prepared for presentation at CONAMA and Universidad de Chile, Santiago.


Chenery, Hollis(1979), Struchtural Change and Development Policy, Oxford University Press, New York.


Committee on Trade and Environment(1999), "Trade liberalization and the environment: a positive agenda for reform", Submission by Australia, WT/CTE/W/105, World Trade Organization.


Hettige, Hemamala, Mainul Huq, Sheoli Pargal and Baved Wheeler (1995), "Determinants of Pollution Abatement in Developing Countries: Evidence from South and South-East Asia", World Bank, Policy Research Department, Environment, Infrastructure and Agriculture Division, Washington, DC.


Mabay and McNally (1999), "Foreign direct investment and the environment: From pollution havens to sustainable development", Gland (Switzerland): WWF.


OECD (1999a), Developing countries and multilateral trade liberalisation: A background note on some key issues, [TD/TC(99)18/FINAL].

OECD (1999b), Improving the environment through reducing subsidies, Paris: OECD.


Tsigas, M.D.Gray, T.Hertel and B. Krissoff(forthcoming), "Environmetal Consequences of Trade Liberalization in the Western Hemisphere", in O. Sunkel and M. Munasinghe(eds.), Sustainability of Long-term Growth: Recent Developments, World Bank and Center for Public Policy, University of Chile.


WORLD BANK (2000), Global Economic Prospects and the Developing Countries, Washington, D.C.

WTO (1996), Trade and Foreign Direct Investment, Geneva: WTO.

(A1) \[ \frac{\dot{\lambda}_c}{\lambda_c} = \rho - \left[ \left( A + \alpha BK_c^{1-\alpha} L^{1-\alpha} \right) z - \eta \right] + \frac{\xi_c}{\lambda_c} \left[ A + \alpha BK_c^{1-\alpha} L^{1-\alpha} \right] z^{\gamma+1} \]

\[ = \rho - \left[ \left( A + \alpha BK_c^{1-\alpha} L^{1-\alpha} \right) z - \eta \right] + \frac{1}{\gamma+1} \left[ A + \alpha BK_c^{1-\alpha} L^{1-\alpha} \right] z \]

\[ = \rho - \left[ \frac{\gamma}{1+\gamma} \left( A + \alpha BK_c^{1-\alpha} L^{1-\alpha} \right) z \right] + \eta \]

(A2) \[ g_c = -\frac{1}{\sigma_c} g_\lambda \]

\[ = -\frac{1}{\sigma_c} \left[ \rho - \frac{\gamma}{1+\gamma} \left( A + \alpha BK_c^{1-\alpha} L^{1-\alpha} \right) z + \eta \right] \]

\[ = \frac{1}{\sigma_c} \left[ \frac{\gamma}{1+\gamma} \left( A + \alpha BK_c^{1-\alpha} L^{1-\alpha} \right) z - \rho - \eta \right] \]

\[ = \frac{1}{\sigma_c} \left[ \frac{\gamma}{1+\gamma} AZ + \eta - \rho \right] \]

(11) Roner
\[
\begin{align*}
\dot{\frac{\mu}{\mu}} &= \rho - \frac{1}{1-\alpha} \delta (L - L_N) - \delta L_N + \frac{\lambda X}{\mu} \\
&= \rho - \frac{\delta}{(1-\alpha)} L + \delta \left( -1 + \frac{1}{1-\alpha} \right) L_N + \frac{\lambda X}{\mu} \\
&= \rho - \frac{\delta L}{(1-\alpha)} + \frac{\delta \alpha}{(1-\alpha)} L_N + \frac{\lambda X}{\mu} \\
&= \rho - \frac{1}{1-\alpha} \delta (L - L_N) - \delta L_N + \frac{\lambda X}{\mu} \\
&= \rho - \frac{1}{1-\alpha} \delta (L - L_N) - \delta L_N
\end{align*}
\]
\( g_c = \frac{1}{\sigma} [\delta L - \rho] \)

