

School of Economics and Finance

**A Political Economy Analysis of Uneven Global, Regional,
National and Sub-National Performance 1950-2010**

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**This thesis is presented for the Degree of
Doctor of Philosophy
of
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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for award of any other degree or diploma in any university.

Signature:

Date:.....

This thesis is dedicated to,

My parents

Dwi Atmodjo Edhie Samodra and Sugijantini

My wife and daughter

Dinarjati Eka Puspitasari and Dianswara Sekar Larasati Samudro

and

My brother and sister

Haryo Luqman Samodra and Cystarini Dian Samodra

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Abstract

This PhD thesis examines the process of uneven global development during the period 1950 to 2010. The examination encompasses a multidimensional analysis, incorporating economic, social, environmental and political factors. Second, a thoroughgoing geographical assessment is conducted, taking account of the world as a whole, the various regions (continents), and specific nations and sub-nations. Third, the principles of political economy are employed. That is, the ‘stylized facts’ of the long waves (history), hegemony (core, semi-periphery and periphery), circular and cumulative causation (CCC), contradiction, and institutional investment and consumption are used to examine uneven development. Fourth, the notion of ‘core, semi-peripheral and peripheral’ are outlined, and, further, heterogeneous sources of data for ‘core, semi-peripheral and peripheral’ regions and countries are explored, to ascertain the changing power relations between these areas at the global, regional, national and sub-national levels.

Patterns of uneven economic, social, environmental and political performance are examined through the use of a wide range of statistics, indices, surveys, and estimates, for example GDP per capita (growth and levels), the Human Development Index, the Ecological Footprint, the World Values Survey (e.g., trust), political indicator (e.g. political rights and civil liberties) and the Corruption Perception Index. When the empirical material is incomplete, incommensurable or heterogeneous, comparisons are often required at the ‘descriptive’ or more qualitative level.

A framework that integrates the principles, theories and issues that inform this study is central to the research method. The framework adopted is a stylized fact approach to confirm several core hypotheses, themselves developed from the principles of political economy. The resultant stylized-fact–roulette (SFR) model of political economy is used to scrutinize the transformation of the performances of multiple factors at differing geographical levels, during the global institutional changes of 1950–2010. To capture the structural linkages of economic, social, environmental and political factors, the model identifies situations in which these multiple factors show structural links, according to principles of the CCC and contradiction through the decadal period.

The application of the SFR model leads to some key results and implications. Global institutional change from the period 1950–1973 under the Fordist institution to the period of 1974–2010 under the institution of globalization and neoliberalism led to the transformation of economic growth through a long-wave upswing during the 1950s–1960s. This was followed by the borderline period of the 1970s and a long-wave downswing of the 1980s–2000s. The terms ‘upswing’, ‘borderline’ and ‘downswing’ are each defined for the period. During the abovementioned periods, with their accompanying global institutions, the Core regions (e.g. North America, Western Europe and part of Oceania) consistently held sway over the semi-peripheral and peripheral regions. However, contradictions in the structural linkages of economic factors promoted a long-wave downswing in core regions during the 1980s–2000s, while, in contrast, Asia underwent CCC that was indicated by a consistent long-wave upswing.

The study’s in-depth and novel assessments of geographic regions yield interesting results. At the sub-national level, the patterns of multiple factors typically differ from global, regional and national patterns during the period of the study. National and sub-national patterns appear to be only occasionally related, suggesting that global institutional changes lead to heterogeneous patterns and complex structural linkages at the sub-national level.

The study’s results hint at the changes in social, environmental and political factors that accompanied the economic institutions of globalization and neoliberalism. Among these are increases in political rights and civil liberties, and the greater opportunities for civilians to express their attitudes, values, beliefs and desire. Conversely, the freedom of civil expression leads to increase negative social behaviour, which can be seen in the increases of corruption. Changes in social factors included decreased levels of trust, which could be associated with a general rise of consumption. Similarly, such increased consumption and corporate financial investment diminishes the wellbeing of environmental systems. Thus, it is found that globalization and neoliberalism came at a cost to the social and environmental capital of the world system as a whole, while there are positive and negative impacts on political capital

Keywords: political economy; uneven development; long wave; hegemony; circular & cumulative causation; contradiction.

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List of Abbreviations

CCC	Circular and Cumulative Causation
CCI	Control Corruption Index
CI	Climate Index
CL	Civil Liberties
CPI	Corruption Perception Index
CSGR	Center for Study Globalisation and Regionalisation
C-SP-P	Core - Semi-periphery - Periphery
EF	Ecological Footprint
EFI	Economic Freedom Index
EFW	Economic Freedom of the World
EI	Education Index
EPI	Environmental Performance Index
ESI	Environmental Sustainability Index
EVI	Environmental Vulnerability Index
FDI	Foreign Direct Investment
FDIC	Foreign Direct Investment Index
GCF	Gross Capital Formation
GCI	Global Competitiveness Index
GDI	Gender-related Development Index
GDP	Gross Domestic Product
GEI	Governance Effectiveness Index
GEM	Gender Empowerment Measure
GI	Globalization Index
GII	Global Integrity Index
GRCI	Growth Competitiveness Index
GWID	Gender Weighted Index of Democratization
HDI	Human Development Index
HEC	High Ecological Capital
HFC	High Free Corruption
HHDI	High Human Development Index
HLT	High Level of Trust
HPI	Happy Planet Index
IGBP	International Geosphere Biosphere Program
KCI	Knowledge Competitiveness Index
KOF	Konjunkturforschungsstelle
LACA	Latin America and the Caribbean
LEC	Low Ecological Capital
LEI	Life Expectancy Index
LHDI	Low Human Development Index
LLT	Low Level of Trust
LLWU	Low Long-wave Upswing
LPI	Living Planet Index
MDLWD	Medium Long-wave Downswing

MDLWU	Medium Long-wave Upswing
MEC	Medium Ecological Capital
MENA	Middle East and North Africa
MFC	Medium Free Corruption
MHDI	Medium Human Development Index
MHLT	Medium Level of Trust
MI	Mother Index
MLWD	Major Long-wave Downswing
MLWU	Major Long-wave Upswing
NOI	Northern Oscillation Index
NRI	Network Readiness Index
OPEC	Organization of the Petroleum Exporting Countries
PI	Political Indicator
PR	Political Right
PSAVI	Political Stability and Absence of Violence Index
RLI	Rule of Law Index
RQI	Regulatory Quality Index (RQI)
SFR	Stylized-fact–Roulette model
SLWD	Slight Long-wave Downswing
SSA	Sub-Saharan Africa
SSA	Social Structure Accumulation
SWOT	Strengths Weaknesses Opportunities Threats
TAI	Technology Achievement Index
TI	Technology Index
UNDP	United Nation Development Program
VAI	Voice and Accountability Index
VHDI	Very High Human Development Index
VHEC	Very High Level of Ecological Capital
VHFC	Very High Free Corruption
VHLT	Very High Level of Trust
WEF	World Economic Forum
WGI	Worldwide Governance Indicator
WVS	World Value Survey
WWF	World Wildlife Fun

Related Thesis Publications

Book Section:

Samudro, Bhimo Rizky. 2011. "Political Economy Uneven Regional Development and Local Election in Indonesia". Chapter 1 on Indonesian Regional Science Association (IRSA) Book Series on Regional Development No 9 Year 2011.

Conferences

Samudro, Bhimo Rizky, Bloch, Harry and Salim, Ruhul. 2012. "Long Waves of Economic Growth in Asia and Western Europe, 1950-2010: Are there any Circular-Cumulative Causation and Contradiction aspects?" Presented at 4th International Conference of Political Economy (ICOPEC), Kocaeli, Turkey, 27-29 September 2012.

Samudro, Bhimo Rizky, Bloch, Harry and Salim, Ruhul. 2012. "Uneven Regional Pattern of Ecological Capital in Indonesia: A Heterodox- Political Economy Perspective". Presented at 11th International Conference Indonesia Regional Science Association (IRSA), Banjarmasin, Indonesia, 9-11 July 2012.

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Chapter 1

Introduction: Uneven Development and Global Institutions

The notion of uneven development arises out of divergent performances in the patterns of development at the global, regional, national, and sub-national levels. This notion is derived from the point of view of political economy, in that the world system consists of core and peripheral regions. The core regions typically use the global institution to contain and eventually overcome the peripheral regions (Trotsky 1931; Baran 1957; Chilcote 2009; Wallerstein 2010a). The global disparity between core and peripheral regions progresses from the global to the sub-national level. Over the long term, the patterns of uneven development reflect the transformation of socioeconomic performance that characteristically follows the changes in global institutions.

Global institutions play a key role in the ways core regions maintain their supremacy in various aspects of the world system, which, according to Boulding (1984), consists of economic, social, environmental, and political systems. Global institutions can be understood from two perspectives (Chase-Dunn and Lawrence 2011; Dicken 2011). The first perspective views global institutions as tools to accelerate the structural linkages among regions of the world system. The second perspective focuses on the implications of a dominant ideology in the world system. This dominant ideology often arises as a result of the interplay of major ideologies in the core regions. In this context, a group of core regions uses global institutions to overcome the structural linkages of the core and periphery. Even though these perspectives have differences, both emphasize the structural linkages of the core and the periphery.

The long-term endogenous process of structural linkages between core and peripheral regions leads to the core countries overwhelming the peripheral countries by means of global institutions (Dutt 2002; Arrighi, Silver and Brewer 2003). Although global institutions frequently provide many benefits to the core components of the world system, they periodically generate disadvantages—not only to the peripheral regions but also to the core regions. Several facts indicate that global institutions characteristically generate both debt crises and financial crises (Suter and Stamm 1992; O'Hara 2006a; Kotz 2008; Tuncer 2010). During the periods considered in this study, the semi-

peripheral and peripheral regions characteristically underwent periods of debt crises, whereas financial crises were experienced by the core regions of the world system.

The existence of debt crises and financial crises suggests that global institutions have been conducive to uncertainty and complexity issues throughout the period under consideration. In order to simplify the investigation of these uncertainties, Table 1.1 summarizes the relationships of debt crises, financial crises, and long waves. The table illustrates several crucial facts. The first is that several global institutions support the structural linkages of core and peripheral regions, which generates debt-crisis periods. These mostly occur in semi-peripheral and peripheral regions during long-wave downswings; furthermore, they take place in every long-wave phase (Suter and Stamm 1992). For instance, in the 1930s some countries in LACA, SSA, and Eastern Europe under imperialist and colonialist institutions experienced debt crises. Early in the globalization era of the 1980s, debt crises also occurred in most LACA and SSA countries.

Table 1.1 Debt Crises, Financial Crises and Global Institutions by Long Waves

	Periods	Upswing	Downswing	Debt Crises	Region of Debt Crises	Financial Crises	Region of Financial Crises	Global Institution
Long wave 1	1780s–1840s	1780s–1810s	1810s–1840s	1820s–1840s	LACA, Southern WE	n.a.	n.a.	Industrial Revolution
Long wave 2	1850s–1890s	1850s–1870s	1870s–1890s	1870s–1880s	LACA, MENA, SSA	n.a.	n.a.	Developing industrial sector, British hegemony
Long wave 3	1890s–1940s	1890s–1910s	1910s–1940s	1930s	LACA, EE, SSA WE (less)	n.a.	n.a.	Imperialism and colonialism, financial sector
Long wave 4	1940s–1990s/2000s	1940s–1970s	1970s–1990s/2000s	1980s–1990s	LACA, SSA, AS (less)	1973–1974; 1981–1982; 1992–1993	WE, NA, part of OC, AS (Japan)	Fordism— Globalization and Neoliberalism
Long wave 5	2000–2040s?	2000–2020s?	2020s–2040s?	2020s?	???	2000–2001; 2007–2008	WE, NA, part of OC, AS (less)	Globalization and Neoliberalism (mature)

Source: Data on long-wave periods and global institutions are adapted from O’Hara (2006a: p.6); Data periods of debt crises are adapted from Pfister and Suter (1987: p. 2); Data periods of financial crises are adapted from Wolfson (1990: p. 346) and Kotz (2008). Data for selected countries are adapted from Pfister and Suter (1987), Eichengreen (1991), Suter and Stamm (1992), Dymiski (2002), Flandreau and Flores (2007), and Tuncer (2010). Note: North America (NA), Western Europe (WE), Eastern Europe (EE), Asia (AS), Oceania (OC), Latin America and the Caribbean (LACA), Middle East and North Africa (MENA) and Sub-Saharan Africa (SSA).

The second fact evident in Table 1.1 is that, from the industrial revolution in long-wave 1 to the Fordism that occurred early in long-wave 4, global institutions

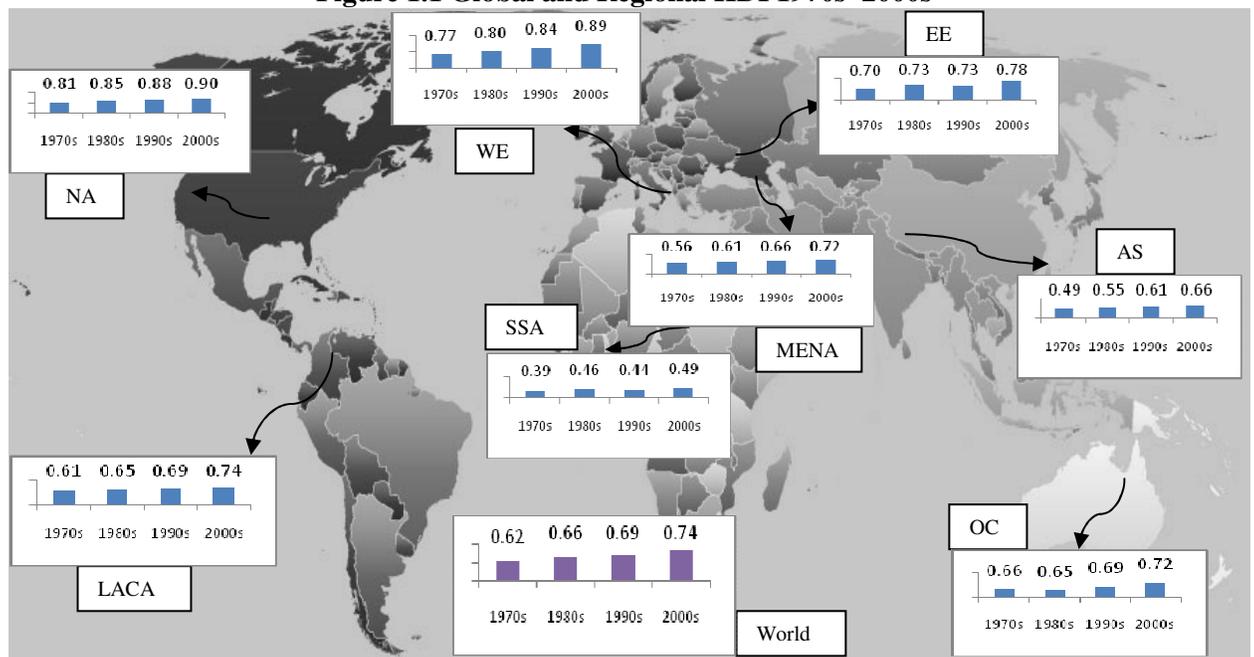
typically contributed to the hegemony of core regions, by which these regions dominated semi-peripheral and peripheral regions. Most core regions experienced uneven development in the long-wave upswings as compared to the long-wave downswings, which are characteristic of semi-peripheral and peripheral regions. However, debt crises also occurred in some parts of the core regions. For instance, several Southern European countries underwent debt crises during the 1820s–1840s, namely, Greece, Portugal, and Spain (Pfister and Suter 1987). According to Suter and Stamm (1992) and Tuncer (2010), the post-World-War I period also saw debt crises in several Western European countries, such as Germany and Austria, both of which experienced debt crises in the 1930s.

Interestingly, the third fact illustrates that the change of global institutions from the Fordist era to the era of globalization and neoliberalism is associated with continued debt crises and financial crises during the 1970s–2000s. As Angus Maddison (2007) reveals, that the eras of globalization and neoliberalism commenced in the first half of the 1970s. The structural linkages of core, semi-peripheral and peripheral regions in the world system from the mid 1970s to the 2000s generated significant uncertainties. During the globalization era, semi-peripheral and peripheral regions (e.g., LACA, SSA, and Asia) typically experienced debt crises from the 1980s to the 1990s. Financial crises also periodically occurred in the core regions in the form of major recessions, such as the recessions that occurred in the middle of the 1970s, the early 1980s, the early 1990s, and the second half of the 2000s.

In addition to uneven development, in the sense of economic uncertainties, another question deserves attention: Do uncertainty and complexity also occur in relation to other non-economic factors, such as the social, environmental and political factors? Thus this thesis uses holistic perspectives that incorporate economic and non-economic factors into the operation of the world system. As Thorstein Veblen (1898a) suggests, the process of economic activities should be captured more broadly, taking account of the relationships between economic factors and non-economic factors. Kenneth Boulding (1984, 1992) implies that the interrelational patterns between economic and non-economic factors can best explain the reality of the world system.

On the empirical side, the performance of non-economic factors is primarily measured by the Human Development Index (HDI). As the UNDP (2010) explains, the HDI captures the patterns of major human development indices, including education, health, and level of income. Figure 1.1 depicts the global and regional trends for HDI during the 1970s–2000s. The global HDI increased from 0.62 in the 1970s to 0.74 in the 2000s, as global institutions changed from the Fordism era in the 1950s to the early 1970s to globalization in the 1980s–2000s. This suggests that globalization promotes the progress of global human development.

Figure 1.1 Global and Regional HDI 1970s–2000s



Source: Calculated from the UNDP (2010). The world map is adapted from <http://www.map-menu.com>. Note: North America (NA), Western Europe (WE), Eastern Europe (EE), Asia (AS), Oceania (OC), Latin America and the Caribbean (LACA), Middle East and North Africa (MENA) and Sub-Saharan Africa (SSA).

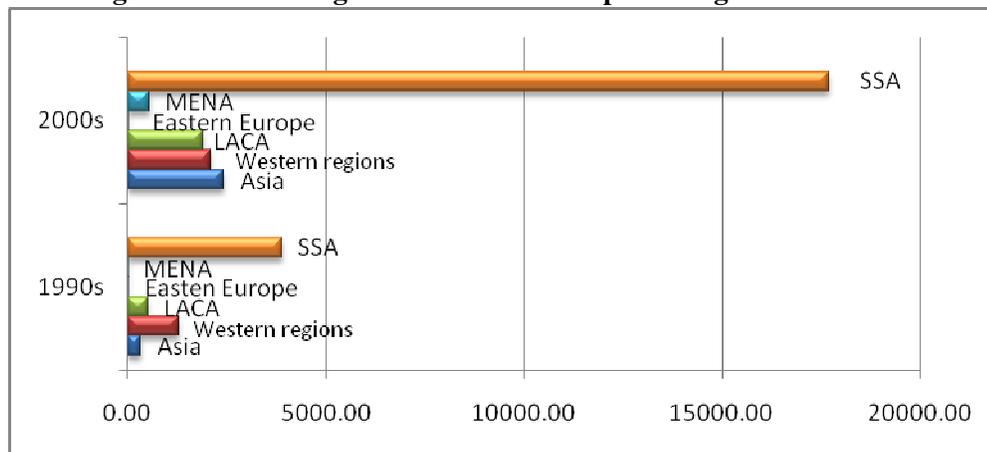
One further question arises out of this fact, namely: Do the regions experience patterns that are similar to the world patterns? To investigate this, uneven development at differing levels, including heterogeneity and complexity, must be examined and understood. Regionally, HDI displayed an increasing pattern during the 1970s–2000s, excluding the SSA region. This pattern suggests uneven development in the form of social and human development. Most core regions, such as North America and Western Europe, had very high levels of HDI, which were greater than the global level. These core regions also displayed a pattern of increase. In semi-peripheral regions, the HDI in

Eastern Europe was slightly greater than the world HDI, though the world HDI was less than Western Europe and North America. Patterns of moderate levels of increase in HDI also occurred in LACA, MENA and Asia. On the other hand, the pattern of HDI in SSA characteristically fluctuated during the 1970s–2000s and was below the global level.

Although an increasing pattern of HDI occurred in the world and in most regions, this proxy may incompletely capture the broader picture. According to Lawn (2007) and Brennan (2009), the world system needs to be considered from various perspectives. Multiple indicators are required when analyzing a change in the pattern of a factor in the world system.

As displayed in Figure 1.2, the regional patterns of the incidence of HIV during the 1990s–2000s provide a good example. Even though an increase in human development occurred in terms of HDI, the regional pattern of people living with HIV also rose during the same period. In almost every instance, the number of people with HIV increased from the 1990s to the 2000s. In particular, SSA experienced an extreme rise in the number of people living with HIV.

Figure 1.2 Cross Regions: Number of People Living with HIV 1990s–2000s



Source: Data are calculated from UNICEF (2010).

The pattern of an increase in the number of people with HIV suggests that the institutions of globalization are powerless to prevent the spread of HIV as part of human development. The structural linkages of core, semi-peripheral, and peripheral regions generate anomalies that primarily occur in peripheral regions. Linked to the pattern of HDI, most core regions had an increase in the HDI pattern at a very high level with a modest increase in the level of people with HIV. This differed from peripheral regions

(e.g., SSA), which had low HDIs compared to the global level and the corresponding increasing pattern of people living with HIV. Thus, given the uneven development occurring in the world system, a supplementary index to HDI is needed in order to understand the pattern of human development.

Turning to environmental factors, the issue of uneven development arises again. As Kapp (1970) demonstrates, the process of cumulative causation is generated by the structural linkages of economic and environmental factors in the world system. Cumulative causation tends to result in anomalies. Such cumulative causation may lead to uneven development in environmental factors.

When attempting to identify uneven development that is linked to environmental factors, the issues of incommensurable value and multiple proxies arise. According to Kapp (1970), Georgescu-Roegen (1975), and Brennan (2009), the patterns of environmental data typically exist in rough forms and have incommensurable values. As a result, several adjustments to environmental data must be made before they can be compared to other factors.

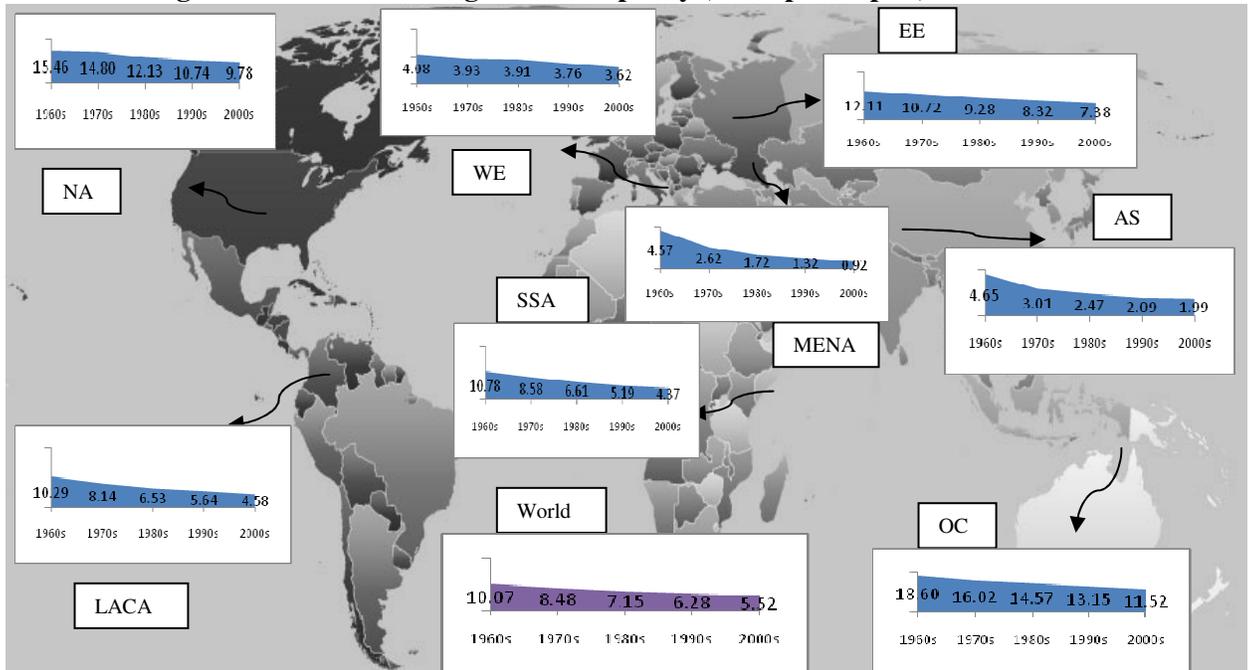
Empirically, the patterns of environmental factors illustrate that the process of uneven development is linked to changes in global institutions. For instance, Figure 1.3 displays the global and regional patterns of biocapacity during the 1960s–2000s. Biocapacity represents the stock of environmental resources at the global to sub-national levels (Global Footprint Network 2010). Global biocapacity characteristically experienced a decreasing pattern, progressively dropping from 10.07 gha in the 1960s to 5.52 gha in the 2000s. At the regional level, decreasing patterns of biocapacity typically occurred in all of regions during the 1960s–2000s.

Interestingly, several semi-peripheral and peripheral regions had biocapacity below the global level. Since the 1980s, the biocapacity in LACA and SSA has been lower than the global biocapacity. During the 1960s–2000s, MENA and Asia had a biocapacity that was significantly lower than the global biocapacity. On the other hand, although biocapacity had a decreasing pattern, in most core regions it was typically greater than the global biocapacity.

The divergent levels of biocapacity can be explained by the structural linkages of core, semi-peripheral, and peripheral regions, which generate anomalies that mostly

occur in semi-peripheral and peripheral regions over the long term. The global institutions of the eras of Fordism and globalization contribute to the ability to extract environmental resources from semi-peripheral and peripheral regions. The period ranging from the 1970s to the 1980s was significant. Regional patterns show that, in several semi-peripheral and peripheral regions (e.g., LACA and SSA), biocapacity dropped below the global level, where they have remained since the 1980s.

Figure 1.3 Global and Regional Biocapacity (GHA per Capita) 1960s–2000s

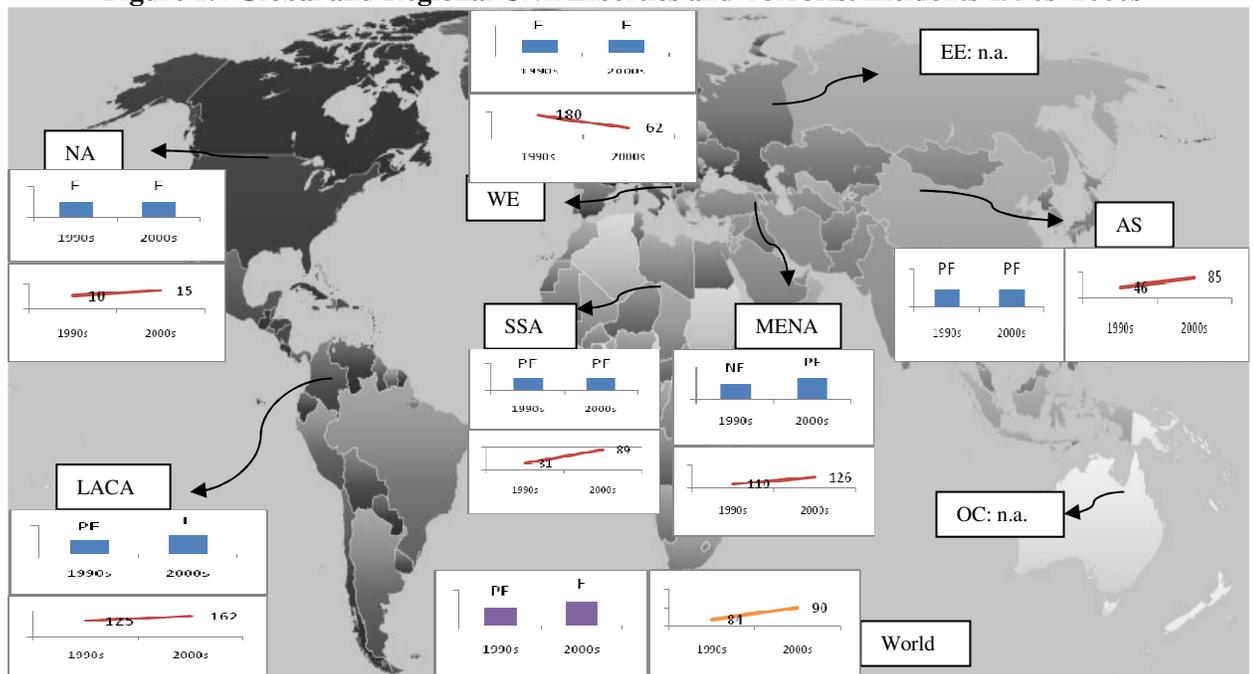


Source: Data are calculated from the New Economic Foundation and Global Footprint Network (2010). The world map is adapted from <http://www.map-menu.com>. Note: North America (NA), Western Europe (WE), Eastern Europe (EE), Asia (AS), Oceania (OC), Latin America and the Caribbean (LACA), Middle East and North Africa (MENA) and Sub-Saharan Africa (SSA). Note: Gha/capita (global hectare per capita)

Uneven development also frequently occurs in regard to political factors. These relate to social behaviors that potentially reflect power and desire (Smith 1759; Welzel and Inglehart 2005). This situation leads to uncertainty as people have the heterogeneous capacity and power to realize their desires. The structural linkages of political factors and other factors in an entire system are likely to stimulate cumulative causation effects, which include uncertainty, complexity, and heterogeneity. In addition, the trends of political factors often generate conflicts and anomalies within the political sphere and between political factors and other factors. For instance, the current global situation is marked by increasing terrorism incidents, yet for the most part global institutions promote political rights and civil liberties.

In the area of civil liberties and terrorism, uneven development can be seen at global and regional levels. As displayed in Figure 1.4, the global pattern of civil liberties increased from “partly free” in the 1990s to “free” in the 2000s, while during the same period, the number of terrorist incidents slightly rose. Increasing civil liberties can represent the freedom of civilians to express their attitudes, values, beliefs, and desires. If civic freedom is positively expressed, it will generate a positive amplification of the pattern of social behavior. Conversely, the pattern of negative social behavior may also be determined by the freedom of civil expression. Empirically, an increase of global civil liberties has stimulated negative expressions, which can be seen in the increased numbers of terrorist incidents. Although the institutions of globalization promoted civil liberties, they were unable to prevent the negative expression of these liberties.

Figure 1.4 Global and Regional Civil Liberties and Terrorist Incidents 1990s–2000s



Source: Civil Liberties data is calculated from the Freedom Institute (2010); Terrorist Incidents data is calculated from United States Department of State (2010). The world map is adapted from <http://www.map-menu.com>. Note: North America (NA), Western Europe (WE), Eastern Europe (EE), Asia (AS), Oceania (OC), Latin America and the Caribbean (LACA), Middle East and North Africa (MENA) and Sub-Saharan Africa (SSA); Column figure refers to the pattern of Civil Liberties; Line figure refers to the pattern of Terrorist Incidents; F: Free Civil Liberties, PF: Partly Free Civil Liberties, NF: Not Free Civil Liberties; n.a.: data is not available.

Shifting to the regional patterns, disparities between core and semi-peripheral–peripheral regions occurred throughout the world. Under the institutions of globalization, the structural linkages of core, semi-peripheral, and peripheral regions

resulted in different magnitudes for freedom of expression in the regions. Most core regions (e.g., North America and Western Europe) were classified as “free” on civil liberties during the 1990s–2000s. Concurrently, the patterns of terrorist incidents increased in North America and decreased in Western Europe.

In the semi-periphery, civil liberties in LACA changed from “partly free” in the 1990s to “free” in the 2000s, during which period the number of terrorist incidents increased. MENA experienced an increasing pattern of civil liberties from “not free” to “partly free” during the 1990s–2000s, while the number of terrorist incidents for the same period increased somewhat. During the 1990s and the 2000s, Asia and SSA were classed as “partly free” for civil liberties, and both of these regions had an increasing pattern of terrorist incidents.

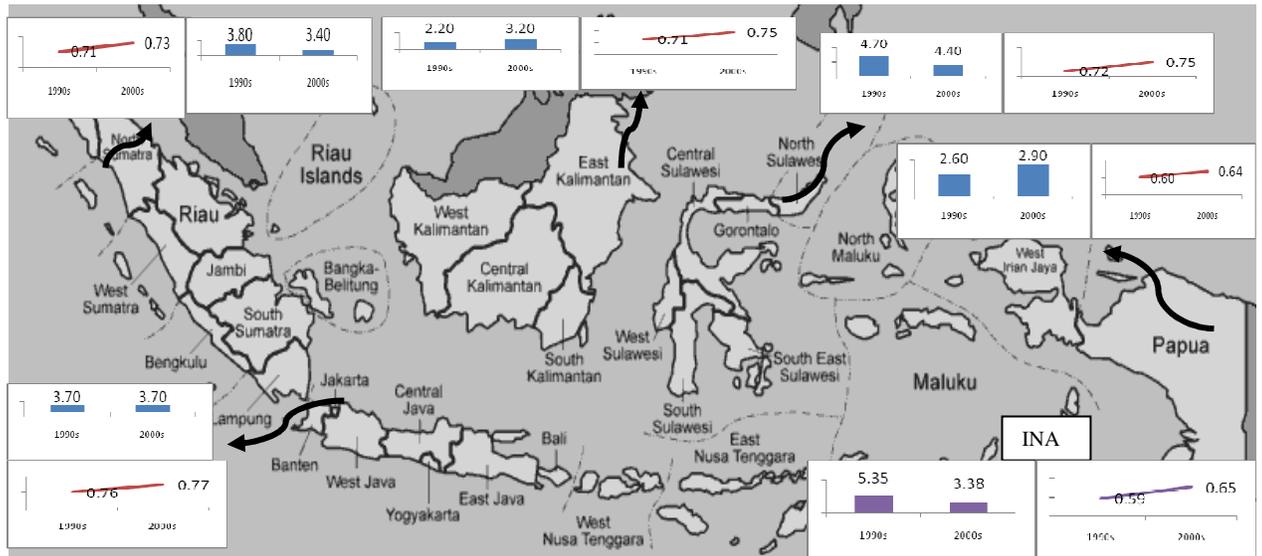
Next, the discourse of uneven development and global institutions can be developed further to include sub-national levels. The argument is that changes in the global institution influence the structural linkages at multiple levels, not only from global to national levels but also at the sub-national level. As Putnam (2001) and Royuela, Romani and Artis (2009) demonstrate, the investigation of the sub-national level is necessary for a clear understanding of performance ranging from the national level to the global level. This suggests the need for a holistic perspective in order to comprehend uneven development.

The discourse of uneven development at the sub-national level can be expressed as a single question: Do the trends of multiple performances indicators at the sub-national level change as global institutions change and develop over time? Addressing this question is crucial to a full appreciation of uneven development. For instance, a comparison of the patterns of sub-national economic growth and HDI in Indonesia demonstrates how crucial trends at the sub-national level act as a discourse of uneven development. Several issues of uneven development can be captured in the sub-national trends, including complexity, heterogeneity, and the need for a holistic approach.

Figure 1.5 illustrates sub-national patterns of GDP growth per capita and HDI, compared to the national pattern in Indonesia during the 1990s–2000s. This figure generally reveals uneven development at the sub-national level. In Indonesia, GDP growth per capita decreased from 5.35 per cent in the 1990s to 3.38 per cent in the

2000s. The sub-nations had various patterns as follows: North Sumatra (a decreasing pattern), Jakarta (a stable pattern), East Kalimantan (an increasing pattern), North Sulawesi (a decreasing pattern), and Papua (an increasing pattern). In the pattern of HDI, several sub-nations in Indonesia had an increasing pattern, which was similar to the national pattern during the 1990s–2000s. The HDI of these sub-nations diverged, with sub-national HDI in Western and Central Indonesia exceeding sub-national HDI in the Eastern region.

Figure 1.5 National and Sub-national GDP Growth Per Capita and HDI: Indonesia 1990s–2000s



Source: GDP growth per capita in the 1980s–2000s for sub-nations in Indonesia is calculated using period annual averages based on Hill (2008). HDI in the 1980s–2000s for sub-nations in Indonesia is calculated using period annual averages based on the Indonesian Statistical Board (2010). The Indonesian map is adapted from <http://climbcarstensz.wordpress.com>. Note: Column figure refers to the pattern of GDP growth per capita; Line figure refers to the pattern of HDI; INA: National patterns of GDP growth per capita and HDI in Indonesia.

Research Problem and Significance, and Organization of the Thesis

The need for a greater development of the study of uneven development and global institutions exists. Existing studies of uneven development have been conducted at the global, regional, and national levels. Furthermore, most previous studies have emphasized economic factors.

The following are examples of studies that emphasize uneven development. Dosi, Freeman, and Fabiani (1994) trace economic development over the long term in advanced countries and relate this development to the technological change in these countries. They also try to capture some stylized facts about the process of economic development. Pini (1995) assesses the process of circular and cumulative causation from

the point of view of the political economy. He does this to examine the structural linkages between economic growth and employment in the numerous advanced countries for long-wave periods. Looking at the global, regional, and national levels, Maddison (2003, 2007) depicts the historical trends of economic factors that are important to the process of long-term economic development. Halevi and Kriesler (2007) highlight the historical development of effective demand to investigate the pattern of economic growth and accumulation at the regional level. Grabowski, Self, and Shields (2007) emphasize the historical approach to regional institutions for comprehending uneven development. Ocampo and Vos (2008) portray the uneven development of economic growth at global and regional levels from 1960 to 2006. Several innovative works by O'Hara examine global, regional, and national patterns of economic, social and environmental factors throughout long waves (e.g., O'Hara 2001a, 2007a, 2008a).

This study uses several principles of political economy in order to further develop hypotheses and scrutinize the heterogeneous linkages within and between so-called economic, social, environmental and political factors at the global, regional, national and sub-national levels. Political factors are included in this study, as the movements of these factors potentially relate to global institutional change. The sub-national level is crucial to constructing a robust investigation of uneven development and, therefore, it is addressed. This study also develops several technical models based on principles of political economy. It is believed that these principles are grounded in empirical reality and will be of assistance in understanding an uneven world performance.

This leads to the major problematic of this study, as follows:

Major Problematic: A political economy analysis of uneven global, regional, national and sub-national performance employing an integrated and heterogeneous linkage of economic, social, environmental and political factors.

This study's research problem can be further described by the following research objectives:

1. To analyze the complexity of uneven development and the heterogeneous character of multiple factors at differing levels (global, regional, national, and sub-national levels) and dimensions (economic, social, environmental, and political).
2. To analyze the changing historical pattern of uneven performance through long waves of change and development.
3. To comprehend the stylized facts of world history between 1950 and 2010 through the lens of circular and cumulative causation and contradictions.

This study is likely to make several contributions to the field, including:

- a. Elucidating global performance using the approaches of political economy and addressing economic, social, environmental, and political factors at the global, regional, national, and sub-national levels.
- b. Elucidating the stylized facts among major factors at the global, regional, national, and sub-national levels
- c. Utilizing critical concepts of political economy to explain uneven global performance.

In order to investigate the research problem and pursue its objectives, this thesis has been organized as follows: Following this introduction, Chapter 2 reviews some of the relevant theoretical and empirical aspects of uneven development from the perspective of political economy.

Chapter 3 proposes several hypotheses that are grounded in the principles and theories of political economy. These hypotheses are constructed by an integrated theoretical framework of principles, theories, and issues that are required to research uneven development.

Chapter 4 explains the construction of the research methodology in relation to the theoretical framework. It presents the relevant data and provides additional analyses of uneven development. This chapter consists of three parts. The first presents the research methodology, which links the stylized fact approach to that of political economy. The third investigates the existing literature on multiple performance indices of different factors, including economic, social, environmental, and political factors. It

selects indices that are relevant to the research objectives and theories. In this chapter, the selection process for multiple performance indices is outlined. The process has several stages: literature reviews, pre-identification, a SWOT (strength, weakness, opportunity, and threat) analysis, and the testing of the theoretical framework. The innovative technical model, which is designated the stylized-factor-roulette-model (SFR) model and which is crucial for the analysis of uneven development, is depicted in the third part.

Chapter 5 examines the long-wave performance of economic factors at the global, regional, national and sub-national levels from 1950 to 2010. This chapter evaluates several hypotheses about economic factors. It does this by using the SFR model. To demonstrate the patterns of long-term economic factors, this chapter focuses on several important areas, namely interpreting the 1970s, the consistency of the Asia's economic performance, the Western economy's deterioration and the erratic economies of LACA, MENA, and SSA. Sub-national variations of economic growth are also presented in Chapter 5.

Chapter 6 investigates the long-term trends of social, environmental, and political factors by investigating these in the global, regional, national and sub-national political economies during the 1950s–2000s. This chapter consists of three main sections that apply the SFR model. The first considers social factors that are evaluated by long-term patterns at the global and regional levels. This section also constructs a statistical classification model to capture the distribution pattern at the regional and national level in terms of C-SP-P relationships. Moreover, social factors at the global, regional, national and sub-national levels are compared. In the second section, environmental factors are analyzed in a similar manner as social factors. This second section also discusses the gaps between biocapacities and ecological footprints, which enable ecological capital to be identified. The third section emphasizes political factors, which are investigated over the various periods.

Chapter 7 scrutinizes the integrative patterns of economic, social, environmental, and political factors from global to sub-national levels during the 1950s–2000s. It does this from the perspective of political economy. This chapter uses an integrative model to analyze these four factors at the global, regional, national, and sub-national levels during

the 1950s–2000s. By supplementing the SFR model, the integrative model is likely to identify structural linkages between multiple factors. This can be done with regards to the principles of CCC and contradiction and is used to assess decadal periods.

Chapter 8 summarizes the key results and draws several important implications from these results that can be used for the development of theories and policies. It also reveals several limitations of this study and suggests issues for further study.

Chapter 2

Uneven Development and the Core Principles of Political Economy: Literature Review

2.1 Introduction

The existing literature on uneven development has identified seven key issues. The first issue regards the fundamental theories of capital, accumulation and economic growth. It provides a foundation for examining the transformation of growth in the long wave.

The second issue is the concept of transformational growth and principle of long-wave economic change and development (e.g., Kondratieff 1935; Gordon and Weisskopf, and Bowles 1983; Nell 1998a, 1998b; Kotz 1987, 2008; Lippit 2006; O'Hara 2006b, 2008a, 2010, 2012a). The literature of this second part scrutinizes global institutional change in the form of long-wave upswings and long-wave downswings. This leads to the structural transformation of multiple socioeconomic factors.

The third issue is that the literature examines uneven development through the principle of hegemony or core– semi-periphery–periphery (C-SP-P). Most of the studies that focus on hegemony emphasize the movement of core components to overcome peripheral components of the world system, as structural linkages between the two components generate anomalies (e.g., Wallerstein 1974; Arrighi, Silver, and Brewer 2003; Maddison 2007; Ocampo and Vos 2008; Lee 2009).

The fourth issue is the concept of economic surplus and effective demand to investigate the principle of circular and cumulative causation (CCC). This part emphasizes the relationship between uneven development and the process of CCC, as the structural linkages of multiple factors experience either increasing or decreasing trends, leading to cumulative causation at differing levels (e.g., Veblen 1898a; Myrdal 1944, 1968; Kaldor 1957, 1972; Kapp 1963; O'Hara 2006a, 2007a, 2007c, 2008a; Berger 2008c, 2009a, 2009b).

Shifting to the fifth, sixth and seventh issues in literature, the fifth issue is that contradictory situations generated by the structural linkages of multiple factors tend to lead to uneven development in a given time period (e.g., Polanyi 1944; Kapp 1963; O'Hara 2006a, 2007a, 2007d, 2009; Berger 2008a, 2008b). The sixth issue identified in the literature is sub-national uneven development (e.g., Lippit 1997; Mosseley 1999;

Hossein-zadeh and Gabb 2000; van Schaik 2002; Rothstein and Stolle 2003). Lastly, the seventh issue is that the literature examines the stylized fact approach to investigating uneven development and transformational growth in the long-wave, which includes the process of CCC, hegemony and contradiction at differing levels (e.g., Kaldor 1962; Maki 1998; Nell 1998a, 1998b, Lawson 2006; Gualerzi and Nell 2010).

The objective of this chapter is to systematically review the extent to which existing literature on the theories and principles of political economy explains uneven development. The rest of the chapter is organized as follows: Section 2.2 discusses the concept of capital accumulation. The discussion of social wealth and capital accumulation in the world system is presented in Section 2.3, which assesses transformational growth in the long wave. This is followed by Section 2.4, which explains the historical debates on the theories of economic growth.

Section 2.5 examines the concept of the long wave and uneven development. In Section 2.6, the concept of transformational growth is discussed to provide a framework for the long wave. The process of hegemony in the world system is presented in Section 2.7, which assesses the relationship between uneven development and the principle of C-SP-P.

Section 2.8 elaborates upon the concepts of economic surplus and effective demand, followed by a discussion of CCC and uneven development in Section 2.9. Section 2.10 discusses contradictory situations that lead to uneven development. The links between global institution and the long wave are examined in Section 2.11. In Section 2.12, the linkages between sub-nations and uneven development are discussed. Section 2.13 discusses the stylized facts approach that is appropriate to investigate uneven development and socioeconomic transformation in the long wave. Section 2.14 analyzes the essence of the existing literature on uneven development and the principles of political economy and considers how these can be used as the research method in this study. Finally, concluding remarks are given in Section 2.15.

2.2 Capital and Accumulation: A Historical Perspective

In general, capital is a stock that maintains the basis of a flow of production over time. Capital is heterogeneous in form and can be categorized into four types, including ecological capital, social capital, human capital, and private business capital (O'Hara 2001b). Changes in capital are flow variables, including investment and consumption. Investment is the building up of productive capacity. In contrast, consumption is defined as the destruction of productive capacity.

Accumulation in terms of capital is viewed from difference perspectives. According to Nell (1987) and Devine (2001), accumulation is defined as the process of the amplification of capital or assets through time at differing levels, from the individual to global scale. The classical perspective emphasizes the accumulation of stock instead of the flow of capital. More precisely, Adam Smith (1788) advocates the accumulation of capital stock through the economical use of profit. Thus, for classical economists, accumulation of capital continuously works until a steady state of zero profit and/or the under-consumption barrier is reached.

Conversely, from the Marxian perspective, accumulation refers to not only the process of capital amplification but also the process of the reproduction of capital, which is linked to social aspects on a large scale (Marx 1885; Devine 2001). With Marx, it is clear that the accumulation of capital continuously crosses regions and countries without boundaries, which generates over-accumulation or periods of crisis. These periods of crisis could emerge in stages along the global circuit of capital, including sourcing, production and markets.

At the end of the 1800s, the discourse about capital shifts from the static accumulation process to a dynamic one, promoted by Thorstein Veblen. Veblen (1908) believes that the economic process can be influenced by non-economic factors, indicating that capital amplification can be affected by various forms of economic and non-economic factors, such as human, social, environmental, and political ones.

Furthermore, in the first half of the twentieth century, John Maynard Keynes (1936) focuses on the accumulation process in terms of investments and savings (O'Hara 2001b). Deviating from the classical tradition, Keynes explains that marginal efficiency, which is associated with long-term capital expectation, determines

investment. From this perspective, investment is likely to promote demand and income as well as saving.

In addition, in the midst of the twentieth century, Michal Kalecki (1971) develops Keynes' perspective into that of dynamics. Kalecki considers the interplay of connection among investment, demand and production capacity. From this point of view, investment can determine demand through investment in production capacity; on the other hand, rising production capacity can also necessitate enhanced demand.

In contrast to Keynes' perspective, some classical followers consider short-term periods of crisis that are linked to capital accumulation. In this respect, they believe that insufficient investment would be unlikely to stimulate a period of crisis. They then present the neo-classical model, which adheres to the classical tradition that emphasizes saving as a factor in determining investment. As a particular novelty, neo-classical economists prefer total product instead of total surplus product to explain the process of capital accumulation. In line with this concept, in the classical tradition, full employment is assumed to form through market mechanisms. This concept is applied in the Solow-Swan growth model.

Kalecki and his followers incorporate the perspective of technological change into the analysis of economic growth (Kalecki 1991; Lavoie 1992). Further, Nicholas Kaldor (1957) puts forward the concept of a technical progress function, which focuses on technological change influenced by investment. More precisely, the interplay linkages of connections among investment, production capacity and demand can be explained by Verdoorn's Law. Under Verdoorn's Law there is a virtuous circle of cumulative causation in which investment increases productivity and provides the basis for increased exports to enhance demand. By increasing demand, it can then propel investment, which increases productivity and supply growth through economies of scale.

2.3 Social Wealth

This section explains the historical concept of collective social wealth as a social process. Marx (1885) treats the accumulation of capital as a reproductive process, which indicates that accumulation includes labor power (LP) and social relationships from the individual level to global levels. Furthermore, Veblen puts forward the concept of

collective wealth as a set of knowledge, technology, art, organization, and communication. Using this point of view, this section elucidates the concept of collective social wealth as the foundation of dynamic capital accumulation.

In the discourse of collective social wealth, Veblen (1898a) proposes institutions to build up communal social wealth. Veblen's point of view can be summarized by the following two points: firstly, social wealth requires institutions and habits that are promote workmanship, technology and culture as positive instincts, and war, business and emulation as negative instincts; secondly, Veblen (1919) provides the foundation for emphasizing conflicts between industrial sectors and business sectors.

Veblen (1898b) argues that institution and habit are media for manifesting the above instinct. As a positive instinct, workmanship can propel the path of collective social wealth if it becomes an institution or habit in society. This process can apply on the individual and global levels. For instance, when workmanship becomes a habit in society, it is likely to stimulate simultaneously positive impacts on human beings, including productivity, ethics, and innovation. Ethics are also a cornerstone in the creation of social empathy among individuals in a society or community. Therefore, collective social wealth can be formed when aggregate positive instincts and habits are developed in institutions to promote the amplification of socioeconomic performance.

Conversely, as negative instincts, war and conflicts can become unproductive processes. When these negative instincts accumulate within institutions, they are likely to cause disruption as negative social activities in the community. Veblen (1904) emphasizes the vested interests and exploitation associated with business activities. Vested interests encourage the business sector to control part of the material surplus of the industrial sector. This imposes capital limitation on workmanship, because the limit of capital in the industrial sector occurs in the distribution of production. Additionally, the industrial sector experiences overexploitation due to unproductive and extravagant financial activity.

Veblen's general theory of social wealth has provided a foundation for institutional political economy. In particular, Veblen's perspective shows that economic activities can be influenced by a pattern of non-economic factors. Technological knowledge, culture and industrial arts are non-economic factors derived through

institutions and habits. By incorporating non-economic factors, Veblen's perspective suggests the principle of holism, which sees interrelationships among factors in systems as a whole. Non-economic factors then become social instincts that are represented in the circuit of capital. Social instincts can then be innovations supporting investment to promote economies of scale.

More recently, with the inspiration of Veblen's dynamic perspective, Gunnar Myrdal (1944) emphasizes circular and cumulative causation, which is useful to evaluate circularity among economic and non-economic factors that generate amplification as a cumulative process. Nicholas Kaldor (1957) also develops the technical progress function and cumulative change in economic growth. This cumulative growth includes change in productivity through investment and innovation.

2.4 Economic Growth: A Historical Perspective

Economic growth has become a core issue of economics and development. Economic growth is measured by the average annual rate of change of gross domestic product (GDP) per capita (Atkinson 2008). Economic growth theory addresses the basic concept, which explains the economy development pattern in the long term. In the analysis of the long-term economy pattern, economic growth theory emphasizes the role of investment growth and income distribution.

A discussion of economic growth begins with the classic theory of economic growth, which describes economic growth as the outcome of the capital accumulation process influenced by the distribution of industrial profits and rent. Income obtained from rent reduces funds used for investment in the industrial sector. In Adam Smith's perspective, classical economic growth emphasizes the efficiency of production through the division of labor.

Karl Marx (1885) critiques the classical theory by analyzing the pattern of profit rate. If the interest rate and rent increase, then the profit rate will decrease. In this process, the technological change, the wage rate, and the work force can also influence the profit rate (Dumenil and Levy 2002). Marx proposes the concept of the falling rate of profit, where the profit rate in the capitalist economy will show a decreasing pattern in the long term that will influence the economic growth rate.

After Marx's economic growth theory, the neoclassical growth theory emphasizes equilibrium and the optimal allocation to create economic growth. This theory supposes constant returns to scale in the production function and the diminishing marginal productivity of labor input in the short term (Solow 1956). Meanwhile, in the long term, technological change and development of the work force influence economic growth as exogenous factors.

Neoclassical growth theory has been critiqued by post-Keynesian growth theory (Harrod 1939; Domar 1946). Post-Keynesian theory emphasizes the roles of economic surplus, technological change, innovation, and demand. Market expansion with a high wage and profit rate encourages increasing returns to scale and productivity. If productivity increases, this increase will encourage export as well as increase aggregate demand. The aggregate demand increase eases the capital accumulation process, thereby encouraging investment growth. Investment growth will re-encourage innovation and technological change. Consequently, if this circulation process runs simultaneously with time evolution, then it will produce the cumulative process of increasing economic growth.

Post-Keynesian growth theory has been further developed in the regulation approach, emphasizing that the productivity expansion process runs along the time evolution or the "productivity regime" (Lipietz 1997; Aglietta 2008). Furthermore, the regulation approach also notes a "demand regime" formed by the composition of aggregate demand, which is consumption expenditure, investment expenditure, government expenditure, and net export.

2.5 Long Wave of Economic Growth and Development

The perspective of the long wave examines institutional transformations, which determine the performance of multiple factors at different levels that lead to long-wave upswings or long-wave downswings (O'Hara 2008a; Kotz 2008). Long wave is a term to explain a long-term dynamic phase of the evolution of capitalist development. The concept of long wave is based on an economic structure experiencing a change over time and evolving into a complex pattern. The economic structure covers fixed capital, human capital, innovation and technology, institutions, and spatial distribution.

The long wave covers a long-term period of capitalist development experiencing very rapid development (booming), followed by the phase of recession and economic instability. The duration of a long-wave is 40 to 60 years with very rapid economic growth occurring for 20 to 40 years, followed by 20 to 40 years of recession and economic instability.

The pioneers of the long-wave concept are Alexander Helphand, van Gelderen, Knut Wicksell, and Nikolai Kondratieff. Helphand (1890) observes a trend in the agriculture sector that was influenced by changes in institutions and technology that took place globally. His work was followed by the work of van Gelderen, which depicts rising and falling economic periods in long waves. Van Gelderen (1901) observes that some commodities appear to experience both upward and downward phases over long periods of time. This long-wave phenomenon is also evident in monetary variables, as observed by Wicksell (1907) in the long-term pattern of interest rates.

Of most relevance to this study is the connection between long waves and institutional change, directly demonstrated by Nikolai Kondratieff. Kondratieff (1935) investigates long-wave changes in economic performance in capitalist economies. Kondratieff also concludes that institutional change typically influences socioeconomic performance through exogenous processes during a long wave.

Debate over long waves arose during the 1930s–1970s with some political economists providing criticisms of several aspects of this concept. Schumpeter (1939) puts forward a business cycle theory in response to Kondratieff’s long-wave explanation. Schumpeter acknowledges upward and downward phases during long waves though he considers these to be caused by the endogenous process of institutional changes due to innovation and technological change. Schumpeter puts forward three distinct business cycles, namely the Kitchin cycle (40 months), the Juglar cycle (9–10 years), and the Kondratieff cycle (48–60 years).

Garvy (1943) similarly criticizes aspects of Kondratieff’s long-wave analysis. Garvy argues that Kondratieff’s long-wave analysis does not account sufficiently for the impact of institutional change upon socioeconomic performance, as it focused on an exogenous rather than an endogenous process.

Kuznets (1955) makes several criticisms of both Schumpeter's business cycle theory and Kondratieff's long-wave explanation. Kuznets contends that the business cycle theory is unlikely to clearly explain the link between business cycles (e.g., Kitchin and Juglar) and long waves. Kuznets also claims that both Kondratieff and Schumpeter ignore external factors linked to institutional change, such as wars, political uncertainty, colonization, and migration.

Mandel (1975) suggests that the rate of profit and capital accumulation be included in the concept of long waves. Mandel sees that the long-term changes in the average rate of profit are likely to determine the long-term pattern of capital accumulation, which relates to the long waves of capitalist economies.

Several political economists disagree with Mandel's focus on the long-term rate of profit. Among them are Bob Rowthorn, Christopher Freeman, Robert Day, and Klas Eklund. Rowthorn (1976) is pessimistic about surplus value in Mandel's conception, in that long-term surplus value is not clearly defined. Day (1976) and Freeman (1978) argue that the structural linkages of endogenous and exogenous processes are unlikely to arise from the rate of profit, as the composition of capital and the rate of surplus value have little influence upon long waves of economic change. Eklund (1980) empirically criticizes the financial credit system in Mandel's conception, claiming that the theory fails to appreciate how financial credit can stimulate profit rates in the long term.

After these debates about the long-wave concept, some political economists have sought to develop the concept further from the 1980s to the 2000s. To do so, they have employed several perspectives. The first perspective captures the long-wave concept in terms of historical specificity and hegemony. This perspective typically employs the concept of long wave to investigate the world system, global inequality, and hegemony. Several scholars of this perspective, such as Wallerstein (1987, 2010a, and 2010b) and Arrighi, Silver, and Brewer (2003), suggest that institutional change leads to structural linkages throughout long waves, which potentially promotes the hegemony of core regions at the expense of peripheral regions. It is plausible that the relationship between long waves and hegemonic powers can partially explain uneven development, as the structural linkages of C-SP-P typically occur over long periods.

The second perspective is linked to the business cycle of Schumpeter. Freeman (1978) and Mensch (1985) posit that capital formation propels productivity, which, through the relationship between innovation and the employment sector, promotes long-term development. As dynamic cumulative causation demonstrates, investment can stimulate productivity as innovation and labor productivity accelerate capital accumulation, as stated in Verdoorn's Law (Kaldor 1957; O'Hara 2006a). Dosi, Freeman, and Fabiani (1994) adopt the work of Freeman to assess the pattern of economic growth among countries, as various institutional changes influence the process of economic development over time.

The third perspective is also informed by Schumpeter's business cycles, but this perspective considers structural and regulatory processes rather than technology and innovation. Adherents to the regulatory perspective consider institutional changes that lead to structural linkages of factors in the system; these changes generate either long-wave cumulative causation or contradictions. Perez (1983, 1985) claims that a change of structural linkages can be determined by changes in economic and non-economic factors. Aglietta, Baulant, and Coudert (1999) propose a regime of accumulation approach because some factors are involved in structural linkages that generate either changes in magnitudes or contradictions in the dynamic system in the long wave.

The fourth long-wave perspective focuses on the social structures of accumulation (SSA) generated by the structural linkages of multiple factors as long-wave institutional change takes place (O'Hara 2008a). This perspective asserts that changes of institution typically influence socioeconomic performance, since cumulative causation and anomalies are generated by the endogenous process of structural linkages. Those who adhere to SSA consider socioeconomic transformation rather than the mode of regulation in the long wave.

Several key scholars have been responsible for the development of the SSA approach. Gordon, Weisskopf and Bowles (1983) apply SSA to the economic crises of the United States and find that non-reproductive cycles determine long-wave downswings. Kotz (2003) explains that neoliberal institutions tend to influence socioeconomic performance, because they are unlikely to stimulate capital accumulation

throughout a long wave. Lippit (2006) uses the SSA approach to reveal the tendency of upswings in the U.S. economy.

Using the SSA approach, O'Hara has demonstrated the connections between the long wave and uneven development. O'Hara (2006a, 2012a) compares the mode of SSA and the mode of regulation in order to comprehend the global economy throughout long waves. In order to understand institutional transformation, O'Hara (2007a, 2008a) investigates the patterns of economic growth that are linked to social and environmental factors. Some of these works indicate national patterns of socioeconomic performance in the countries of China and Australia (e.g., O'Hara 2007b, 2008b).

2.6 Transformational Growth and Development

Transformational growth and development theory is proposed by Edward Nell to explain the economic performance failures of the United States at the end of the 1960s. This theory relates to the *General Theory of Employment, Interest and Money* from Keynes (1936), where the multiplier relation between the investment and output supports the formal structure. However, Nell (1998b) develops Keynes's theory construction by embedding Marx's concept of the nature of capital as expanding value. Both theories explain that capitalist economic development experiences stagnation in the long run because of the influence of investment and consumption. When members of society allocate their income for savings, the result decreases the investment multiplier, which retards economic growth.

In Keynes's perspective, investment is determined by the connection between the interest rate and the marginal efficiency of capital. The marginal efficiency of capital is defined as expected returns from an investment relative to its offer price. When output increases, the marginal efficiency of capital is greater than the interest rate. This condition leads to new investment. However, when this perspective is used to analyze the capitalist economic development, Keynes argues that capitalist economy experiences stagnation in the long run.

Keynes (1936) proposes a basic argument about economic stagnation in the long run. From Keynes's perspective, investment increases the demand for capital goods and, in addition, increases the offer of consumption goods. Keynes then compares conditions

in the 19th century, where population growth, production innovation, and new area findings were factors to increase the marginal efficiency of capital to conditions in the 20th century, where the interest rate tends to be higher than the marginal efficiency of capital.

Parallel with Keynes's perspective, Nell (1987, 1998b) argues that capital accumulation experiences internal obstacles so that it will not be able to raise the price of consumption goods. On the other hand, Nell disagrees with the concept of the diminishing marginal productivity of capital. In this case, Nell emphasizes the role of household production, which actually tends to have the potential to encourage capital accumulation.

Nell's concept of the role of household production is followed by the concept of non-market procedures. Nell (1998b) expresses an argument that the capitalist economy experiences stagnation in the long run, because household production through non-market procedures cannot be transformed on the capital market. Nell provides an illustration of when the economy of the United States experienced a decrease at the end of the 1960s.

Based on this perspective, Nell explains that transformational growth can be created by technological change in production, such as computerized and automated systems (Nell and Phillips 1995; Nell 1998a; Dickens 2001). However, Nell realizes that the computerization production does not provide the medium for a shared transfer to incorporate the role of household production (Gualerzi and Nell 2010). Nell also opposes government service privatization, which he argues only reduces investment and consumption. In this case, he believes that the government should encourage the purchasing power of poor households that do not have the access to non-market procedures. With sufficient purchasing power, household production is expected to create benefit in the household sector that influences the industrial sector and capital market.

More broadly, Nell (1998a) argues that the patterns of transformational growth are influenced by institutions and exogenous factors. Changes in institution and exogenous factors affect the relationship between economic variables. However, it is difficult to identify the pattern of transformational growth because economic variables

are impacted by many extraneous influences. To address this, Nell utilizes the concept of stylized facts, suggested by Nicholas Kaldor (Nell 1998b). This concept identifies central tendencies and general patterns, so the relationship between economic variables is defined with greater clarity.

In Nell's perspective, stylized facts define the pattern that enables one to investigate the relationships among economic variables. Stylized facts identify sets of two or more economic variables that simultaneously increase or decrease, or sets of two or more economic that change independently of another. The concept of stylized facts removes the influence of irrelevant variables or extraneous factors, thereby revealing the general tendency of the pattern created by economic variables.

To deal with transformational growth, Nell (1998b) uses the concept of stylized facts to investigate the long-term pattern of economic variables in order to identify the changes in economic performance. He compares stylized facts of economic variables from Napoleonic Wars to World War I with stylized facts of those from the period of World War I to World War II. In the comparison, he identifies the pattern of each economic variable (e.g., price, money wage, output, and productivity). As a result, he captures structural differences and technological change as they generate a general tendency towards transformational growth.

2.7 Uneven Development and Hegemony (Core–Semi-periphery–Periphery)

The discourse of political economy has always been concerned with the patterns of the wealth of nations. These include the asymmetric, hegemonic relations between heterogeneous areas throughout the world. This section examines the principle of hegemony or the principle of C-SP-P, which addresses the structural linkages between core components and peripheral components in the world system, the former overcome the latter and generate conflicts and uneven development.

Uneven development is a contradiction of the development of capitalism where capital welfare concentration occurs in a core area, while, on the other hand, the peripheral area experiences limited capital accumulation and economic backwardness (Marx 1885). Uneven development refers to the condition of an area (country or regional) that experiences a period of transition in the production process and social

transformation. Based on that perspective, uneven development can explain the pattern of economic growth and social class in the process of transformation at the global, regional, national, and sub-national level.

The uneven development concept begins with the economic development analysis of Leon Trotsky. Trotsky (1931) uses uneven development theory in order to analyze the economic development in Russia, which experienced a transition period during the 1920s–1930s. Trotsky uses “permanent revolution” terminology in explaining the situation in Russia at that time. Russia experienced a socioeconomic transition period that caused varying performance among regions and also caused a difference in social classes (the presence of the bourgeois and proletarian class). This perspective shows that uneven development can also arise from a process of socioeconomic transformation from backwardness towards progress.

Furthermore, the concept of uneven development reveals that more capital concentration and production in a certain area (the core) causes capital stock and production process in other areas (the periphery) to become limited. In fact, there is a tendency for the area with the higher capital accumulation and production to put structural pressure on the area that experiences production–process limitation (Wolpe 1980; Bond 2001). The core area centralizes innovation, technology transformation, and distribution so that its process of capital accumulation and production improves and puts more burdens on the production process in the periphery.

More specifically, the concept of uneven development emphasizes not only the difference of capital accumulation and the production process but also the difference of the production process of capital goods (raw material) and that of consumption goods (Hilferding 1910; Dutt 1986; Bond 2001). With high innovation and technology transformation, the core area will tend to produce consumption goods that can be distributed to the periphery area. On the contrary, capital goods (raw material) in the periphery area are distributed to the core area because of limited innovation and technology in the peripheral area. With technology and industrialization, the value of consumption goods, which are produced in the core area, is higher than the value of raw material produced in the peripheral area. This condition comprises the structural linkage

between the core (where capital accumulation and the process of core production increases) and the periphery (where capital and production insufficiency occurs).

In addition to the difference between the production process of raw material and consumption goods, the uneven development concept also examines the influence of capital accumulation and investment growth on the environment (Harvey 1996; Jorgenson and Rice 2005). The environmental condition and continuous development in the core and peripheral areas are also affected by uneven development. High capital accumulation and investment growth in the core impact the environment negatively in the periphery. With limited technology, the periphery produces raw material and tends to affect the environment directly. Moreover, limited capital accumulation causes the peripheral area to have less capacity to offset harm to the environment caused by the production of raw materials. Meanwhile, characteristics of the core areas lead enough investment growth to support the capacity of environment amelioration.

The C-SP-P concept is employed by Raul Prebisch (1950, 1981) to analyze unequal advantages between the core and peripheral and semi-peripheral countries in world economic relations and cooperation. Prebisch argues that these unequal advantages cause the terms of trade decrease for raw materials produced by the peripheral countries. The terms of trade decrease for raw material products in the peripheral countries is influenced by the difference between the elasticity of relative income in manufacturing and that of raw material sectors. The demand of manufactured products is more elastic compared to raw material demand.

The difference in technological development can also cause the difference between core and peripheral countries in terms of the organization of the labor market and wage level. The technological change in the core countries has the potential to stimulate productivity and wage levels, simply because the well-established labor union supports it (Amin 1976; Korzeniewicz 2001). On the contrary, in the peripheral countries, the technological change stimulates competition between the company and the workers. The technological change in raw material production causes a decrease in both price and wage levels. Therefore, the difference in production organization between the core and peripheral countries becomes the cause for the unequal advantages of these two areas.

In addition to Prebisch, several other approaches analyze the relation of C-SP-P. Andre Gunder Frank (1967) states that economic surplus should be generated by the interconnection between the urban and rural area. Frank observes that economies of scale will continuously move from the urban areas to the rural areas. According to Frank's perspective, the transfer of economies of scale between urban and rural areas should occur so that those two areas can grow together simultaneously. Samir Amin (1976) characterizes economic performance in the peripheral countries. The peripheral countries tend to have a low productivity level of manufacturing, weak growth in the service sectors, inadequate access to international trade, and a low integration pattern of corporations among peripheral countries.

A different perspective in analyzing C-SP-P is offered by Wallerstein (1979, 2010a) and Arrighi, Silver, and Brewer (2003). This perspective emphasizes the access of each country to the exercise of economic and political power at the global level. In the world system, political power is seen as the ability to dominate the global economy. Moreover, Wallerstein and Arrighi introduce the position of semi-peripheral countries to distinguish them from core and peripheral countries in their access to prosperity. A country in the peripheral position can develop into the semi-peripheral when the country prospers. In this case, Wallerstein's perspective highlights the competitive pattern among countries in achieving access both politically and economically, rather than focusing on the relation pattern of productivity and trade among countries.

2.8 Economic Surplus and Effective Demand: A Foundation for Cumulative Growth

Economic surplus is the national net income minus the essential consumption of a population (Danielson 1991; Davis 1992). Lippit (2001) argues that economic surplus rises when the economy is supported by modern technology and increasing returns to scale. If innovation arises from an oligopolistic industry, then economic surplus moves in the direction of the oligopolistic holders, and the competitors follow it or choose to change to another sector. The production process with high innovation and technology increases its output and also decreases the production cost. When output increases, then the demand increases and encourages a larger surplus with market expansion.

The emphasis of the analysis of economic surplus is expansion, innovation, and high corporate salary (Dawson and Foster 1992). Meanwhile, expansion is influenced by the performance of demand. Therefore, a policy towards demand provides a prospect and an opportunity for the work-force market, higher wages, and improved overall welfare. The connection between economic surplus and demand is explained through the process of circular and cumulative causation (Kaldor 1957; Pini 1995).

From the post-Keynesian perspective, economic surplus influences aggregate demand growth through export and productivity from the medium-term to the long-term phase of the production process (Lavoie 1992). The production process of goods and services is influenced by productivity growth and economic surplus. Examining another angle, the innovation process and technological change also encourage productivity and export.

Both internal and external demand provides the output expansion through circular and cumulative growth (Kaldor 1961; King 1994; Pini 1995; McCombie and Roberts 2009). Government spending is a form of internal demand that increases the aggregate demand, which has a positive influence on investment and sectoral productivity. Exports rise and cause an increase in demand. This process runs simultaneously through a circular flow. The same process occurs in world income, which is an external demand that results when rising productivity and economic surplus in each country foster export and international trade, thereby influencing world income. The cumulative causation process also occurs when innovation represents investment growth and productivity such that exports increase.

From this perspective, demand growth is encouraged by productivity growth, while the production process is supported by effective demand growth (Toner 1999; Dutt 2001; Toner and Butler 2009). GDP growth per capita (as a demand proxy) and economic surplus simultaneously influence the pattern of economic growth in the long term. Consequently, various institutions, policies, and innovations potentially generate transformation, productivity, export, and aggregate demand, which certainly influence economic growth across countries.

2.9 Uneven Development and the Principle of Circular and Cumulative Causation

This section discusses the principle of circular and cumulative causation (CCC) as well as the relation of this principle to uneven development. The CCC principle captures the structural linkages of multiple factors, which either rise or fall in certain periods. The performance of these factors affects the performance of the entire system (Kaldor 1957, 1972; O'Hara 2008a, 2010; Berger 2008c). CCC describes a relation between a change of an independent variable and a change in a dependent variable. The dependent variable changes in accordance with change in the independent variable, in the same direction. More broadly, this answers the question of when a change in a variable causes a significant change in other variables in the socioeconomic system. A small change in the variables in the socioeconomic system will experience magnification when there is an income divergence at the global, regional, state, and individual levels.

Questions and discussions arise as to whether the CCC process occurs naturally or as a collective action. In answering such a question, discussion on CCC is directed toward the circularity aspect that becomes the focus of the cumulative process. To illustrate, when a change in variable A causes a change in variable B, but variable B's change does not give feedback to variable A, this process maintains an equilibrium in the system until the variable A's change ends. Conversely, an effect is cumulative when feedback moves and experiences magnification in the original variable (McCombie and Roberts 2009; Berger 2009b).

CCC processes that influence the growth process in the social economic system can include human capital formation, investments in machinery and equipments, export growth, effective demand and productivity, as well as increasing returns and industrial locations (Argyrous and Bambergy 2009). The initial idea of including the CCC concept into the social economic analysis comes from Knut Wicksell's monetary theory (Schmid 2001). Wicksell explains that an initial increment in the monetary supply experiences a multiplier process to generate additional money supply. This multiplier process is defined as the form of cumulative causation, which can also occur in investment and income.

Wicksell's concept is developed by Gunnar Myrdal, who expands the scope of CCC process analysis in the development of the social economic system. Myrdal (1944)

investigates racial inequality in the United States. He argues that African-Americans have a low education level, more children, less economic assets, and are risk averse. These characteristics lower African-Americans' wage level, and they subsequently face difficulties in obtaining a decent education level and savings access.

The result is supported by Myrdal's research in 1968. His analysis shows that lower wages cause lower nutrition and health, further producing a lower productivity level for the African-Americans, which often results in a lower level of income.

Myrdal argues that access to a decent education level would enable African-Americans to gain the opportunities to increase their living standard. The improved education level would increase their health, productivity, and income levels, and would decrease the social gap in society. This process is magnified when the education obtained is higher, and in turn also further develops health, productivity, and income. This then becomes the model for developing and under-developing countries to view education as an aspect that brings about a positive cumulative impact on social and economic development.

However, Myrdal also observes that the circular process between variables in the system could experience growth, stagnation, or even decreases (Myrdal 1944; McCombie and Roberts 2009; Berger 2009b). The circular process can experience stagnation and obstruction when the elements of counteracting forces are dominant. To illustrate, traditional aspects of culture and inequality can obstruct the circularity process among education, health, productivity, and income. One of these traditional aspects is population increase as individuals have many children. The model of Myrdal's CCC is displayed in Figure 2.1.

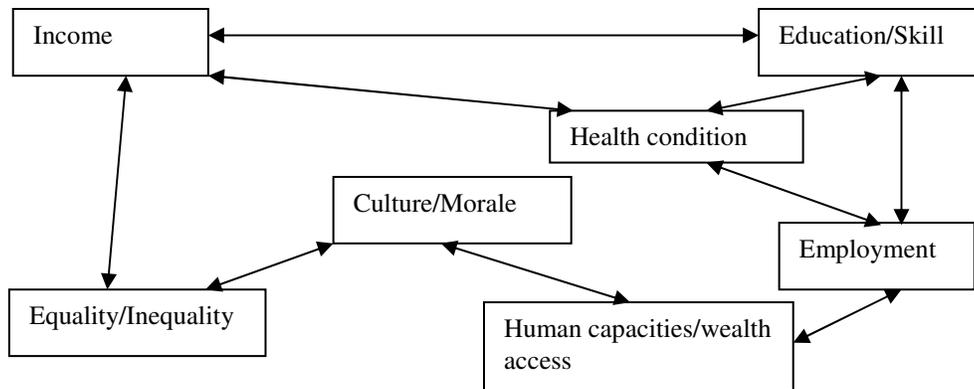


Figure 2.1 Myrdal's Model of Circular and Cumulative Causation

Source: Developed from Myrdal (1944, 1968), O'Hara (2007c), Berger (2009b) and Sen (2011).

Turning to economic factors, the effect of increasing returns in one area of a country is a stimulating aspect for circularity and growth (Argyrous and Bambergy 2009; Toner and Butler 2009). When the demand for output increases due to elastic price, the producer can manage the production means at a low-cost production level. In this case, the low-cost level will increase demand as well as decrease the production cost level (Young 1928). This circularity process is supported by the increase of demand and market scale that is influenced by division of labor. Young (1928) argues that an area that produces goods with elastic prices will experience faster growth, and not the other way around. To illustrate, a country that focuses on investment in a manufacturing industry will keep the circularity of economic variables that supports continued economic growth.

As displayed in Figure 2.2, Nicholas Kaldor elucidates the role of the productivity of the manufacturing industry as a stimulus for economic growth. Kaldor emphasizes the export of manufacture by citing Verdoorn's Law (Kaldor 1957; King 1994; McCombie and Roberts 2009). Kaldor explains that during its growth, output is positively related to labor productivity. Investment in the manufacturing increases productivity in two ways: innovation and labor productivity. When industry productivity increases, exports increase. Export growth promotes national income increase. Countries that have potential export products are able to increase national income and expand products to increase economies of scale.

The process of scale economies increasing demand and investment can be explained by the effective demand concept (Pini 1995; Dutt 2001). Effective demand

determines output and efficiency growth levels. It shows the feedback effect of effective demand on capital accumulation, investment, and consumption. When the wage level increases and is followed by an increase in demand and investment, this increases efficiency growth, output and wage level again. This process is the CCC form as expounded by John Eatwell (1982) and Holt and Pressman (2009), where higher demand growth stimulates the productivity growth through price and non-price factors and creates feedback to increase demand growth simultaneously and continuously.

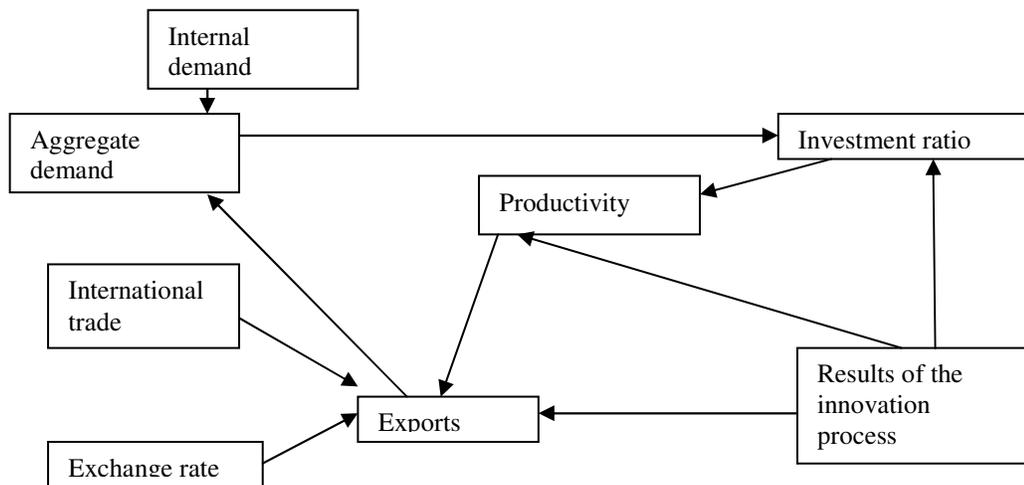


Figure 2.2 Kaldor’s Model of Circular and Cumulative Growth
Source: Adapted from Pini (1995: p. 10).

2.10 Uneven Development and the Principle of Contradiction

In this section, the principle of contradiction and its place in comprehending the uneven development phenomenon is reviewed. The principle of contradiction emphasizes institutional change, leading to structural linkage between multiple factors, which, in turn, generates anomalies or conflicts over time (O’Hara 2008a 2010; Foster and Burkett 2008).

A contradiction is an endogenous element in a system that moves simultaneously in both positive and negative directions (Glyn 1990; Foster 2005). Such contradiction occurs as a result of evolutionary and dynamic changes. The positive and negative aspects of the contradiction share characteristics in that they are related to economic transformation, are constantly and causally connected to other factors, contribute to the

transformative development of long-term social economics, and experience particular pattern of cycles and trends in their evolution. The outcomes of this contradictory process are continuously changing over time, since this process is contingent on the institutions, behaviors, and interactions of the factors in the existing systems (Bell 1976; O'Hara 2010). The changes of outcome patterns can move progressively or regressively depending on those institutional pressures.

The concept of contradiction can be studied from various perspectives. Mao Zedong (1937) describes contradiction as a part of dialectic perspectives that cannot be grasped physically. Dialectic perspective emphasizes that contradiction is part of the changing and developing relationship of social economic aspects. This changing and developing relationship of social economic aspects cannot be revealed mechanically and partially. Mao adds that not all changes in the system can occur spontaneously, because the external factors have a more dominant influence. For instance, the changes in global institution that influence the patterns of social economic interactions can potentially bring a contradiction in various areas.

Mao's argument is substantiated by Glyn (1990, 1997) and Burkett (2006), who point to the contradiction that takes place in capitalist economies due to the linkages among the production system and the patterns of social and environmental factors. Capitalist economy is an economic system that undergoes continuous development in innovations and technologies to produce useful outputs for prosperity. However, when the worker's role is replaced by capital, a contradiction of capital-work roles will occur. Effective demand will decrease, also resulting in a decrease of profit level.

Joseph Schumpeter (1939) observes another kind of contradiction in the development of capitalism: the contradiction between business innovation and the production focus of large companies. The development of capitalism is supported by innovative roles and technology development that produce new products. On the one hand, such a condition will increase profit levels and prompt the adoption of new production methods as a part of business cycles. On the other hand, the presence of large corporations will create oligopoly and tend to generate artificial patterns of innovations.

In the development of political economy theories, contradiction as a term is related to the concept of a disembedded economy. Karl Polanyi (1944) argues that

capitalism is a system with innovation and productivity strengths, but the process has an impact on the social relation patterns between human beings and the environment. In the course of experiencing dynamic development, capitalism forges “creative destruction” by expanding the market and changing regulations, thereby creating productivity and profit. On the other hand, capitalism also continuously destroys social institutions and natural resources in its attempt to generate profit and productivity in the global system. Global institutions can evidently experience changes to support the development of capitalism in the long term. However, the contradictions resulting from such institutional changes can result in the decrease of growth.

Contradiction is related to the pattern of socioeconomic transformation as a result of dominant institutional changes (Foster 2005; O’Hara 2008a). The changes of the global institution from Fordism to globalization and neo-liberalism lead to various contradictions, such as those between individual and society, between industrial and financial sectors, and between economic development and environmental considerations. Global and neoliberal institutions stimulate innovations and develop new industries, markets and individual skills. Innovations and capital accumulation flourish in many different continents, regions, and countries. On the one hand, this process encourages everyone to achieve higher productivity and profit levels, economic rents, and business monopoly. On the other hand, social relations are weakened as a result of the individual pursuit for material gains and personal interest.

Global institutional changes can also precipitate the contradiction of individual patterns in the global system. Globalization encourages an individual to achieve a higher profit level, but at the same time, the global business system also possesses characteristics that engender contradictions (Offe 1984; Glyn 1990; O’Hara 2010). When business capital is more dominant than labor wage, it decreases demand in the system. On the other hand, when labor wage is more dominant than business capital, it increases production cost in the system. Those two conditions will result in the decrease of investment and profit levels.

A decrease of profit levels can also occur when global institutions encourage innovations and accumulation that are not followed by proper competition patterns. The surplus innovation, without competition, decreases productivity and increases the

production cost. Accordingly, profit also decreases and is followed by decrease in capital accumulation and economic growth.

The contradiction between the industrial and financial sectors is an important issue in capitalist development (O'Hara 2006a; Berger 2008a). When these two sectors can mutually complete and support one another, then there will be growth and accumulation. The profit increase from the industrial sector raises economic surplus and encourages high economic growth. Credit expansion in the industrial sector increases when there is high economic growth. On the other hand, the financial sector will limit the credit expansion in the industrial sector when the rate of interest increases during economic boom. This limit influences the rate of profit in the industrial sector, because the industrial sector experiences difficulty in paying a high interest rate.

2.11 Global Institutions and the Long Wave

The relationships between global institutions and long waves are explained by the global circuit of social capital. Some authors (Palloix 1977; Smith and White 1992; O'Hara 2006a; Dicken 2011) reveal that every phase in this process experiences a complex interplay of linkages throughout long waves. This process begins with global sourcing, where global finance and credit (represented by companies, financial credit and central banks) allocate money and credit to provide endogenous funds.

In the demand for finance, money and credit stimulate labor power (LP) and the means of production (MOP). This activates the global production process, which expands the production of surplus products, including commodity value (C) and surplus product (c). In global trade, commodity value and surplus product are placed in the market as value (M) and surplus value (m). As displayed in Figure 2.3, the structural linkages between these four stages indicates that sourcing, finances, production and market sectors in global circuit capital are associated with financial institutions, business corporations, and government.

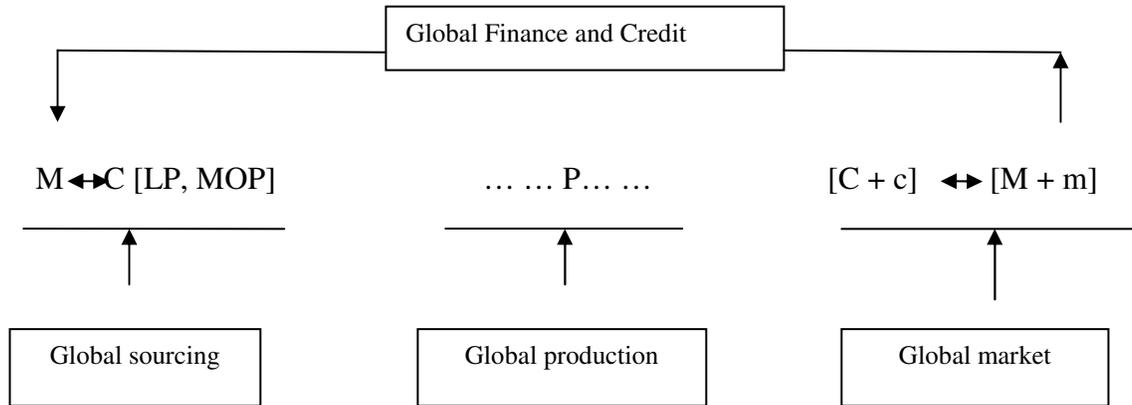


Figure 2.3 The Global Circuit of Social Capital
Source: Adapted from O’Hara (2006a: p. 90)

According to Bowles, Gordon, and Weisskopf (1988) and Brenner and Glick (1991), the global circuit of social capital requires the interconnection of institutions that support social capital networks through long-wave growth and development. The complex interplay of linkages between phases and stages in the global circuit of social capital requires that the global economy be embedded into a chain of financial, sourcing, production, trade, and multifaceted institutions. The process of embedding is crucial for propelling accumulation during long waves, thereby providing a stable path of global finance and credit that includes the following: adequate prices and quality of input for labor power, and means of production; the smooth motion of labor and machinery in the process of production; and essential levels of global demand and trade.

In the discourse of global institutions and long waves, the circuit of social capital linked with public goods requires detailed investigation. This discourse generally examines the relationships of individual and social capital. In such cases, some factors in global institutions promote individual capital, and other factors provide social capital. This occasionally generates contradictions in the circuit of social capital. A review of the literature (Saad-Filho 2002; Wolfson 2002; O’Hara 2006a) reveals that the powerful capitalist countries ignore individual capital that is linked to labor wages. When labor wages decrease, most capitalist countries reduce the cost of production. However, contradictorily, low individual incomes associated with low wages cause the collapse of

world income. Thus, it is necessary to focus on all factors linked to global demand, such as investment, productivity, exports, and world income.

Kaldor (1957), Pini (1995), and O'Hara (2006a) illustrate that the path of the circuit of social capital requires higher demand, which stimulates investment, productivity, innovation, exports, and world income. This path of the social capital circuit involves the dynamics of the circular and cumulative causation model among factors that can be investigated through long waves. In the dynamic circular and cumulative causation model, the structural linkages among demand, investment, and productivity are important in the investigation of the establishment of a global circuit of social capital during a long wave. Also relying on O'Hara (2006a), it is critical to investigate some contradictions along this circuit, which are linked to global public goods, financial instability, and environmental impact.

Particularly in the dynamic of a circular and cumulative causation model, demand is enhanced by escalating distribution systems through production and distribution institutions. Moreover, innovations and technological skills are also needed to increase productivity. Figure 2.4 shows the Kaldorian dynamics of the circular and cumulative causation model, which puts forward demand as a cornerstone for expanding productivity. This expanding productivity creates a steady atmosphere, which moderates uncertainty to drive investment through sufficient levels of capital accumulation. In some cases, demand also moves into speculative activities that are linked with financial institutions (Pollin 1997; O'Hara 2006a).

Investment can generate productivity and create innovations that expand the production process and the basis of exports. In the global market, export activities are propelled by world income, which requires adequate domestic government policies in every country. Stable world income can be formed through moderating contradictions between individual and social capital in the role of global institutions and the circuit of social capital.