\( L_N = \frac{1}{\sigma \delta} (\delta L - \rho) = \frac{1}{\sigma} \left( L - \frac{\rho}{\delta} \right) \)

\[ \text{(111) } g_Y = g_K = g_c \]
\[ \text{(A8) } g_Y = g_K = g_c \]
\[ \text{(A9) } - \sigma_c g_K = g_\lambda \]
\[ \text{(A10) } g_\lambda = g_\xi + \gamma g_z \]
\[ \text{(A11) } g_\mu + g_N = g_\lambda + g_Y = (1 - \sigma_c) g_K \]

\[ \text{(A12) } g_\mu = -\delta H_N - (\sigma_c - 1) g_K \]
\[ \text{(A13) } g_Y = \alpha g_K + (1 - \alpha) g_N + g_z \]

\[ \text{(A14) } g_K = \alpha g_K + (1 - \alpha) \left[ (1 - \sigma_c) g_K - g_\mu \right] + g_z \]
\[ = \alpha g_K + (1 - \alpha) \left[ (1 - \sigma_c) g_K + \delta H_N + (\sigma_c - 1) g_K \right] + g_z \]
\[ = \alpha g_K + (1 - \alpha) \left[ (1 - \sigma_c) g_K + \delta H - \rho - (\sigma_c - 1) g_K + (\sigma_c - 1) g_K \right] + g_z \]
\[ g_Y + \gamma g_z = g_E \]
\[ \text{(A15) } g_\xi = -\sigma_c g_K - \gamma g_z = -\sigma_c g_K + g_K - g_E = (1 - \sigma_c) g_K - g_E \]
\[ \text{(A16) } g_\xi = (1 - \sigma_c) g_K - \frac{g_\xi}{\sigma_E} \]
(A17) \[ g_z = \frac{\sigma_E}{1+\sigma_E} (1-\sigma_c) g_K \]

(A18) \[ g_K = \alpha g_K + (1-\alpha) [(1-\sigma_c) g_K + \delta H - \rho] + g_z \]

(A19) \[ (1-\alpha) g_K = (1-\alpha) [(1-\sigma_c) g_K + \delta H - \rho] + \left[ -\sigma_c g_k - \frac{\sigma_E}{1+\sigma_E} (1-\sigma_c) g_K \right] \gamma^{-1} \]

\[
(1-\alpha) - (1-\alpha)(1-\sigma_c) + \frac{\sigma_c + \frac{\sigma_E}{1+\sigma_E} (1-\sigma_c)}{\gamma} \] \[ g_K = (1-\alpha)(\delta H - \rho) \]

(A21) \[ \left[ \sigma_c (1-\alpha) + \frac{\sigma_c + \sigma_E}{\gamma (1+\sigma_E)} \right] g_K = (1-\alpha)(\delta H - \rho) \]

(A22) \[ g_K = g_c = g_y = (\delta H - \rho) (\sigma_c + (\sigma_c + \sigma_E)/(1+\sigma_E)) \gamma^{-1} \]

(A23) \[ g_{hs} = 0 \]

(A24) \[ g_E = \frac{1-\sigma_c}{1+\sigma_E} g_K \]

(A25) \[ g_N = (1 + (\sigma_c + \sigma_E)/(1+\sigma_E)) g_K \gamma(1-\alpha) \]

(A26) \[ g_z = -\frac{\sigma_c + \sigma_E}{\gamma}\frac{1}{1+\sigma_E} g_K \]
(A27) $g_\lambda = -\sigma C g K$

(A28) $g_\mu = (1 - \sigma C) g K - g N$

(A29) $g_\xi = \sigma E \frac{1 - \sigma E}{1 + \sigma E} g K$
1. 


OECD(Non-OECD)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD</td>
<td>247.425</td>
<td>284.915</td>
<td>358.573</td>
<td>379.872</td>
<td>475.125</td>
<td>648.920</td>
<td>799.928</td>
</tr>
<tr>
<td>(OECD)</td>
<td>207.824</td>
<td>245.055</td>
<td>305.515</td>
<td>324.146</td>
<td>410.037</td>
<td>599.464</td>
<td>734.589</td>
</tr>
<tr>
<td>(OECD)</td>
<td>84%</td>
<td>86%</td>
<td>85%</td>
<td>86%</td>
<td>92%</td>
<td>92%</td>
<td></td>
</tr>
<tr>
<td>OECD(Non-OECD)</td>
<td>219.421</td>
<td>253.506</td>
<td>328.862</td>
<td>358.869</td>
<td>464.341</td>
<td>643.879</td>
<td>865.487</td>
</tr>
<tr>
<td>(OECD)</td>
<td>146.044</td>
<td>163.360</td>
<td>228.932</td>
<td>229.114</td>
<td>294.888</td>
<td>484.012</td>
<td>669.719</td>
</tr>
<tr>
<td>(OECD)</td>
<td>67%</td>
<td>64%</td>
<td>70%</td>
<td>64%</td>
<td>64%</td>
<td>75%</td>
<td>77%</td>
</tr>
</tbody>
</table>