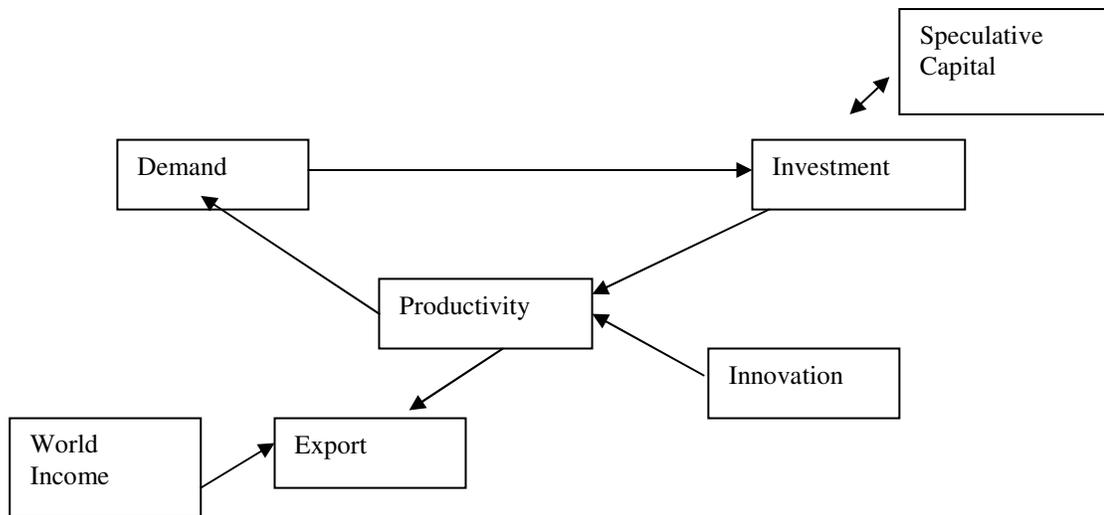


Figure 2.4 The Kaldorian Dynamics of Cumulative Causation

Source: Adapted from O’Hara (2006a: p. 92)

In the dynamics of the cumulative causation model, investment is the primary requirement for propelling the structural linkage of demand and productivity. Keynes (1939), Kaldor (1972, 1982), Dymski and Pollin (1994), Poitras (2002), and O’Hara (2006a) consider that investment is a core determinant of economic growth. Capital accumulation, innovation, and structural change constitute a powerful interplay, which generates a foundation for durable productivity growth, improved living standards, and expanded global markets.

In addition, investment creates productivity through innovation to provide exports in both domestic and global markets. With the stabilization of world income, expanding export activities could provide steady demand. This development would require using the rate of growth per capita as the demand proxy. A higher rate of growth per capita would indicate that demand could stimulate investment by reducing uncertainty, thereby increasing the rate of growth per capita and propelling various levels of investment.

2.12 Uneven Development and the Sub-national Level

In order to provide a deep appreciation of uneven development, this section assesses some uneven development phenomena at the sub-national level. The unevenness of development of sub-nations is potentially different from that of the global, regional and national levels. That is, several aspects of uneven development may occur in sub-nations

and yet fail to be captured by global and regional patterns. This section gives an overview of existing literature concerning uneven performance in sub-nations from a political economy perspective.

The existing literature can be classified into two groups of scholars. This classification takes into account the ways in which CCC and contradiction are likely to mark out the process of uneven development at the sub-national level. The first group covers uneven sub-national development in the sense of hegemony, which links to other aspects of political economy, such as contradiction, CCC, and the long wave (e.g., William Sewell, Kamran Matin, and Adam Morton). The second group specifically emphasizes the process of CCC that relates to socioeconomic indicators (e.g., Patrick Heller, Vicente Royuela *et. al.*, and Rene Veron)

Sewell (1988) examines the historical development of the working class in Marseille, France. Contributing to the understanding of long waves, his investigation includes long-term performance in the pattern of sub-nations from the 1820s to 1870s. The principle of hegemony is identified by the structural linkage of the French Kingdom (core) and Marseille's workers (periphery). The endogenous process of this structural linkage generates a contradiction between the national capital (French) and the sub-national capital (Marseille). Sewell also investigates the progress of economic development in Marseille as labor organizations successfully provided stability in the labor wage. Linked to Keynes concept of demand–investment and Kaldor's model of CCC, labor organizations became institutions to accelerate capital accumulation, thereby promoting productivity in the structural linkage between demand and investment in Marseille.

Bond (2008) investigates uneven development in South African sub-nations from the perspective of historical specificity. In his investigation, Bond reveals structural linkage between the colonizer (core) and the indigenous people (periphery), which led to the pattern of combined development (i.e., modern and traditional). In the sense of CCC, combined development represents an institution to provide the structural linkage of demand and investment through labor productivity. However, his results also identify two particular contradictions: the structural linkage of capital (colonizer) and labor (indigenous people), as well as white people (colonizer) and black people (indigenous

people). These two contradictions promoted uneven development among sub-nations in South Africa.

The relationship of uneven development and combined development is also explored by Matin (2007). The results of Matin's work indicate a combined development institution in Iran, which he calls Uymaq. This institution contributes to synergy between the traditional and modern in the Iranian agriculture sector. Matin also identifies the structural linkage of sub-national capital and state capital, which leads to anomalies in sub-national development. The government of Iran allowed a flow of international capital to promote national economic growth, yet most sub-nations typically used local capital to boost their performance, leading to divergent patterns of sub-national economic growth.

Morton (2010) examines uneven development in Mexican sub-nations from a historical perspective. In the sense of hegemony, Morton identifies the structural linkages between the colonizer (core) and the indigenous people (periphery), which stimulates combined development in Mexico. He reveals that the long-term combined development leads to the structural linkage of traditional technology (used by the indigenous people) and modern technology (used by the colonizer), which generates contradiction between capital (the colonizer) and labor (the indigenous people). These results indicate that uneven development is shaped by hegemony and contradictions at different points in time.

A second group of scholars considers uneven development observations in terms of the process of CCC and the development of sub-national indices. Some political economists in this group also try to develop contemporary long-wave approaches at the national and sub-national level. Lippit (1997) employs the social structural accumulation concept (SSA) to investigate the long wave of economic change in the United States (US). Moseley (1999) similarly examines the pattern of economic growth in the US during the 1970s–1990s, a period that represents a turning point of the US' economy. O'Hara (2007b, 2008b) applies SSA to evaluate long-wave national patterns in institutional change and socioeconomic performance in the US and China.

As for the structural linkage of economic and social factors, Wish (1986) investigates socioeconomic factors at the national and sub-national level by comparing

the United States' metropolitan economic, sociological, and political data to indicate patterns of quality of life. In a manner similar to Wish's work, Royuela, Romani and Artis (2008) employ a sub-national index to investigate the pattern of the quality of life in different municipalities in Catalonian provinces. The above studies indicate that the process of CCC at the sub-national level may be different from that at the national level. In this context, the sub-national indices provide a basis for comparing performance between sub-nations and nations.

The processes of CCC at the sub-national level can also be used for social factors. Heller (1996) defines two specific institutional factors that promote high levels of social capital in the Kerala provinces of India, while not doing so at the national level or in other provinces in India. Heller reveals that state intervention and class mobilization likely contributed to an increased level of economic development, a strong labor movement, and a democratic state in Kerala. Veron (2001) employs an integrative model of sub-national indices for comprehending social, economic, and environmental aspects in Kerala, India. Veron identifies the structural linkage of civil society, local government, and state government that lead to the cumulative causation of high social capital in Kerala. These results of Heller and Veron suggest that the endogenous process of CCC in Kerala differs from that in India as a whole, and other provinces because Kerala has specific institutional advantages.

The heterogeneous process of CCC also determines various patterns of sub-national social capital in core countries. Putnam (2001) investigates the difference between social trust in the northern US and the southern US. An important discovery of Putnam's work is that the pattern of sub-national social capital in the US is typically dissimilar across sub-national areas. Van Schaik (2002) measures social trust in some advanced countries in Europe. Van Schaik reveals several issues that are connected to uneven socioeconomic development in Western Europe. For instance, social trust in Scandinavian countries, such as Sweden and Norway, is relatively higher than in other Western European countries, such as the United Kingdom, France, and Germany. The inequality of income in Scandinavian countries is slightly less than in other Western European countries. Rothstein and Stolle (2003) claim that trust contribute to lower inequalities in income in Scandinavian countries.

2.13 Stylized Fact Approach

The general or common tendency of an economic pattern is not easy to identify because many factors outside the economy influence economic variables. The interrelatedness among variables also tends to be influenced by unpredictable external shocks. In responding to this situation, Nicholas Kaldor (1961) suggests the use of stylized facts. Stylized facts are described as a common tendency that can explain a repeated interrelated pattern among variables. This interrelatedness can occur in two or more variables moving together in a particular period of time and space and can be discovered by using various types of data. Stylized facts can grasp the core essence as well as define and explain the existing facts as an identified pattern.

As Kaldor (1961) contends, a stylized fact is an empirical finding which is the result of generalized elucidation. Stylized facts are useful in providing a broad, general account of several complex statistical phenomena. They also aid development of hypotheses, as they are empirically oriented and focus on general tendencies. This study examines the stylized facts of uneven global, regional, national and sub-national performance over the period from 1950 to 2010.

The notion of a stylized fact is first proposed by Nicholas Kaldor in his discourse on economic growth (Kaldor 1961). The sense in which Kaldor uses the term can be seen below:

“Any theory must necessarily be based on abstractions; but the type of abstraction chosen cannot be decided in a vacuum: it must be appropriate to the characteristic features of the economic process as recorded by experience. Hence the theorist, in choosing a particular theoretical approach, ought to start off with a summary of the facts which he regards as relevant to his problem. Since facts, as recorded by statisticians, are always subject to numerous snags and qualifications, and for that reason incapable of being accurately summarized, the theorist, in my view, should be free to start off with a “stylized” view of the facts—i.e. concentrate on broad tendencies, ignoring individual detail, and proceed on the “as if” method, i.e. construct a hypothesis that could account for these “stylized

facts” without necessarily committing himself to the historical accuracy, or sufficiency, of the facts or tendencies thus summarized” (Kaldor 1978:p. 2).

Hence, Kaldor’s approach indicates that stylized facts can be captured by certain general characteristics of the economic process. Further, this argument suggests that Kaldor’s stylized facts approach would, at least in part, point to a realist approach in economic analysis. More broadly, the stylized fact seeks to lead the researcher to construct a general model of his research problems.

The process of gathering the stylized facts can be interpreted as a process to eliminate disturbance factors, irrelevant variables and external factors so that the common tendency of a series of facts can be explained easily and clearly. Furthermore, complexity in the interrelatedness among variables can be presented in a comprehensible form and can be used as a basic justification as well as a theoretical foundation.

More specifically, the concept of “stylized facts” emphasizes the pattern of a trend drawn from series of facts. Thereby, the interrelated pattern among variables can be presented in a simple way. When the existing trend pattern has been identified, the possible factors that can influence the trend pattern can be observed.

However, one significant difficulty of using stylized facts is determining an appropriate level of abstraction to best represent a problem as in the stage of identifying the trend. Various perspectives and procedures also influence the interpretation of the existing trend pattern. The stylized fact should be a general tendency that clearly captures the major characteristics of the problem, yet it must also eschew interruption by minor characteristics. When the stylized fact has an appropriate level of abstraction, a research problem contains general patterns that summarize heterogeneous sources of empirical data.

In understanding stylized facts, this study seeks to underline two methodological perspectives: the realist perspective and the instrumentalist perspective (Lawson 1989: p. 61; Heine, Meyer, and Strangfeld 2005: p. 3). The comparison of these perspectives is evaluated in two stages (Boland 1994: p. 535). The first stage is to evaluate the “as if” approach employed by each perspective. The realists employ the stylized fact to capture in-depth the real entities required to construct a model. The realists believe that the accordance of a model and the entities it depicts is crucial to providing an adequate level

of abstraction. On the other hand, the instrumentalist views the “as if” approach as the positing of simple assumptions. Instrumentalists use assumptions to select an appropriate level of abstraction.

The second stage is to compare the goals of the research. Realists view the research result at the broad level. They emphasize the realities represented by stylized facts. By way of contrast, the instrumentalists approach is more straightforward. Beginning with objectives that arise out of theory, they develop models that seek to generate results that will meet these objectives. Table 2.1 summarizes the comparison of the way in which realists and instrumentalists view and employ stylized facts.

Table 2.1 Stylized Fact: Comparison Between Realist and Instrumentalist Perspective

Stages		Characteristics	
1. Evaluate the concept of “as if”		Realist	Instrumentalist
Realist	Instrumentalist	Realist	Instrumentalist
Stage 1 Stylized fact	Stage 1	The accordance of model and real entities provides adequate level of abstraction.	Assumptions in model determine the level of abstraction.
2. Compare the goal of the research		Realist	Instrumentalist
Realist	Instrumentalist	Realist	Instrumentalist
Stage 2 Stylized fact	Stage 2	Explain the results that deal with the objective. Explain the results at broad level.	Explain the results that deal with the objective.

Source: Lawson (1989, 2006); Heine, Meyer, and Strangfeld (2005)

As can be seen, the concept of the stylized fact lends many researchers to consider the nature of the link between reality and the models of reality. In general, researchers seek to understand the real entities, as they believe these provide sufficient explanation without the creation of complex instruments. Through the basic characteristic and trends of stylized facts, researchers deem that they have sufficient power to explain the objects of their research. As Kaldor (1978) suggests, the complex statistical clarification of research tends to be an obstacle that typically confuses researchers. Other scholars such as Hausman (1995), Maki (1998), Nell (1998b), and Gualerzi and Nell (2010) lend support to Kaldor’s view.

A benefit of stylized facts is that they make possible simulation models for analyzing the processes underlying the stylized facts. A model that can express stylized

facts with clarity and a measure of precision is an adequate model for explaining the real entities (Boland 1994; Heine, Meyer, and Strangfeld 2005).

A second benefit of stylized facts is that they enable researcher to evaluate the model. For instance, an abstract model tends to have only an imprecise explanatory ability for complicated analysis. Stylized facts direct the researchers to focus on general tendencies. Researchers can then use the general tendencies as a basis for improving models, refining assumptions and constructing alternative models.

2.14 Uneven Development Issues and Principles of Political Economy

This section seeks to explain the link between the existing literature of uneven development issues and the principles of political economy. The section proposes a methodical approach to create an integrated framework of principles, theories and issues that relate to uneven development. This is critical to preparing a robust research method, technical model, and analyses. In order to create an integrated framework of principles, theories, and issues, this section proposes two stages of investigation. The first stage includes a summary of the central literature linked to uneven development. In the second stage, an integrated framework is constructed for comprehending the linkage of principles, theories and issues in uneven development.

The first stage summarizes the existing literature outlined in previous sections. This summary is presented in Table 2.2. This table consists of seven columns that include the names of scholars, principles of political economy, theories/concepts, links to other scholars and main issues/results.

Table 2.2 Core Existing Literature of Principles of Political Economy and Uneven Development

Scholars/Author	Principles of Political Economy	Theories/Concepts	Link to Other Scholars	Main Results	Time Series	Coverage Area
Kondratieff (1935)	Long wave	Long wave of institutional change	Helphand, van Gelderen, Wicksell	<ul style="list-style-type: none"> • Institutional changes influence socioeconomic performance • Exogenous process on long wave • Rising period and falling period on long wave 	n.a.	Global, Regional, National
Schumpeter (1939)	Long wave, CCC	Business cycle, innovation and technology	Kondratieff	<ul style="list-style-type: none"> • Institutional change • Endogenous process on long wave • Up and down phases • Long wave consists of cycles 	n.a.	Global, Regional, National
Garvy (1943)	Long wave	Critic of Kondratieff's long wave	Kondratieff	<ul style="list-style-type: none"> • Institutional change and socioeconomic performance • Endogenous process of long wave 	n.a.	Global, Regional, National
Kuznets (1955)	Long wave	Critic of Kondratieff's long wave and Schumpeter's business cycle	Kondratieff, Schumpeter	<ul style="list-style-type: none"> • Institutional change influences socioeconomic performance • Exogenous process influences endogenous process 	n.a.	Global, Regional, National
Mandel (1975)	Long wave	Profit rate and capital accumulation on long wave	Kondratieff	<ul style="list-style-type: none"> • Long-term profit rate determines long-term capital accumulation 	n.a.	Global, Regional, National
Wallerstein (1987, 2010a, 2010b)	Long wave	Hegemony approach to long wave	Kondratieff, Kuznets	<ul style="list-style-type: none"> • Institutional change leads to structural change of element in a whole system that promotes hegemony of core element 	n.a.	Global, Regional, National
Arrighi, Silver, Brewer (2003); Aglietta (2008)	Long wave, Hegemony	Hegemony approach to long wave, the global development hierarchy model	Kondratieff, Wallerstein	<ul style="list-style-type: none"> • GDP per capita and economic factors are employed as a distinguished criteria for model of C-SP-P 	n.a.	Global, Regional, National
Freeman (1978)	Long wave	Innovation approach to long wave	Kondratieff, Schumpeter	<ul style="list-style-type: none"> • Innovation leads to endogenous process of structural linkage 	n.a.	Global, Regional
Mensch (1985)	Long wave	Innovation approach to long wave	Kondratieff, Schumpeter	<ul style="list-style-type: none"> • Innovation provides capital formation for propelling productivity 	n.a.	Global, Regional

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Scholars/Author	Principles of Political Economy	Theories/Concepts	Link to Other Scholars	Main Results	Time Series	Coverage Area
Perez (1985)	Long wave	Regulation approach to long wave	Kondratieff, Schumpeter	<ul style="list-style-type: none"> Regulation change leads to change of structural linkage that determines socioeconomic performance 	n.a.	Global, Regional
Aglietta (2008)	Long wave	Regulation on long wave	Kondratieff, Schumpeter	<ul style="list-style-type: none"> Regime accumulation model on long wave 	n.a.	Global, Regional
Gordon, Weisskopf and Bowles (1983)	Long wave	Social Structure Accumulation (SSA) approach to long wave	Kondratieff, Schumpeter, Mandel	<ul style="list-style-type: none"> SSA identifies productive and non-reproductive cycles on long wave 	n.a.	Global, Regional, National
Kotz (2003)	Long wave	SSA to long wave	Kondratieff, Schumpeter, Mandel	<ul style="list-style-type: none"> SSA evaluates economic institution 	n.a.	Global, Regional
Lippit (2006)	Long wave	SSA to long wave	Kondratieff, Schumpeter, Mandel	<ul style="list-style-type: none"> SSA identifies pattern of up and down on long wave 	n.a.	National
Nell (1998a,1998b)	Long wave/transformational	Transformational growth	Keynes	<ul style="list-style-type: none"> Long-term transformation in economic growth depends on investment and consumption Stylized facts approach 	n.a.	Global, Regional, National
O'Hara (2006a, 2007a, 2007b, 2008b, 2012a)	Long wave	Principle of long wave, SSA approach	Kondratieff, Schumpeter, Mandel	<ul style="list-style-type: none"> SSA investigates uneven development through long wave, taxonomy of long wave, short wave 	1950s–early 2000s	Global, Regional, National
Smith (1759)	Hegemony	Wealth of nation and Moral sentiment	n.a.	<ul style="list-style-type: none"> Interrelationship between wealth and social behavior 	n.a.	Global
Veblen (1898)	Hegemony, CCC	Evolutionary economics and holistic perspective	n.a.	<ul style="list-style-type: none"> Institutional process includes the structural linkages of multiple factors in a whole system 	n.a.	Global
Trotsky (1931)	Hegemony, Uneven Development	The notion of uneven development	Veblen, Marx	<ul style="list-style-type: none"> Most countries undergo various stages and institutional change that lead to unevenness in the process of development 	n.a.	Global
Gerschenkron (1954)	Hegemony, Uneven Development	Economic backwardness	Trotsky	<ul style="list-style-type: none"> Economic backwardness is experienced by most countries in the beginning of economic development 	n.a.	Global, Regional

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Scholars/Author	Principles of Political Economy	Theories/Concepts	Link to Other Scholars	Main Results	Time series	Coverage Area
Baran (1957)	Hegemony, Uneven Development	The dependency of core-periphery	Gerschenkron	<ul style="list-style-type: none"> Institution of core element leads to structural linkage of C-P that generates several anomalies in periphery 	n.a.	Global, Regional
Amin (1974,1976)	Hegemony, Uneven Development	The dependency of core-periphery	Baran	<ul style="list-style-type: none"> The differences of capital accumulation between C-P lead core element to overcome periphery in endogenous process 	n.a.	Global, Regional
Frank (1975)	Hegemony, Uneven Development	The dependency of core-periphery	Baran	<ul style="list-style-type: none"> Imperialist and colonialist institution of core influence structural linkage of C-P 	n.a.	Global, Regional
Dutt (1986)	Hegemony, Uneven Development	The dependency of core-periphery	Baran	<ul style="list-style-type: none"> Technology and monopoly power institution influence, structural linkage of C-P 	n.a.	Global
Hopkins and Wallerstein (1977)	Hegemony	The combination model of C-SP-P	Wallerstein	<ul style="list-style-type: none"> Develops model of C-SP-P 	n.a.	Global
Arrighi and Drangel (1986)	Hegemony	The wealth-stratification hierarchy model	Hopkins, Wallerstein	<ul style="list-style-type: none"> GDP is used as a distinguished criteria for model of C-SP-P 	n.a.	Global
Grabowski, Self and Shields (2007)	Hegemony	Historical approach of regional institutions for economic development	Wallerstein	<ul style="list-style-type: none"> GDP per capita and economic factors are employed as distinguishing criteria for model of C-SP-P 	n.a.	Global, Regional
Maddison (2001, 2007)	Hegemony	Historical process of uneven development	Wallerstein	<ul style="list-style-type: none"> The historical trends of economic factors that are important to the process of long-term economic development 	1820–2007	Global, Regional, National
Ocampo and Vos (2008)	Hegemony, Uneven Development	Historical process of uneven development	Wallerstein, Maddison	<ul style="list-style-type: none"> The uneven development of economic growth patterns at global and regional levels 	1960–2006	Global, Regional, National

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(Cont'd from page 51)

Scholars/Author	Principles of Political Economy	Theories/Concepts	Link to Other Scholars	Main Results	Time Series	Coverage Area
Keynes (1936)	CCC	The structural linkages of demand-investment in the long term	Veblen	<ul style="list-style-type: none"> Structural linkage of demand and investment undergoes long-term accumulation in an endogenous process 	n.a.	Global
Myrdal (1944, 1968)	CCC, Contradiction	The circular and cumulative causation of multiple factors	Veblen	<ul style="list-style-type: none"> The structural linkages of multiple factors generate cumulative change and amplification 	n.a.	Global, Regional, National
Kaldor (1957, 1972)	CCC	The CCC of economic factors (dynamic CCC)	Myrdal, Schumpeter, Keynes	<ul style="list-style-type: none"> The model of CCC on economic factors (demand-investment-labor-innovation-productivity-export) Stylized facts approach 	n.a.	Global
Kapp (1970) and Georgescu-Roegen (1975)	CCC, Contradiction	The basic concept of social cost	Veblen, Myrdal, Polanyi	<ul style="list-style-type: none"> The structural linkage of economic and environmental factors generates social cost as cumulative causation 	n.a.	Global
Pini (1995)	CCC	The CCC process for investigating uneven development	Kaldor	<ul style="list-style-type: none"> Investigating the process of CCC in the long-term period to comprehend uneven development 	1960–1990	Regional
Berger (2009a,b,c)	CCC	The development method of CCC	Myrdal, Kaldor	<ul style="list-style-type: none"> The method of CCC for institutional economics 	n.a.	Global
Polanyi (1944)	Contradiction	The disembedded economy; the fictitious commodities	Myrdal, Kapp	<ul style="list-style-type: none"> Capitalist institutions typically promote contradiction and anomalies in the structural linkage of multiple factors Free-market of capitalist economy should exclude land, labor and money to eliminate contradiction 	n.a.	Global

(Cont'd)

(Cont'd from page 52)

Scholars/Author	Principles of Political Economy	Theories/Concepts	Link to Other Scholars	Main Results	Time Series	Coverage Area
O'Hara (2006a, 2007a, 2008b)	CCC, Contradiction	The CCC and the contradiction process for investigating uneven development, principle of CCC and contradiction	Veblen, Myrdal, Kaldor and Schumpeter	<ul style="list-style-type: none"> The long-term pattern of uneven development in economic, social and environmental factors 	1950–2008	Global, Regional and National
Zedong (1937)	Contradiction	The basic concept of contradiction	Marx, Lenin	<ul style="list-style-type: none"> The universal and particular terms of contradiction 	n.a.	Global
O'Connor (1998)	Contradiction	The two contradictions of capitalism	Polanyi, Kapp	<ul style="list-style-type: none"> Contradiction of capitalism: capital-labor (social) and capital-environmental factors 	n.a.	Global
Foster and Burkett (2008)	Contradiction	n.a.	Marx, Engels, Schnaiberg, Kapp	<ul style="list-style-type: none"> Social cost is derived from cumulative causation on entropy (extrapolation) Confirm the heat death of universe hypothesis 	n.a.	Global
Sewell (1988)	CCC, Contradiction, Hegemony	n.a.	n.a.	<ul style="list-style-type: none"> Investigating process of hegemony (state-province), CCC (demand-investment) and Contradiction (capital-labor) 	1820s-1870s	National, Sub-National
Putnam (2001)	CCC, Uneven Development	n.a.	n.a.	<ul style="list-style-type: none"> Heterogeneous patterns of sub-national level of trust 	1960s-2000s	National, Sub-National
Bond (2008)	CCC, Contradiction	n.a.	n.a.	<ul style="list-style-type: none"> Investigating process of hegemony (colonizer-origin), CCC (demand-investment) and contradiction (white people-black people) 	n.a.	National, Sub-National
Royuela, Romani and Artis (2008)	CCC, Uneven Development	n.a.	n.a.	<ul style="list-style-type: none"> Heterogeneous patterns of quality of life 	n.a.	Sub-National
Morton (2010)	CCC, Contradiction	n.a.	n.a.	<ul style="list-style-type: none"> Investigating process of hegemony (colonizer-indigenous) and contradiction (white people-black people) 	n.a.	National, Sub-National

Sources: Author's compilation

Following the summary of the main literature, the second stage of this section develops an integrated framework of principles, theories, and issues in uneven development. Seven issues related to uneven development are posited. The first issue of uneven development relates to *the patterns of history*. Historical patterns are a crucial part of the uneven development mechanism. For instance, changes of socioeconomic performance are identified by historical patterns as institutional experience that leads to change and increases in magnitude over the long term.

The second issue is that uneven development should be analyzed from a *holistic perspective*. The unevenness of the development may be seen at different levels (global, regional, national, and sub-national) as structural linkages are likely to arise due to the relationships of multiple factors in a whole system. This is followed by the third issue, namely that the holistic perspectives generate a *complexity problem*. The long-term relationships of multiple factors at differing levels must be captured as follows: from multiple points of view, multiple theories, and a variety of methods. This implies collection of extensive data and the use of complex analyses.

These three issues lead to four further issues relating to uneven development. The fourth issue is *heterogeneous* socioeconomic performance at differing levels. This is due to various endogenous processes in structural linkages of multiple factors at differing levels. In the fifth issue, the complexity of the relationships of multiple factors in a whole system results in the *incommensurability problem* in evaluating the changes in multiple factors. In this context, some aspects need to be evaluated multi-dimensionally, such as social behavior, political activities, environmental pollution and cultural aspects. The sixth issue is *multiple proxies of factors*. As a result of a holistic perspective, factors need to be evaluated by multiple indices. Lastly is the issue of *uncertainty*. The historical and holistic nature of uneven development necessitates the analysis of long-term processes of multiple factors. The resultant patterns and explanations of trends are uncertain.

From these issues, an integrated framework of principles, theories, and issues has been developed, as illustrated by Figure 2.5 below.

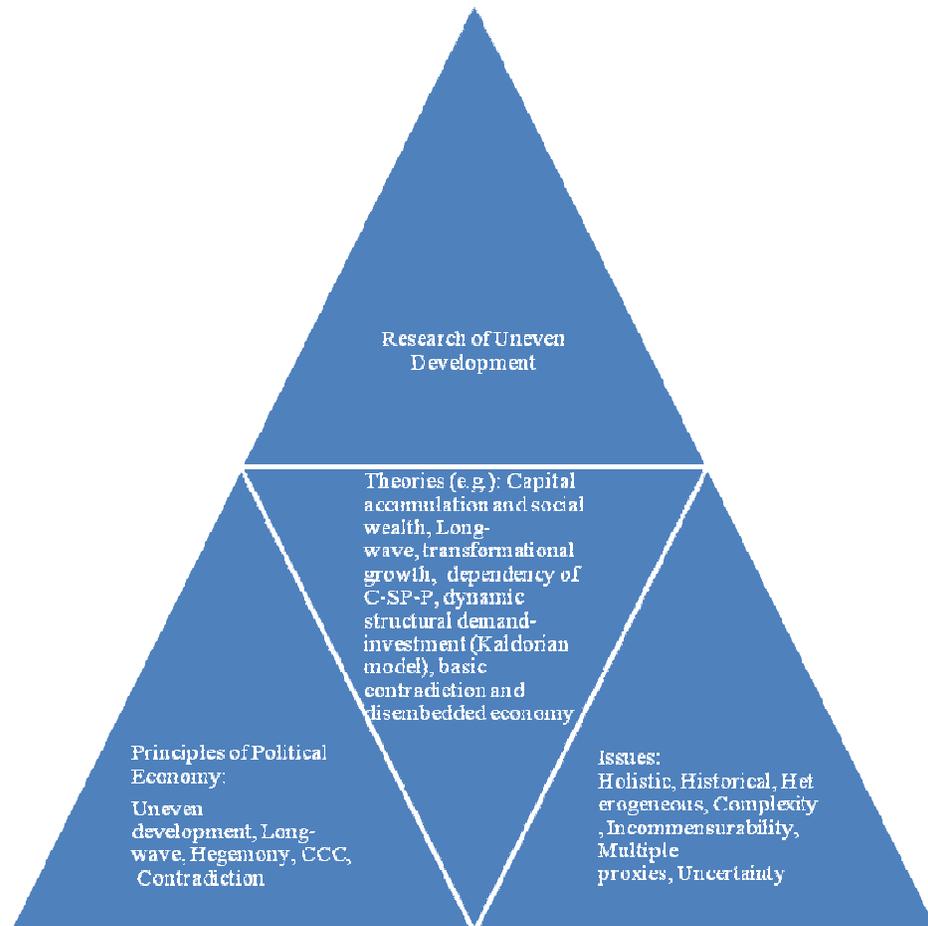


Figure 2.5 Integrated Frameworks of Principles, Theories and Issues

Figure 2.5 employs the segmented pyramid diagram to integrate the approaches that are in the literature review. In this pyramid, the four segments are interrelated. The interrelationships of principles, theories and issues are fundamental to the research of uneven development. The three segments of principles, theories and issues guide the process of research in the next stages. This research feeds back into and further refines these segments.

2.15 Concluding Remarks

The present chapter reviews some of the relevant theoretical and empirical aspects of uneven development from the point of view of political economy. This chapter considers five principles of political economy: uneven development, long wave, hegemony, CCC and contradiction, plus the specific component of the sub-nation. These are critical for comprehending the phenomena of uneven development.

This chapter explains the historical development of these principles by outlining the theories and scholars that relate to them. The tabulation of existing literature summarizes the principles, scholars, theories and main results that could potentially be employed in the process of this research. In examining the literature, several major issues of uneven development have also been discovered, such as its holistic, historical, heterogeneous and complex nature; its incommensurability and multiple proxies; and its uncertainty.

An integrated framework has been presented to help comprehend the interrelationship of principles, theories and issues in the research of uneven development. This framework provides the fundamental guiding parameters for the process of this research. Further, the major issues detailed in the present chapter are elaborated in Chapter 3, which discusses the core hypotheses of uneven development.

Chapter 3

The Core Hypotheses of Uneven Development

3.1 Introduction

In the previous chapters, Chapter 1 introduces the purpose of this thesis and its significance. Chapter 2 discusses several pieces of literature concerning political economy and the historical background to observations at the sub-national level. An integrated framework of principles, theories, and issues linked to uneven development is also proposed in Chapter 2, which introduce the major issues related to uneven development, leading to an assessment of multiple factors at different levels.

The objective of the present chapter is to propose hypotheses that are crucial to the investigation of uneven development at the global, regional, national, and sub-national levels. Here, hypotheses are developed and linked to research objectives, theories and further analyses. This chapter presents five core hypotheses that are analyzed in this study.

The rest of this chapter is organized as follows. Section 3.2 discusses the hypotheses development of uneven development. Lastly, concluding remarks are given in Section 3.3.

3.2 Principles of Political Economy and Hypothesis Development

Political economy concerns trends in socioeconomic performance at the global, regional, national and sub-national levels. The world's economies experience major socioeconomic processes and trends in cycles and long waves, which reveal some regions or nations growing and developing more favorably than others. This process leads to hegemonic tendencies that evolve during long-wave economic changes and development. Adam Smith's investigation led others— such as Thorstein Veblen, Joseph Schumpeter, W.A. Lewis, Simon Kuznets, Alexander Gerschenkron, Paul Baran, Andre Gunder Frank, and Immanuel Wallerstein— to scrutinize the sources drivers of unequal progress and development. The concept of core, periphery and semi-periphery (C-P-SP) was advanced by these scholars as a technical tool to analyze hegemonic trends, commodity input chains, and output distribution in numerous areas in the world.

Uneven development is a critical process in the global economy, which has been especially influenced by more extreme power polarization seen in particular historical periods. For instance, there was hegemonic change from Dutch to British supremacy in the 1700s–1800s, followed by US hegemony in the first half of the 1900s, apparently to be succeeded by China in the 2000s. According to Wallerstein (1979, 2010a), this hegemony relates to the rise of the dominance of a core region. The core uses military power to dominate output distribution, financial institutions and consumer products (Boswell and Sweat 1991; Chase-Dunn and Grimes 1995). Kwon (2011) reveals that although military power sometimes contributes to economic dominance for the core, it can also reduce its economic activities, since the core's finances are expended upon military infrastructure. For instance, the collapse of the Fordist institution can be seen as a result of declining US hegemony which, in turn, was contributed to by the US loss of military power in the Vietnam War.

One tool put forward by scholars who advance the principle of uneven development has been the concept of core, periphery and semi-periphery (C-P-SP). C-P-SP is an operational tool for scrutinizing empirical and also structural patterns and relationships between developed, developing and underdeveloped areas of the world. The core includes the leading players in the world economy. The periphery includes areas that are underdeveloped due to insufficiently effective networks, institutions and governance structures. The semi-periphery includes those areas that have managed to break through these structural limits and make progress toward industrialization, as well as achieve varying levels of socioeconomic development.

At the broader level, this study examines the pattern of uneven development in the world, including the various continents, nations and sub-nations. Angus Maddison (2007) investigates patterns of capitalist development, paying special attention to gross domestic product (GDP), population, and productivity (linked to technical and institutional factors). This current study endeavors to improve on the analysis by also including social, environmental, and political factors (as well as the sub-national level), thereby producing a more holistic analysis.

In this context, the concepts of transformational growth and long waves are utilized as helpful tools of inquiry to enable more coherent historical patterns to be observed than the Maddisonian method usually does. Transformational growth can be seen in the long-term socioeconomic performance of capitalist economies. The regions and countries of the world have experienced various instabilities in

socioeconomic performance over the past decade. For instance, Sub-Saharan Africa has been undergoing turbulent poverty, inequality, famine, and diseases. Financial crises have occurred in some LACA countries, such as Argentina and Mexico. Some of Asia, including Japan, experienced the collapse of asset prices during the 1990s. Late in the first decade of the 21st century, the United States also underwent financial crises linked to collateralized mortgages. Moreover, political instability, social conflicts, terrorism and wars have occurred in MENA, Asia, Oceania and Western Europe, as well as in the United States. In addition, natural environmental disasters have been experienced in some Asian and Pacific countries, particularly Japan.

The various instabilities in political economic performance have led to much discussion regarding institutional changes over the long wave. A review of the literature suggests institutional changes in the social structure of accumulation (SSA) occur over the long wave (Gordon, Bowles, and Weiskopf 1983; Kotz 1987; Lippit 2006; O'Hara 2006b; 2007b; 2008b). The SSA theory presumes that the foundation of a beneficial set of institutions maintains the stability and certainty required for sustained investment during long-wave upswings.

SSA proposes four major initial frameworks. First, SSA identifies institutions as the cornerstones influencing socioeconomic performance under capitalist economies through long-wave economic change and development. The long-term interplay of the links among investment, demand and rate of growth can be influenced by stability and certainty at differing levels.

Second, evolution and transformation occur in institutions through long waves. Institutions experience maturation, transformation, and renewal to stimulate systems and environments for sustained upswings. According to O'Hara (2006a, 2008b), in SSA theory, the process of institutional transformation involves flexible periodicity and structures of change. For instance, labor productivity tended to be higher in the long-wave upswing of the 1950s and 1960s; it then declined through the long-wave downswing through the 1970s and 2000s. In this case, the power of capital increased continuously relative to labor to reduce operational costs, while the rate of economic growth decreased in the same period.

The third framework is linked to the demand side. In SSA theory, GDP per capita growth identifies the degree of demand at differing levels throughout the long waves. O'Hara (2006b, 2007b, 2008b) classifies long waves based on GDP per

capita growth, including the long-wave upswing (GDP per capita growth above 2.5 per cent for at least 15 years), borderline (between 2.01 and 2.5 per cent growth per capita) and long-wave downswing (GDP per capita growth below 2.0 per cent). As a demand proxy, the rate of growth per capita is important for critical evaluation of the long-term economic performance of capitalist economies.

The fourth framework is that, on a broader level, SSA theory proposes to closely examine economic performance under capitalist economies that are linked with social and environmental performance through long waves. SSA empirics link GDP per capita growth with patterns of environmental and social factors. For instance, relationships between capital and environmental factors can be institutional, affecting long-term socioeconomic performance. The capital-environmental accord deteriorates as business sectors challenge capital through depletion of natural resources and their ecological footprint increases. Moreover, relationships in the capital-social factor can be viewed in conflict between capital and trust. Social trust may decline in several countries that have increased rates of growth per capita. It is important to stress that SSA theory may capture interrelationships among factors in the world system as a whole.

From the perspective of this literature, this study investigates whether or not the world, continents, nations, and sub-nations tend to exhibit the stylized facts of a long-wave pattern of several decades of upswing followed by several decades of downswings throughout history. However, these long-wave patterns may become very complex when economic variables are linked with social, environmental and political factors. More specifically, this study posits Hypothesis 1, as follows:

Hypothesis 1: The world, its major continents/regions, nations and sub-nations experienced a long-wave upswing from 1950 to 1973, followed by a long-wave downswing from 1974 to 2010.

Hypothesis 2 is linked specifically to the C-P-SP, in that the core tends to have higher growth throughout a long wave than does the periphery, and further, that structural factors account for this disparity in growth. This hypothesis also states that economies in the semi-periphery that have broken through many structural limits have both higher and lower growth than both core and peripheral countries, and that

some of these countries (e.g., China) are potential core economies, as well as hegemonies.

In Smith's (1788) pioneering concept of uneven development, he considers the patterns of wealth among nations. He posits that wealth typically determines the pattern of a society's behavior and moral sentiment, emphasizing how the pattern of wealth among nations has changed over time. Therefore, institutions are crucial to maintaining the patterns of wealth.

In the discourse on the institution, Veblen (1898a) explains that economic activities should be viewed more broadly, as institutional processes are determined by the structural linkages of multiple factors in the "system as a whole." A partial emphasis on economic factors overlooks institutional processes in other factors, which generate conflicts and contradictions. The linkage between economic and non-economic factors must be considered.

By investigating the linkages between institutions and economic development, several scholars have assessed the structural processes of economic development among nations. In trying to comprehend economic development in Russia during the 1920s–1930s, Trotsky (1931) puts forward the notion of uneven development. He explains that the pattern of economic development in Russia can be characterized by several stages in distinct institutions. Trotsky assumes that most countries similarly undergo various stages of economic development and that institutions lead to unevenness in the process of this development.

At a broader level, Gerschenkron (1954) advances the notion of economic backwardness, in which he asserts that a country typically experiences "backwardness" in the early stages of economic growth. Consequently, some countries need sufficient levels of investment early on in their beginning of economic growth to accelerate their movement through the stages of economic development—even though they experience a decreasing pattern of consumption early on in their beginning stages of growth. Heterogeneous patterns of investment probably contribute to the unevenness of economic development among countries.

The notions of uneven development and economic backwardness have led several scholars to consider the structural linkages of core, semi-peripheral, and peripheral areas over time. Baran (1957) adopts the concept of economic backwardness to comprehensively examine the dependency between core and peripheral countries. He suggests that the core countries have employed several

institutions to bring about the structural linkages between them and peripheral countries, for example colonialism and imperialism.

Frank's (1975) work follows that of Baran and focuses on the process of hegemonic institutions in Latin America. He finds that the colonial institutions of the core are likely to create "core-periphery structural linkages" that lead to several anomalies in the economic development of the periphery. In this context, he argues that the heterogeneous hegemonic institutions have led to various structural linkages between the core and periphery and that these, in turn, accelerated uneven development in the world.

Following Baran and Frank, Samir Amin and Amitava Krishna Dutt further consider the structural linkages between core and peripheral areas. Examining peripheral countries in Africa, Amin (1972, 1974) scrutinizes the differences in capital accumulation between core and peripheral areas. He notes the structural linkages of these areas, which led the core to overwhelm the periphery. Dutt (1986) suggests several technical factors that determine these structural linkages, such as monopoly power and technology. As Dutt demonstrates, high levels of technology and monopoly power are typical of hegemonic institutions and lead to core areas overcoming peripheral areas in the structural linkages.

Several scholars look at the usefulness of models of C-SP-P in identifying the process of hegemony and uneven development. Wallerstein (1974) uses this approach to analyze the world system. Generally, this approach views a group of core regions and nations as being hegemonic in the world economy. The semi-peripheral areas are those that have sought to break through the structural boundaries and move towards industrialization and heterogeneous levels of socioeconomic development. The peripheral areas are those that experience underdevelopment through insufficient institutions and ineffectual networks and governance structures.

As for the concept of a semi-periphery, Wallerstein explains that most developing countries belong to this particular part of the global system. This concept enables scholars to differentiate their approach from other development theories, which treat the existence of developing regions as a temporary element in the world system (Wallerstein 1979; Korzeniewicz and Awbrey 1992; Lee 2009).

After Wallerstein's structural model of C-SP-P, three major development models are suggested. The first model is the combination C-SP-P model proposed in the work of Hopkins and Wallerstein. Hopkins and Wallerstein (1977) reveal the

combination C-SP-P model that emphasizes not only the hierarchy of C-SP-P but also the relationships among areas. This model posits that the relationships of the C-SP-P generate a combination of characteristics for every area, as economic factors become a series of differentiated factors.

Arrighi and Drangel (1986) establish a wealth-stratification hierarchy model using the relation and combination process as a base model. This second model highlights wealth stratification among areas in the world using GNP per capita as the distinguishing criterion. This model also proposes semi-peripheral areas as transitional features of developing regions and countries. In discussion of the semi-periphery, this model posits that as a group, the semi-periphery is larger than the core, but it is smaller than the periphery (Arrighi and Drangel 1986: p. 29; Smith and White 1992: p. 22-24; Lee 2009: p. 279).

Lastly, the global development hierarchy model is the third C-SP-P model. This model employs a broader range of economic factors than the second model. According to Arrighi, Silver, and Brewer (2003) and Aglietta (2008), one major contribution of this model is that the criteria of differentiation of regions and countries emphasize not only GNP per capita but also the relationship of GNP per capita to other economic factors such as labor productivity, value-added growth in the industrial sector, and export levels.

Several succeeding works in the third model depict the historical pattern of economic development at the global, regional and national levels using the global development hierarchy approach. Horvath and Grabowski (1999) investigate economic factors to understand the dependency of developing countries on advanced countries. Maddison (2003, 2007) portrays historical patterns and processes of economic factors that are implicitly linked to the hegemonic perspective. Ocampo and Vos (2008) indirectly employ the global development model to examine uneven economic development from the global to national levels over the long term.

Therefore, this study posits Hypothesis 2, as follows:

Hypothesis 2: There are significant structural linkages among the three classes of areas: core, semi-periphery, and periphery.

To evaluate Hypothesis 2, the study proposes the model of C-SP-P intensity in Figure 3.1 to identify structural linkages. Several literature sources argue that

change in economic performance across countries mostly occurs during a recession, such as in the mid-1970s and the debt crisis of the early 1980s (e.g., Suter and Stamm 1992; Flandreau and Flores 2007; Wallerstein 2010b). Accordingly, the model explains the debt crisis of the 1980s, which in this decade generated greater intensity in the structural linkage of core countries (advanced countries), semi-peripheral countries (developing countries) and peripheral countries (underdeveloped countries). The model of C-SP-P is analyzed in detail in Chapter 5.

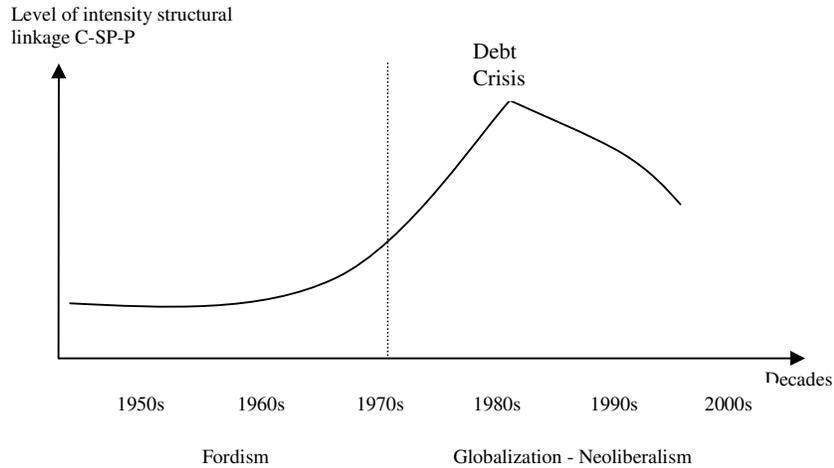


Figure 3.1 The Model of C-SP-P

Source: Developed from Suter and Stam (1992) and Flandreau and Flores (2007)

A related task involves seeing how the long-waves data according to GDP per capita growth should be modified, or caveats drawn, when other data is introduced, especially social, political and environmental data. This is explained in more detail below as the other hypotheses are introduced.