1984년 20%
1988년 30%
1998년 40%
(10 
25%)
(share)
1948~1998

<1>

UNCTAD(1999a)  참조.
OECD 5.6% 1987~1997, 10% 1987, 2%), <2> OECD 11% GDP 2% 1987~1997, 2% OECD 9% OECD 1987~1997, 1% SSA 4% SSA 1987~1997, 1.3% 1% SSA 7% SSA 2.3% (1987~1997 SSA 1.1%)

<2> 1987~1997, 2% OECD 11% GDP 2% OECD 1987~1997, 1% 1987~1997, 1% SSA 4% SSA 1987~1997, 1.3% SSA 7% SSA 2.3% (1987~1997 SSA 1.1%)

FDI\(\leq 2\) OECD, FDI\(\geq 10\) OECD (\(\leq 3\) OECD).

\[\begin{array}{|c|c|c|c|c|c|c|c|c|}
\hline
\text{Country} & \text{US\$} & \text{US\$\%} & \text{US\$\%} & \text{US\$\%} & \text{US\$\%} & \text{US\$\%} & \text{US\$\%} & \text{US\$\%} \\
\hline
\hline
\text{OECD} & 61,280 & 235,845 & 324,744 & 571,707 & 100 & 100 & 100 & 100 \\
\hline
\text{OECD} & 42,058 & 189,121 & 267,262 & 453,765 & 68.6 & 80.2 & 82.3 & 79.4 \\
\hline
\text{OECD} & 19,222 & 46,724 & 68,698 & 117,943 & 31.4 & 19.8 & 21.2 & 20.6 \\
\hline
\text{OECD} & 404 & 823 & 2,972 & 8,304 & 0.7 & 0.3 & 0.9 & 1.5 \\
\hline
\text{OECD} & 2,171 & 12,651 & 25,371 & 26,225 & 3.5 & 5.4 & 7.8 & 4.6 \\
\hline
\text{OECD} & 8 & 410 & 2,221 & 6,062 & 0.0 & 0.2 & 0.7 & 1.1 \\
\hline
\text{OECD} & 7,325 & 12,821 & 14,154 & 20,200 & 12.0 & 5.4 & 4.4 & 3.5 \\
\hline
\end{array}\]

* OECD (\(\leq 3\) OECD)

\text{1998 OECD(1999) DISY (International Direct Investment Statistics Yearbook) OECD (\(\leq 3\) OECD)}

\[\begin{array}{|c|c|c|c|}
\hline
\text{Country} & \text{1990} & \text{1995} & \text{1998} \\
\hline
\hline
1. & 2,458 & 8,342 & 21,903 \\
2. & 2,118 & 7,005 & 4,990 \\
3. & 1,949 & 3,812 & 4,899 \\
4. & 1,931 & 3,290 & 4,198 \\
5. & 1,645 & 3,040 & 3,749 \\
6. & 1,272 & 2,961 & 3,534 \\
7. & 816 & 2,798 & 2,851 \\
8. & 748 & 1,825 & 2,477 \\
9. & 646 & 1,756 & 2,464 \\
10. & 510 & 1,437 & 2,374 \\
\hline
\text{OECD} & 30.1\% & 52.8\% & 45.3\% \\
\hline
\end{array}\]

\text{1998 OECD(1999) DISY (International Direct Investment Statistics Yearbook) OECD (\(\leq 3\) OECD)}
1990 OECD FDI 40%–50%, OECD FDI OECD GDP GDP (Official development finance: ODF) OECD FDI OECD GDP GDP (export credits)

4> DAC (Official development assistance) (greening of portfolio)

<table>
<thead>
<tr>
<th></th>
<th>US$ m</th>
<th>US$ m (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ODA*</td>
<td>84.5</td>
<td>78.5</td>
</tr>
<tr>
<td>ODA (OA)</td>
<td>6.6</td>
<td>6.0</td>
</tr>
<tr>
<td>ODF</td>
<td>20.8</td>
<td>14.0</td>
</tr>
<tr>
<td>2. NGO</td>
<td>0.6</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>53.0</td>
<td>80.1</td>
</tr>
<tr>
<td></td>
<td>24.8</td>
<td>30.2</td>
</tr>
<tr>
<td></td>
<td>10.7</td>
<td>34.6</td>
</tr>
<tr>
<td></td>
<td>12.0</td>
<td>25.0</td>
</tr>
<tr>
<td></td>
<td>4.9</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>7.1</td>
<td>1.8</td>
</tr>
<tr>
<td></td>
<td>5.4</td>
<td>6.0</td>
</tr>
</tbody>
</table>

%: 1999 OECD

1991–1998 530 1,470 20% 49% 5% 20% .