Drawing on the principle of circular and cumulative causation, this study examines the relationships (stylized facts) among different variables to identify structural linkages. Gunnar Myrdal and Nicholas Kaldor develop CCC models, with Myrdal drawing especially from socioeconomic factors and Kaldor focusing more on technical economic factors. For instance, Myrdal (1944, 1968) shows that education, income, employment and productivity are not only interrelated (circular in movement) but also tend to move up and down together (cumulative).

Kaldor highlights the relationship between aggregate demand, investment, productivity and exports. These elements tend to be endogenously self-reinforcing, because they are circular and cumulative in motion. Pini (1995) models these

Kaldorian linkages technically for investigating Organization for Economic Co-operation and Development (OECD) countries.

Evolutionary economics is critical for the CCC principle. Veblen (1898a) claims that economic processes should be comprehended by a holistic view, namely as long-term phenomena in the evolutionary process of the structural linkages among multiple factors. Concerning the circulation of structural linkages among multiple factors (both economic and non-economic), Veblen considers that over time, cumulative changes occur throughout the entire system.

In the context of the evolution of institutions, Keynes (1936) suggests that along with the structural linkages among multiple factors, over time, these linkages increase in magnitude. For example, the structural linkage between demand and investment increases in magnitude over the long term. By suggesting that innovation and technology accelerate the endogenous process of structural linkages, Schumpeter (1939) focuses on institutions that affect the structural linkages of factors over long waves. Schumpeter even suggested the concept of the long-run business cycle which, along with short-term cycles, potentially explains multiple changes in structural linkages.

The concept of evolution of institutions inspired several other scholars, who are the second part of this discussion. Myrdal (1944, 1968) uses holistic and cumulative change to develop a model of CCC. He argues that evolutionary processes affecting the interplay of structural linkages generate not only cumulative change, but also an amplification effect, which he calls cumulative causation. As he demonstrates in his book *American Dilemma*, the circular links between economic and social factors typically increase the magnitude of the entire system.

By adopting Myrdal's concept of circular and cumulative causation, Nicholas Kaldor (1957, 1972) proposes the dynamic model of CCC, which includes several crucial economic factors such as aggregate demand, investment, productivity, innovation and exports. Kaldor also employs several previously developed concepts. For instance, he uses the Keynes's concept of accumulation to determine the structural linkage of demand and investment. Thereby, he describes the structural linkage of investment, the employment sector, and industrial productivity to promote exports. As another example, he also adopts Schumpeter's concept of innovation to explain the endogenous process of structural linkage between investment and

productivity through institutional innovation. As a result, he discerns a general trend among economic factors in an integrated system.

Subsequent to Kaldor, K.W. Kapp, and Nicholas Georgescu-Roegen use Myrdal's concept of CCC to investigate the endogenous process of structural linkages of economic and environmental factors. Kapp (1970) utilizes the basic concept of social cost, which is a structural linkage between economic and environmental factors over the long term. In his technical model, Georgescu-Roegen (1975) agrees with Kapp to view social cost as a part of the cumulative causation process. Both Kapp and Georgescu-Roegen utilize the concept of entropy, as developed in the Second Law of Thermodynamics, to describe cumulative causation. As they demonstrate, over time the structural linkage between economic and environmental factors typically increases entropy.

By assessing OECD countries' data from 1960 to 1990, Pini (1995) uses the principle in an empirical fashion to confirm two crucial aspects of political economy. First, Pini's results support the Keynesian concept of an accumulation process in the structural linkage of demand and investment, as well as the Schumpeterian concept of innovation in the structural linkage of investment and productivity. Second, he comprehensively examines the endogenous process of the interplay of structural linkages between multiple factors in the long-term period.

Several works of Phil O'Hara also adopt the principle of CCC and link it to other principles of political economy, including uneven development. O'Hara (2007a) uses the principle of CCC, in connection with the principle of long waves and C-SP-P to investigate uneven global and regional levels. The holistic perspective of Myrdal is confirmed by O'Hara (2008a) when he assesses socioeconomic performance according to global, regional and national patterns throughout long waves. Moreover, he also explores the concept of social cost and entropy through the linkage of CCC and uneven development (O'Hara 2009).

Another scholar interested in uneven development is Sebastian Berger. Berger (2008b) proposes the notion of political ecological economics, which is derived from Kapp's concept of social cost. Berger's notion is useful for promoting environmental policies. Further, Berger (2008c, 2009b) considers the technical aspects of minimizing social cost, work which he bases on Myrdal's CCC and Kapp's concept of social cost.

From the perspectives of this literature, this study scrutinizes patterns of variables that are both interrelated (circular, wide in scope) and cumulative (amplified, increasing in magnitude). Specific hypotheses are developed for examining long-wave trends in terms of economic, social, political, and environmental factors. Hypothesis 3 can be posited, as follows:

Hypothesis 3: For each set of two variables, the data move up and down together throughout long waves.

In general terms, Hypothesis 3 states that interrelated economic factors tend to display a cumulative pattern of endogenous amplification that generates long-wave upswing and downswing patterns. This study uses the relationship between aggregate demand, investment, productivity, and net exports as it adopts Kaldor's model of CCC. For instance, the sets of aggregate demand and investment data are investigated at the global and regional levels in the long-term period.

Based on the model of CCC, the expected relationships among economic factors are illustrated in Figure 3.2. This figure shows four quadrants that includes interrelated economic factors. The points from 1 to 8 are the measures of elasticity that represent circularity on particular economic factors. For instance, the elasticity of GDP per capita growth to investment growth is shown on point 1 as positive change in investment growth, which is caused by positive change in GDP per capita growth. If the elasticity is ++, it represents positive CCC (Points 1, 2, 3, and 4). Negative CCC is displayed by the elasticity that generates -- (Points 5, 6, 7, and 8). The cumulative process is described by arrow lines O-A, O-B, O-C, and O-D. All data analyses of the model are discussed in Chapter 5.

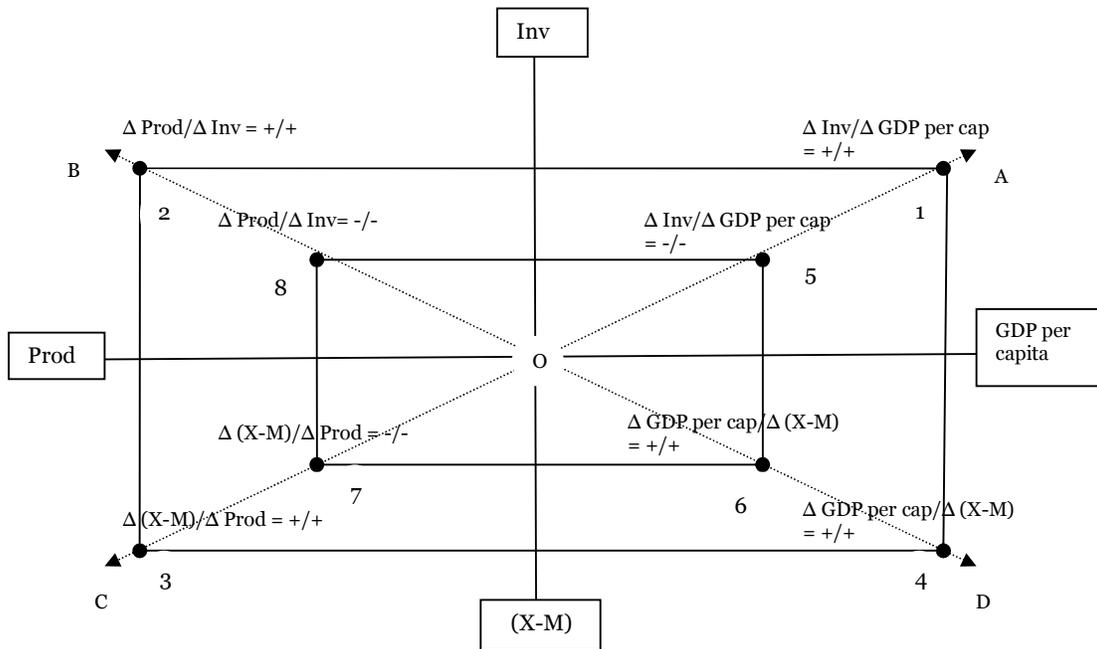


Figure 3.2 The Model of CCC for Economic Factors

Note: All variables are in the form of growth

This research also examines the relationship among economic, social, environmental, and political factors. From a CCC perspective, this study is interested in the upward and downward movements between these different factors. For instance, for many nations, GDP and social factors tend to move together because they have feedback effects on each other. The same can often be said for GDP and political factors, as growth and political capital may increase or decrease together. They can thus show interactive increases in magnitude due to the feedback processes involved. Enhanced growth may stimulate good health and education, which in turn may promote a democratic environment. These types of effects are crucial to this study as they represent the CCC processes. From the perspective of Myrdal’s model of CCC, the expected relationships among the multiple factors in this study are shown in Figure 3.3.

Figure 3.3 shows the interrelationship among multiple factors (economic, social, environmental, and political factors). The structural linkages among multiple factors are represented by the alphabetical boxes from A to O. These structural linkages are different from the interrelationship among economic factors. Multiple factors generate complex linkages, which are indicated by a two-way relationship for

each pair of factors. This figure uses a two-arrow line to show these interrelationships.

The patterns of interrelationships generate positive CCC and negative CCC. Positive CCC is a positive change in a factor caused by a positive change in another. Negative change in a factor that determines negative change in another factor is a negative CCC. For instance, Box A describes the structural linkage between GDP growth per capita (economic factor) and HDI (social factor). Positive change in GDP per capita is caused by positive change in HDI, while at the same time positive change in GDP per capita determines positive change in HDI. These structural linkages create a form of circularity among multiple factors. The circularity experiences amplification that generates a cumulative process. A series of numbers from 1 to 5 show two-way arrows, which represent a cumulative process.

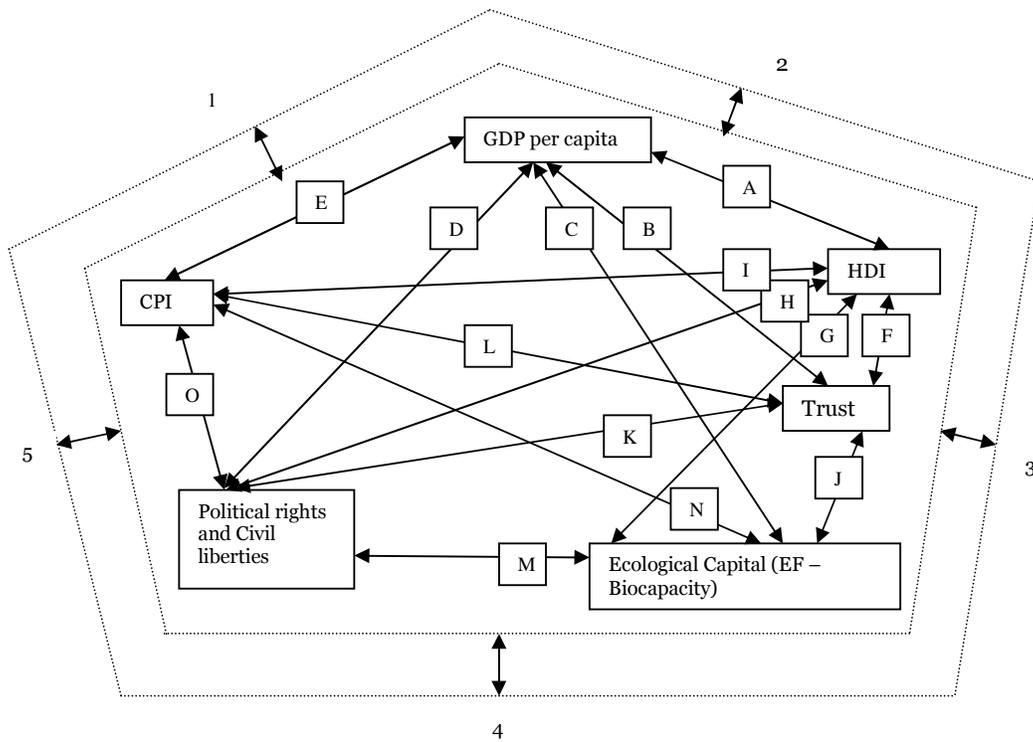


Figure 3.3 The Model of CCC for Multiple Factors

In identifying structural linkages, the model's CCC of multiple factors does not use elasticity due to complexity and heterogeneity issues. This model uses the classification scheme of factors at the global, regional, national and sub-national level. For instance, one country experiences an upswing of GDP growth per capita

while it has a very high position on the HDI. From this result, this country experiences positive CCC in the structural linkages of GDP growth per capita and HDI. Further, the study calculates the percentages of countries that experience CCC based on the model. The calculation method is developed and modified from Ocampo and Vos (2008) and O'Hara (2012a). All analyses of the model are elaborated in Chapter 7.

From the perspectives discussed above, an array of complex hypotheses can be formulated along these lines, as shown in Sub-hypotheses 3a–3e below.

Sub-hypothesis 3a: GDP and HDI tend to move upward and downward together over time.

Sub-hypothesis 3b: GDP and trust tend to move upward and downward together over time.

Sub-hypothesis 3c: GDP and ecological capital tend to move upward and downward together over time.

Sub-hypothesis 3d: GDP and political rights tend to move upward and downward together over time.

Sub-hypothesis 3e: GDP and the corruption perception index (CPI) tend to move upward and downward together over time.

The principle of contradiction in political economy states that there are often considerable opportunity costs associated with advances in economic growth and development. As economic advancement takes place, other areas of society may simultaneously decline. Even within the economy, advances in some areas may occur at the expense of other economic factors. Usually, however, the trade-offs are between economic advancement and social or environmental or even political well-being.

Contradictions are typically viewed from an institutional–holistic perspective. Zedong (1937) suggests universal and particular elements of contradictions. He explains that universal contradictions can capture the movements of existing factors that work in the opposite direction in a whole system. In particular, he proposes that a contradiction is a process motion of multiple factors (elements) in which one group of factors moves in a different direction from another group, while both groups have structural linkages over time. Examples include differential versus integral

(mathematics), positive versus negative (physics), and action versus reaction (mechanics) (Zedong 1937: p 5).

Polanyi (1944) contends that capitalist institutions influence the structural linkages of economic and environmental factors, and, further, that these institutions characteristically generate conditions under which economic factors prevail over environmental factors. To extend this perspective, Polanyi puts forward the notion of a disembedded economy, claiming that institutions in the world economy eliminate contradictions and anomalies. In this sense of a disembedded economy, he suggests that three types of commodities lead to the failure of economic institutions and should be excluded from the free-market: land, labor and money. For instance, he suggests that land typically undergoes degradation; therefore, it can potentially disturb the endogenous process of structural linkage, thereby generating long-term contradictions in a free-market.

Scholars contribute both development and application models to the principle of contradiction. O'Connor (1998) provides two analyses of contradictions in capitalism. These are the contradiction between the institutions of capital and labor within institutions and the contradiction between the institutions of capital and natural resources.

Following this perspective, Foster (2001) develops a twin-stage contradiction model of capitalism, which explains the two contradictions of the capitalist institution process in the world system. Burkett (2006) evaluates Foster's two-stage contradiction model—which consists of contradictions between capital and labor and capital and environmental factors—and establishes the distinction between capital accumulation in ecological institutional crises and capital accumulation in human capital institutional crises. Foster (2005) adopts Schnaiberg's treadmill of accumulation model to illustrate that the accumulation process of capital in human capital institutions is different from the accumulation process of capital in ecological capital institutions.

Several scholars apply the model of contradiction with links to other principles, such as CCC, long waves and uneven development. As for the relationship between CCC and contradiction, Foster and Burkett (2008) confirm Marx and Engel's "heat death" of the universe hypothesis, which suggests that the problem of contradiction between economic and environmental factors not only involves entropy but also the extrapolation of entropy. This notion is similar to that

of Kapp (1970) and Georgescu-Roegen (1975), who claim that contradiction potentially occurs in the structural linkages between economic and environmental factors. These factors generate cumulative causation, as a result of the increased magnitude of entropy. Berger (2008b) notes that the cumulative causation of entropy or the extrapolation of entropy informs Kapp's concept of social cost. In the context of uneven development and long waves, O'Hara (2006a) reveals a contradictory situation in socioeconomic performance among global and regional patterns throughout long waves. O'Hara (2007c, 2008b) also investigates CCC and the contradictions for economic–social–environmental structural linkages at the global, regional and national levels.

From these initial concepts, the model of contradiction for economic factors is given in Figure 3.4. Figure 3.4 shows four quadrants in which economic factors are interrelated. The elasticity of economic factors is evident in the set of points from 1 to 8, which represent contradictions. For instance, elasticity of investment growth to productivity growth generate +/- (point 4) or -/+ (point 8), which are negative results. It refers to an anomaly in structural change between investment and productivity. Such negative results of elasticity describe the contradiction between productivity growth and investment growth. The direction of contradiction is shown by arrow lines O-A, O-B, O-C and O-D. Investigations of contradictions are discussed in Chapter 5.

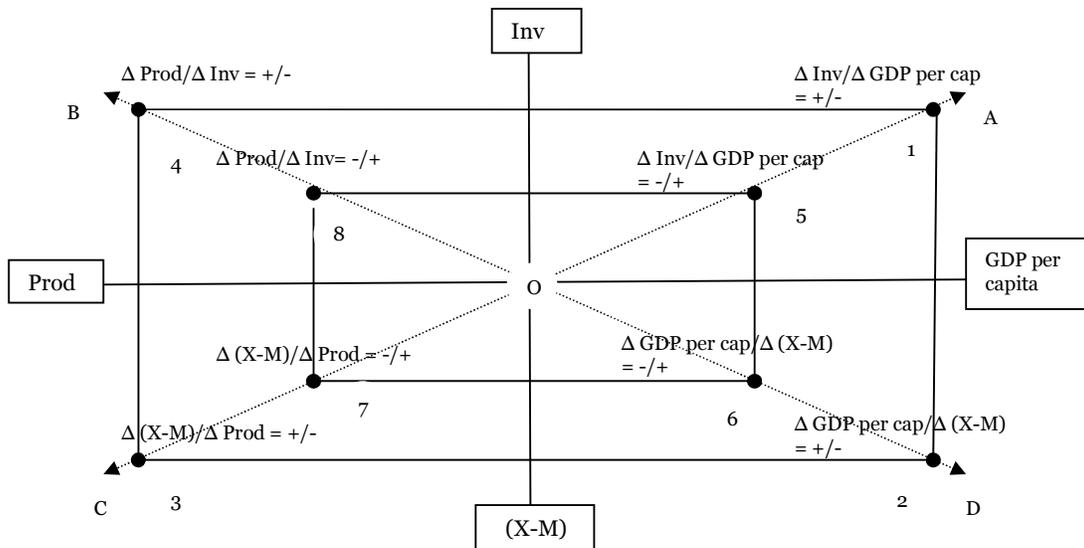


Figure 3.4 The Model of Contradiction for Economic Factors

Therefore, a general hypothetical statement that relates to the notion of contradiction states that the structural linkages of multiple factors generate long-term anomalies. Contradictions can occur at the global, regional, national, and sub-national levels—wherever various factors are inversely related over time. This can be stated operationally as follows:

Hypothesis 4: The interrelationship among economic, social, environmental and political factors demonstrates a contradictory pattern when, throughout long-wave upswings and downswings, the movements of one group of variables are inversely related to those of another group of variables.

The model of contradiction among multiple factors is displayed in Figure 3.5. The model is similar to the model of CCC in Figure 3.3, but excludes the cumulative process. Figure 3.5 shows the structural linkages among multiple factors, which are represented by alphabetical boxes. Contradiction occurs in a pair of factors when structural change between them generates anomalies. For instance, one country has positive change in GDP growth per capita that is followed by negative change in HDI.

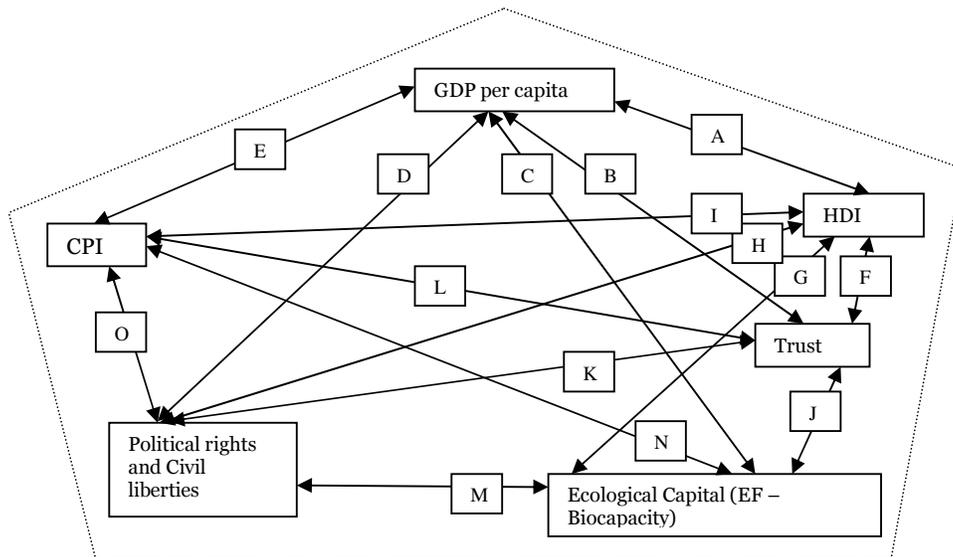


Figure 3.5 The Model of Contradiction for Multiple Factors

This model of contradiction uses the classification scheme of factors at the global, regional, national and sub-national level. This study calculates the percentage of countries that experience contradiction based on the position. For instance, a country experiences an upswing in GDP growth per capita, while it retains the low position in HDI. All analyses of contradiction are elaborated on in Chapter 7. Thus, to simplify the operational analyses, this Hypothesis 4 can also be broken down into five specific sub-hypotheses:

Sub-hypothesis 4a: As GDP grows the HDI declines over time.

Sub-hypothesis 4b: As GDP grows levels of trust decline over time.

Sub-hypothesis 4c: As GDP grows the ecological capital decline over time.

Sub-hypothesis 4d: As GDP grows political rights declines over time.

Sub-hypothesis 4e: As GDP grows the CPI declines over time.

This study details some of these contradictions in a way that goes beyond the related measures of sustainability and welfare. As Brennan (2009) illustrates, the main problem with these measures is their assumption that economic, social, environmental, and political factors can be directly compared and indeed fused into a simple index. Brennan also shows that the attempt to statistically fuse economic, social and environmental factors is fraught with problems. Since this is usually done mechanically, it ignores the historical and heterogeneous nature of the processes involved, and is statistically problematic. A better way to compare economic, social, political and environmental processes is to follow Kapp's approach, which accounts for the qualitative differences among these factors.

If Hypotheses 4a, 4b and 4c are proven, then as global GDP increases over time, global ecological capital (biocapacity minus the ecological footprint), and social capital (trust) tend to decline. More importantly, there are likely to be structural linkages among these processes. This study investigates these likely contradictions in more detail, paying special attention to the degree to which they are structurally related, i.e., the decline in ecological capital is directly or indirectly caused by the expansion of GDP, and the decline in social trust is directly or indirectly caused by the increase in GDP (e.g., in neoliberal nations).

One way in which declining ecological capital can be directly linked to rising GDP is that the ecological resources are used in the generation of GDP but are not

included in the estimation of GDP. Similarly, the decline in social trust can be linked to rising GDP through, for instance, family and community resources moving from non-commodity market to being included in the market as GDP rises. This study also investigates the extent to which contradictions or non-contradictions operate at the global, regional, national, and sub-national levels.

One area that has been under-researched is the sub-national level. The works of Wish (1986) and Royuela, Romani, and Artis (2009) reveal how central this level is in the analysis of uneven development. Indeed, one of the present study's improvements is to include the work of Maddison in a sub-national level analysis.

A comprehensive global investigation of uneven performance necessarily assesses core elements at the sub-national level. This research includes this dimension as much as possible, paying special attention to interesting sub-national cases. For instance, some issues that have been identified in the literature as being of special interest are the differential performances of member nations/areas of Europe (e.g., Greece and Scandinavia); the importance of Kerala in India, given its much higher level of social progress compared with economic progress; the differential levels of trust in the northern US compared with those in the southern US; the high rates of growth in Western Australia compared with Tasmania and Victoria; and the high level of social trust in northern Italy compared with that in the south. In particular, the following question will be considered: What the mechanisms are operating at the sub-national level that bring about this differential long-wave performance?

A great deal of research indicates that social capital is directly related to equality of income distribution, health and child welfare, and low levels of crime (Putnam 2001). This also has relevance to regions that may be considered nations in the future, such as the EU, where trust is high in Scandinavian areas—where distributional inequality is relatively low—and much lower in the “neoliberal” United Kingdom, where inequality is higher (Uslaner 2002). The key to investigating the sub-national level is to examine economic, social, environmental and political performance in detail, using a methodology from the perspective of political economy.

Given the considerations mentioned, the model of sub-national variation is displayed in Figure 3.6. The model explains that sub-national variations in multiple factors increased from the period of the 1950s–1970s under Fordism to the period of

the 1980s–2000s under globalization. More specifically, this figure illustrates the change in the form of variations in one country as the institutions of globalization take place during the 1950s–2000s. For instance, variation in HDI for one country during the 1980s–2000s was greater than during the 1950s–2000s. All analyses of sub-national variations are discussed in Chapters 5 and 6.

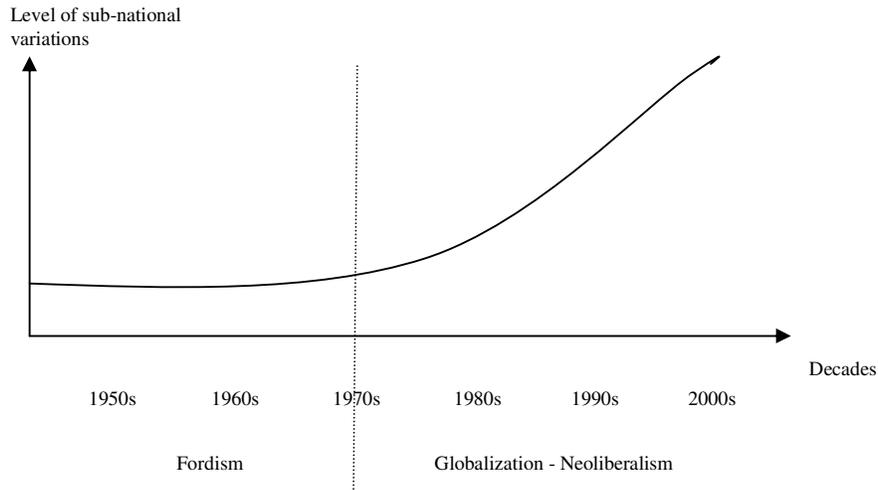


Figure 3.6 The Model of Sub-national Variations

This survey of the global, regional national and sub-national levels of GDP, trust, ecological capital and political variables isolates several major stylized facts at the sub-national level. Some of the most interesting and important sub-national asymmetries are comparatively examined, with a view to providing a richer understanding of the complex worldwide historic–institutional situation. Chapter 2 explores this issue in more detail, but it is anticipated that the following hypothesis will be a useful basis for isolating some core sub-national processes. Thus, Hypothesis 5 can be posited, as follows:

Hypothesis 5: From 1950 to 2010 sub-national variations in (a) GDP, (b) trust, (c) ecological footprint, and (d) political factors have been increasing.

This hypothesis examines the extent to which differences between the “highest level” sub-regions and “lowest level” sub-regions have increased over time. If this hypothesis is supported, it would indicate that core and periphery development at the sub-national level has been increasingly uneven. On the other hand, if the

hypothesis is not supported, then C-SP-P differentials are declining at this level. The factors behind these increasing or decreasing disparities, whichever may be the case, are especially important to the research.

3.3 Concluding Remarks

The current chapter discusses the core hypotheses of uneven development that are generated by the linkage of the issues and the principle of political economy. Five core hypotheses are posited in this chapter. These hypotheses capture five principles of political economy that are linked to uneven development.

In the current chapter, the first hypothesis captures the issue of uneven development linked to long-wave and transformational growth at the global, regional, national and sub-national levels. In the second hypothesis, the structural linkage of C-SP-P is posited to discuss the hegemony process in uneven development. The third hypothesis elaborates on the process of CCC for economic factors in the long wave that are linked to uneven development. More broadly, this hypothesis also includes the applying the process of CCC to analyze linkages between economic factors and non-economic factors (social, environmental, and political factors). The fourth hypothesis posits the process of contradiction in the interrelationships of economic, social, environmental and political factors during the long-wave. In the fifth hypothesis, the sub-national patterns linked to economic, social, environmental and political factors are considered concerning the long-term period.

This chapter suggests several relevant hypotheses issuing from the theories and principles of political economy. Building on these results, Chapter 4 elaborates on the connection between the research method, the relevant indices and the technical model. In particular, it discusses how the research methodology is used to investigate the hypotheses in this study.

Chapter 4

Research Method, Performance Indices, and Technical Model from the Perspective of Political Economies

4.1 Introduction

In Chapter 2 and Chapter 3, literature surveys are conducted to assess theories and hypotheses that are relevant to this study. Chapter 2 discusses the principles of political economy that are pertinent to the research problems, with special reference to literature that considered performance at the sub-national level. Chapter 3 emphasizes the development of hypotheses that are linked to the research of uneven development at global, regional, national and sub-national levels.

The goal of the current chapter is to construct a research methodology that is appropriate to the theoretical framework, the available data, and further analysis of uneven development. This chapter also emphasizes various indices of global, regional, national, and sub-national performance, with respect to economic, social, environmental, and political factors. Using a SWOT analysis, this study identifies the characteristics of each performance index in terms of data input, methodology, technical attributes, and outcomes.

This chapter has four main parts, which describe the links between theory, the research method, the available data, and the technical model used in this study. The first part of the chapter discusses research methodology and describes six important elements in the process of data analysis, namely, geography, technical factors, principles of political economy, method, type of data, and data limitations. The second part presents regional perspectives to clarify the geographical dimension being analyzed in the study. The third part investigates socioeconomic performance indices of various factors, namely, economic, social, environmental, and political factors. A survey of the literature of the performance indices of multiple factors is conducted.

To elaborate these indices, this chapter discusses the selection process used to generate relevant selected indices. By use of a pre-identification model, a SWOT analysis, and theoretical testing, this chapter identifies several major indices that suit the research objectives and theories. Technically, in the fourth part, this study proposes an original model of the stylized fact, called “the stylized-fact– roulette-model of political

economy” (SFR). Moreover, the regions being analyzed and technical calculations being used are specified to aid the data analysis and results discussion.

The rest of the present chapter is arranged as follows. Section 4.2 suggests a research methodology. Section 4.3 comprehensively discusses terms of regional dimensions that are investigated in the research method. Section 4.4 presents multiple performance analyses and is divided into seven sub-sections. The sub-section 4.4.1 discusses backgrounds of some performance indices of multiple factors. Section 4.4.2 proposes the selection stages of indices to generate several relevant indices for this study. Sub-section 4.4.3 shows some indices from the literature review survey. Sub-section 4.4.4 displays the pre-identification stage for selecting indices. Sub-section 4.4.5 describes the selection of indices through the SWOT analysis. In Sub-section 4.4.6, selected indices are scrutinized by theoretical framework testing to generate relevant selected indices. Sub-section 4.4.7 presents the overview of relevant selected indices. In Section 4.5, this research method is simplified by a specific model that is formed by the SFR model of political economy. Section 4.6 explains the role of the SFR model, which is applied in later chapters. Lastly, several conclusions are drawn from these sections.

4.2 Research Methodology

Methodologically, this study is interested in six elements. First, from a geographic standpoint, this study seeks to comprehend the patterns of long-wave motion through complex historical phases of transformation. This can only be satisfactorily carried out when global, regional, national, and sub-national trends are differentiated. No serious view of uneven worldwide development can ignore complex core-periphery-semi-periphery relationships at these four geographic levels.

Table 4.1 The Six Elements of the Uneven Development Research Method

	1.Geography	2.Dimensions	3.Data, etc.	4.Principles	5.Methods	6.Data Limitations
A	Global	Economic	GDP	Uneven Development and Long wave	Maddison [History, Phases]	Multiple Proxies of factors
B	Regions/ Continents	Social	Trust, HDI	C-P-SP	Wallerstein [C-P-SP, Hegemony]	Incommensurable
C	Nations	Environmental	Ecological Footprint, Biocapacity	CCC	Kaldor, Myrdal, Ocampo and Vos [Technical]	Heterogeneous
D	Sub-nations	Political	Political Rights, Civil Liberties, Corruption Perception Index	Contradiction	O’Hara, [Principles of political economy, LW]	Overlapping Time periods

Source: This table is adapted from the author’s candidacy paper.

Second, this study assesses more than economic factors to develop a holistic analysis of how the economic patterns link to or differ from social, environmental, and political patterns. Many scholars have tried to fuse these four dimensions into a single index (e.g., genuine performance index), but the work of Brennan (2009) has clearly shown this to be an unsatisfactory approach. As previously mentioned, drawing on the work of K.W. Kapp, this study highlights the heterogeneous nature of the dimensions and the need to embed history and complexity into the analysis.

Third, this study uses an array of statistics and data to illustrate the four main dimensions, namely, economic, social, environmental, and political. The discussion below delineates the large set of indicators that are used. At the economic level—if indeed such an independent factor exists—this study uses rates and levels of GDP per capita but, where necessary and possible, these are supplemented with components of GDP such as investment and consumption (also linked to net exports). For social data, trust and HDI are the primary indices, but numerous other sources and indices are utilized as well. For environmental data, the ecological footprint and biocapacity are primary, but these are also supplemented by an array of other sources as required. In the political area, the indices of “political freedom” (being a specific form of political rights and civil liberties) and corruption (where familial, friendship, or tribal capital might be

greater than conventional social capital) are used, along with other sources. While 1950–2010 is the period under consideration, many gaps and other problems arise, especially since the WDI, HDI, ecological footprint, political freedom, and corruption data are not always available for this period as a whole.

In terms of general methods, this study is influenced by the work of Angus Maddison, whose path-breaking analysis of the phases of capitalist development and collections of economic data going back to AD 1000 have given the study of economic history much more explanatory power than was previously possible. However, this study seeks to go beyond Maddison by adding social, environmental, and political data, as well as an analysis at the sub-national level. This study is limited to the period 1950–2010, since that timeframe likely encompasses the start of a long-wave upswing in the 1950s and a downswing (in the West) commencing in the 1970s and extending to the present. That period also encompasses the astounding industrialization process in China and other parts of Asia in more recent decades.

This study also incorporates Immanuel Wallerstein's categories of core, semi-periphery, and periphery, or at least it starts with these simple categories, for the purpose of being specific and paying attention to the structural elements linking the world's regions, continents, nations, and sub-nations. Wallerstein's perspective is also useful for comprehending the concept of hegemony, including the power relations that evolve between nations and regions vis-à-vis commerce, finance, production, and military activities.

Phillip O'Hara's principles of political economy are used in this study as a way of developing operational hypotheses applicable to the four main regions. Historical specificity is a paramount principle, especially when linked to a non-deterministic analysis of long waves through successive decades of growth and decline. Circular and cumulative causation are used in order to examine the statistics that are used, first, to show the interaction between these causative factors and the need for a holistic study and, second, to illustrate how factors often tend to increase in magnitude as growth rises or declines over time. The principle of contradiction helps the formulation of hypotheses and the process of historical investigation by highlighting the fact that often the economic, social, political, and environmental data move in different directions in a

structural relationship. In other words, one way of promoting economic growth is to reduce (use) the stock of ecological resources or to modify social relationships (household production, women's work, enjoyment).

4.3 Regional and National Perspectives

This section clarifies the definitions of region that determine the primary geographical areas in this study. Eight regions are investigated in terms of economic, social, environmental and political factors and the principles of political economy. These groups are Asia, Western Europe, North America, Oceania and the Pacific, Eastern Europe, Latin America and the Caribbean (LACA), the Middle East and North Africa (MENA), and Sub-Saharan Africa (SSA).

This study first considers Asia, the largest continent in the world. According to the National Geographic Society (2010), Asia has the Suez Canal as its western boundary and the Pacific Ocean as its eastern boundary; the Caucasus Mountains and Arctic Ocean form its northern boundary and the Indian Ocean its southern boundary. The United Nations (2011) states that Asia consists of 50 countries, which are divided into five sub-regions: Central Asia, Eastern Asia, Southern Asia, South-Eastern Asia, and Western Asia. Central Asia comprises the former countries of the Soviet Union that are positioned in the near Caucasus Mountains and Black Sea. Eastern Asia contains countries that stretch from the Arctic Sea and the Ural Mountains in the north to Southern China and the East China Sea in the south. Southern Asia includes countries from Afghanistan in the west to Bangladesh in the east and from Nepal in the north to the Maldives in the south. South-Eastern Asia includes a group of countries that span the Malaya Peninsula and the South China Sea in the north to the Pacific Ocean in the south and from the Indian Ocean in the west to Papua Island in the east (excluding Papua New Guinea). Lastly, Western Asia denotes a group of countries from Afghanistan in the east to the Suez Canal in the west and from the Black Sea in the north to the Arabian Sea in the south.

Table 4.2 Definitions of the Asian Region

	The United Nations	The World Bank	The CIA World Fact Book	This Study
General	Central Asia (formerly the Soviet Union, e.g., Kazakhstan, Tajikistan); Western Asia (most Middle Eastern countries); Eastern Asia (e.g., Japan, China, Korea Rep); Southern Asia (e.g., India, Pakistan), South-Eastern Asia (e.g., Thailand, Indonesia, Malaysia).	Asia-Pacific region, including Asia (without Middle Eastern countries) and the Pacific (Australia, New Zealand and most Pacific-Oceania countries [e.g., Papua New Guinea, Fiji]). The Asian region is classified into three parts: East and Southeast Asia, South Asia and the Pacific.	East and Southeast Asia (e.g., Japan, China, Thailand Indonesia), South Asia (e.g., India, Pakistan) and Central Asia (e.g., Kazakhstan, Tajikistan, Turkmenistan). The CIA also includes part of Russia as the Asian region.	Defines Asia as a region that comprises East and Southeast Asia (e.g., Japan, China, Thailand, and Indonesia), South Asia (e.g., India, Pakistan) and Central Asia (e.g., Kazakhstan, Tajikistan, Turkmenistan).
Specific				
Northern boundary	The Caucasus Mountains and the Arctic Sea	The Caucasus Mountains and the Arctic Sea	Part of Russia	The Caucasus Mountains and the Arctic Sea
Southern boundary	The Indian Ocean	Australia and New Zealand	The Indian Ocean	The Indian Ocean
Eastern boundary	The Pacific Ocean	The Pacific Ocean	The Pacific Ocean	Papua Island (excluding Papua New Guinea) and The Pacific Ocean
Western boundary	The Suez Canal (the Red Sea)	Afghanistan	Afghanistan, Kazakhstan and Turkmenistan	Afghanistan, Kazakhstan and Turkmenistan
Emphasis	Geographical aspect	Economic aspect	-	Socioeconomic and political aspects; core, semi-periphery and periphery

Source: United Nations (2011), World Bank (2010), CIA World Fact Book (2010)

This study defines Asia slightly differently from the above definition. Specifically, Asia is taken to be the region that stretches from Central Asia (Afghanistan and some of the former Soviet Union, e.g., Kazakhstan, Tajikistan, Turkmenistan) in the west to the Pacific Ocean and Papua Island (excluding Papua New Guinea) in the east and from the Ural mountains and the Arctic Sea in the north to the Indian Ocean in the south. This definition is based upon literature that holds that the Middle East is an

isolated region that is separate from Asia (e.g., World Bank 2010, CIA World Fact Book 2010). Table 4.2 shows the definition of the Asian region in this study and other sources.

In the Asian region, this study also emphasizes the relationship of core, semi-periphery and periphery (C-SP-P). Japan is classified as a core country. China and some newly industrialized countries such as the Korean Republic, Singapore, and Taiwan are categorized as semi-peripheral countries, which are developing into a group of new core countries. Most countries in the south–eastern part of Asia are classified as semi-peripheral, such as Thailand, Indonesia, and Malaysia. Meanwhile, the southern area is occupied by semi-peripheral countries (e.g., India, Pakistan) and peripheral countries (e.g., Nepal, Bhutan).

The second region is Western Europe, which is defined on the basis of a variety of terms. This study defines this region mostly through the combination of geographical and political aspects. In terms of geography, the United Nations (2011) classifies Western Europe as part of the European region alongside Northern Europe, Southern Europe, and Eastern Europe, which simply indicates the geographical fact that Western Europe is a region located on the western side of the European region. In political terms, Western Europe is defined as a group of countries in Europe that had no affiliation with the Soviet Union during the Cold War of the 1960s–1980s (CIA World Fact Book 2010). Currently, the World Bank (2010) categorizes the European region from an economic perspective, dividing this region into two areas. These are, first, the Euro zone (European countries that use the Euro currency) and, secondly, Europe and Central Asia (a group of countries that consist of non-Euro countries and some countries in Central Asia, such as Kazakhstan, Tajikistan, Turkmenistan, Kyrgyzstan, and Armenia).

Table 4.3 Definitions of the Western European Region

	The United Nations	The World Bank	The CIA World Fact Book	This Study
General	Nine countries in the western part of the European continent (e.g., France, Germany, Austria)	The collection of Euro member countries	The collection of countries that has no affiliation with the former Soviet Union	A group of countries that includes the western part, northern part and southern part of the European region
Specific				

Categorization of the European Continent	Four parts: Western Europe, Northern Europe, Southern Europe and Eastern Europe	Two parts, including the European Union and non-European Union plus Central Asia	-	Divides European continents into two parts, including 'Western Europe' (western part, northern part [Scandinavian], southern part of European continent) and Eastern Europe
Emphasis	Geographical aspect	Economic aspects	Political aspects	Socioeconomic and political aspects; core, semi-periphery, and periphery relationships

Source: United Nations (2011), World Bank (2010), CIA World Fact Book (2010)

In this study, Western Europe refers to a group of countries in the western, southern and northern parts of the European continent. Table 4.3 compares the definitions of Western Europe used in this study and other sources. The countries in the western, southern, and northern areas contain relatively similar socioeconomic institutions, although the western and northern areas tend to outperform the southern area (Eichengreen 2006). The trends of socioeconomic performance in Western Europe are differentiated from those in Eastern Europe. This study's definition also takes into account the relationship of C-SP-P among countries in this region. Most Western European countries are classified as core. For instance, France, Germany, and the United Kingdom are classified as a group of core countries in the west, while Spain, Italy and Portugal are countries in the south.

The third region is North America, which is also defined in various ways. North America spans the Arctic Ocean in the north to South American and Caribbean countries in the south and from the Pacific Ocean in the west to the Atlantic Ocean in the east (National Geographic Society 2010). Similarly, the CIA (2010) defines North America as a region that includes the United States, Canada, and Mexico. However, other sources claim that Mexico should not be included in this region. The United Nations (2010) defines North America as consisting of five countries, including the United States, Canada, Bermuda, Saint Pierre and Miquelon, and Greenland. The World Bank (2010) classifies Mexico as part of Latin America. This is mainly because it emphasizes economic aspects as the basis for classification.

Table 4.4 Definitions of the North American Region

	The United Nations	The World Bank	The CIA World Fact Book	This Study
General	A region that consists of five countries: the US, Canada, Bermuda, Saint Pierre and Miquelon, and Greenland	A region that includes two core countries: the US and Canada	The collection of countries from Greenland in the north to Mexico in the south	A region that consists of five countries: the US, Canada, Bermuda, Saint Pierre and Miquelon, and Greenland
Specific				
Categorization	Four parts, including North America (e.g., the US, Canada), the Caribbean (e.g., Cuba, Jamaica), Central America (e.g., Mexico, Honduras) and South America (e.g., Argentina, Brazil, Uruguay)	The US and Canada is part of Asia and the Pacific region.	Three parts: North America (e.g., the US, Canada, Mexico and Greenland), the Caribbean (e.g., Honduras, Cuba, Jamaica); LACA (e.g., Argentina, Brazil, Chile)	North America (the US, Canada, Bermuda, Saint Pierre and Greenland) and LACA (e.g., Mexico, Argentina, Cuba, Brazil); classifies Mexico into part of LACA
Emphasis	Geographical aspects	Economic aspects	Political aspects	Socioeconomic and political aspects; core, semi-periphery and periphery relationships

Source: United Nations (2011), World Bank (2010), CIA World Fact Book (2010)

In terms of C-SP-P, North America includes two core countries (i.e., the US and Canada), semi-peripheral countries (i.e., Bermuda, Greenland), and a peripheral country (i.e., Saint Pierre and Miquelon). Unlike the United Nations, this study divides the American continent into two areas: North America and Latin America and the Caribbean (LACA). The difference may be because the United Nations emphasizes geographical over socioeconomic factors, and, as a result divides the American continent into four parts, namely North America, Central America, the Caribbean and South America.

Eastern Europe is the fourth region that literature categorizes in numerous ways. In geographical terms, the United Nations (2011) deems Eastern Europe to be a region located in the eastern part of the European continent. Former Eastern Bloc countries occupy most of this region, from the Czech Republic to the Russian Federation. It is, however, noteworthy that the United Nations classifies the former Yugoslavia (e.g., Bosnia, Croatia, and Slovenia) into Southern Europe. In geopolitical terms, the CIA

(2010) divides Central-Eastern Europe into four parts: Central Europe (e.g., the Czech Republic, Slovakia, Poland, and Slovenia), Eastern Europe (e.g., Belarus, Estonia, Lithuania, and Latvia), Southeastern Europe (e.g., Bosnia, Croatia, Macedonia, Serbia, Montenegro, Bulgaria, Romania, and Albania), and the former Soviet Union (e.g., the Russian Federation, Ukraine, and Georgia). In economic terms, the World Bank divides European countries into two groups: European Union and non-European Union (plus Central Asia). This indicates a focus on current economic conditions rather than a historical-economic perspective, in that several former Eastern Bloc countries are now members of the European Union.

Building on these perspectives, this study posits a particular definition of Eastern Europe that is associated with the research objective. This study defines Eastern Europe as a collection of former Eastern Bloc countries, including former Yugoslavia. Table 4.5 compares this study’s definitions of Eastern Europe with those used in other sources. One reason this study views the former Eastern Bloc from a historical-economic perspective is that this region experienced similar long-wave conditions such as a long-wave upswing during the 1950s–1970s, a downswing during the 1980s–1990s, and an upswing in the 2000s.

Most countries in this region are classified as semi-peripheral, excluding the Russian Federation, which is deemed to be a core country in this region. Romania, Bulgaria, Poland, Czech Republic, and Hungary are categorized as semi-peripheral countries. Meanwhile, Slovenia is a new country that develops from a peripheral to a semi-peripheral country.

Table 4.5 Definitions of the Eastern European Region

	The United Nations	The World Bank	The CIA World Fact Book	This Study
General	Consists of former Eastern Bloc (excluding former Yugoslavia)	Does not specifically identify	Does not specifically identify	The collection of countries that include former Eastern Bloc countries including former Yugoslavia
Specific				
Categorization of European Continent	Four parts: Western Europe, Northern Europe, Southern Europe and Eastern Europe	Two parts: European Union and non-European Union (plus Central Asia)	Four parts: Central Europe, Eastern Europe, Southeastern Europe, the former Soviet Union	Two parts: ‘Western Europe’ (western part, northern part [Scandinavian], and southern part of European continent)

			Eastern Europe consists of six countries (e.g., Belarus, Latvia, Estonia, Lithuania)	and Eastern Europe
Emphasis	Geographical aspects	Economic aspects	Political aspects	Socioeconomic and political aspects; core, semi-periphery and periphery relationships

Source: United Nations (2011), World Bank (2010), CIA World Fact Book (2010)

The fifth region in this study is Latin America and the Caribbean (LACA). Much prior literature divides LACA into three areas with divergent reasons for this division. For instance, the United Nations (2011) proposes that LACA is a region that comprises countries in the Caribbean Ocean (e.g., Cuba, Jamaica, and Costa Rica), Central America (e.g., Mexico, Honduras, and Panama), and Southern America (e.g., Argentina, Brazil, and Chile). The World Bank (2010) defines LACA as a region that spreads out from Mexico in the center to the southern American continent, and includes several countries in the Caribbean Ocean. By way of contrast, the CIA (2010) does not specify a definition for LACA; rather, it categorizes the American continent into three parts: North America, Central America, and South America. From another perspective, Latin America has been used to identify a part of the American continent in which most societies use the Spanish or the Portuguese language (Colburn 2002).

Table 4.6 Definitions of the LACA Region

	The United Nations	The World Bank	The CIA World Fact Book	This Study
General	A region that consists of countries in the Caribbean Ocean, Central America and Southern America	A region that spreads out from Central America to Southern America and includes several countries in the Caribbean Ocean	Does not specifically identify	A region that consists of countries in the Caribbean Ocean, Central America, and South America
Specific				
Categorization of the American continent	Four parts: North America (e.g., the US, Canada), the Caribbean (e.g. Cuba, Jamaica), Central America (e.g., Mexico, Honduras) and	Two groups: Asia-Pacific and LACA.	Three parts: North America (e.g., the US, Canada, Mexico, and Greenland), the Caribbean (e.g., Honduras, Cuba, Jamaica), and	Two parts: North America (the US, Canada, Bermuda, Saint Pierre and Miquelon, and Greenland) and

	South America (e.g., Argentina, Brazil and Chile)		LACA (e.g., Argentina, Brazil, Chile)	LACA (e.g., Mexico, Argentina, Cuba, Brazil); classifies Mexico as part of LACA
Emphasis	Geographical aspects	Economic aspects	Political aspects	Socioeconomic and political aspects; core, semi- periphery and periphery relationships

Source: United Nations (2011), World Bank (2010), CIA World Fact Book (2010)

In this study, LACA refers to a region that consists of countries in Central America (e.g., Mexico, Honduras, and Panama), the Caribbean Ocean (e.g., Cuba, Jamaica, Costa Rica, and Trinidad and Tobago) and Southern America (e.g., Argentina, Brazil, Chile, and Uruguay). Table 4.6 illustrates that this study utilizes a combination of the definition of the LACA region from the United Nations and the World Bank. One crucial point is that this study includes Mexico as part of LACA, in contrast to the CIA (2010) and Colburn (2002), who categorize it as part of North America.

Most LACA countries are classified into semi-peripheral countries. For instance, Argentina, Chile, and Mexico are a group of semi-peripheral countries. Some Caribbean countries such as Cuba, Costa Rica, and Trinidad and Tobago, as well as Brazil, Paraguay, Uruguay, and Venezuela in South America, are also categorized as semi-peripheral countries. Meanwhile, Haiti, Nicaragua, and Guatemala are classified as peripheral countries.

The sixth region is Oceania and the Pacific. Geographically, the United Nations (2011) posits that this region comprises four sub-regions: Australia and New Zealand, Melanesia (e.g., Fiji, New Caledonia, Papua New Guinea, and Vanuatu), Micronesia (e.g., Guam, Kiribati, and the Marshall Islands) and Polynesia (e.g., American Samoa, Cook Islands, Samoa, and Tonga). The CIA differs slightly from the UN, considering Oceania and the Pacific as a region that includes Australia, New Zealand, and several countries in the Pacific Ocean – without Papua New Guinea. In contrast, the World Bank has no specified definition of Oceania and the Pacific, preferring to categorize most countries in this region under the category East Asia and the Pacific.

Table 4.7 Definitions of Oceania and the Pacific Region

	The United Nations	The World Bank	The CIA World Fact Book	This Study
General	A region that comprises Australia and New Zealand, Melanesia, Micronesia and Polynesia	Does not specifically identify	A region that includes Australia, New Zealand and several countries in the Pacific	A region that includes Australia and New Zealand, Melanesia, Micronesia, Polynesia.
Specific				
Categorization	Australia and New Zealand, Melanesia (e.g., Fiji, Papua New Guinea and Vanuatu), Micronesia (e.g., Guam, Kiribati and Marshall Island), Polynesia (e.g., Cook Island, Tonga)	Most Oceania and Pacific countries are included into East Asia and the Pacific region	Excluding Papua New Guinea	Australia and New Zealand, Melanesia (e.g., Fiji, Papua New Guinea, and Vanuatu), Micronesia (e.g., Guam, Kiribati, and Marshall Island), Polynesia (e.g., Cook Island, Tonga)
Emphasis	Geographical aspects	Economic aspects	Political aspects	Socioeconomic and political aspects; core, semi-periphery and periphery relationships

Source: United Nations (2011), World Bank (2010), CIA World Fact Book (2010)

Table 4.7 summarizes the definition of Oceania and the Pacific used in this study. Based on the C-SP-P, Australia and New Zealand are deemed core countries, while Fiji, Vanuatu, and Papua New Guinea are categorized as semi-peripheral countries. Micronesian and Polynesian countries are classified as peripheral.

The seventh region is the Middle East and North Africa (MENA). MENA refers to a region that stretches from several countries in northwestern Africa to southwest Asia (World Bank 2010). The United Nations and the CIA do not specify a grouping for Arabia and North Africa. The United Nations (2011) categorizes Arab nations as part of Asia, namely Western Asia, which is separated from Northern Africa. The CIA (2010) also distinguishes between the Middle East and North Africa, with no separate categories in the African continent.

Table 4.8 Definitions of the MENA Region

	The United Nations	The World Bank	The CIA World Fact Book	This Study
General	Does not specifically identify	A region that spreads out from northwestern Africa to southwestern Asia	Does not specifically identify	A region from northwestern Africa to southwestern Asia
Specific				
Categorization	The Middle East is part of Asia, designated Western Asia; North Africa is part of Africa, which is separated from the Middle East	Classifies Middle Eastern and North African countries into a group which is called MENA (e.g., Iran, Saudi Arabia, Yemen, Egypt, Morocco)	The Middle East is a specific region; North Africa is part of Africa (the CIA has no specific categorization for the African continent)	Middle Eastern and North African countries comprised a group called MENA (e.g., Iran, Saudi Arabia, Yemen, Egypt, Morocco)
Emphasis	Geographical aspects	Economic aspects	Political aspects	Socioeconomic aspects; core, semi-periphery and periphery relationships

Source: United Nations (2011), World Bank (2010), CIA World Fact Book (2010)

Table 4.8 displays this study's definition of MENA compared to that of other sources. For this study, MENA extends from Morocco in northwestern Africa to Iran in the east of the Middle East, and from Yemen in the south of the Middle East to Syria in the north of the Middle East. In North Africa, MENA incorporates Sudan in southern North Africa to Tunisia and Egypt in northern North Africa.

The relationship of C-SP-P among countries in this region is worth noting. At the global level, most countries in MENA are typically classified as semi-periphery and periphery. For instance, Saudi Arabia, Iran, and Egypt form a group of semi-peripheral countries. Israel, Bahrain, and Qatar are also classified as semi-peripheral countries. Morocco, Algeria, and Tunisia are some of the semi-peripheral countries in North Africa, while Jordan, Syria, and Iraq are categorized as semi-peripheral countries in the Middle East. Lastly, Sudan and Yemen are classified as peripheral countries.

The last region in this section is Sub-Saharan Africa (SSA). In terms of geographical aspects, the United Nations (2010) gives no specific definition for SSA. Rather, it divides the African continent into the five sub-regions of Eastern Africa,

Middle Africa, Northern Africa, Southern Africa, and Western Africa. The CIA (2010) likewise does not use the term Sub-Saharan Africa (SSA), preferring rather to treat the African continent as a single entity. However, the World Bank (2010) does use the acronym SSA to designate the vast region south of the Sahara desert. Collins and Burns (2007) also describe SSA, explaining that it is a region that is occupied by many “black populations.”

In this study, SSA is the region that extends from the southern Sahara desert to South Africa, including southwestern Africa (e.g., Gambia, Ghana, Nigeria, and Togo), southeastern Africa (e.g., Kenya, Mauritius, Mozambique, and Seychelles), central Africa (e.g., Angola, Cameroon, Congo, and Gabon) and southern Africa (e.g., South Africa, Botswana, Lesotho, and Swaziland).

This definition is appropriate to investigate the C-SP-P in this region. Globally, most countries in SSA are categorized as part of the periphery, but this study identifies some particular SSA countries can be grouped with the semi-periphery. For instance, South Africa and Botswana can be classified as among of semi-peripheral countries in this region. Gabon, Ghana, and Gambia are also categorized as semi-peripheral countries. Some archipelago countries, such as the Seychelles and Mauritius are developing significantly in income growth per capita so that they can be grouped in the semi-periphery. Finally, some countries are classified in the periphery in this region, including Ethiopia, Kenya, Somalia, Congo, Togo, Chad, Lesotho, Nigeria, and Swaziland.

Table 4.9 Definitions of the SSA Region

	The United Nations	The World Bank	The CIA World Fact Book	This Study
General	Does not specifically identify	A region that extends out from the south of the Sahara desert to southern Africa	Does not specifically identify	A vast region from the south of the Sahara desert to southern Africa
Specific				
Categorization of African Continent	Five sub-regions: Northern Africa (e.g., Egypt, Libya, Tunisia), Western Africa (e.g., Gambia, Ghana, Nigeria and Togo), Middle Africa (e.g., Angola, Cameroon, Congo, and Chad),	Classifies Middle East and North African countries into a group which is called MENA (e.g., Iran, Saudi Arabia, Yemen, Egypt, Morocco); Designates the collection of	No categorization	Divides into two parts: North Africa (included in the term of MENA) and Sub-Saharan Africa (SSA); Categorizes SSA into five sub-regions: Western

	Eastern Africa (e.g., Kenya, Ethiopia, Mauritius, and Seychelles), Southern Africa	countries in the southern Sahara desert as SSA		Africa (e.g., Gambia, Ghana, Nigeria, and Togo), Middle Africa (e.g., Angola, Cameroon, Congo, and Chad), Eastern Africa (e.g., Kenya, Ethiopia, Mauritius, and the Seychelles), and Southern Africa (e.g., South Africa, Lesotho, Botswana, and Swaziland)
Emphasis	Geographical aspects	Economic aspects	Political aspects	Socioeconomic aspects; core, semi-periphery and periphery relationships

Source: United Nations (2011), World Bank (2010), CIA World Fact Book (2010)

4.4 Performance Indices

4.4.1 Survey of the Literature

This section discusses the background for multiple performance analyses. It identifies several bases for this discourse. Many significant scholars use a variety of methodologies to assess the pattern of socioeconomic performance, suggesting indices that are proxies of multiple factors that capture the trends of economic, social, environmental, and political factors. This review identifies indices that are used later in this study.

First, in terms of economic factors, several previous researchers have examined the evolution of performance trends over time. Maddison (1983) investigates the national income per capita gap between advanced and developing countries from 1700 to 1980. Summers and Heston (1991) use the Penn World Table to compare the time series of national income among countries. In a later study, Maddison (2007) presents the worldwide pattern of economic factors from 1800 to 2003, including gross domestic product (GDP), as they are linked to world population, world energy consumption, and global pollution.

Innovation is connected to institutional transformation, and some scholars consider it be a key driver for socioeconomic development. To a greater or lesser extent, the work of those scholars is informed by Schumpeter's concept of business cycle. Barro (2001) posits that the level of education determines the level of income growth per capita. Barro also emphasizes the relationship between the level of education and the use of technology. He suggests that the combination of these factors generates income growth per capita. Desai *et al.* (2001) constructs an indicator to measure the level of technological understanding for society, which he calls the technology achievement index (TAI). O'Hara (2001a, 2007a) investigates how the structural linkages between GDP growth per capita and the TAI reveal the trends of socioeconomic development at the global, regional, national, and sub-national levels.

Several organizations construct a range of indices to identify the structural linkages between productivity and socioeconomic development. The World Economic Forum (WEF) (2001) uses the global competitiveness index (GCI) to measure trends related to international competitiveness among nations. The GCI emphasizes the role of innovation in promoting productivity, which, among other things, generates economic growth through exports. To create the GCI, the WEF utilizes the network readiness index (NRI), which assesses a community's level of preparedness for connecting to the global network (Kirkman *et al.* 2001; Dutta and Mia 2009). Robert Huggins Associates (2002) determines competitiveness in the accumulation of knowledge, which potentially propels long-term socioeconomic performance using the knowledge competitiveness index (KCI).

Economic freedom and globalization are two other central issues linked to global economic development. Several institutes propose indices that measure economic integration, global investment, and international political engagement. A.T. Kearney Corporation (2003) provides the globalization index (GI), which captures the pattern of economic integration among countries. It includes economic variables such as portfolio capital flow, number of internet users and foreign direct investment (FDI). That company also investigates future prospects of international investment, as measured by the foreign direct investment confidence index (FDIC). Axel Dreher (2005) suggests that the GI is not comprehensive enough to illustrate the linkages between global interaction

and information flow that contribute to economic growth at differing levels. Partly in response to this, Dreher uses the Konjunkturforschungsstelle (KOF) index of globalization, which considers the social and political aspects of economic integration in greater depth than previous globalization indices. Lockwood and Redoano (2005) present the globalization index-center for study globalization and regionalization (CSGR), another index that views globalization along economic, social and political lines.

Globalization can stimulate the integration of economic activities that could also possibly lead to economic freedom in many countries. The Heritage Foundation (1995) proposes the economic freedom index (EFI), which is useful for identifying the level of freedom in economic activities, such as business, trade and investment. The Fraser Institute (1996) provides another index, known as the economic freedom of the world index (EFW). This index measures economic freedom through socioeconomic factors such as trade, investment, government policies, and legal structures.

Previous studies typically employ both the EFI and the EFW to examine the linkages between economic and non-economic factors. In the era of globalization, EFI and EFW are useful for investigating these linkages, which determine economic growth (Pitlik 2002; Weede and Kampf 2002; Gwartney, Halcombe, and Lawson 2004; Weede 2006). Both of these indices can also be linked to income inequality (Berggren 1999; Berggren and Jordahl 2005). In addition, several researchers find links between economic freedom and environmental factors, and economic freedom and political factors (Carlsson and Lundstrom 2001; Lundstrom 2002, 2005).

In addition to economic indices, researchers have developed social indices to capture various trends that occur within social factors. Inspired by Adam Smith's Theory of Moral Sentiment, Donaldson (2001) makes a case for the moral and ethical foundation of all economic activities. Meanwhile, O'Connor (1994) recognizes the contradiction between economic progress and social factors under capitalist economies. Out of these perspectives, which highlight the relevance of social factors, several social indices have arisen.

Social factors are typically classified into social capital and human capital, and each potentially links to other factors in the global system (Zak and Knack 2001;

Ahlerup, Olsson, and Yanagizawa 2009). Paxton (2002) defines social capital as the stock of social institutions that experience interrelationships in a given time period. Social capital may also relate to those elements in a society that lead to a sense of faith within individuals, known as social trust. Empirically, Paxton (2002) utilizes World Value Surveys (WVS) data to measure the level of trust in various countries. O'Hara (2006a, 2007a, 2008b) makes a novel investigation into the pattern of economic growth that is linked to social trust, in order to understand uneven development among regions and nations.

Human capital is a social factor that contributes to the stock of human institutions, such as knowledge, education, and health (Paxton 2002). From a holistic point of view, human capital is most likely a key driver of the structural linkages that exist among multiple factors. As Kaldor (1972) and O'Hara (2006a) demonstrate, labor and innovation are elements of human capital, both of which are stimulated by investment that can propel productivity through dynamic circularity and cumulative causation. The United Nations Development Program's (UNDP) (1990) human development index (HDI) is major index of human capital. HDI addresses standard of living and takes several human institutions, such as education and health, into consideration.

Due to its widespread use in prior studies, HDI is useful for examining performance trends in human development. In terms of global and regional levels, the patterns of HDI indicate the unevenness of human development among nations (O'Hara 2001a, 2007a, 2008a; Blanchflower and Oswald 2005; Leigh and Wolfers 2005). This index also potentially indicates the inequality problems that could occur at different levels and that could be brought about by hegemony (Anand and Ravallion 1993; Hicks 1997; O'Hara 2007a). However, a number of scholars have also criticized HDI for its poor ability to predict future development (Ivanova, Arcelus, and Srinivasan 1999). Building on critique of Ivanova *et al.*, other scholars adjust the function and refine the methodology of HDI (Cahill 2005; Ranis, Stewart, and Samman 2010)

Recently, the discourse of gender has become central to discussion about HDI, as gender issues are taken to be a component of the stock of human capital. The UNDP (1995) publishes the gender-related development index (GDI) and the gender

empowerment measure (GEM) that measures the progress of gender-related development, linking gender to performance trends in human development. As Dijkstra and Hanmer (2000) suggest, gender inequality is one major gender aspect that should be investigated separately from the GDI. In responding to this limitation, Vanhanen (2010) proposes another version of the gender index, known as the gender weighted index of democratization (GWID). This index connects the existence of gender inequalities to levels of democracy. The GWID views aspects of gender inequality through a political lens, which, indeed, is a fruitful perspective from which to view trends in gender development.

Childhood development trends are another relevant issue related to social factors. The Save the Children (2000) publishes the *State of the World's Mother's* report that includes the mother index (MI). This unique index measures the condition of mothers and children among nations. It assesses health, education, political participation, infant mortality rates, and child health and safety. However, this index is somewhat limited because it does not span a time series and has a small coverage area.

Environmental issues also impact economic and social factors. Holistic perspectives suggest a complex interplay between environmental and socioeconomic factors, resulting in a variety of interdependencies during different historical periods (Veblen 1898a; Myrdal 1968; Kapp 1963). These interdependencies lead to structural linkages that stimulate endogenous processes, which generate either cumulative amplification or anomalies (Polanyi 1944; Kapp 1970; O'Hara 2001b, 2006a, 2008a). As a result, some scholars and organizations have developed environmental indices to capture heterogeneous ecological patterns.

Environmental indices can be classified into three types. The first type of environmental index measures the impact of human activity on the supply and demand of the stock of environmental capital. The Global Footprint Network produces the ecological footprint (EF) and biocapacity index (Wackernagel and Rees 1997). Biocapacity minus EF indicates the gap between the supply and the demand of the environmental stock, which is also known as ecological capital. The World Wide Fund for Nature (WWF) suggests using the living planet index (LPI) to measure the ecological footprint in global forests, populations of freshwater species and populations of marine

water species. The New Economic Foundation (2005) proposes the happy planet index (HPI) to measure the proportion of ecological capital required for human sustainability. As a composite index, the HPI addresses life expectancy, life satisfaction and ecological footprint.

Empirically, prior studies that relate to political economy typically employ EF, LPI, and HPI. O'Hara (2001a, 2007a, 2008a) investigates the long-term trends of environmental factors at differing levels, which are represented by the ecological footprint minus biocapacity and LPI. He does this in the context of long waves and contradiction principles. From the perspective of political economy, the global and regional pattern of EF, as the stock of environmental factors, has been examined by scholars such as Wackernagel *et al.* (1999, 2006); White (2007); Jorgenson and Burns (2007); Zhao, Hong, and Zhang (2008); Bagliani *et al.* (2008); and Hoekstra (2009). Several scholars use the LPI as a proxy for environmental factors in order to understand the demand for human activities that links to environmental reserves (McMichael and Powles 1999; Jenkins, Green, and Madden 2003; Loh *et al.* 2005; Bohringer and Jochem 2007). Furthermore, the HPI is also useful for describing the pattern of human responses to changes in the environmental stock, which is influenced by human activities and by the demands on environmental capital (Ng 2008; Abdallah, Thompson, and Marks 2008).

The second type of environmental index typically measures environmental sustainability. Samuel-Johnson and Esty (2000) propose the environmental sustainability index (ESI). Siche *et al.* (2008) suggests that the ESI assesses environmental stock that could be useful for further development. Nevertheless, Jha and Murty (2008) criticize the ESI, noting that it presents difficulties in identifying environmental degradation.

In order to supplement the ESI, Yale University proposes the environmental performance index (EPI), which considers performance according to the pattern of global, regional, and national performance trends for producing output that is characteristically generated by environmental stock. Both ESI and EPI use an identical methodology, but they have dissimilar perspectives: ESI focuses on the supply-side of environmental stock, whereas EPI typically emphasizes the demand made on environmental stock to produce output.

The third type of environmental index is primarily concerned with the physical aspects of environmental stock. The International Geosphere Biosphere Program/IGBP (1980) proposes the climate change index (CI), which examines the changes in climate by investigating trends in physical environmental factors such as global average temperature, levels of atmospheric carbon dioxide, and sea-levels. Empirically, Hansen *et al.* (1998) employs CI to investigate the regional pattern of climate change in the following areas: Oceania and the Pacific, Asia, and North America. The South Pacific Applied Geosciences Commission (1999) suggests the economic vulnerability index (EVI), which captures the potential vulnerability of environmental stock among regions and nations, based on factors such as earthquakes, winds, volcanoes, endemics, mining and sanitation. Schwing, Murphree, and Green (2002) present another physical index for the environment, which they call the northern oscillation index (NOI). This index uses the basic concept of CI to construct a particular climate index for the Northeast Pacific region.

In addition to environmental factors, political factors contribute to the structural linkages among multiple factors within an entire system. Political factors are defined as the stock of political aspects (e.g., civil liberties, government power, political rights, and political behaviors) that experience changes in their structures during a particular period. Some political economists, such as Trotsky (1931), Baran and Hobsbawm (1961), Amin (1974), Wallerstein (1974, 1987), and Frank (1992) consider that uneven in socioeconomic development is due to structural linkages between core and peripheral elements in the world system. The discourse of uneven development and the structural linkages of core and peripheral areas point to the existence of political factors.

The consideration of political factors leads to the development of political indices. The Freedom House proposes the Political Indicator (PI), which consists of the political rights (PR) and civil liberties (CL). This index focus on the freedom of citizens to participate politically and organizationally, i.e., the freedom to participate in the election process, the freedom to participate in political parties and the freedom to participate in choosing members of the legislature. Several studies reveal that the PI is useful to investigate political factors that are interrelated with other factors in society

(Helliwell 1994; Booth and Richard 1998; Dreher and Gassebner 2008; Armstrong 2011).

The World Bank Institute (1996) suggests other political indices, namely the Worldwide Governance Indicator (WGI), which, in turn, captures some political factors measured by indices such as the voice and accountability index (VAI), the political stability and absence of violence index (PSAVI), the governance effectiveness index (GEI), the regulatory quality index (RQI), the rule of law index (RLI) and the control corruption index (CCI). Kaufmann and Kraay (2008) argue the WGI is deficient as a tool for comparing the pattern of political factors across countries. In response to the weaknesses of the WGI, Thomas (2008) suggests that all sub-indices of the WGI be reconstructed so that each index not only measures government activities in a country but also enables a comparison of the performance among countries.

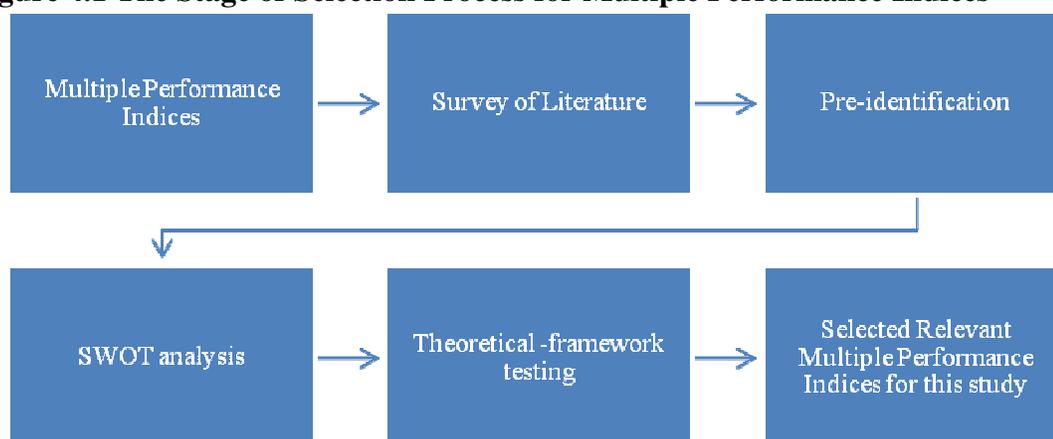
As noted previously, human behavior is a political aspect in that it influences governmental and civil policies (Smith 1759). Based on this perspective, corruption is a political factor, as it undermines of human behavior within a society. Transparency International (1995) proposes the corruption perception index (CPI) to measure and to compare the levels of corruption among countries. Some prior studies investigate the links between factors addressed by the CPI and other political factors, such as democracy, political rights, and civil liberties (Seligson 2002; Chowdury 2004; Canache and Allison 2005). The CPI is also related to economic trends (e.g., GDP growth per capita and investment), as indicated in several studies that have investigated the relationship of these factors (Sandholtz and Koetzle 2000; Habib and Zurawicki 2001; Graeff and Mehlkop 2003; Cole, Elliot, and Zhang 2009).

4.4.2 The Selection Process for Multiple Performance Indices

Having assessed several socioeconomic performance indices in the literature review, this section describes the process undertaken to select indices that are suitable for this study's analyses. The selection process slightly modifies the method of the identification of indices developed by the World Bank (Kaufmann, Kraay, and Mastruzzi 2009), resulting in four main stages in the selection process. The first stage is a summary of the relevant literature. This is followed by the second stage, which examines some indices

according to the following aspects: dimension, data source, data provider, website, data source public access, time series, and area of coverage and frequency. The third stage entails a SWOT analysis that investigates the indices' strengths, weaknesses, opportunities, and threats (Karppi, Kokkonen, and Lahteenmaki-Smith 2001; Rutz and Janssen 2007; Goosens *et al.* 2007). The fourth stage is the theoretical framework testing, which assesses these indices against the principles of political economy in line with the hypotheses of this study. Figure 4.1 shows the stages of the selection process for socioeconomic performance indices used in this study.

Figure 4.1 The Stage of Selection Process for Multiple Performance Indices



Source: Author. Note: —→ = selection process

4.4.3 The Results of the Survey of Literature

This section clarifies the results of the literature survey, which identified 145 performance indices that sought to measure different dimensions. As shown in Table 4.10, of these 145 indices, 48 indices are selected and used further on in this study.

**Table 4.10 Some Selected Indices at Different Levels
(Economic-Social-Environmental-Political)**

Dimension	Index
Economic	<i>Economic Freedom Index (EFI)</i>
	<i>Economic Freedom of the World (EFW)</i>
	<i>Export (Ex)</i>
	<i>Foreign Direct Investment Confidence Index (FDICI)</i>
	<i>Global Competitiveness Index (GCI)</i>
	<i>Globalization Index (GI)-A.T. Kearney</i>
	<i>Globalization Index (GI)-CSGR</i>

(Cont'd)

(Cont'd from page 101)

Dimension	Index
	<i>Globalization Index (GI)-KOF</i>
	<i>Gross Domestic Product (GDP)</i>
	<i>Gross Capital Formation (GCF)</i>
	<i>Growth Competitiveness Index (GRCI)</i>
	<i>Knowledge Competitiveness Index (KCI)</i>
	<i>Macroeconomic Competitiveness Index (MACI)</i>
	<i>Microeconomic Competitiveness Index (MICI)</i>
	<i>Network Readiness Index (NRI)</i>
	<i>Public Institution Index (PII)</i>
	<i>Technology Achievement Index (TAI)</i>
	<i>Technology Index (TI)</i>
	<i>Value Added in Industrial Sector (VAI)</i>
Social	<i>Education Index (EI)</i>
	<i>Employment to Population Ratio (EPR)</i>
	<i>Gender-related Development Index (GDI)</i>
	<i>Gender Empowerment Measurement (GEM)</i>
	<i>Gender Weighted Index of Democratization (GWID)</i>
	<i>Human Development Index (HDI)</i>
	<i>Human Poverty Index (HPI)</i>
	<i>Life Expectancy Index (LEI)</i>
	<i>Life Satisfaction Index (LSI)</i>
	<i>Mother Index (MI)</i>
	<i>Social Trust (T)</i>
Environmental	<i>Ecological Footprint (EF) by New Economic Foundation</i>
	<i>Ecological Footprint (EF) by Global Footprint Network</i>
	<i>Living Planet Index (LPI)</i>
	<i>Happy Planet Index (HPI)</i>
	<i>Environmental Sustainability Index (ESI)</i>
	<i>Environmental Performance Index (EPI)</i>
	<i>Environmental Vulnerability Index (EVI)</i>
	<i>Climate Change Index (CI)</i>
Political	<i>Political Rights (PR)</i>
	<i>Civil Liberties (CL)</i>
	<i>Voice and Accountability Index (VAI)</i>
	<i>Political Stability and Absence of Violence Index (PSAVI)</i>
	<i>Governance Effectiveness Index (GEI)</i>
	<i>Regulatory Quality Index (RQI)</i>
	<i>Rule of Law Index (RLI)</i>
	<i>Control Corruption Index (CCI)</i>
	<i>Corruption Perception Index (CPI)</i>
	<i>Global Integrity Index (GII)</i>

4.4.4 The Pre-identification of Indices

This sub-section scrutinizes selected indices using a pre-identification approach. Pre-identification is a technique used to examine the general characteristics around each index. In this stage, building on the World Bank model, this study employs a pre-

identification model that emphasizes dimension, data provider, website, data source, public access, time series, coverage area, and frequency. All of the results for this stage are shown in Table 4.11. These results inform the SWOT analysis to be carried out in the next stage.

Table 4.11 Pre-identification of Indices

Dimension	Index	Data Provider-Website	Public Access	Time Series	Coverage Area (countries)	Frequency
Economic	Economic Freedom Index (EFI)	Heritage Foundation www.heritage.org	Yes	1995-2010	179	Annual
Economic	Economic Freedom of the World (EFW)	Fraser Institute www.freetheworld.com	Yes	1970-2009	141	Not regular
Economic	Export (Ex)	World Bank (WB) http://data.worldbank.org/	Yes	1960-2010	228	Annual
Economic	Foreign Direct Investment Confidence Index (FDICI)	A.T Kearney www.atkearney.com	Yes	2004-2010	72	Not regular
Economic	Global Competitiveness Index (GCI)	World Economic Forum (WEF) www.weforum.org	Yes	2001-2010	133	Annual
Economic	Globalization Index (GI)-A.T Kearney	A.T Kearney www.atkearney.com	Yes	2003-2007	72	Annual
Economic	Globalization Index (GI)-CSGR	Centre for Study of Globalization and Regionalism (CSGR) www2.warwick.ac.uk	Yes	1982-2004	190	Annual
Economic	Globalization Index (GI)-KOF	Konjunkturforschungsstelle (KOF) http://globalization.kof.ethz.ch/	Yes	2002;2005-2009	208	Not regular
Economic	Gross Domestic Product (GDP)	World Bank (WB) http://data.worldbank.org/	Yes	1960-2010	228	Annual
Economic	Gross Capital Formation	World Bank (WB) http://data.worldbank.org/	Yes	1960-2010	228	Annual
Economic	Growth Competitiveness Index (GRCI)	WEF www.weforum.org	Yes	2000-2010	133	Annual
Economic	Knowledge Competitiveness Index (KCI)	Robert Huggins Associates www.hugginsassociates.com	Yes	2002-2008	34	Not regular
Economic	Macroeconomic Competitiveness Index (MACI)	WEF www.weforum.org	Yes	2000-2010	133	Annual
Economic	Microeconomic Competitiveness Index (MICI)	WEF www.weforum.org	Yes	2000-2010	133	Annual
Economic	Network Readiness Index (NRI)	WEF www.weforum.org	Yes	2001-2009	134	Annual

(Cont'd)

(Cont'd from page 104)

Dimension	Index	Data Provider- Website	Public Access	Time Series	Coverage Area (countries)	Frequency
Economic	Public Institution Index (PII)	WEF www.weforum.org	Yes	2000-2010	133	Annual
Economic	Technology Achievement Index (TAI)	UNDP http://hdr.undp.org/en/	Yes	2001	182	Not regular
Economic	Technology Index (TI)	WEF www.weforum.org	Yes	2001-2010	133	Annual
Economic	Value Added in industrial sector (VAI)	World Bank (WB) http://data.worldbank.org/	Yes	1960-2010	228	Annual
Social	Education Index (EI)	UNDP http://hdr.undp.org/en/	Yes	1990-2010	182	Annual
Social	Employment to Population Ratio (EPR)	World Bank (WB) http://data.worldbank.org/	Yes	1960-2009	228	Annual
Social	Gender-related Development Index (GDI)	UNDP http://hdr.undp.org/en/	Yes	1990-2009	182	Annual
Social	Gender Empowerment Measurement (GEM)	UNDP http://hdr.undp.org/en/	Yes	1990-2009	182	Annual
Social	Gender Weighted Index of Democratization	Tatu Vanhannen www.fsd.uta.fi	Yes	1995-2008	185	Annual
Social	Human Development Index (HDI)	UNDP http://hdr.undp.org/en/	Yes	1990-2010	182	Annual
Social	Human Poverty Index (HPI)	UNDP http://hdr.undp.org/en/	Yes	1990-2010	182	Annual
Social	Life Expectancy Index (LEI)	New Economic Foundation (NEF)	Yes	1990-2009	179	Annual
Social	Mother Index (MI)	Save the Children www.savethechildren.org	Yes	2000-2009	100	Annual
Social	Social Trust (T)	World Value Survey www.worldvaluesurvey.org	Yes	1981-2008	42	Waves
Social	Life Satisfaction Index (LSI)	New Economic Foundation (NEF) www.happyplanetindex.org	Yes	1961-2005	179	Annual
Environmental	Ecological Footprint (EF)	NEF www.happyplanetindex.org	Yes	1961-2005	179	Annual
Environmental	Ecological Footprint (EF)	Global Footprint Network www.footprintnetwork.org	Yes	1996-2010	128	Annual
Environmental	Living Planet Index (LPI)	WWF-UNEP www.panda.org	Yes	1998-2008	182	Annual

(Cont'd)

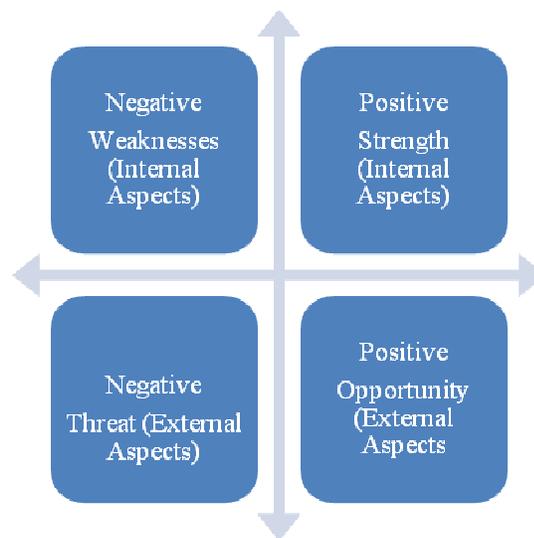
(Cont'd from page 105)

Dimension	Index	Data Provider-Website	Public Access	Time Series	Coverage Area (countries)	Frequency
Environmental	Happy Planet Index (HPI)	NEF www.happyplanetindex.org	Yes	1961-2005	179	Annual
Environmental	Environmental Sustainability Index (ESI)	Yale University http://epi.yale.edu/	Yes	2000-2005	237	Annual
Environmental	Environmental Performance Index (EPI)	Yale University http://epi.yale.edu/	Yes	2006-2010	230	Not regular
Environmental	Environmental Vulnerability Index (EVI)	South Pacific Applied Geoscience Commissions www.vulnerability.net	Yes	1999-2005	230	Not regular
Environmental	Climate Change Index (CI)	International Geosphere-Biosphere Programme (IGBP) www.igbp.net	Yes	1980-2008	72	Annual
Political	Political Rights (PR)	Freedom House www.freedomhouse.org	Yes	1973-2010	193	Annual
Political	Civil Liberties (CL)	Freedom House www.freedomhouse.org	Yes	1973-2010	193	Annual
Political	Voice and Accountability Index (VAI)	World Bank (WB) & Brookings Institute www.govindicators.org	Yes	1996-2008	211	Annual
Political	Political Stability and Absence of Violence Index (PSAVI)	World Bank (WB) & Brookings Institute www.govindicators.org	Yes	1996-2008	211	Annual
Political	Governance Effectiveness Index (GEI)	World Bank (WB) & Brookings Institute www.govindicators.org	Yes	1996-2008	211	Annual
Political	Regulatory Quality Index (RQI)	World Bank (WB) & Brookings Institute www.govindicators.org	Yes	1996-2008	211	Annual
Political	Rule of Law Index (RLI)	World Bank (WB) & Brookings Institute www.govindicators.org	Yes	1996-2008	211	Annual
Political	Control Corruption Index (CCI)	World Bank (WB) & Brookings Institute www.govindicators.org	Yes	1996-2008	211	Annual
Political	Corruption Perception Index (CPI)	Transparency International www.transparency.org	Yes	1995-2010	180	Annual
Political	Global Integrity Index (GII)	Global Integrity www.globalintegrity.org	Yes	2004-2008	45	Annual

4.4.5 The SWOT Analysis

This sub-section examines the selected indices by using a SWOT analysis. The analysis identifies several indices that are suitable for further analyses. The SWOT analysis was introduced by Albert Humprey as a strategic planning tool to be used by businesses to assess various activities (Rutz and Janssen 2007; Goosens *et al.* 2007). In this study, the analysis is empirically applied to select relevant socioeconomic performance indices. Internal aspects of these indices are categorized into Strengths (S) or Weaknesses (W), whereas external aspects are classified into Opportunities (O) or Threats (T). Thus, the SWOT matrix is as follows:

Figure 4.2 SWOT matrix



Source: Rutz and Janssen (2007)

As shown in Figure 4.2, the SWOT analysis employed in this study consists of the following:

1. Strengths: internal aspects of indices that are useful for this study.
2. Weaknesses: internal aspects of indices that are useless for this study.
3. Opportunity: external aspects of indices that are useful for this study.
4. Threat: external aspects of indices that are useless for this study.

As for appropriate criteria for selecting relevant indices, this study draws on several measurements from the OECD (2003), and the works of Wesselink *et al.* (2007) and Goosens *et al.* (2007). Moreover, this study presents some new criteria, such as technical

attributes (e.g., the linkage of indices and multiple factors) and outcome criteria (e.g., the linkage of indices and uneven development), which may usefully inform the selection process.

Table 4.12 Criteria Used in the SWOT Analysis for Selecting Indices

Aspects	Criteria
Input data for indices	<ol style="list-style-type: none"> 1. Input data for these indices are publicly available and sufficiently documented 2. Indices should be supported with a database system that can be updated regularly
Methodical approach of indices	<ol style="list-style-type: none"> 1. Indices should be constructed using a theoretical framework 2. Indices should follow international standards of measurement
Technical attributes of indices	<ol style="list-style-type: none"> 1. Indices can be proxies for some dimensions that are analyzed in this study 2. Indices can be utilized to link economic, social, environmental and political factors 3. Indices have technical advantages that are useful for this study, including relevant time series, wide area of coverage and constant frequency
Outcomes of indices	<ol style="list-style-type: none"> 1. Indices should be able to be used to provide stylized facts of the world at different levels and dimensions, especially for investigating uneven development 2. Indices should elucidate trends over time (long waves) 3. Indices should be able to capture the linkages of economic, social, environmental and political factors 4. Indices should be able to investigate integrated analyses at different levels and dimensions

Table 4.12 displays four aspects, along with eleven criteria that are useful for selecting indices. As Kapp (1963) and Brennan (2009) posit, heterogeneous data are useful for scrutinizing the complex interplay in historical patterns. The criteria that relate to the objectives of this study are as follows: the complexity of uneven development, multiple factors, changes in historical patterns, and stylized facts of world history. For instance, Criteria 2 of technical attributes suggests that selected indices should provide the structural linkages of multiple factors. Another such example is Criteria 1 of the outcomes aspect, which suggests that selected indices should be able to be used for investigating the discourse of uneven development. The summary of the SWOT analysis of the indices based upon the above criteria is given in Table 1 in Appendix C.

4.4.6 Selected Indices and Theoretical Framework Testing

This sub-section explains the fourth stage in the process of selecting indices. Here, the results of the SWOT analysis are extended by linking them to the theoretical framework.

This theoretical framework contains five core principles from political economy that could be linked with these selected indices. These principles “filter” the selected indices, resulting in identifying indices that are most relevant for this study.

In investigating indices, the fourth stage utilizes Table 4.13 below. This table illustrates selected indices that are relevant for this study. Some indices in the column “major selected indices” are likely to be used in further analyses, as they have in dimensions, such as time period, area of coverage, regularity of data, and the suitability of data to the theoretical framework. The column “theoretical framework” contains theories and concepts that are integral to the further development of the hypotheses and the analysis in this study. In short, therefore, this table shows the links between major selected indices and theories.