53 GDP FDI OECD FDI OECD GDP (67%), ODF (85.8%), 14% UNCTAD(1999) .

54 (official development assistance) 571 497 20% .
investment) (BOX 1).

### BOX 1. *Greening of Portfolio Investment*

FDI and M&A:

FDI and M&A are key indicators in the context of international investment. OECD publications provide comprehensive data on these metrics. 

### 5> OECD FDI and M&A

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>M&amp;A</td>
<td>101.2</td>
<td>134.1</td>
<td>165.7</td>
<td>217.7</td>
<td>244.8</td>
<td>303.1</td>
<td>516.7</td>
<td>772.8</td>
</tr>
<tr>
<td>FDI</td>
<td>177.7</td>
<td>204.7</td>
<td>239.6</td>
<td>308.7</td>
<td>332.7</td>
<td>394.2</td>
<td>578.1</td>
<td></td>
</tr>
</tbody>
</table>


### 6> OECD FDI in US$:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UNALLOCATED</td>
<td>59.8</td>
<td>228.0</td>
<td>323.0</td>
<td>568.9</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>13.3</td>
<td>29.3</td>
<td>23.5</td>
<td>26.0</td>
<td>22.4</td>
<td>12.9</td>
<td>7.3</td>
<td>4.6</td>
</tr>
</tbody>
</table>

1987% 22% , 1991% 1/3% (Karsenty, 2000). GDP% 1980% 53% GDP% 1995% 63% . GDP% 1990% 1998% 7% . GDP% 1975% 59% , 1999% 76% .

57 OECD: International Telecommunications, 1.4.
2. BOX 2

ICT (help desk function)

ICT "leap-frog"

(old economy)
Phytosanitary Measures, WTO 138(1) 20 (Sanitary and Phytosanitary Measures) 20(1) (national treatment) 160(1) TRIMs (The Trade Related Investment Measures)
OECD (Code of Liberalization), OECD (Bilateral investment treaties: BITs)

(Bilateral investment treaties: BITs)
Free Trade Agreements: FTA\(^58\), EU\(^59\), WTO\(^58\), (trans-regional agreements). 

\(\text{ASEAN}\)\(^58\), ANZERTA\(^59\), Mercosur\(^59\), (SADC)\(^59\).
3. FDI Flows

FDI flows have increased significantly since 1990. The share of FDI flows from OECD countries to developing countries has increased from 10% in 1990 to around 15% in 2000 (UNCTAD, 2000). The share of FDI flows from OECD countries to developing countries has also increased from 80% in 1990 to around 85% in 2000 (UNCTAD, 2000).

61 OECD(1999) 62 OECD, "OECD those", OECD, OECD.
GATS negotiated access to the international market is increasingly used by developing countries to gain market access. OECD Trade (1997) gives a detailed account of how developing countries use the “mode 4” service provision scheme.

Developing countries are also increasingly using access to foreign markets (ODA) for services (see World Bank, World Development Report 2000). The ODA stream of the OECD Development Assistance Committee consists of a non-commercial economic flow.

\(^{63}\) Draft version 2000.
1. 


OECD/UNCTAD 1999.

OECD 1998.
70 Markusen and Venable, 1999, op. cit.
Policy essay no. 24, Washington: ODC.

Sachs and Warner (1995)  

OECD (1998)  

Ben-David, Nordstrom, Winters (1999)  

Dollar and Kray (2000)  


BEN-DAVID, D., NORDSTROM, H. and WINTERS, A. (1999), "Trade, income disparity and poverty", WTO special studies 5, Washington: WTO.


73 BEN-DAVID, D., NORDSTROM, H. and WINTERS, A. (1999), "Trade, income disparity and poverty", WTO special studies 5, Washington: WTO.


2.  

...
| Box 1. | (open access resources) |


80 OECD (1997a); OECD (1997a); UNEP, 2000, op. cit.
3. The Core of the Issue

The core of the issue [spill-over effect] is that. The Asian Development Bank (ADB) has shown that GDP can decrease 10% if there is a reduction in the number of workers. The core of the issue is that. The Asian Development Bank (ADB) has shown that GDP can decrease 10% if there is a reduction in the number of workers.