Table 4.13 Relevant Selected Indices Link to Theories, Factors, and Levels

Major Selected Indices	Theoretical Framework	Factors	Data Availability
GDP Growth Per Capita	Uneven development, Long wave, CCC, Contradiction, C-SP-P	Economic	Global, Regional, National, Sub-national
Gross Capital Formation	Uneven development, Long wave, CCC, Contradiction, C-SP-P	Economic	Global, Regional, National
Value Added in Industrial Sector	Uneven development, Long wave, CCC, Contradiction, C-SP-P	Economic	Global, Regional, National
Net Exports	Uneven development, Long wave, CCC, Contradiction, C-SP-P	Economic	Global, Regional, National
Life Expectancy Index	Uneven development, Long wave, C-SP-P	Social	Global, Regional, National
Human Development Index	Uneven development, Long wave, CCC, Contradiction, C-SP-P	Social	Global, Regional, National, Sub-national
Social Trust	Uneven development, Long wave, CCC, Contradiction, C-SP-P	Social	Global, Regional, National, Sub-national
Biocapacity-Ecological Footprint	Uneven development, Long wave, CCC, Contradiction, C-SP-P	Environmental	Global, Regional, National, Sub-national
Political Rights	Uneven development, Long wave, CCC, Contradiction, C-SP-P	Political	Global, Regional, National
Civil Liberties	Uneven development, Long wave, CCC, Contradiction, C-SP-P	Political	Global, Regional, National
Corruption Perception Index	Uneven development, Long wave, CCC, Contradiction, C-SP-P	Political	Global, Regional, National, Sub-national

Note: The process of theoretical framework testing is given in Table 2 in Appendix C.

In summary, the selection process of multiple indices uses four stages to obtain relevant indices that are suitable for the further analyses. Table 4.14 displays a summary of the indices-selection process. This table illustrates the name and criteria of filtering in every stage. These criteria generate a number of indices that are selected in every stage.

Table 4.14 Summary of the Indices-Selection Process

Stages	1	2	3	4
Name of filter	Survey of literature	Pre-identification	SWOT Analysis ¹	Theoretical-framework testing ²
Criteria of filter	Collecting from literature	Identifying general aspects of indices	Analyzing: 1. Internal aspects of indices (strength-positive and weaknesses-negative) 2. External aspects of indices (opportunity-positive and threat-negative)	Compatibility to principle of political economy, theories, and hypotheses
Specific criteria of filter	No	1. Dimension 2. Source of indices 3. Public access availability 4. Time series of indices 5. Coverage area of indices 6. Frequency	1. Input data for indices; 2. Methodical approach of indices; 3. Technical attributes of indices; 4. Outcome of indices	Link to: 1. Five principle of political economy 2. Five hypotheses of uneven development
Results (number of indices)	145	48	29	11

¹ The SWOT analysis is comprehensively described in Table 1 in Appendix C.

² The process of theoretical framework testing is described in Table 2 in Appendix C.

4.4.7 Overview of Selected Indices

4.4.7.1 Gross Domestic Product (GDP)

GDP is defined as the market value of all final goods and services produced within a geographical entity within a given period (Goosens *et al.* 2007: p. 10). GDP is calculated using the following three approaches:

1. Demand/expenditure approach
2. Income approach
3. Production approach

Table 4.15 describes the three approaches that are used to estimate the GDP.

Table 4.15 Calculation of GDP Using the Expenditure, Income, and Production Approaches

Expenditures		Income		Production	
Consumption	xxx	Capital income	xxx	Value-added (VA) services	xxx
Investment	xxx	Labor income	xxx	VA agriculture	xxx
Government	xxx	State revenue	xxx	VA manufacturing	xxx
Export	xxx				
Import	xxx				
GDP	xxx		xxx		xxx

Source: Adapted from Goosens *et al.* (2007)

To enhance the initial concept of GDP, several economists suggest that is important to further develop its theoretical and empirical elements. Hicks (1939) and Weitzman (1976) suggest the benefit in deleting the depreciation of capital from the GDP calculation. They argue that GDP minus depreciation is a sustainable income as the capital stock is not degenerated by consumption in the present time. GDP without depreciation is Net National Product (NNP).

In addition, Goosens *et al.* (2007) explain that a broader view of the term of GDP needs to be developed as GDP is used to identify standard of living across countries. Consequently, purchasing power parity (PPP) is then used to define a set of comparable measures for the value of goods and services among countries. The PPP determines how many units of local currency are required to obtain goods and services based on the basis currency (e.g., US\$).

Turning to empirical development, GDP growth per capita is a tool used to investigate the pattern of socioeconomic performances across countries. According to the perspective of social structure of accumulation (SSA) theory, institutional changes influence the pattern of socioeconomic performances at global, regional, and national levels (Kotz 2008; O'Hara 2008c). From this perspective, GDP growth per capita is utilized to scrutinize the long-term impact of institutions on socioeconomic

performance. However, GDP growth per capita needs other performance indices to support the long-term investigation of socioeconomic performances among countries.

4.4.7.2 Gross Capital Formation

Gross capital formation includes the sum of the total fixed assets in the economy plus net changes in the level of inventory (including projects in progress and the stock of goods). Fixed assets include the construction of public facilities, equipment, machinery, and land (World Bank 2010). Some of the literature emphasizes that gross capital formation represents capital accumulation. Karl Marx (1885) employs capital formation to explain capital accumulation in the metamorphosis of capital, while Simon Kuznets (1939) explains capital accumulation in the US from 1919 to 1933 through a series of gross capital formations.

In a global context, Alexander Gerschenkron (1954) argues that differential characteristics of capital accumulation influence economic development in a region and/or country. Gerschenkron notes that a region and/or country that had delayed its development would be affected by structural changes in the relationship between investment and demand, which is represented by the GDP.

In line with Gerschenkron, Kuznets (1955) holds that most regions and countries have heterogeneous capital formation due to differences in the process of development financing. Kuznets uses gross capital formation as a share of the GDP for investigating the impact of development financing among countries.

According to UNCTAD (2003), regions and nations need to consistently raise their gross capital formation a share of the GDP far above 25 per cent in order to continue on the path of growth and development. This threshold of the share of the GDP above 25 per cent determines investment growth performance in middle-income developing countries. The literature clearly shows that differences in capital accumulation, as represented by gross capital formation, can differentiate rates of growth as a demand proxy.

4.4.7.3 Value Added in the Industrial Sector

Productivity refers to the ratio of the output of goods and services to the input of goods and services. Productivity captures the linkage between land, raw materials, labor, technology, and the managerial system in a production process. The patterns of productivity growth are seen as a part of structural link between investment,

productivity, net export, and aggregate demand. At a broader level, the pattern of productivity growth describes the differences in development among nations in terms of investment, innovation and output.

Thornton (1970) and O'Hara (2006a) argue that the rate of growth of productivity is represented by the growth in the value added of output, while Saari (2006) states that productivity in industrial sectors is represented by value added growth.

4.4.7.4 Net Exports

Exports of goods and services represent the total value of goods and services that are supplied from a country to the other parts of the world (World Bank 2010). This includes travel, insurance, transport, merchandise, license fees, freight, royalties, and other services, such as financial, government services, communication, and construction (World Bank 2010). Imports correspond to the total account of goods and services coming into a country from other parts of the world. Therefore, net exports refer to the total value of exports minus the total value of imports.

4.4.7.5 Human Development Index (HDI)

The HDI measures the well being of its citizens of a country or region (UNDP 2010). The HDI is a composite statistic that measures human development. The HDI is based on three indicators: longevity, as measured by life expectancy at birth; educational attainment, as measured by a combination of adult literacy (two-third weight) and combined primary, secondary and tertiary enrolment ratios (one-third weight); and standard of living as measured by real GDP per capita adjusted for purchasing power (PPP) (UNDP 2010).

The use of the HDI has been criticized and debated. Criticism has resulted from choosing and using variables to reflect the development of human beings. Moreover, some critics have also been critical of using the HDI to analyze other aspects of development, such as political and environmental factors. In this context, the criticisms are directed at how the HDI is interrelated with other index functions. For example, in the early 1990s the HDI was used to analyze human development and its connection between stability and political freedom in the world. In the early 2000s, the HDI was used in the discussion about continual development.

The UNDP has proposed several revisions of the HDI in response to some of the critiques. These recommendations emphasize the need to revise the index and

improve the availability of the data. The HDI has experienced some changes in terms of how it is used to measure knowledge and standard of living (UNDP 2010).

From 1990 to 2009, the UNDP measured the dimension of knowledge of the HDI using the adult literacy rate and combined school enrolment ratios for all levels of education (primary, secondary and tertiary). GDP per capita is adjusted for purchasing-power parity (PPP, US dollar) and is used to represent the standard of living. Life expectancy at birth is used to measure a long and healthy life. In response to change, the UNDP uses the gross national income (GNI) instead of GDP per capita to measure standard of living. The dimension of knowledge and education is now measured by expected years of schooling (school-age children) and mean years of schooling for adults (aged 25 ≤).

The UNDP has made these changes to eliminate weaknesses in the data. GDP does not reflect the capability of a citizen in a country to access a better standard of living, while GNI measures the accrual income of a citizen in a country. In particular, GNI captures international remittances and aid, while it excludes income that is generated in a country but is sent back overseas.

For the dimension of knowledge and education, the adult literacy rate does not capture the knowledge of the adult population, while school attendance is not fully measured by gross enrollment ratios. The new HDI uses expected years of schooling to properly capture the number of years of schooling and it uses mean years of schooling for adults to measure human capital formation at the regional and national level.

However, the UNDP is still assessing how to further develop the HDI methodology, as the new HDI method still has some limitations. For instance, the expected years of schooling across a country does not account for differences in the length of a school year among countries. Moreover, the mean years of schooling does not strictly measure the quality of education across countries.

The UNDP is redeveloping the dimension index. Prior to 2009, the HDI was calculated using a set of maximum and minimum values for each indicator. The new method of HDI applies the maximum indicator values from 1980 to the current report. The UNDP also uses 0 years as a minimum value for the knowledge variables, 20 years as the maximum value for life expectancy, and US\$ 100 as the minimum value for standard of living. The minimum value is used for standard of

living, as it is considered to be a value related to non-market production. Therefore, the calculation for each indicator of the HDI is as follows:

$$\text{Dimension Index} = \frac{(\text{Actual value} - \text{minimum value})}{(\text{maximum value} - \text{minimum value})}$$

The HDI method has also been revised in terms of aggregation. The UNDP (2010) has replaced the arithmetic mean of three dimensions with the geometric mean. From 1990 to 2009, the arithmetic mean was used to aggregate the HDI to calculate a linear substitutability condition. If the low value occurs in one dimension, it could be substituted by a high value in the other dimensions. The new method uses the geometric mean that describes the differences in achievement across dimensions. With the geometric mean, increasing one dimension by 10 per cent generates an effect on the HDI value equal to an increase in 10 per cent in other dimensions.

The HDI is meant to be complementary to other indices used for comprehending human development. The UNDP (2010) proposes the inequality human development index (IHDI), which considers uneven development. Foster, Lopez-Calva, and Szekely (2005) introduce a distribution-class composite index to enable the HDI to address unequal distribution among countries.

As a complementary index for human development, the HDI has some internal positive strength. The HDI is constructed using widely available data. This index is easily comprehensible and it can serve to provide a pattern of human development across a country. As an external positive aspect, the HDI method is regularly redeveloped in terms of composite data, the calculating index, and aggregation. Thus, the HDI provides the pattern of human development that potentially supports the use of economic indicators (e.g., GDP growth per capita, productivity growth).

The HDI also has some internal and external negative aspects. First, Bagolin (2004) argues that the HDI is not strictly meant to describe human development in developed countries without also applying other complementary performance indices. Second, the HDI does not capture environmental and political dimensions. Consequently, other indices need to be used to address environmental and political dimensions, as the composite index of the HDI does not cover them.

4.4.7.6 Trust

In terms of measuring global trust, a broad-based survey is needed to investigate trust levels in differing areas of life and at different levels of society. The World Values Survey (WVS) Association is an agency that conducts global social surveys, some of which measure the level of trust. It uses random sampling in five phases or “five waves” of the survey in 1981, 1990, 1995–1997, 1999–2004, and 2005–2008. The WVS surveys are administered to respondents in 57–100 countries. One of the questions that respondents are asked to reply to is related to their trust level (World Value Survey 2010): “Most people can be trusted or you can’t be too careful in dealing with people?”

The level of trust describes individual trust among people in a region or a country. This indicator identifies the pattern of social interaction among residents, related to the level of social capital. As a social indicator, trust is a suitable complement to other indices that are used to comprehend socioeconomic performance. The WVS is continually extending the range of countries and regions. The score of the index makes it relatively easy to highlight the pattern of trust in one country, although the score is not annually presented by the WVS.

The pattern of social capital across a region/country is captured by a trust indicator that is linked to uneven development (Zak and Knack 2001). In global institution, the change from Fordism to globalization generates transformation in social capital. The level of trust indicator is reliable for investigating the influence globalization has on social capital. Most people compete to create innovation in order to gain productivity and profit, while they neglect the existence of social relationships (Uslaner 2002; Rothstein and Uslaner 2005). The rise of individualism occurs across nations as faster innovation and higher profit undermine social norms and values. Declining social relationship causes people to decrease their level of trust with one another.

The WVS’s five waves’ survey, conducted during 1980–2010, is suitable for examining changes in the formation of social capital. The emergence of globalization in the mid 1970s may have caused a decline in the level of trust. The level of trust highlights the pattern of trust between core and peripheral countries, as it is a reliable way to complement the pattern of economic growth.

4.4.7.7 Ecological Footprint

This study's indicators for the stock of ecological capital are the ecological footprint (EF) and biocapacity. The EF is a measure of ecological demand as human economies supply more goods and services (Goosens *et al.* 2007: p. 34). According to the Global Footprint Network (2010), EF measures the depletion of ecological capital by taking into account of the cropland footprint, grazing footprint, forest footprint, fishing ground footprint, carbon footprint and built-up land footprint. By contrast, biocapacity refers to environmental capacity, that is, the stock of ecological capital. To evaluate the durable structures of ecological capital, the gap between EF and biocapacity is determined.

EF measures a region's consumption of the ecological capacity, which may generate environmental impacts (Goosens *et al.* 2007). As such, EF measures the final consumption of the residents' ecological capacity (biocapacity) at the regional and national levels. In one country, the EF could be higher than the biocapacity, while in another country, the biocapacity could exceed the EF. Thus, EF is useful for investigating the pattern of uneven development.

In the context of uneven development and inequality, the role of the EF is to make note of a country with an ecological deficit (where the $EF > \text{the biocapacity}$) and a country with ecological reserve/surplus (where the $EF < \text{the biocapacity}$) (Global Footprint Network 2010). The differences between countries with ecological reserves and countries with ecological deficits are crucial when investigating the issues of uneven development and inequality. Although core countries have limited biocapacity, they use global institutions to hold sway over biocapacity in peripheral countries (Rice 2007).

The exploration of biocapacity occurs in peripheral countries as core countries direct the global production chain. In peripheral countries, there is a high ecological footprint. The form of investment does not fully promote technological change and innovation. In peripheral countries, lower technological change is insufficient not only for the production process but also for environmental protection.

4.4.7.8 Freedom indicator

Freedom House (2010) conducts an annual survey on global individual freedom in 193 countries and 16 special areas. The survey is conducted by an independent party

outside the influence of each country's government. The survey covers two indicators (Freedom House 2010):

1. Political rights: such as the freedom of individuals or citizens to participate in the political process, e.g., the freedom to choose the legislature, the freedom to vote in the elections, and the freedom to follow political parties
2. Civil liberties: such as freedom of expression

The survey methodology used by Freedom House is grounded in the standards of political rights and civil liberties found in the Universal Declaration of Human Rights. These standards apply to all countries.

The survey results for the two indicators are presented as scores ranging from 1 to 7. A score of 1 indicates a high degree of freedom, while a score of 7 indicates a low degree of freedom. The survey results are classified as follows: free (1.0–2.5), partly free (3.0–5.0), and not free (5.5–7.0). The survey also assigns the designation “electoral democracy” to countries that meet the following standards: a multiparty political system, the universal right to vote for all citizens, honest elections conducted by secret vote, and significant public access to the electorate for major political parties.

The political indicators capture the impact of political rights and civil liberties on individual well-being across a country. Freedom House presents the annual Freedom House Indicator in the form of a qualitative report. This qualitative report is transformed into a numerical score that is a reliable quantitative assessment, capable of indicating political development across countries. The political indicators can be used to investigate the structure of political development (including individual and government) that is linked to uneven development.

However, some criticism has been directed at the Freedom House index. Although the index includes political and civil aspects, it does not fully capture economic, social, and environmental factors. Freedom House employs the criteria from the Human Rights Declaration, but introduces subjectivity in terms of a transformation variable. Moreover, in this index the categorization and the rank are not directly interpreted; more complementary data is required to investigate political spheres across the country.

In comprehending the strengths and limitations of an index, the existence of political indicators can complement other indices (Goosens *et al.* 2007). Other

indices from different dimensions (economic, social, and environmental) need to support the results of the political indicator. The combination of these indices is suitable for analyzing socioeconomic and political spheres across countries in the context of uneven development.

4.4.7.9 Corruption Perception Index

The corruption perception index (CPI) is based on the perception of various aspects of corruption as stipulated by international businessmen and journalists (Transparency International 1995, 2010). From 1995 to 2010, CPI was used to assess 81–146 countries. This index ranks a country with a score from 0 to 10. A zero represents a country that has numerous forms of corruption, while a 10 indicates a country that is “free from corruption” (Transparency International 2010). The CPI is used to examine the unevenness of corruption levels at the global, regional, and national levels.

The CPI measures the level of corruption in the public sector based on the perception of a country’s residents. Transparency International (TI) captures the residents’ perceptions and presents the information in the form of scores and rankings across countries. The index is easily understandable and it covers a wide range of countries. The CPI complements other indices, as political aspects linked to economic sectors are measured in this index.

However, TI notes that CPI only emphasizes perceptions of corruption in the public sector and fails to fully consider individual corruption. The CPI is constructed based on the perceptions of residents, expatriates, business people, and members of academia, as well as country analysts. Even though the respondents are from independent institutions, their perceptions are based on personal and professional judgments and, thus, subjectivity cannot be excluded.

TI regularly redevelops this index. TI conducts 17 different surveys, the results of which are compiled into a composite index (the CPI). The CPI informs government official and business people who develop business and trade policies. This index also provides several types of information related corruption, which can be useful for developing government policies.

One primary advantage of the CPI is that the index has the capability of transforming qualitative perceptions of corruption into quantitative index. The CPI is comparable across countries and linked to uneven development. For instance, the

CPI provides information of corruption to business people and governments that make investment and trade decisions (Lessmann and Markwaardt 2010). Thus, there is a link between corruption and economic activities and the index can be used to evaluate whether the pattern of corruption affects economic growth and investment.

4.5 The Stylized-fact–Roulette (SFR) Model of Political Economy

This study employs the concept of the stylized fact in its research methodology. An original, simple model, known as the stylized-fact–roulette model of political economy (SFR), is applied. This model captures the interrelationships of factors, dimensions and principles.

Three fields of the analysis are illustrated in Figure 4.3. The first field represents has factors based upon the political economy perspective, which are represented by Greek letters, as follows: economic factors (α), social factors (β), environmental factors (γ), and political factors (δ). The second field contains four levels (dimensions), which are displayed as capitalized Latin letters as follows: global (A), regional (B), national (C) and sub-national (D). The third field consists of five principles of political economy that are employed to comprehend some stylized facts that are linked to the issue of uneven development that pertain to different factors and levels. As discussed in Chapter 2, five core principles of political economy are employed in this study. The model represents these using standard Latin numerals. These principles are as follows: uneven development (1), the long wave (2), circular and cumulative causation (3), contradiction (4), and core-semi-periphery and periphery relationships (5).

The SFR model consists of three distinct circles of different sizes. Each circle is separated by broken (dash) lines that indicate these three circles are interrelated. The interrelationships of the three circles span the three fields (factor, level and principle) and, in total, represent eighty possible analyses in the study.

The particular combination of integrated fields identifies each section of analysis. For instance, the combination α –A–1 represents an analysis that examines the linkage of an economic factor at the global level using the principle of long wave. An analysis that investigates social factors at the regional level using the principle of C–SP–P is expressed by the combination β –B–4. As another example, the combination γ –D–2 denotes an analysis of the integrated linkage of an environmental factor at the sub-national level using the principle of CCC. These

notations apply to the other 77 combinations that represent the analyses undertaken in this research.

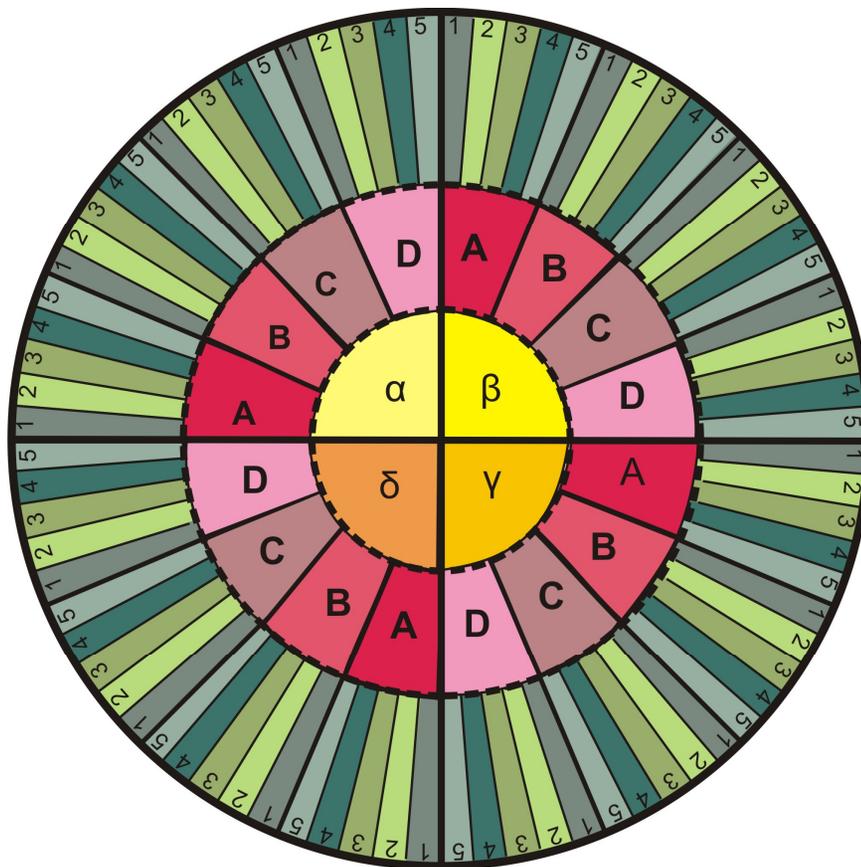


Figure 4.3 Stylized Fact-Roulette Model of Political Economy

Note:

α = Economic factor

β = Social factor

γ = Environmental factor

δ = Political factor

A = Global

B = Continental/Regional

C = National

D = Sub-national

1 = Principle of uneven development

2 = Principle of long-wave

3 = Principle of circular and cumulative causation

4 = Principle of contradiction

5 = Principle of core-semi-periphery-periphery

4.6 Role of the SFR Model of Political Economy

This sub-section explains the role of the SFR model of political economy that is applied in the later chapters. The role of the SFR model is displayed in Table 4.6. This table shows the principle of political economy and forms of analyses that are employed in every chapter. These analyses investigate stylized facts that are linked to several factors at the global, regional, national, and sub-national levels. For each stylized fact, there is an expected result in terms of interrelationships from the hypotheses in Chapter 3. These expected results are examined in the later chapters.

In presentation, all combinations of integrated fields represent analyses of stylized facts that are linked to factors, levels and principles. For instance, Chapter 5 investigates long-wave of economic growth at differing levels (Hypothesis 1). This analysis generates results of stylized facts. If the stylized fact occurs on the global level, a combination of the SFR model generates economic (factor)-global (level)-long wave (principle). This combination is transformed into the SFR model: α -A-2. Similar notations are employed to analyze other stylized facts for other combinations of fields.

Table 4.16 Role of the SFR Model of Political Economy

	Factors	Level	Principle (<i>expected principle</i>)	Hypotheses/ Sub-hypothesis	Form of analyses	<i>Expected results of the SFR model (stylized facts)</i>	Notations of the SFR model
Chapter 5	Economic (E)	Global (G)	UD, LW, CCC, C, C-SP-P	H1, H2, H3, H4	Descriptive	Combination: Economic (E)-Global (G)-UD; E-G-LW; E-G-CCC; E-G-C; E-G-CSPP	α -A-1; α -A-2; α -A-3; α -A-4; α -A-5
		Regional (R)	UD, LW, CCC, C, C-SP-P	H1, H2, H3, H4	Descriptive	E-R-UD; E-R-LW; E-R-CCC; E-R-C; E-R-CSPP	α -B-1; α -B-2; α -B-3; α -B-4; α -B-5
		National (N)	UD, LW, CCC, C, C-SP-P	H1, H2, H3, H4	Descriptive	E-N-UD; E-N-LW; E-N-CCC; E-N-C; E-N-CSPP	α -C-1; α -C-2; α -C-3; α -C-4; α -C-5
		Sub-National (SN)	UD, LW	H1, H5	Descriptive	E-SN-UD; E-SN-LW	α -D-1; α -D-2;
Chapter 6	Social (S)	Global	UD, LW, CCC, C, C-SP-P	H1, H2	Descriptive	Social (S)-G-UD; S-G-LW; S-G-CCC; S-G-C; S-G-CSPP	β -A-1; β -A-2; β -A-3; β -A-4; β -A-5
		Regional	UD, LW, CCC, C, C-SP-P	H1, H2	Descriptive	S-R-UD; S-R-LW; S-R-CCC; S-R-C; S-R-CSPP	β -B-1; β -B-2; β -B-3; β -B-4; β -B-5
		National	UD, LW, CCC, C, C-	H1, H2	Descriptive	S-N-UD; S-N-LW; S-N-	β -C-1; β -C-2; β -C-

			SP-P			CCC; S-N-C; S-N-CSPP	3; β -C-4; β -C-5
		Sub-National	UD, LW	H1, H5	Descriptive	S-SN-UD; S-SN-LW	β -D-1; β -D-2;
	Environmental (ENV)	Global	UD, LW, CCC, C, C-SP-P	H1, H2	Descriptive	Environmental (ENV)-G-UD; ENV-G-LW; ENV-G-CCC; ENV-G-C; ENV-G-CSPP	γ -A-1; γ -A-2; γ -A-3; γ -A-4; γ -A-5
		Regional	UD, LW, CCC, C, C-SP-P	H1,H2	Descriptive	ENV-R-UD; ENV-R-LW; ENV-R-CCC; ENV-R-C ENV-R-CSPP	γ -B-1; γ -B-2; γ -B-3; γ -B-4; γ -B-5
		National	UD, LW, CCC, C, C-SP-P	H1, H2	Descriptive	ENV-N-UD; ENV-N-LW; ENV-N-CCC; ENV-N-C; ENV-N-CSPP	γ -C-1; γ -C-2; γ -C-3; γ -C-4; γ -C-5
		Sub-National	UD, LW	H1, H5	Descriptive	ENV-SN-UD; ENV-SN-LW	γ -D-1; γ -D-2
	Political (P)	Global	UD, LW, CCC, C, C-SP-P	H1, H2	Descriptive	Political(P)-G-UD; P-G-LW; P-G-CCC; P-G-C; P-G-CSPP	δ -A-1; δ -A-2; δ -A-3; δ -A-4; δ -A-5
		Regional	UD, LW, CCC, C, C-SP-P	H1, H2	Descriptive	P-R-UD; P-R-LW; P-R-CCC; P-R-C; P-R-CSPP	δ -B-1; δ -B-2; δ -B-3; δ -B-4; δ -B-5
		National	UD, LW, CCC, C, C-SP-P	H1, H2	Descriptive	P-N-UD; P-N-LW; P-N-CCC; P-N-C; P-N-CSPP	δ -C-1; δ -C-2; δ -C-3; δ -C-4; δ -C-5
		Sub-National	UD, LW	H1, H5	Descriptive	P-SN-UD; P-SN-LW	δ -D-1; δ -D-2
Chapter 7	Integrative of Four Factors	Global	UD, LW, CCC, C	H1, H2, H3, H4, SH3a, SH3b, SH3c, SH3d, SH3e, SH4a, SH4b, SH4c, SH4d, SH4e	Descriptive	[(E-G-UD)-(S-G-UD)-(ENV-G-UD)-(P-G-UD)];[(E-G-LW)-(S-G-LW)-(ENV-G-LW)-(P-G-LW)];[(E-G-CCC)-(S-G-CCC)-(ENV-G-CCC)-(P-G-CCC)]; [(E-G-C)-(S-G-C)-(ENV-G-C)-(P-G-C)]	[(α -A-1)-(β -A-1)-(γ -A-1)-(δ -A-1)]; [(α -A-2)-(β -A-2)-(γ -A-2)-(δ -A-2)]; [(α -A-3)-(β -A-3)-(γ -A-3)-(δ -A-3)]; [(α -A-4)-(β -A-4)-(γ -A-4)-(δ -A-4)]
		Regional	UD, LW, CCC, C	H1, H2, H3, H4, SH3a, SH3b, SH3c, SH3d, SH3e, SH4a, SH4b, SH4c, SH4d, SH4e	Descriptive	[(E-R-UD)-(S-R-UD)-ENV-R-UD)-(P-R-UD)];[(E-R-LW)-(S-R-LW)-(ENV-R-LW)-(P-R-LW)];[(E-R-CCC)-(S-R-CCC)-(ENV-R-CCC)-(P-R-CCC)]; [(E-R-C)-(S-R-C)-(ENV-R-C)-(P-R-C)]	[(α -B-1)-(β -B-1)-(γ -B-1)-(δ -B-1)]; [(α -B-2)-(β -B-2)-(γ -B-2)-(δ -B-2)]; [(α -B-3)-(β -B-3)-(γ -B-3)-(δ -B-3)]; [(α -B-4)-(β -B-4)-(γ -B-4)-(δ -B-4)]

		National	UD, LW, CCC, C	H1, H2, H3, H4, SH3a, SH3b, SH3c, SH3d, SH3e, SH4a, SH4b, SH4c, SH4d, SH4e	Descriptive	[(E-N-UD)-(S-N-UD)-ENV-N-UD)-(P-N-UD)];[(E-N-LW)-(S-N-LW)-(ENV-N-LW)-(P-N-LW)];[(E-N-CCC)-(S-N-CCC)-(ENV-N-CCC)-(P-N-CCC)]; [(E-N-C)-(S-N-C)-(ENV-N-C)-(P-N-C)]	[(α -B-1)-(β -B-1)-(γ -B-1)-(δ -B-1)]; [(α -B-2)-(β -B-2)-(γ -B-2)-(δ -B-2)]; [(α -B-3)-(β -B-3)-(γ -B-3)-(δ -B-3)]; [(α -B-4)-(β -B-4)-(γ -B-4)-(δ -B-4)]
		Sub-National	UD	H1, H2, H3, H4, H5	Descriptive	[(E-SN-UD)-(S-SN-UD)-ENV-SN-UD)-(P-SN-UD)]	[(α -B-1)-(β -B-1)-(γ -B-1)-(δ -B-1)]; [(α -B-2)-(β -B-2)-(γ -B-2)-(δ -B-2)]

Note: UD: Uneven development; LW: Long wave; CCC: circular and cumulative causation; C: contradiction; C-SP-P: core-semi-periphery-periphery; E: Economic factor; S: Social factor; ENV: environmental factor; P: political factor; G: global; R: regional; N: national; SN: sub-national.

4.7 Concluding Remarks

The current chapter describes the links between the core principles of political economy, the hypotheses of uneven development and a research methodology. This chapter shows that several core principles can be connected to particular indices that are important in assessing several hypotheses of uneven development. In order to support these hypotheses, a research method is explained that is linked to the research objectives, the chosen theoretical framework and technical model, as well as the selected data. The technical model simplifies the interrelationships between three fields: four factors (economic, social, environmental, and political), four levels (global, regional, national, and sub-national), and five core principles of political economy (uneven development, historical/long wave, CCC, contradiction, and C-SP-P).

This chapter puts forward three notions that form the foundation for further analyses. The first is the research methodology that arises by linking the research objectives, the theoretical framework and the hypotheses. The second is the discussion of various indices of different levels and dimensions. Third, a technical model is presented, which is termed by the SFR model of political economy. This model is used to summarize several important aspects of the linkages of factors, levels and principles of political economy. In Chapters 5, 6, and 7, the SFR model is used to assess long

waves of economic, social, environmental, and political factors at different levels during 1950–2010.

Chapter 5

Long Waves of Economic Factors in the Global, Regional, National and Sub-National Political Economies, 1950–2010

5.1 Introduction

As discussed in Chapter 4, this study proposes several hypotheses based on relevant literature. The previous chapter also explains the research method, which involves a number of approaches: First, it employs the stylized fact approach; next, it considers various geographical dimensions and finally it employed the stylized-fact–roulette model (SFR) as a technical method to assess the data.

The current chapter examines long-term patterns of economic factors at differing levels during the 1950s–2000s. This chapter applies the SFR model of political economy to lead this investigation toward explaining relevant stylized facts. This chapter is divided into three major parts. The first part of this chapter discusses economic growth and uneven development trends during the 1950s–2000s. Long-term patterns of distribution of economic growth at the global and regional levels are presented. The second part focuses on the 1970s, during which structural linkages of core, semi-peripheral, and peripheral countries typically changed in the world. The third part captures several crucial stylized facts of economic factors, including the consistency of the Asian economy, the deterioration in the Western economy, and the erratic economies of LACA, MENA and SSA. These economic performances are investigated by CCC and Contradiction on the structural linkages of GDP growth per capita (demand), investment, productivity, and export. In addition, the third issue innovatively discusses the sub-national variations of economic growth.

The rest of the chapter is organized as follows. Section 5.2 seeks to examine long waves of economic growth at global and regional levels. Sub-section 5.2.1 investigates pattern of economic growth within countries. The following section, Section 5.3, scrutinizes the change in the structural linkages of C–SP–P in the 1970s through countries' distribution of GDP growth per capita. Section 5.4 discusses the consistent performances in Asia that are promoted by the cumulative causation of economic factors. Section 5.5 reveals several contradictions of economic factors, which are causing the deterioration of the Western economy. Section 5.6 illustrates the patterns of

economic factors in LACA, MENA and SSA. Section 5.7 scrutinizes sub-national patterns of economic growth in selected nations. Lastly, Section 5.8 summarizes the results of the earlier sections in this chapter.

5.2 Economic Growth and Development Trends 1950–2010

Interest in the pattern of economic growth and development intensified after a prolonged period of growth performance threw up several stylized facts and heterogeneous pieces of evidence that had emerged at differing levels. In light of this, a technical approach that focuses primarily on the role of long-term socioeconomic performance is required. Such an approach reveals many stylized facts at the global, regional, national, and sub-national levels in the long term.

The social structure of accumulation (SSA) theory is particularly useful for observing long-term socioeconomic performance. The SSA theory presumes that the change of institutions within a capitalist economy tends to influence socioeconomic performance in the long term (Gordon, Bowles, and Weisskopf 1983; Kotz 1987, 2008; Lippit 2006; O’Hara 2007b, 2010, 2012b). It also presumes an evolutionary process, in which institutions experience change and transformation that promote long-term economic growth. SSA theory is not deterministic, but it explains the durable structure of institutions through long-wave motion.

SSA theory posits that GDP growth per capita is a critical proxy for identifying conditions in demand and market capital. In terms of SSA empirics, GDP growth per capita is a function of the level of economic stability and the efficacy of institutions. It enables global performance to be critically investigated, along with long-wave upswings, a borderline period, and long-wave downswings.

Table 5.1, below, outlines how long waves will be examined at the global, regional, national, and sub-national levels. There are seven classes of GDP growth per capita that can capture economic growth at different levels. For instance, the global or regional/country condition is classified as low long-wave upswing (LLWU) if it has GDP growth per capita in the range of 2.51–3.50 per cent. Slight long-wave downswing/slight downswing (SLWD) refers to the global, regional, or country

conditions of GDP growth per capita of 1.01–2.00 per cent. This classification is crucial for investigating the pattern of economic performance at different levels.

Table 5.1 Long-Wave Taxonomy for GDP Growth per Capita

Major Upswing	Medium Upswing	Low Upswing	Borderline	Slight Downswing	Medium Downswing	Major Downswing
>4.50% Growth	3.51–4.50% Growth	2.51–3.50% Growth	2.01–2.50% Growth	1.01–2.00% Growth	0.00–1.00% Growth	0.00%> Growth
<i>MLWU</i>	<i>MDLWU</i>	<i>LLWU</i>	<i>B</i>	<i>SLWD</i>	<i>MDLWD</i>	<i>MLWD</i>

Source: O’Hara (2007a); this study extend the classifications, making them different from those in the source.

First, the performance of the global political economy is investigated by GDP per capita growth (as a proxy economic factor). The first stylized fact is that GDP growth per capita at the world level was relatively high during the long-wave upswing of 1950–1973 and relatively low during the long-wave downswing of 1974–2010. Taking a long view, the global economy experienced durable institutional changes during 1950–2010. GDP per capita growth is affected by the effectiveness of global institutions. The pattern of change between the long-wave upswing of 1950–1973 and the long-wave downswing of 1973–2010 reflects the impact of institutional processes on the political economy.

Global and regional economic performance during the long-wave upswing of 1950–1973 and the long-wave downswing of 1973–2010 are illustrated in Table 5.2. Table 5.2a the reveals average GDP per capita growth in the world and regions during 1950–1973 and 1974–2010³. This study employs 1973 as a specific border between the two long-wave phases, since it was during this year that the influence of the neoliberal institution on global economic performance increased (Maddison 2003, 2007; O’Hara 2007a, 2008a). Decade averages of GDP growth per capita identify long waves at differing levels. Table 5.2b also shows averages for the periods of 1950s–1970s and 1980s–2000s⁴. This is useful for investigating the level of change in economic growth between periods in the global and regional capital markets (Boulding 1945, 1984; O’Hara 2008a), identified as the disparity between the rate for the period of the 1950s–1970s and that for the period of the 1980s–2000s⁵.

³ The classification of periods 1950–1973 and 1974–2010 is based on the work of Maddison (2007) and O’Hara (2008a).

⁴ The classification of the 1950s–1970s and 1980s–2000s is developed based on O’Hara (2008a).

⁵ The calculation method of level of the economic change is developed based on O’Hara (2008a).

Table 5.2a GDP Growth per Capita 1950–2010 (%): World and Regions, Period Annual Averages

	1950– 1973	1974– 2010	1950s*	1960s	1970s	1980s	1990s	2000s
Asia	3.11	5.08	2.68	3.36	3.72	3.73	5.47	6.16
North Am America	3.48	1.78	3.15	3.77	2.76	1.64	1.49	1.72
Western Europe	3.87	2.03	3.58	4.36	3.67	2.38	2.08	1.17
Eastern Europe	4.01	2.30	4.10	4.09	3.11	0.39	-0.87	4.88
MENA	3.16	0.98	2.78	2.91	3.53	-1.74	1.66	2.29
SSA	2.23	1.08	1.86	1.97	2.65	0.04	0.27	2.20
LACA	2.49	1.41	2.13	2.84	2.21	-0.12	1.70	2.27
Oceania Pacific	3.29	0.87	1.63	2.57	2.95	0.24	0.97	0.97
World	3.33	1.82	2.74	3.23	2.12	0.82	1.35	1.98

Source: GDP growth per capita in the 1960s–2000s is calculated using period annual averages based on World Bank (2010); * = GDP growth per capita in the 1950s is calculated using period annual averages based on Maddison (2003). Note: Asia (25 countries), North America (3 countries), Western Europe (22 countries), Eastern Europe (19 countries), MENA (20 countries), LACA (28 countries), Oceania & Pacific (15 countries), SSA (28 countries). More complete explanations are given in the Definitions of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-1 and Calculation Results: Appendix D1-1⁶ and D1-2.

During 1950–1973, world GDP growth per capita was 3.33 per cent. During 1974–2010, it decreased to 1.82 per cent during 1974–2010. The long-wave upswing and downswing can be identified by comparing average GDP growth per capita in the 1950s–1970s and the 1980s–2000s. The average GDP growth per capita for the 1950s–1970s was 2.70 per cent, which suggests a long-wave upswing. This was followed by a long-wave downswing of 1.61 per cent, as indicated by the average GDP growth per capita for the 1980s–2000s. Decade averages of GDP growth per capita are also revealing. Global GDP per capita experienced an upswing in the 1950s–1960s, followed by a borderline level in the 1970s, which declined into a downswing during the 1980s–2000s. The deterioration of the global capital market is identified by the level of negative economic change, which is the gap between average global GDP per capita in the 1950s–1970s and the 1980s–2000s.

⁶ Calculation Results: Appendix D-1 displays time series data per country in every region that includes specific explanations on missing data in every country.

Table 5.2b Change in GDP growth per capita 1950–2010 (%): World and Regions, Period Annual Averages

	Δ (1950- 1973) – (1974- 2010)	Average 1950s- 1970s	Average 1980s- 2000s	Δ (1950s- 1970s) – (1980s- 2000s)
Asia	63.44	3.26	5.12	57.29
North Am America	-48.94	3.23	1.62	-49.96
Western Europe	-47.69	3.87	1.88	-51.54
Eastern Europe	-42.49	3.77	1.47	-61.06
MENA	-68.85	3.07	0.60	-80.59
SSA	-51.46	2.16	0.69	-67.99
LACA	-43.22	2.39	1.29	-46.25
Oceania Pacific	-79.74	2.38	0.72	-69.64
World	-45.41	2.70	1.61	-40.29

Source: Same as Table 5.2a.

Global economic conditions were a pale imitation of the performance of advanced regions. Western Europe experienced a medium upswing during 1950–1973, yet it was at a borderline level during 1974–2010. North America had a low upswing during 1950–1973, followed by a slight downswing during 1974–2010. Part of Oceania and the Pacific also experienced a medium downswing during 1974–2010, after experiencing a low upswing. Average GDP growth per capita in these advanced regions also declined about one-half from the period of the 1950s–1970s to that of the 1980s–2000s. For instance, GDP growth per capita in Western Europe decreased from an average of 3.87 per cent in the 1950s–1970s to an average of 1.88 per cent in the 1980s–2000s.

Asia experienced a consistent long-wave upswing from 1950, which became stronger during 1974–2010. Asia underwent a medium upswing during the 1950s–1970s, followed by a major upswing during the 1980s–2000s. GDP growth per capita was slightly higher in 1974–2010 than in 1950–1973. Average GDP growth per capita during the 1980s–2000s was 57.29 per cent higher than it was during the 1950s–1970s, suggesting that this region remains a potential capital market.

Eastern Europe shows specific patterns of economic performance. This region experienced a medium upswing during 1950–1973 with particular medium upswings in the 1950s–1960s and a low upswing in the 1970s. GDP growth per capita then declined throughout the 1980s–1990s. In the 2000s, this region increased its GDP growth per

capita by four times more than in the 1980s–1990s. Yet, the pattern of the average GDP growth per capita between the 1950s–1970s and the 1980s–2000s suggests that this region experienced a long-wave upswing during the 1950s–1970s and a long-wave downswing during the 1980s–2000s. This region has a low capacity to provide capital markets, as the level of negative economic change was 61.06 per cent.

Latin America and the Caribbean (LACA) experienced a borderline level of GDP growth per capita during 1950–1973 and then declined into a slight downswing during 1974–2010. Average GDP growth per capita in the 1980s–2000s was lower than it was in 1950–1973. The region began from a borderline position of GDP growth per capita of 2.13 per cent in the 1950s, which turned into a low upswing in the 1960s (2.84 per cent) and then returned to a borderline position through the 1970s (2.21 per cent). However, the upswing in this region did not continue; the region experienced a major downswing in the 1980s, a slight downswing in the 1990s, and a borderline position in the 2000s. Overall, the pattern of economic performance during the 1950s–2000s suggests that negative economic change occurred in LACA.

Negative change in GDP growth per capita also occurred in MENA. This region experienced a medium upswing during 1950–1973, followed by slight and medium downswings during 1974–2010. GDP growth per capita decreased from a 3.07 per cent average in the 1950s–1970s to a 0.60 per cent average for the period of the 1980s–2000s. Specifically, MENA experienced a low upswing in the 1950s; then, it continued to have upswings of increasing magnitude throughout the 1960s–1970s. These were followed by a major downswing in the 1980s, a slight downswing in the 1990s, and a borderline position during the 2000s.

In the last region, SSA was at borderline level during 1950–1973, followed by a long-wave downswing during 1974–2010. GDP growth per capita in this region declined from an average of 2.16 per cent in the 1950s–1970s to an average of 0.69 per cent in the 1980s–2000s. This region's GDP growth per capita exhibited a slight downswing in the 1950s, which was prolonged into the 1960s. Even though SSA experienced a low upswing in the 1970s (2.65 per cent), GDP growth per capita then declined, as seen in the major downswings through the 1980s–1990s. It was at a borderline position in the 2000s. This pattern of economic performance suggests that economic instability likely

contributes to declining market potential, as the results of large negative economic change.

5.2.1 Global, Regional, and National Upswing and Downswing 1950–2010

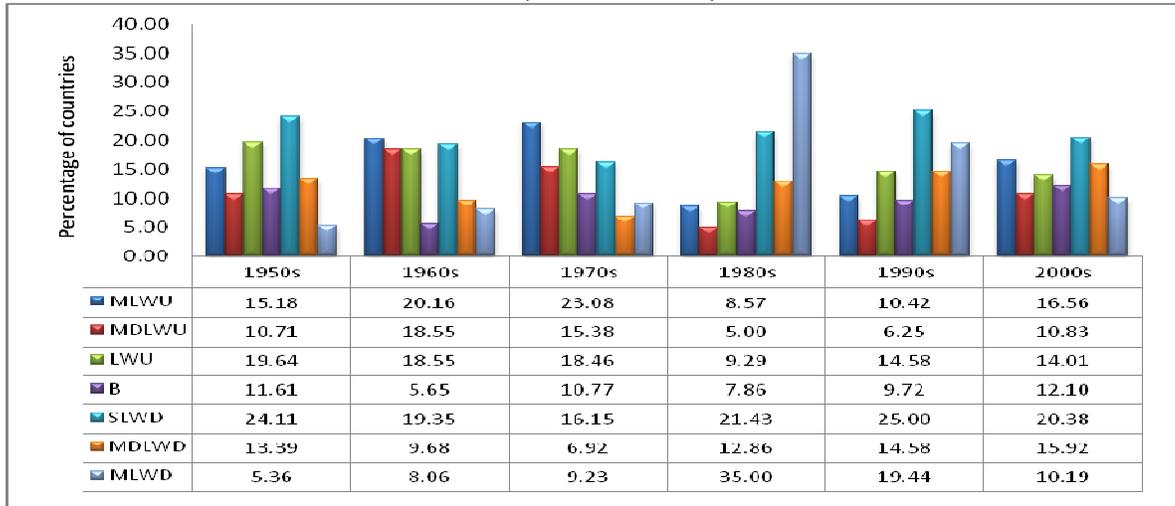
This sub-section examines the patterns of economic performance among regions and nations during the long-wave upswing of 1950–1973 and the long-wave downswing of 1973–2010. There are two critical facts in this sub-section. The first is the pattern of countries' performance during the 1950s–2000s, which crucially reveals the change in each country for every decade in the long wave. Within the distribution of countries, this study is concerned with examining countries' patterns for indicating long-wave performance. The second is the regional pattern during the 1950s–2000s, which shows regional contributions linked to long-wave performance for every decade.

The changes in countries' patterns are useful indicators of the patterns of economic performances among regions and nations. The present study particularly acknowledges previous research. Ocampo and Vos (2008) utilize the method of country distribution to identify the pattern of expansion or contraction in long-term GDP growth per capita among 106 countries that are classified as semi-peripheral (e.g., Asia, Eastern Europe, MENA, and Central America) and peripheral regions (e.g., SSA). O'Hara (2012a) also uses the distribution of 80 countries to investigate the patterns of long wave and short wave in GDP growth per capita.

The presents study extends several modifications in applying this method, which results in differences from previous sources. These modifications are represented in patterns illustrated in Figures 5.1, 5.2, 5.3a, 5.3b, and 5.3c. Figure 5.1 captures the distribution of countries during the 1950s–2000s using earlier long-wave taxonomy. This study gathered evidence from 160 countries around the world, namely Asia (25 countries), North America (3 countries), Western Europe (22 countries), Eastern Europe (19 countries), Oceania and the Pacific (15 countries), LACA (28 countries), MENA (20 countries), and SSA (28 countries). The distribution of countries is shown by the percentage of countries within each of the seven classes of GDP growth per capita for every decade. Figure 5.2 presents the global patterns of upswing, downswing, and

borderline during the 1950s–2000s. The series in Figure 5.3 then displays the distribution of countries by regions according to long-wave taxonomy.

Figure 5.1 Distributions of Countries 1950-2010 by Long-Wave Taxonomy (160 countries)



Source: Basic data is processed from GDP per capita growth. GDP growth per capita in the 1960s–2000s is calculated using period annual averages based on World Bank (2010); GDP growth per capita 1950s is calculated using period annual averages based on Maddison (2003). Note: Figure 5.1 uses taxonomy of long wave in Table 5.1, including MLWU: major long-wave upswing, MDLWU: medium long-wave upswing, LLWU: low long-wave upswing, B: borderline, SLWD: slight long-wave downswing, MDLWD: medium long-wave downswing, MLWD = major long-wave downswing. More complete explanations are given in Technical Notes: Appendix B-6 and Calculation Result: Appendix D1-4.

Regions and nations underwent a long-wave upswing in the 1950s–1970s and a long-wave downswing in the 1980s–2000s. As displayed in Figure 5.1, nearly 15.18–23.08 per cent of the 160 countries included in the analysis had experienced a major upswing in the 1950s, 1960s, and 1970s. Conversely, during the 1980s–2000s, only 8.57–16.56 per cent of the countries underwent a major upswing; that is, nearly 10.19–35.00 percent of the countries experienced a major downswing. The decades of the 1980s and the 2000s are noteworthy. In the 1980s, the percentage of major upswing countries was one third of that in the 1970s. In the 2000s, the percentage of major upswing (MLWU) countries rose by 7.99 per cent from that in the 1980s.

In particular, during the upswing of the 1950s–1960s, the percentages of major upswing (MLWU) and medium upswing (MDLWU) countries increased by 5–8 per cent, while slight downswing (SLWD) and medium downswing (MDLWD) countries declined by 4–5 per cent. These swings determined the performance of the world economy in these periods. The advanced regions of North America, Western Europe, and parts of Oceania contributed more than a quarter of the countries that experienced

upswings⁷. As shown in Figure 5.3a, roughly 24 per cent of all upswing countries were in Western Europe. Asia represented around 17–19 per cent of upswing countries. Finally, between 14 and 17 per cent of countries from Eastern Europe underwent upswing.

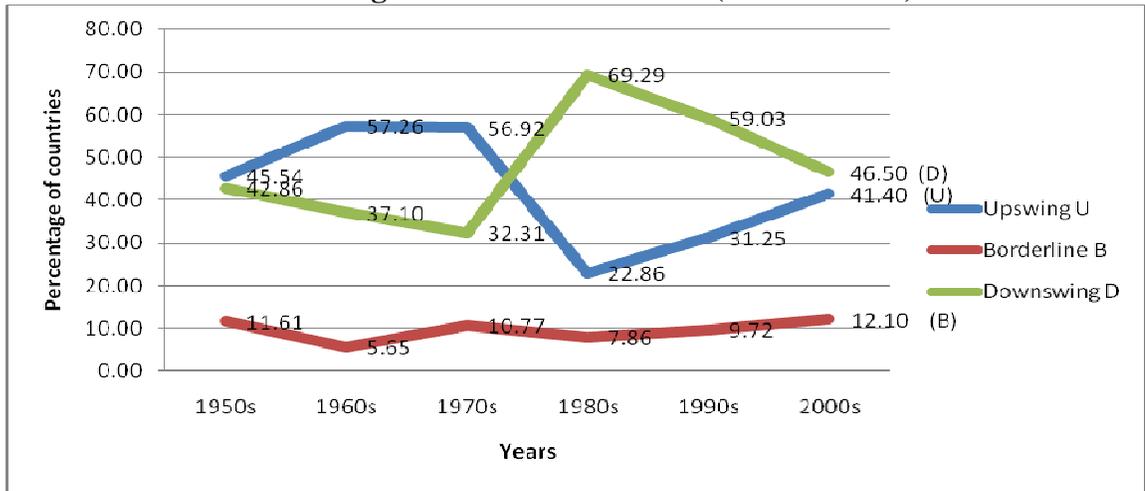
In the 1970s, long-wave performance was determined by two specific patterns of distribution. Firstly, the percentage of countries experiencing major upswings (MLWU), borderline position (B) and major downswings (SLWD) increased in comparison to the percentage in the 1950s–1960s. The percentage of major upswing countries was slightly higher than in the 1950s and 1960s. The percentage of borderline countries rose by roughly 5 per cent from the 1960s. The percentage of major downswing countries increased from 8.06 per cent in the 1960s to 9.23 per cent in the 1970s.

During the 1980s–1990s, as seen in Figure 5.1, the slight downswing of 21.43 to 25.00 per cent of countries and the major downswing of 19.44 to 35.00 per cent of countries partly determined the low levels of global growth. LACA and SSA contributed more than half of the countries that experienced downswing⁸. As the global oil regime underwent uncertainties in the mid-1980s, no fewer than 11 countries in MENA also experienced downswings. However, downswings were not restricted to MENA; all advanced nations in North America and Oceania, as well as half of those in Western Europe, underwent downswings during recessions in the early 1980s and 1990s. In the case of Eastern Europe, nearly a quarter of the countries experienced a downswing during the 1990s. Unlike other regions, Asia enjoyed strong growth trends through these decades. At least one half of the upswing countries for the 1980s and 1990s came from Asia.

⁷ It should be noted that this study may not capture the 1940s. In this study, a region or a country is classified by upswing in the 1950s as it experienced upswing during the 1950s–1960s. More complete calculations are given in Appendices D1-1 and D1-4.

⁸ More complete calculations are given in Appendix D1-4

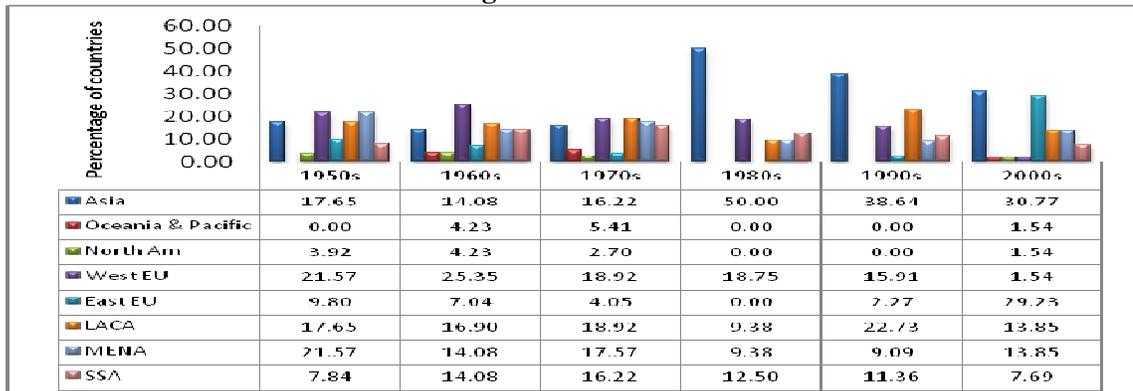
Figure 5.2 Comparison of Percentages of Upswing, Borderline and Downswing Countries 1950s–2000s (160 countries)



Source: Same as Figure 5.1. Note: Same as Figure 5.1.

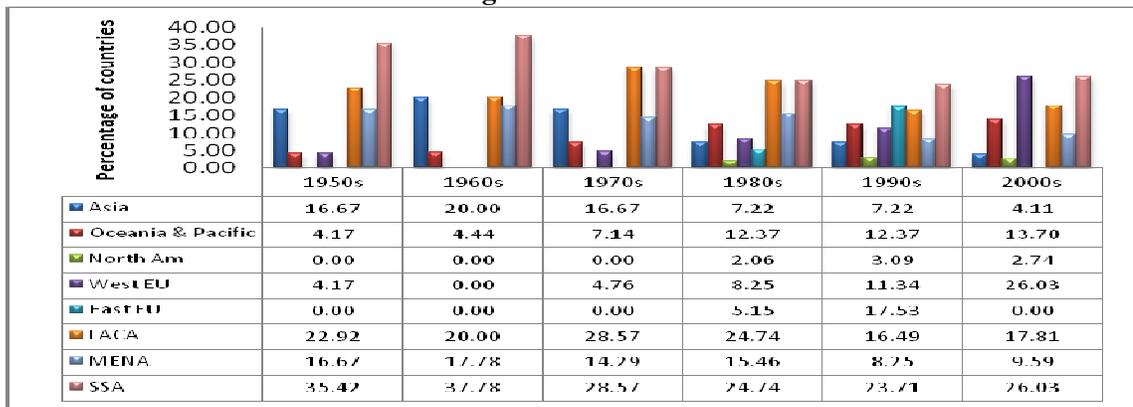
Turning to Figure 5.2, a second pattern can be seen that different patterns occurred in the percentage of upswing, downswing and borderline countries. The percentage of countries experiencing upswing was higher than the percentage of downswing countries during the 1950s–1970s. By contrast, during the 1980s–2000s, the percentage of countries experiencing downswing was larger than the percentage of upswing countries. The percentage of borderline countries was below the percentage of upswing and downswing countries during the 1950s–2000s. The pattern of borderline countries increased in two periods, namely the 1960s–1970s and the 1980s–2000s. It also decreased in two periods, the 1950s–1960s and the 1970s–1980s.

Figure 5.3a Upswing in GDP Growth per Capita by Percentage of Countries per Region 1950s–2000s



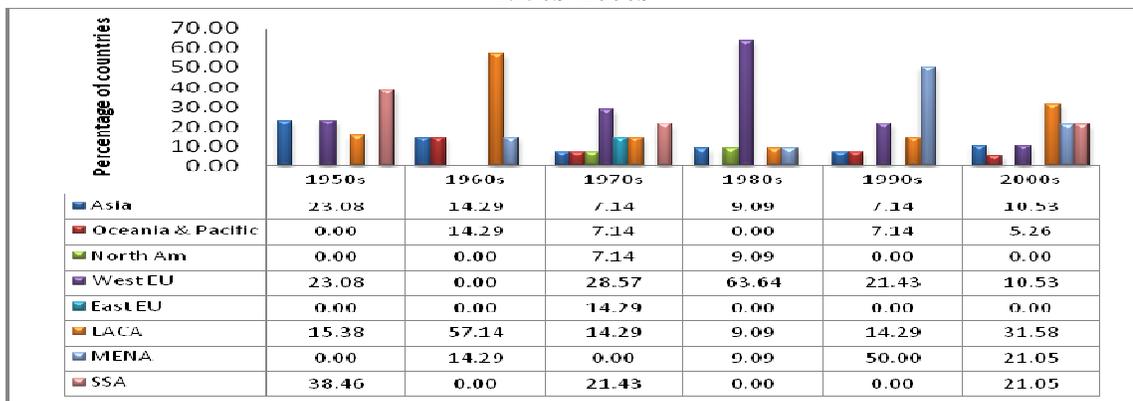
Source: Basic data is processed from GDP per capita growth. GDP growth per capita in the 1960s–2000s is calculated using period annual averages based on World Bank (2010); GDP growth per capita in the 1950s is calculated using period annual averages based on Maddison (2003). Note: Figure 5.3a uses taxonomy of long wave in Table 5.1. Number of upswing countries is defined as the sum of all classification for upswing (MLWU, MDLWU and LLWU). More complete explanations are given in Technical Notes: Appendix B-6 and Calculation Results: Appendix D1-5.

Figure 5.3b Downswing in GDP Growth per Capita by Percentage of Countries per Region 1950s–2000s



Source: Same as Figure 5.3a. Note: Appendices are same as Figure 5.3a.

Figure 5.3c Borderline in GDP Growth per Capita by Percentage of Countries per Region 1950s–2000s



Source: Same as Figure 5.3a. Note: Appendices are same as Figure 5.3a.

In the 2000s, the distribution of countries displayed three specific patterns. The first pattern was that the percentage of downswing countries, at 46.50 per cent, differed only slightly from the percentage of upswing countries, which was nearly 41.40 per cent. The second pattern was that the borderline countries, constituting 9.72 per cent of the total in the 1990s, increased to 12.10 per cent in the 2000s. In line with these two patterns, Asia contributed more than one third of the upswing countries during the 2000s. Eastern Europe contributed more than a quarter of the upswing countries. LACA and SSA represented nearly 30 per cent and 21 per cent of borderline countries respectively, suggesting that many LACA and SSA countries were attempting to stimulate economic performance after the debt crisis of the 1980s.

As can be seen from the earlier Figure 5.1, the third pattern is that the percentage of the major and medium upswing countries as well as that of the borderline countries increased in the 2000s. Major upswing countries increased by more than a half compared to levels in the 1990s. The percentage of medium upswing and borderline countries increased slightly, by 4–5 per cent. Some regions displayed a pattern of GDP growth per capita, most noticeably Eastern Europe and LACA. Eastern Europe, which experienced major upswings during this period, represented more than a quarter of the upswing countries. Most LACA countries were at a borderline position.

5.3 Global Institutional Change and Structural Linkages of the Core, Semi-periphery, and Periphery in the 1970s

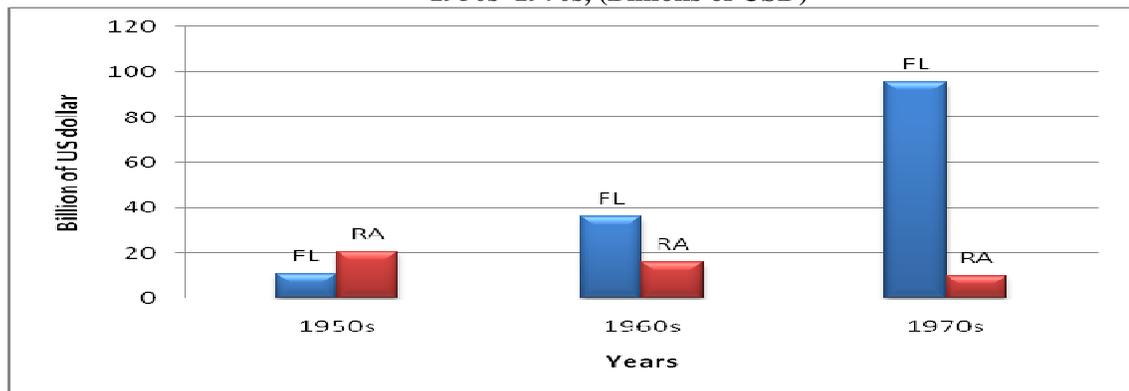
This section discusses the 1970s, a decade in which the structural linkages of core, semi-peripheral, and peripheral regions increased. It also evaluates the way in which existing literature conceives of the 1970s or, more specifically, the first half of the 1970s, when globalization and the neoliberal institution came to the fore (e.g., Maddison 2007; O'Hara 2008a). The first part of the present analyses scrutinizes the determinant factors of global institutional change in the 1970s. In the second part, structural changes in C-SP-P relationships are identified in the terms of their distribution among countries.

Two determinant factors of global institutional change arose in the 1970s. The first factor was the collapse of the Bretton Woods system, which led to a change in the system of global financial transactions, from the Bretton Woods system to flexible

capital mobility. During the 1950s to the 1960s, global financial transactions took place under the Bretton Woods system, maintained by the support of the United States' hegemony, which represented a Fordist institution. As the Bretton Woods system became more established, many countries typically used the US dollar for international transactions, because the stability of the US dollar was guaranteed by gold. Nevertheless, the stability of gold as a reserve asset decreased over time, as the United States struggled to contain its foreign liabilities. These liabilities led the US dollar to weaken, which meant it was less exchangeable for gold (the reserve assets).

To illustrate the collapse of Bretton Woods, this study presents data from Pool, Stamos, and Jones (1991) in a graphic format. Figure 5.4 shows that assets in the US were higher than foreign liabilities early in the Fordist era, i.e., the 1950s. In the 1960s, the US's foreign liabilities slightly exceeded reserve assets, indicating that the US dollar value was weakening compared to the gold value. By the 1970s, foreign liabilities were more than three times the value of reserve assets. Decreasing reserve assets indicated a weaker position of gold to ensure the value of the US dollar.

Figure 5.4 The United States' Foreign Liabilities⁹ and Reserve Assets¹⁰ 1950s–1970s, (Billions of USD)



Source: Foreign liabilities and gold reserve assets are calculated using period annual averages based on Pool, Stamos and Jones (1991). Note: FL = US foreign liabilities; RA = the US gold reserve assets.

Decreasing US reserve assets contributed to the collapse of Bretton Woods, which signaled the commencement of capital mobility in the early 1970s. In addition, in the mid-1970s, core countries (e.g., the United States and the United Kingdom) began using

⁹Foreign liabilities are defined as part of the total debt in a country that is owed to creditors outside the country (World Bank 2010).

¹⁰Reserve assets refer to US gold reserve assets employed to back the US dollar in international transactions (Pool, Stamos, and Jones 1991).

monetary policy in preference to the Bretton Woods system (Cleaver 1989; Dymski 2002). Capital mobility was one aspect of the change from the Fordist era to the era of globalization. Capital flow, either from region to region or from one country to other countries, rose compared to previous decade.

Hence, capital mobility led to changes in the transformation of the structural linkages of the core, semi-periphery, and periphery in the global system. According to Kaldor (1982), Desai (1989), and Dymski (1990, 2002), capital mobility leads to global uncertainty and several anomalies, especially for semi-peripheral and peripheral regions. Core regions allowed official government loans to be replaced by commercial loans to semi-peripheral and peripheral regions, as several of these regions tried to recover from recessions in the mid-1970s. The aim of the capital inflows was to propel productivity, based on the structural linkages of demand and investment. However, as a result of higher interest rates on loans charged by commercial banks than by the government, semi-peripheral and peripheral regions became debtors to major commercial banks in core countries. This situation led to uncertainty and, consequently, uneven economic performances and varying trends in economic factors over time.

The second factor that contributed to structural changes and recession for core regions was emerging in the first half of the 1970s. At this time, the Yom Kippur War between Israel and Egypt took place. The United States supported Israel, partly in an attempt to control oil resources in the Middle East. In response, several OPEC (Organization Petroleum Exporter Countries) countries supported Egypt. The OPEC increased the oil price, which placed pressure on Israel and the US.

The increasing oil price affected not only Israel and the US, but also several other core regions. During the Fordist era, the core regions relied on the control of oil resources under US hegemony, with affordable oil being crucial for economic development. As the US's hegemony waned, and oil prices increased, a number of core regions struggled to increase production and export levels. The rise in oil prices affected the balance of payments in core regions and decreasing terms of trade with semi-peripheral and peripheral regions. These conditions resulted in a recession for several core regions in the mid-1970s.

These two factors contributed to global ‘circuits’ of oil transactions, and to changes in the structural linkages of core, semi-peripheral, and peripheral regions in the 1970s, as illustrated in Figure 5.5.

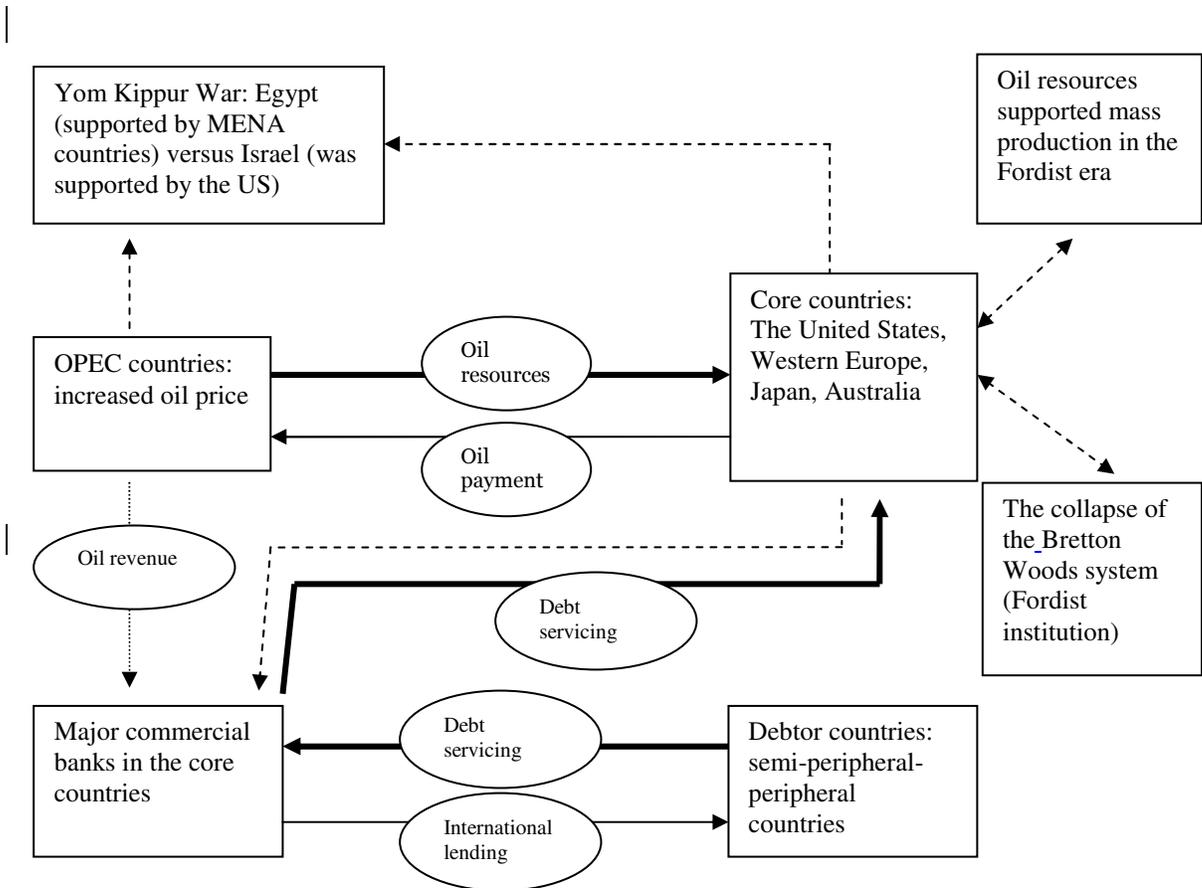


Figure 5.5 Global Circuits of Structural Changes and Oil-Related Transactions in the 1970s

Source: Pool, Stamos and Jones (1991), Issawi (2006). Note: This study extended links and figures, making them different from those in the sources. Thick-solid line: capital flow from semi-peripheral-peripheral to core regions; Solid line: capital flow from core to semi-peripheral and peripheral regions; Broken line: control linkages; Broken line with two arrows: interrelationship between two parts; Small broken line: the OPEC countries save oil revenue in major commercial banks.

The second part of the analysis focuses on the distribution of countries in various regions to examine the changes in the structural linkages of core, semi-peripheral, and peripheral regions. Country distribution is measured by countries’ changes in GDP growth per capita during the decade. As the global institution changed in the 1970s, several countries in core, semi-peripheral, and peripheral regions demonstrated a range of trends in the 1960s, 1970s, and 1980s. For example, one country experienced a

downswing in the 1960s, followed by an upswing in the 1970s and a downswing in the 1980s.

Table 5.3 shows the number of countries that, according to long-wave taxonomy, experienced temporary changes in GDP growth per capita in the 1970s. For instance, five semi-peripheral countries in LACA experienced temporary upswings in the 1970s. In SSA, two semi-peripheral countries experienced temporary upswings, whereas three peripheral countries had temporary upswings, and one country was temporarily in borderline.

Two major stylized facts can be identified from Table 5.3. The first stylized fact is that the number of semi-peripheral and peripheral countries that experienced temporary changes in GDP growth per capita exceeded the number of core countries in the 1970s. Semi-peripheral and peripheral countries accounted for 24 of 29 countries that experienced temporary changes in GDP growth per capita. The second stylized fact is that, in the 1970s, a far greater number of temporary upswings occurred in semi-peripheral and peripheral countries.

Table 5.3 Structural Changes of GDP Growth per Capita by Number of Countries per Region in the 1970s

	Asia	Oceania	North America	Western Europe	Eastern Europe	LACA	MENA	SSA	Total
Core countries			1B	4(1U,1D, 2B)					5 (1U, 1D,3B)
Semi-peripheral countries	2 countries (1U,1D)	5 (3U,1D, 1B)			2(2B)	5(5U)	4 (4U)	2 (2U)	20 (13U,2 D, 5B)
Peripheral countries								4(3U, 1B)	4 (3U,1B)
Total	2 (1U, 1D)	5 (3U,1D, 1B)	1B	4 (1U,1D, 2B)	2(2B)	5(5U)	4 (4U)	6(5U, 1B)	29 (17U, 3D, 8B)

Source: GDP growth per capita in the 1960s-2000s is calculated using period annual averages based on World Bank (2010). Note: U=upswing, D=downswing, B=borderline.

These two stylized facts signify that global institutional change in the 1970s determined changes in the structural linkages of C-SP-P. These changes were represented by temporary anomalies in the levels of GDP growth per capita. Linked with the first analysis, the Fordist era gave way to the era of globalization that generated

capital mobility. As a result, capital mobility led to major commercial banks in core countries lending to semi-peripheral and peripheral countries. The capital inflow in these countries brought about upswings in GDP growth per capita, which served as a proxy of aggregate demand. However, increasing capital inflow typically stimulated increasing capital outflow in semi-peripheral and peripheral countries, representing decreasing domestic resources. This explains why semi-peripheral and peripheral countries experienced a temporary upswing in the 1970s. As capital inflows increased productivity and export levels, aggregate demand increased, as suggested by an upswing of GDP growth per capita. At the same time, capital outflow increased, potentially decreasing investment and productivity. This also interrupted performance in the balance of payment as net export decreased and went into the negative, generating a decrease in aggregate demand, as can be seen in the downswing of GDP growth per capita in most semi-peripheral and peripheral countries in the 1980s.

Figure 5.6a Total Debt-Service of GDP¹¹ and Total Debt-Service¹² of Export: Mexico, 1960s–2000s



Source: Total debt service (% of exports) and total debt-service (% of GDP) are calculated using period annual averages based on the World Bank (2010).

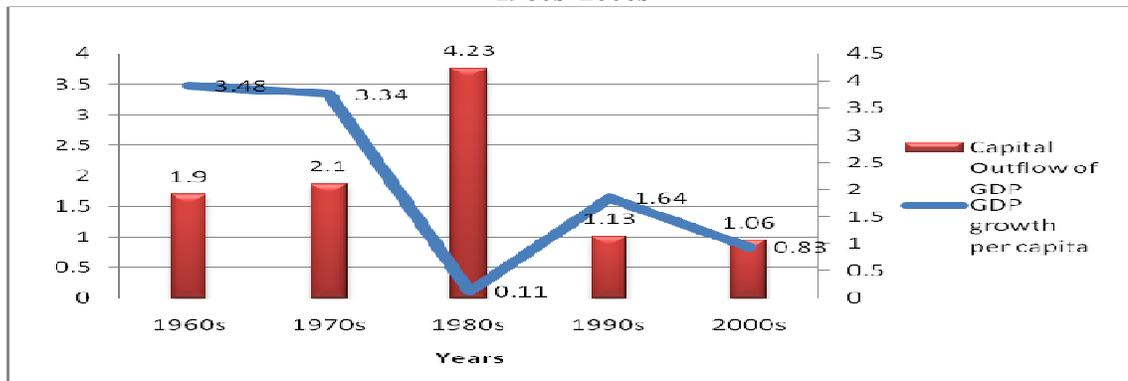
The links between debt crises and economic growth can be seen in the case of Mexico. As Figure 5.6a and 5.6b illustrate, the dependency upon foreign debt in Mexico during the 1970s–1980s was suggested by the total debt-service of GDP and the total debt-service of export, which increased from 32 per cent in the 1960s to 66 per cent in the 1970s, as foreign debt promoted capital inflows. These, in turn, stimulated a

¹¹ Total debt service is the sum of principal repayments and interest actually paid in foreign currency, goods, or services on long-term debt, interest paid on short-term debt and repayments (repurchases and charges) to the IMF. Total debt-service (% of GNI) is defined as total debt service as share of the added value of total domestic products (World Bank 2010).

¹² Total debt service (% of export) is defined as the total debt service share of export activities (World Bank 2010).

temporary upswing in Mexico. GDP growth per capita was 3.34 per cent in the 1970s, followed by long-wave downswings in the 1980s–2000s. Declining GDP growth per capita from the 1970s to the 1980s was determined by increasing capital outflow as a share of GDP and debt service as a share of GDP.

Figure 5.6b GDP Growth per Capita and Capital Outflow¹³ of GDP: Mexico, 1960s–2000s



Source: GDP growth per capita in the 1960s–2000s are calculated using period annual averages based on the World Bank (2010); Resident capital outflow (% of GDP) is calculated using period annual average based on Schneider (2001) and World Bank (2010)

5.4 The Asian Experience: Consistent Upswing 1950–2010

This section discusses the pattern of economic performance in Asia. The discussion is based on three in-depth analyses. The first examines the pattern of GDP growth per capita in Asia during the 1950s–2000s, focusing on certain countries in this region. The second analysis captures the pattern of the linkages of economic variables in this region in relation to the principle of circular and cumulative causation (CCC) and contradiction. The third analysis uses the results of the second analysis to provide a historical perspective, which is crucial to appreciating Asia’s global economic hegemony.

The first analysis considers some patterns linked with GDP growth per capita during 1950–1973 and 1974–2010. These are depicted in Table 5.4. GDP growth per capita is also indicated for every decade, which is useful for understanding long-wave performance. Table 5.4b also shows averages for the periods of the 1950s–1970s and the 1980s–2000s. These are crucial for examining the level of change in economic growth between periods in global and regional capital markets (Boulding 1984; O’Hara 2008a).

¹³ Capital outflow is the sum of capital which is owned by all residents and is accumulated in a foreign country. If that capital is invested in the domestic economy, it will generate a high social return (Schneider 2001).

The level of economic change refers to the average GDP growth per capita in the 1980s–2000s minus the average GDP growth per capita in the 1950s–1970s.

In general, Asia consistently experienced upswings from the 1950s onward. During 1973–2010, the average GDP growth per capita was higher than during 1950–1973. This region's long-wave upswing of the 1950s climbed even higher through the 1980s–2000s. A medium upswing occurred in the 1950s, 1960s, and 1970s when GDP growth per capita was between 2.68 and 3.72 per cent. A medium upswing in the 1970s continued in the 1980s, followed by a period of major upswing in the 1990s and 2000s. The stability of market growth in Asia between the long-wave upswing of the 1950s–1970s and the long-wave downswing of the 1980s–2000s is also indicated by a 57.29 per cent level of positive economic change.

During the 1950s–2000s, the pattern of economic performance in Asia was partly determined by the advancement of Japan and China, as well as being shaped by the development of several newly industrialized countries, such as the Republic of Korea and Singapore. The progress of India was also important. In the 1950s–1960s, Japan's major upswing fuelled a medium upswing in the Asian economy. Since the mid-1970s, China has experienced successively major upswings, which drove the pattern of economic performance in Asia during the 1980s–2000s. Major upswings in the Republic of Korea and Singapore ensured a sustainable upswing in this region. In the 2000s, India overtook the Republic of Korea and Singapore through its major upswing, which China also enjoyed in the 2000s. It is noteworthy that India had the strongest capital market in the region, with a level of positive economic change being above 120 per cent.

**Table 5.4a GDP Growth per Capita: Asia, 1950–2010 (%),
Period Annual Averages**

	1950– 1973*	1973– 2010	1950s*	1960s	1970s	1980s	1990s	2000s
Asia	3.11	5.08	2.68	3.36	3.72	3.73	5.47	6.16
Japan	8.33	1.96	7.18	9.69	4.64	3.06	1.87	0.64
China	7.10	7.96	5.34	8.01	6.09	8.56	8.44	8.99
India	1.51	3.64	1.68	1.62	1.75	2.34	3.54	5.61
Indonesia	2.11	4.45	1.00	1.90	5.39	4.07	5.35	3.38
Korea Rep	4.99	5.63	5.46	3.92	7.00	6.34	5.35	4.35
Singapore	4.63	4.68	0.99	6.07	7.92	5.43	4.62	3.51
Thailand	3.70	4.65	2.26	4.89	4.97	4.57	5.75	3.15
Pakistan	1.89	2.50	-0.01	3.79	1.82	3.85	1.66	2.26
Nepal	1.01	1.73	2.17	0.38	0.45	1.45	2.39	1.90

Source: GDP growth per capita in the 1960s–2000s is calculated using period annual averages based on the World Bank (2010); *=GDP growth per capita in the 1950s is calculated using period annual averages based on Maddison (2003). Note: All Asian countries in this Table 5.4a have complete time series data during 1950–2010. More complete explanations are given in Definition of Statistical Terms: Appendix A-1 and A-3, Technical Notes: Appendix B-1 and Calculation Results: Appendix D1-1 and Appendix D1-2.

**Table 5.4b Change in GDP growth per capita: Asia, 1950–2010 (%),
Period Annual Averages**

	Δ (1950–1973) – (1974–2010)	Δ (1950s–1970s) – (1980s–2000s)
Asia	63.44	57.29
Japan	-76.40	-74.12
China	12.10	33.70
India	141.40	127.80
Indonesia	111.28	54.45
Korea Rep	12.73	-2.08
Singapore	1.10	-3.73
Thailand	25.73	11.13
Pakistan	32.24	38.90
Nepal	70.95	91.28

Source: Same as Table 5.4a. Note: Same as Table 5.4a.

The consistent long-wave upswing in Asia during the 1950s–2000s was also influenced somewhat by semi-peripheral and peripheral countries. The economic progress in semi-peripheral countries occurred in the 1970s–1980s, when some Southeast Asian countries commenced upswings. For instance, Thailand and Indonesia experienced major upswings in the 1970s. Indonesia even had a potential capital markets, as the level of positive economic change was 54.45 per cent. By contrast, some

countries in South Asia struggled to move from peripheral to semi-peripheral class. Most of these had less capacity to generate long-wave upswings. For instance, a slight downswing and a borderline position occurred in Pakistan during the 1990s–2000s, and Nepal experienced a medium downswing and a borderline position during the 1950s–2000s.

For the second analysis, this study investigates the linkage of economic factors in Asia. This is to analyze the pattern of those factors associated with the principle of CCC and contradiction. This study proposes four economic factors: GDP growth per capita, investment growth (gross capital formation growth), productivity (value added growth in the industrial sector) and export minus import growth (net export growth). These factors are derived from Kaldor’s dynamic circular and cumulative causation model (Kaldor 1972; Pini 1995; Toner 1999; O’Hara 2006a). The relational patterns are then analyzed through the elasticity function¹⁴. The results of elasticity for each set of variables are crucial to identify CCC and contradiction among these factors.

Technically, the investigation of CCC and contradiction refers to the model of CCC and contradiction on economic factors (see Figure 3.2 and 3.4 in Chapter 3). The models show four quadrants that determine pairs of economic factors based on the Kaldorian CCC. The four-quadrant model of economic factors follows the circularity of economic factors in Kaldor’s model. For instance, the change in aggregate demand (GDP per capita) causes the change in investment alongside the circularity of Kaldor’s model. This circularity generates the elasticity of GDP growth per capita in relation to investment growth. The model notes that elasticity is calculated only by pairs of factors that have direct structural linkages through the circularity. For instance, the relationship between GDP per capita and investment has direct structural linkage, whereas the relationship between investment and net exports has indirect structural linkage.

There are four elasticity functions that can represent the direction of the structural linkages among the factors, namely the elasticity of GDP growth per capita to investment, the elasticity of investment to productivity, the elasticity of productivity to net export growth, and the elasticity of net export to GDP growth per capita. As an example, the structural linkages between GDP per capita growth and investment can be

¹⁴ More complete explanations are given in Chapter 3.

defined through the elasticity function (see Chapter 3). This function measures the percentage change of investment determined by the percentage change of GDP per capita. Similarly, other elasticity functions also represent the relationship among other factors.

The pattern of CCC and Contradiction in terms of factors and periods can be identified from the elasticity among these economic factors. The relationship of all economic factors represents CCC in a region if elasticity among these factors is positive (+). CCC may also occur in a region if all elasticity generated is negative (-) for all economic factors. By way of contrast, a contradiction may be identified in a region if there is a combination of (+) and (-) in elasticity among the factors. For instance, the pattern of CCC occurs in the relationship between GDP growth per capita and investment when the elasticity of GDP growth per capita to investment is positive. A contradiction occurs in the relationship between these two factors when the elasticity between them is negative.

Table 5.5 CCC in Asia Using Elasticity of Economic Factors, 1960s–2000s¹⁵

	1960s– 1970s*	1980s– 2000s	1960s	1970s	1980s	1990s	2000s	Contradiction- Years
Asia								
E Inv, GDP per capita	3.15	2.21	3.99	1.91	2.52	1.90	2.31	-
E Prod, Inv	0.83	0.59	0.61	1.23	0.74	0.49	0.55	-
E NX, Prod	0.85	0.98	0.86	0.83	0.44	1.61	1.03	-
E GDP per capita, NX	0.45	0.79	0.47	0.51	1.20	0.66	0.76	-
CCC and Contradiction- factors	CCC	CCC	CCC	CCC	CCC	CCC	CCC	

Source: Data is calculated using period annual average based on the World Bank (2010). Note: GDP/cap = GDP per capita (% growth), Inv = investment (% growth), Prod = industrial productivity (% growth), NX = net export (% growth). More complete explanations are served in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-2 – B-4 and Appendix B-7 and Calculation Results: Appendix D1-9.

The results of the elasticity among economic factors in Asia during the 1950s–2000s are displayed in Table 5.5. Note that the time series data are available from the 1960s–2000s. Table 5.5 shows two important aspects linked to the elasticity analysis. The first aspect captures the results of elasticity among economic factors. In the second

¹⁵ This study uses the 1960s-2000s for the investigation of CCC and Contradiction as some economic factors, such as Gross Capital Formation growth, Value added growth in industry and Net export growth have time-series data limitation in the 1950s. More complete explanations are given in Technical Notes: Appendix B-2, B-3, B-4 and B-7.

aspect, the results are revealed in every decade. The last row in Table 5.5 shows that CCC and contradiction may occur in every decade. The column of contradiction by years reveals decades in which a region has contradiction as a result of elasticity among economic factors.

The long-term pattern of CCC in Asia suggests that the interrelationship among economic factors is likely to have been a critical contributor to the sustained upswing. The results support Halevi and Kriesler (2007), Ocampo and Vos (2008), Toner and Butler (2009), and O'Hara (2008a, 2012a). As Table 5.5 illustrates, no negative elasticity was found in the relationship among economic factors during the 1950s–1970s and the 1980s–2000s. These economic factors even have an increasing pattern in elasticity. For instance, productivity elasticity to net export is slightly increased from long-wave upswing to long-wave downswing. This suggests that industrial capital was in relative accord with financial capital. Expanding productivity propelled the basis of exports. Hence, the elasticity of GDP growth per capita with respect to net export growth in the 1980s–2000s was higher than in the 1960s–1970s. This suggests that Asia managed to prevent any overcapacity problems in its export products.

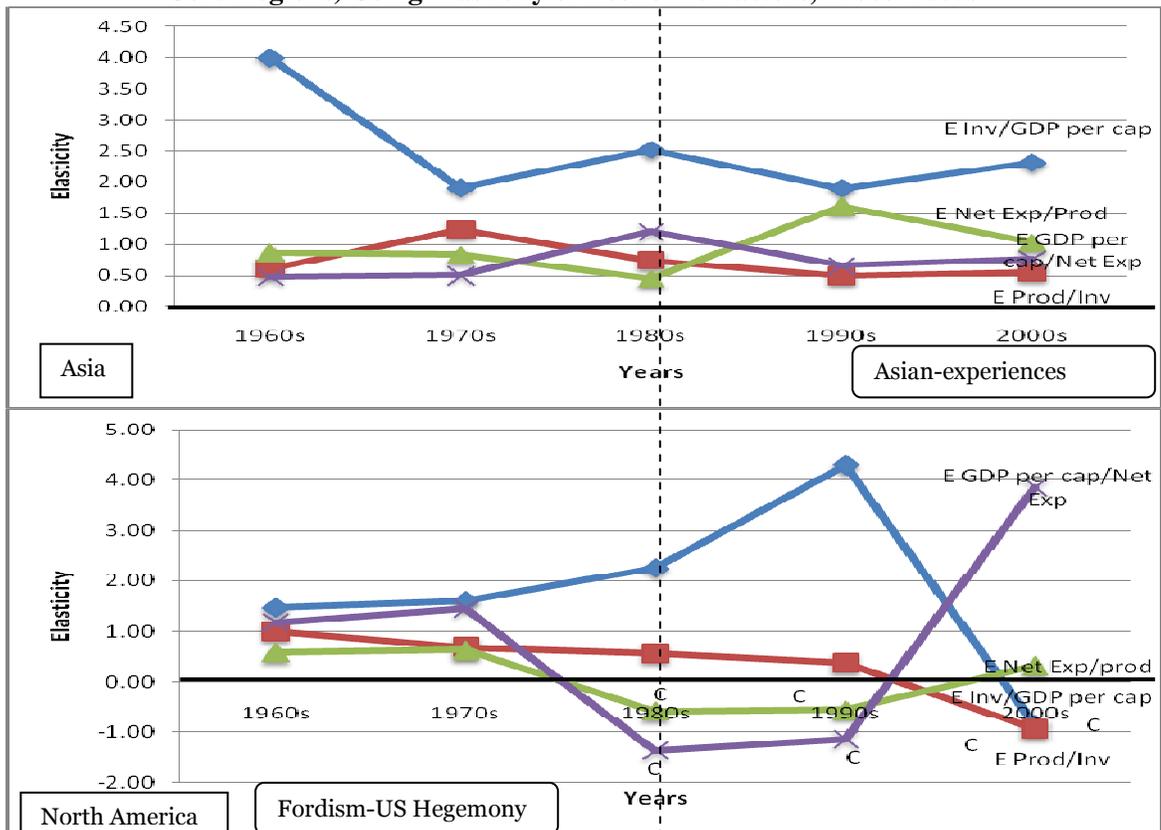
However, the GDP growth per capita to investment elasticity and the investment to productivity elasticity declined slightly in the 1980s–2000s when compared to the 1960s–1970s. As displayed in Table 5.5, the elasticity of average GDP growth per capita with respect to investment during the 1980–2000s was 2.21. This indicates that a one per cent change of average GDP growth per capita can lead to an increase of 2.21 per cent in investment growth. On the other hand, during the 1960s–1970s, a one per cent change in average GDP growth per capita can increase investment growth by 3.15 per cent.

The neoliberal perspective on this period might claim that financial liberalization removed restrictions on the mobility of global capital. As Wolfson (1990) contends, financial liberalization may have led to capital inflows to Asian countries during the 1980s–1990s; however, these may have generated financial fragility. This was also a period in which capital outflows determined declining currency values. Moreover, in the sub-section discussing temporary economic growth, this study reveals that some Asian countries underwent temporary downswings as financial crises occurred in the 1990s.

The third analysis evaluates an episode of the Asian long-wave upswing of the 1950s–2000s in terms of its global hegemony. Asia took advantage of replacing the core nations as the major supplier of mass consumer goods in global trade. World hegemony changed from the core countries, led by the US, to many nations in Asia, spearheaded by China. Asia was able to compete with the advanced nations, especially in the 1980s–2000s.

Empirically, this study investigates the conjoining of economic factors in Asia and in advanced nations (the Western regions). It employs the concept of elasticity to examine the process of change in world hegemony. In particular, the pattern of elasticity among economic factors in Asia is compared with the Western pattern during the 1950s–2000s. The results of the elasticity calculations are in Figure 5.7, which seeks to simplify the comparison between them. North America is taken to be the representative of the West, in large part because the United States is part of North America.

Figure 5.7 The Process of Change in Hegemony: Asia and North America (Part of the Core Regions) Using Elasticity of Economic Factors, 1960s–2000s



Source: Data is calculated from Table 5.5 and 5.7. Note: C = contradiction point; broken line: border between phase. Completed explanations are served in Definition of Statistical Terms: Appendix 1, Technical Notes: More complete explanations are given in Appendix B-2 – B-4 and Appendix B-7 and Calculation Results: Appendix D1-9 and D1-10.

Figure 5.7 shows two main graphs. The first graph displays the pattern of the four elasticity measures in Asia, whereas the second shows the pattern of elasticity in North America. The vertical dash-line divides the Asian and North American pattern into two parts. The global long-wave upswing of the 1950s–1960s and the borderline of the 1970s are on the left-side. The long-wave downswing is on the right side.

In terms of the elasticity of economic factors during the 1950s–2000s, Figure 5.7 reveals two general yet different conditions between Asia and North America. During the 1950s–1970s, the patterns of economic factors in Asia and North America both show positive elasticity, suggesting that these two regions have no contradiction in the relationships among economic factors. However, there are six contradictions among economic factors in North America, whereas Asia has consistently experienced positive elasticity during the 1980s–2000s.

In particular, contradiction point (C) shows negative elasticity in the 1980s, 1990s, and 2000s for North America. For instance, the negative elasticity of net export to GDP growth per capita presented a contradiction in the 1980s and 1990s in North America. In the 2000s, the elasticity of investment to productivity was negative, showing contradiction between them. The 2000s were also decades in which the elasticity of investment to GDP growth per capita was negative.

The investigation above suggests that hegemony in the global economy experienced a change from Western regions (e.g., North America) to Asia during the 1950s–2000s. North America's advancement was achieved by the institution of Fordism during the long-wave upswing of the 1950s–1970s, yet the region experienced downswing and contradictions under a neoliberal institution during the 1980s–2000s. Conversely, Asia maintained an upswing and CCC among its economic factors. Since the 1980s, this region has typically seized hegemony in the global economy.

5.5 Western Deterioration: Western Europe, North America, and Parts of Oceania and the Pacific

This section investigates some characteristics of the pattern of economic performance in Western regions such as Western Europe, North America, and parts of Oceania-Pacific. This study employs three main analyses to investigate these regions. In the first, the

pattern of GDP growth per capita is analyzed to identify general characteristics during a long wave. This is then developed in the second analysis using the principle of CCC and contradiction. The third analysis specifically examines the process of Western deterioration through long wave, including the occurrence recession and financial crises.

The first analysis captures the pattern of GDP growth per capita in several advanced countries in Western Europe, North America, and parts of Oceania-Pacific. These patterns are revealed in Table 5.6, which displays average GDP growth per capita during the 1950s–1970s and the 1980s–2000s. Decade averages of GDP growth per capita are also shown to identify the taxonomy of long-wave economic growth in every decade. The gap between average GDP growth per capita in the 1950s–1970s and the 1980s–2000s is used to identify the rate of change (Boulding 1984; O’Hara 2008a). This is useful for recognizing capital market growth.

Table 5.6a GDP Growth per Capita: Western Europe, North America and Oceania (Selected Advanced Countries) 1950–2010 (%), Period Annual Averages

	1950– 1973*	1974– 2010	1950s*	1960s	1970s	1980s	1990s	2000s
Western Europe	3.87	2.03	3.58	4.36	3.67	2.38	2.08	1.17
France	4.12	1.46	3.40	4.56	3.45	1.75	1.45	0.53
Germany	6.29	1.61	7.08	7.37	3.01	1.87	1.90	0.50
Italy	4.99	1.45	5.47	4.99	3.50	2.48	1.19	-0.23
United Kingdom	2.47	1.70	1.95	2.54	2.27	2.29	1.95	0.99
Netherlands	3.64	1.65	2.91	4.36	2.48	1.59	2.56	0.79
Finland	4.32	1.81	3.45	4.48	3.67	3.09	0.87	1.29
Norway	3.26	2.34	2.59	3.74	3.84	2.40	2.82	0.95
Sweden	3.08	1.40	2.32	3.82	2.06	2.02	1.06	1.09
North America	3.48	1.78	3.15	3.77	2.76	1.64	1.49	1.72
Canada	2.92	1.49	2.78	3.18	2.38	1.80	1.29	0.93
United States	3.51	1.59	3.57	3.84	2.26	2.12	1.93	0.64
Oceania	3.29	0.87	1.63	2.57	2.95	0.24	0.97	0.97
Australia	2.45	1.74	1.88	2.87	1.88	1.92	1.89	1.83
New Zealand	2.22	1.07	1.67	2.53	1.29	1.18	0.89	1.64

Source: Same as Table 5.4a. Note: All selected advanced countries in this Table 5.6a have complete time series data during 1950–2010. More complete explanations are displayed in Definition of Statistical terms: Appendix A-1, Technical Notes: Appendix B-1 and Calculation Results: Appendix D1-1 and Appendix D1-2.

In general, the patterns of economic performance in most advanced nations substantially determined the world economic pattern during the 1950s–2000s. As advanced regions, Western Europe, North America, and parts of Oceania experienced a

long-wave upswing during the 1950s–1960s, then borderline in the 1970s and a long-wave downswing during the 1980s–2000s. The level of negative economic change during the 1950s–2000s in these advanced regions was 51.54 per cent in Western Europe, 49.96 per cent in North America, and 70.46 per cent in Oceania, as markets' potential declined due to economic instability and institutional disarray. This declining market growth is illustrated by the difference between average growth in the 1950s–1970s and that in the 1980s–2000s.

Specifically, Table 5.6a notes that Western Europe's GDP growth per capita seems out of line compared to that of all major economies during the 1990s–2000s. Western Europe experienced a decrease in GDP growth per capita from 2.08 per cent in the 1990s to 1.17 per cent in the 2000s. There are two causes that link to this decreasing pattern. First, Western Europe includes countries that are members of the European Union (EU). The EU countries aspire to monetary union for their trade and business. However, progress toward this aim is fraught with problems. Maddison (2003) notes that a major currency crisis occurred in some Western European countries in the early 1990s as they secured their exchange rates at considerable expenses. As a result, devaluations occurred in some countries, such as the United Kingdom, Italy, and France.

Second, some Eastern European countries expected to join the EU after the collapse of the Soviet Union in the early 1990s (Kornai 2006). Nevertheless, the level of initial economy decides how they deal with the consequences of monetary union. The Eastern European countries experience exchange-rate instability and high unemployment, which are barriers to entry into a monetary union. Although most have joined the EU, they suffer high inflation and budget deficits, in the context of the influential economic performance of Western Europe as a whole.

Table 5.6b Change in GDP Growth per Capita: Western Europe, North America and Oceania 1950–2010 (%), Period Annual Averages

	Δ (1950–1973)— (1974–2010)	Δ (1950s— 1970s)—(1980s— 2000s)
Western Europe	-47.69	-51.54
France	-64.59	-67.33
Germany	-74.35	-75.56
Italy	-70.95	-75.33
United Kingdom	-31.36	-22.66
Netherlands	-54.62	-49.39
Finland	-58.19	-54.75
Norway	-28.22	-39.27
Sweden	-54.63	-49.18
North America	-48.94	-49.96
Canada	-49.12	-51.81
United States	-54.79	-51.26
Oceania	-79.74	-70.46
Australia	-29.03	-14.95
New Zealand	-42.43	-23.49

Source: Same as Table 5.4a. Note: Same as Table 5.6a.

Most countries in North America and Western Europe experienced an upswing during the era of Fordism. This was followed by the borderline position of the 1970s and the downswing of the 1980s–2000s, a consequence of the institutions of globalization and neoliberalism. Neoliberalism is unlikely to promote a sustained upswing in those advanced nations, as their capital market growth loses economic capacity. In North America, the United States and Canada had low and medium upswings during the 1950s–1960s, then borderline in the 1970s and a series of slight downswings in the 1980s–2000s. In Western Europe, medium downswings and major upswings occurred in France, Germany, and Italy during the 1950s–1970s, followed by slight downswings and medium downswings during the 1980s–2000s. Scandinavian countries in the northern part of Western Europe typically experienced medium and low upswings in the 1950s–1970s, followed by borderline positions and downswings in the 1980s–2000s.

However, certain anomalous cases were observed in Western regions, as can be seen in Table 5.6a. In Western Europe, temporary upswings occurred in some nations, for example the Netherlands and Norway, during the long-wave downswing of the 1980s–2000s. The United Kingdom and Sweden—both advanced countries—experienced only one upswing during the 1950s–2000s. These countries experienced

downswings in the 1950s, followed by borderline in the 1960s–1980s and downswings in the 1990s and 2000s. Australia and New Zealand exhibit similar out-of-the-ordinary patterns. Both countries experienced temporary upswings in the 1960s, after having experienced downswings in the 1950s and, later, a series of downswings during the 1970s–2000s.

The second analysis examines the relationship of economic factors in Western regions, including GDP growth per capita, investment growth, productivity, and net export growth. These economic factors are investigated through their elasticity. Following Kaldor’s dynamic cumulative and causation model, this study presents four pairs of elasticity function that are crucial for identifying the principle of CCC and contradiction among economic factors.

Table 5.7 reveals several results for the elasticity of economic factors in Western regions during the 1950s–2000s. As noted previously, the time series data is available from the 1960s to the 2000s. In Table 5.7, the elasticity of economic factors is given as an average for the period of the 1950s–1970s and that of the 1980s–2000s. The results are also displayed in decade averages during the 1960s–2000s. The far-right column or “contradiction-years column” shows decades in which a contradiction occurred in a region. The last row reveals that CCC and contradiction may occur for every decade in a region.

In general, the phenomenon of a contradiction in relationship to economic factors for the Western region mostly occurred during the long-wave downswing of the 1980s–2000s. On the other hand, there was no negative elasticity among those factors identified in the long-wave upswing of the 1950s–1960s and the borderline position of the 1970s. This suggests that the institution of neoliberalism generated more contradiction than the institution of Fordism. As displayed in Table 5.7, the four-pair elasticity of economic factors exhibited no negative results in the period of the 1960s–1970s; these were followed by some negative results in the period of the 1980s–2000s. The relationship among economic factors generating negative results in North America occurred in the 1980s, 1990s, and 2000s. Western Europe had contradictions in the relationships between net export and GDP growth per capita in the 1980s and the 1990s. Parts of

Oceania exhibited contradictions similar to those in Western Europe in the 1980s and 2000s.

Table 5.7 Contradiction and CCC in the Core Regions Using Elasticity of Economic Factors, 1960s–2000s

	1960s- 1970s	1980s- 2000s	1960s	1970s	1980s	1990s	2000s	Contradiction- Years
Western Europe								
E Inv, GDP per capita	0.85	1.19	0.99	0.69	1.37	1.53	0.20	
E Prod, Inv	1.19	1.06	1.19	1.18	0.71	0.83	9.19	
E NX, Prod	0.17	-0.19	0.18	0.17	-0.43	-0.41	0.30	1980s, 1990s
E GDP per capita, NX	5.54	-3.97	4.66	7.15	-2.35	-1.96	1.78	1980s, 1990s
CCC and Contradiction- factors	CCC	NX, Prod, GDP/cap	CCC	CCC	NX, Prod, GDP/cap	NX, Prod, GDP/cap	CCC	
North America								
E Inv, GDP per capita	1.52	1.79	1.46	1.59	2.26	4.29	-0.84	2000s
E Prod, Inv	0.85	0.67	0.99	0.68	0.56	0.36	-0.94	2000s
E NX, Prod	0.60	-0.35	0.58	0.63	-0.57	-0.55	0.32	1980s, 1990s
E GDP per capita, NX	1.28	-2.36	1.17	1.45	-1.37	-1.15	3.86	1980s, 1990s
CCC and Contradiction- factors	CCC	NX, Prod, GDP/cap	CCC	CCC	NX, Prod, GDP/cap	NX, Prod, GDP/cap	Inv, GDP/cap	
Oceania								
E Inv, GDP per capita	1.48	3.83	2.26	0.88	21.17	3.93	6.98	
E Prod, Inv	0.60	0.53	0.53	0.77	0.64	0.63	0.38	
E NX, Prod	0.82	-0.81	0.90	0.69	-0.62	0.37	-2.15	1980s, 2000s
E GDP per capita, NX	1.31	-0.32	0.92	2.11	-0.12	1.07	-0.17	1980s, 2000s
CCC and Contradiction- factors	CCC	NX, Prod, GDP/cap	CCC	CCC	NX, Prod, GDP/cap	CCC	NX, Prod, GDP/cap	

Source: Same as Table 5.5. Note: Same as Table 5.5.

Further, in the Western regions, the relationship of industrial productivity to net export and that of net export to GDP per capita experienced contradictions during the long-wave downswings of the 1980s–2000s. These contradictions are suggested by negative results in these two pairs of elasticity in Western Europe, North America and part of Oceania. For instance, the elasticity of industrial productivity in relation to net export growth was -0.43 in the 1980s for Western Europe, meaning that a one per cent change in the average industrial productivity decreased net export growth by 0.43 per cent. The decline of GDP growth per capita was 2.35 per cent as net export growth increased one per cent in Western Europe, defined by the negative elasticity between net

export and GDP growth per capita. This suggests that the contradiction in the long-wave downswing that occurred in Western regions was due to the institution of neoliberalism-globalization promoting capital inflows and imports. Capital inflows and import significantly weaken the relationship of productivity, net exports, and GDP growth per capita.

The third analysis investigates the linkage of contradiction and major recessions as well as financial crises during long-wave downswings. This study finds that most contradictions in the core regions arose in the 1980s, 1990s and 2000s. These findings concur with those of Wolfson (2000), Halevi and Kriesler (2005), Kotz (2008) and Kriesler (2009), who revealed that core or advanced regions experienced a series of recessions in the mid 1970s, early 1980s, early 1990s, and early 2000s.

In North America for the 2000s, the elasticity of productivity with respect to investment was negative, as shown in Table 5.6. This suggests a contradiction between financial capital and industrial capital, triggered by domestic deregulations, especially in the United States. Domestic deregulations directed foreign financing of real stock, which could have stimulated speculation (Wolfson 2000). This speculation indicated that financial capital exceeded industrial capital, which affected industrial productivity. Increasing stock prices stimulate rising real estate prices, promoting the issuing of sub-prime mortgages. The result was a financial crisis (Kotz 2008).

Throughout the 1990s and the 2000s, a contradiction also occurred in productivity–net exports and net exports–GDP growth per capita. As shown in Table 5.6, the elasticity of productivity to net exports was negative in Western Europe, North America and part of Oceania. This contradiction was derived from global factories or transnational corporations (TNCs), which interrupted the accordance of productivity and net exports. The development of global factories stimulated overcapacity, which dampened the outlook for exports and increased interest in financial investment. This also contributed to decreased demand due to negative net export elasticity to GDP per capita in these core regions. As Crotty and Dymski (1998) suggest, overcapacity in the global market is determined by declining demand as lower wages and an increasing supply of goods occur in the same period.

Wolfson (2000) reveals four main factors that determine financial crises: financial instability, financial fragility, bank credit availability, and regulatory structure. Financial fragility factor can lead to particularly vulnerable financial systems (Wolfson 1990; Minsky 1995; Hart 2010), impacting on the banking system, which in turn affects bank credit availability. In the banking system, purchased funds tend to conflict with interest rates. This situation reflects something of the inappropriateness of the regulatory structure as well as the institutional structure.

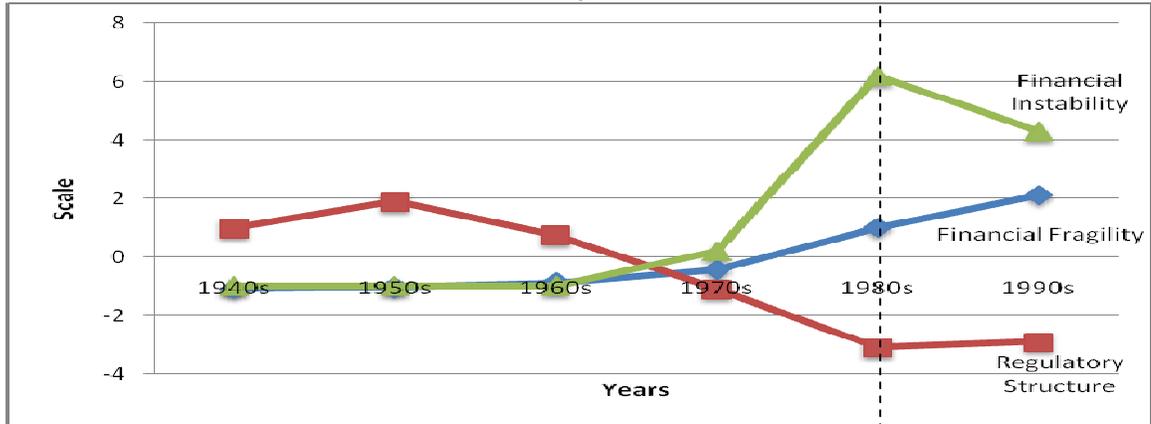
In measuring financial crises, Wolfson (1990, 2000) explains that financial crises are a period of disturbance in the financial market, which becomes powerless to channel funds to those who have investment opportunities. This crisis then interrupts the economy through the financial system. On the one hand, government takes the form of regulatory structure to prevent the collapse of the financial system. From this perspective, Wolfson investigates the cyclical patterns of financial crises using four variables, namely financial instability, financial fragility, bank credit availability, and regulatory structure.

Wolfson defines the factors involved in a financial crisis as follows. Financial instability refers to the set of problems in the financial system, while financial fragility is defined as the vulnerability of the financial system to financial crisis. Bank credit availability is defined as a period in which the bank funds transform into credit. Bankruptcies generate financial problems that interrupt the process of production in the industrial sector, and demand a change in the regulatory structure from the government and the central bank. The change in regulatory structure also has a period, which is investigated in Wolfson's work.

Wolfson examines the cyclical patterns in these factors using a dummy variable, which represents 1 for financial crises and 0 for non-financial crises. For instance, the beginning of financial fragility is represented by a 1, and a 0 refers to the end of financial fragility. From the data, Wolfson (1990) uses a set of uncorrelated linear combinations of variables to calculate the total variance of variables. The maximum percentage of total variances for each variable represents the actual variation for each variable. Therefore, the pattern of four variables can be drawn.

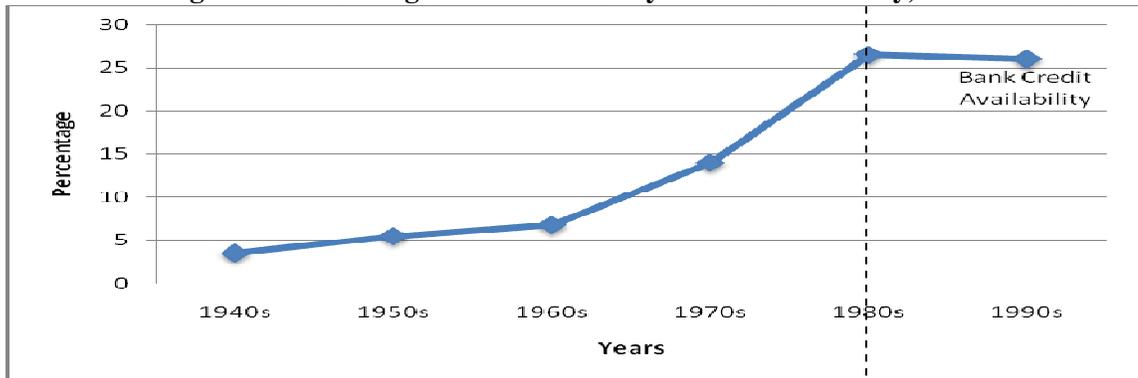
This present study draws on Wolfson’s analysis to identify the behavior of these four variables for each decade. The average percentages of variances for each variable are calculated to transform into the percentage of variances in a particular decade. The patterns yielded by the calculation are shown in the form of graphs.

Figure 5.8a Financial Instability, Financial Fragility and Regulatory Structure in the US Economy, 1940s–1990s



Source: Data is adapted from Wolfson (1990, 2000). Note: Dash-line = the peak of financial instability. More complete calculations are in Calculation Results: Appendix D1-11.

Figure 5.8b Banking Credit Availability in the US Economy, 1940s–1990s



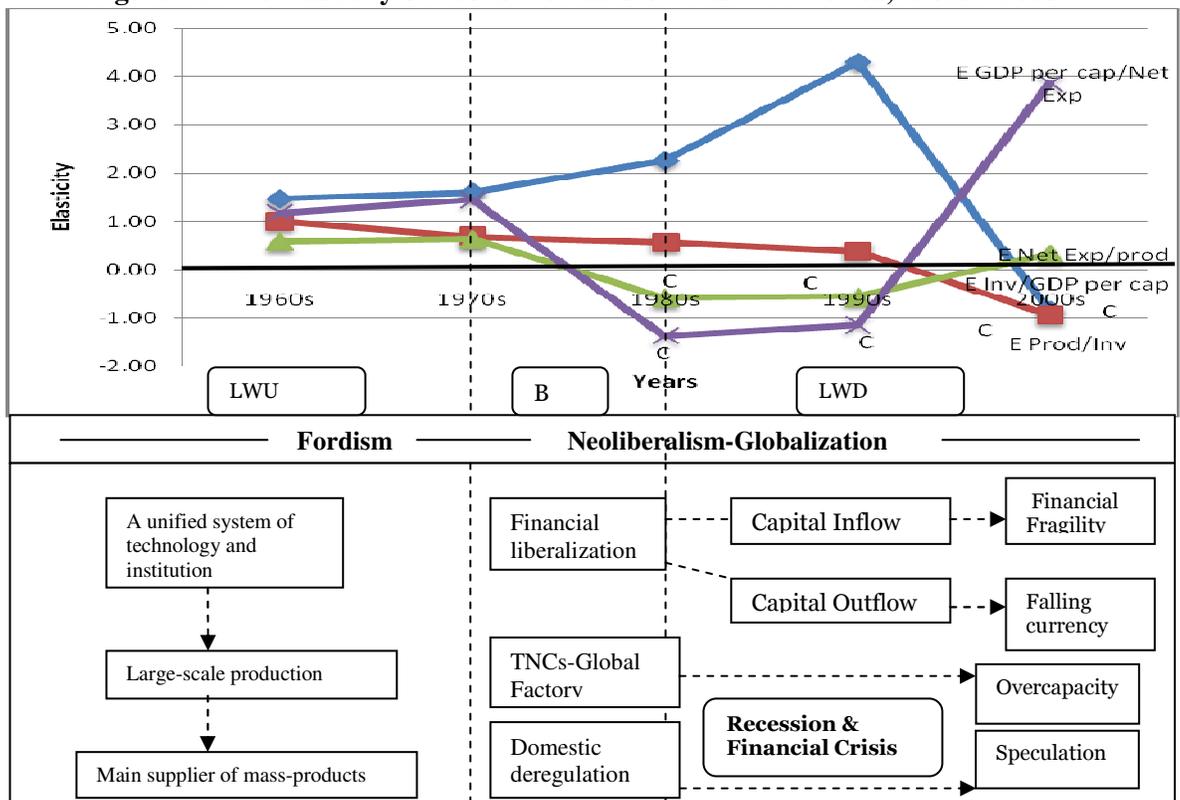
Source: Same as Figure 5.8a. Note: Same as Figure 5.8a

The process of financial instability is displayed in Figures 5.8a and 5.8b. These figures reveal the pattern of financial instability in the US during the 1940s–1990s. In Figure 5.8a, there are three line patterns, depicting financial instability, financial fragility, and regulatory structure. The vertical axis shows the scale of these factors, as a factor is more dominant when positive than when negative. The pattern of financial fragility was negative during the 1940s–1960s and positive during the 1970s–1990s. The US experienced its peak of financial fragility in the 1980s. The regulatory structure was strong (i.e., positive) during the 1940s–1960s, then lower during the 1970s–1990s, and

at its lowest position in the 1980s. Financial instability tended to be at its greatest during the 1970s–1990s, rather than during the 1940s–1960s. This trend of financial instability is also supported by Figure 5.8b, which shows bank credit availability. The percentage of bank credit availability was higher during the 1970s–1990s than during the 1940s–1960s, with the 1980s being the decade in which bank credit availability was at its highest.

Figures 5.8a and 5.8b suggest that financial instability arose during the 1970s–1990s in the context of increasing financial fragility, rising bank credit availability, and declining regulatory structure. These patterns culminated in the 1980s. This analysis now identifies the correspondence between Wolfson’s findings and the results of elasticity in Western regions. As discussed previously, the elasticity may shed light on the process of financial instability. Technically, this study creates a figure that generally explains the relationship of financial instability and some contradictions among economic factors (see Figure 5.9).

Figure 5.9 The Elasticity of Economic Factors in North America, 1960s–2000s



Source: Data is calculated from Table 5.7. Note: C = contradiction point; Broken line: border between phase; Broken arrow = causality relationship; solid arrow = flow relationship; LWU=long-wave upswing; B = borderline; LWD = long-wave downswing. The appendices are same as Figure 5.7.

Figure 5.9 depicts the pattern of elasticity among economic factors in North America during the 1960s–2000s. The figures also show the existence of contradiction and CCCs. The dashed line divides this figure into three parts according to the long-wave taxonomy, namely the long-wave upswing of the 1960s (LWU), the borderline of the 1970s (B), and the long-wave downswing of the 1980s–2000s. This figure also names and explains some institutions that characterized these three periods. For instance, Fordism was the prevalent institution from the 1960s to the early 1970s, as North America (Western regions) unified technology and institutions to control mass production on the global stage.

This analysis then compares Figure 5.7 and Figure 5.8. In Figure 5.8, the four-pair relationship among economic factors in North America displays a pattern of positive elasticity during the 1960s–1970s under Fordism, followed by negative elasticity on productivity to net export and net export to GDP growth per capita during the 1980s–1990s. This was succeeded by negative elasticity on GDP growth per capita to investment growth and investment growth to productivity under the institution of neoliberalism. This pattern is in accordance with Figure 5.7, which shows that the highest level of financial instability occurred in the 1980s in North America, owing to the determinant factors that are outlined.

The above patterns arise from particular processes during the 1970s–2000s under the neoliberal institution. Some brief explanations follow. During this period, financial liberalization prevailed, in an attempt to promote capital inflows and capital outflows. Throughout the same period, TNC and global factories rapidly developed and generated overcapacity in the production process. A contradiction between productivity and net exports arose in North America when exports could not respond to productivity due to overcapacity occurring in global trade. Financial fragility led to a contradiction between net export and GDP growth per capita, as capital inflows dominated net exports. Finally, while capital inflows increased rapidly, capital outflows were also increased in an attempt to decrease the value of currency. The outcome in each case was financial crisis.

Declining domestic regulatory controls were a part of financial liberalization. Rapidly, increasing bank credit contributed to the dominance of financial capital. Speculation therefore arose in financial markets, such that they exceeded the level of

industrial capital. For instance, in the 2000s, over-inflated US stock prices contributed to increasing real estate prices, pushing up the operational costs for the economic sector, i.e., creating an economic bubble. This bubble began to influence the US economy in the early 2000s. Housing prices further increased with the decline in the construction industry. Mortgages spiked, which spread globally through collateralized debt. Hence, in over-simplified terms, the financial crisis began. The crisis thus precipitated the bankruptcy of some of the largest banks in Western nations, especially in the US and Western Europe.

The rise of private sector debt influenced production in the industrial sector, which was interrupted as firms sought to restrain debt by decreasing the proportion of their investment in labor productivity and technological change.

Declining labor productivity was determined by the static wage, while lower innovation decreased output. Declining output discourages economic surplus and market expansion, which leads to a decline in net exports and aggregate demand. Decreasing aggregate demand in turn interrupts capital accumulation, which decreases investment. Aggregate demand is therefore not sufficient on its own to provide the opportunity for market expansion.

Households also feel the impact of private sector debt. When aggregate demand does not fully provide for investment, the labor wage becomes static or decreases, thereby reducing households' opportunity to survive and thrive. Household income decreases, on average impacting social welfare, such as education and health. Moreover, the average prices of goods increase, as industrial sectors have high production costs. Thus, households have to deal with higher prices of goods while suffering a decrease in income.

5.6 The Erratic Trends of Economic Factors: LACA, MENA, and SSA

This section assesses trends in the movements of economic factors in semi-peripheral and peripheral regions, namely LACA, MENA, and SSA. These regions are of interest because they experienced structural changes in the 1970s, which affected GDP growth per capita, and led to the following analyses of structural linkages of economic factors in these regions during the 1950s–2000s. These analyses employ the principle of CCC and

contradiction to comprehend trends in economic factors and assess the historical development of these trends.

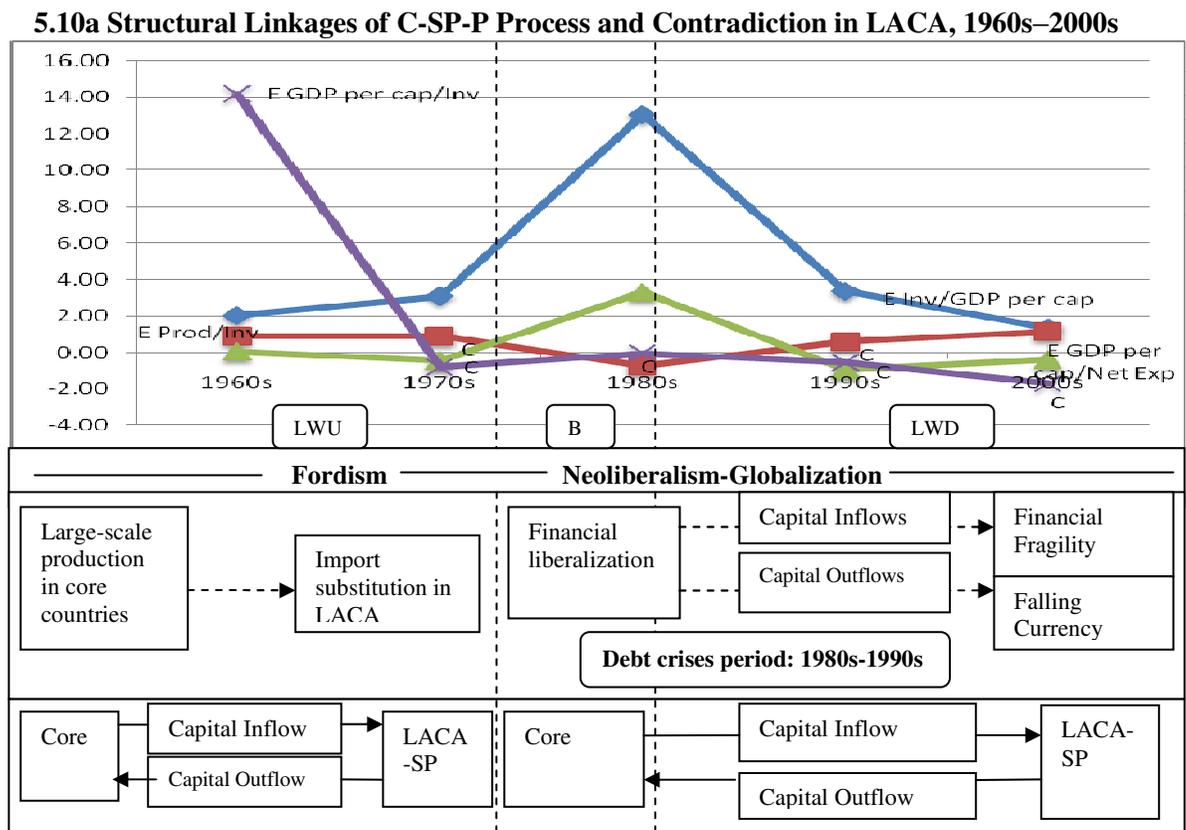
The patterns of structural linkages of multiple economic factors in LACA and MENA can be seen in Table 5.8a. This table reveals several stylized facts about CCCs and contradictions. The first stylized fact is that contradictions in the structural linkages of economic factors were experienced during the 1960s–2000s by MENA from the 1960s and by LACA from the 1970s to the 1980s. The second stylized fact is that the contradictions between the structural linkages of productivity to net exports and net export to GDP growth per capita were dominant in LACA and MENA during the 1960s–2000s. For instance, the elasticity of productivity to net exports was negative in LACA in the 1970s, 1990s, and 2000s. In MENA, the elasticity of net export to GDP growth per capita was negative in the 1960s, 1970s, 1990s, and 2000s. The third stylized fact is that both LACA and MENA had only one decade of CCC: LACA in the 1960s and MENA in the 1970s.

Table 5.8a Contradiction and CCC in the Semi-peripheral Regions (LACA and MENA) Using Elasticity of Economic Factors, 1960s–2000s

	1960s-1970s	1980s-2000s	1960s	1970s	1980s	1990s	2000s	Contradiction-Years
LACA								
E Inv, GDP per capita	2.48	2.11	2.01	3.08	13.04	3.35	1.32	-
E Prod, Inv	0.88	0.98	0.87	0.87	-0.74	0.58	1.12	1980s
E NX, Prod	-0.23	-0.15	0.04	-0.46	3.33	-0.94	-0.40	1970s,1990s,2000s
E GDP per capita, NX	-2.02	-3.22	14.20	-0.82	-0.03	-0.55	-1.71	1970s,1980s,1990s,2000s
CCC and Contradiction-factors	NX, Prod, GDP/cap	NX, Prod, GDP/cap	CCC	NX, Prod, GDP/cap	NX, Prod, GDP/cap, Inv	NX, Prod, GDP/cap	NX, Prod, GDP/cap	
MENA								
E Inv, GDP per capita	3.84	6.04	4.61	3.20	-2.53	1.93	1.71	1980s
E Prod, Inv	0.62	1.65	0.83	0.37	0.42	2.50	2.50	-
E NX, Prod	-0.29	0.56	-0.09	-0.81	7.16	0.68	-1.09	(1960s, 1970s, 2000s)
E GDP per capita, NX	-1.46	-0.18	-2.91	-1.04	-0.13	0.31	-0.22	1960s,1970s,1980s,2000s
CCC and Contradiction-factors	NX, Prod, GDP/cap	CCC	NX, Prod, GDP/cap					

Source: Same as Table 5.5. Note: Same as Table 5.5. More complete explanations are given in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-2 – B-4 and Appendix B-7, Calculation Results: Appendix D1-10.

From these stylized facts, the analysis scrutinizes the structural linkages of economic factors throughout the 1960s–2000s under the Fordist institution and the institution of globalization. The trend is illustrated in Figure 5.10a. In the 1960s, the world experienced a long-wave upswing, as most core regions developed Fordist large-scale production. LACA was one of the semi-peripheral regions whose economy was affected by import substitution, a practice encouraged by the core regions. The core regions controlled the dependency of the semi-periphery and periphery by various means, especially official government loans. As a result, capital inflows in LACA predominantly consisted of government loans from the core countries, and LACA’s domestic resource was mostly one of capital outflow.



Source: Data is calculated from Table 5.8a. Note: Same as Figure 5.9. The appendices are same as Figure 5.7.

In the 1970s, globalization replaced Fordism, which typically accelerated the dependency of LACA upon the core regions. As noted previously, the structural change in investment and demand would be expected to have caused a temporary upswing in LACA. However, Figure 5.10a shows that a contradiction occurred in the structural

linkages of GDP growth per capita to investment and net export to GDP growth per capita. This suggests that the temporary upswing in LACA was generated by foreign debt, as capital inflows interrupted the balance of payments. This situation was also aided by increasing capital outflow, which influenced the structural linkage between demand and investment.

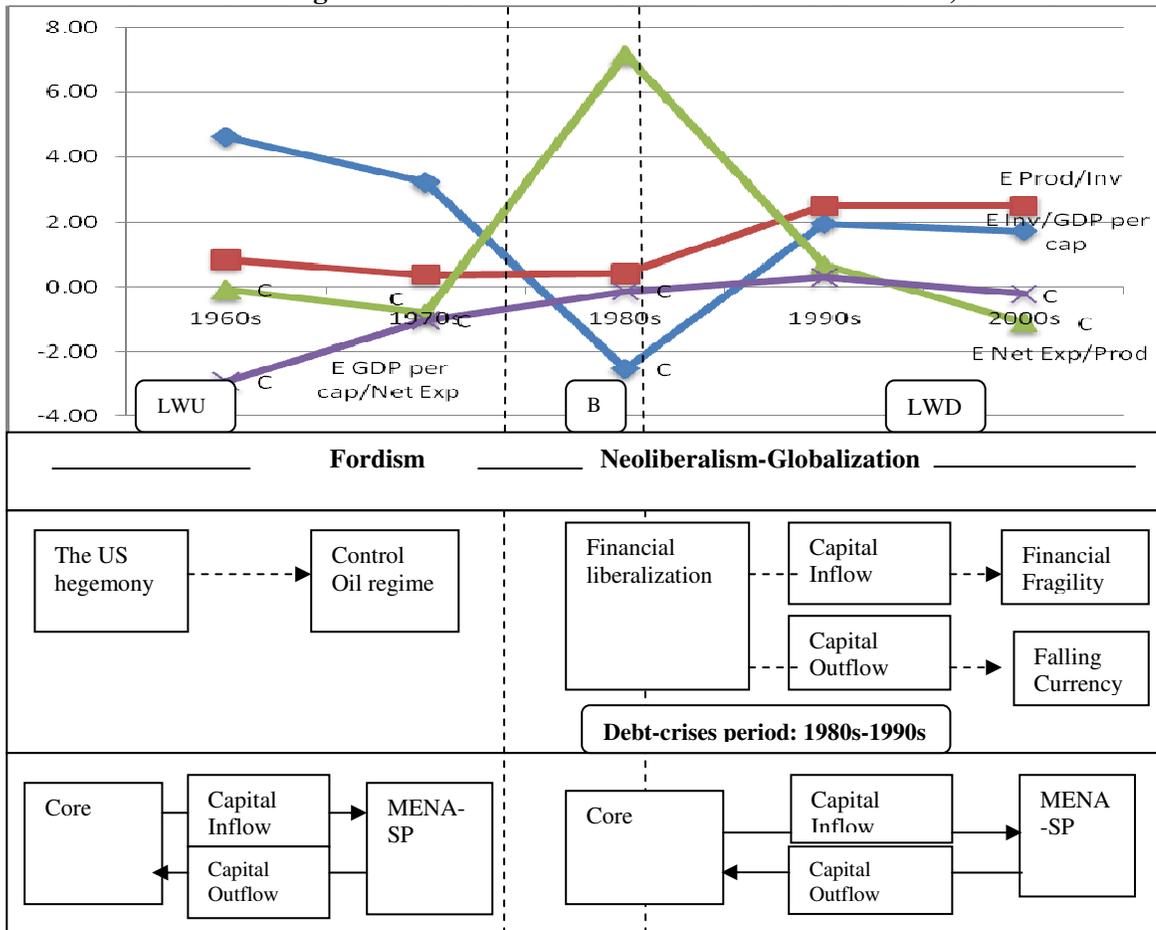
During the 1980s–2000s, increasing financial liberalization led to uncertainties, as a temporary upswing occurred in LACA at this time. Capital inflows triggered financial fragility, in that most semi-peripheral countries in LACA were not able to service foreign debt at high interest rates. Declining domestic resources due to capital outflows contributed significantly to the falling currencies. This combination of factors saw semi-peripheral countries in LACA experience debt crises during the 1980s–1990s. Further, as shown in Figure 5.10a, LACA had several contradictions in economic factors during the 1980s–2000s; typically, these occurred in the structural linkages of productivity to net exports and net exports to GDP growth per capita.

Although its patterns were similar to those of LACA, MENA was subject to different forces affecting the structural linkages of economic factors during the 1960s–2000s. During the Fordist era, the core regions utilized the institutions that controlled oil resources in MENA to enable large-scale production. This took place under US hegemony. Government loans enabled most core countries to hold sway over the oil-producing regimes in MENA, which, in turn, gave them significant influence. As a result, capital inflows were the dominant influence on the structural linkage of productivity and net exports, as suggested by contradictions. Further contradictions occurred in the structural linkage of net exports to GDP growth per capita, which interrupted the balance of payments in some MENA countries.

In terms of the flow of capital, similar factors were at work among MENA countries and among LACA countries. Global financial liberalization led to capital flows between core and semi-peripheral countries. These semi-peripheral countries became financially fragile, which led to a worsening balance of payments. Falling currencies and resultant capital outflows decreased the resources of domestic financial institutions. Therefore, semi-peripheral countries in MENA experienced debt crises during the 1980s, before undergoing CCC in the 1990s. However, after this, political conflict

contributed to uncertainties in the region, on top of which contradictions in the structural linkages of economic factors occurred.

5.10b Structural Linkages of C-SP-P Process and Contradiction in MENA, 1960s–2000s



Source: Same as Figure 5.10a. Note: Same as Figure 5.10a

As SSA experienced long-wave downswings in the 1950s–1960s and the 1980s–1990s, it was classified as a peripheral region. The trends of economic factors in SSA are shown in Table 5.8b, which suggests several stylized facts. The first stylized fact is that contradictions among economic factors in SSA occurred in every decade of the 1960s–2000s. The second stylized fact is that contradictions among economic factors mostly occurred in the long-wave downswing of the 1980s–2000s.

The third stylized fact is that the peripheral region of SSA experienced contradictions in the structural linkages among economic factors: contradiction in the structural linkage of productivity to net export and net export to GDP per capita during the 1960s–1970s, and, further, by contradictions in the structural linkage of GDP per

capita to investment, investment to productivity, productivity to net exports, and net exports to GDP per capita during the 1980s–2000s.

How contradictions among economic factors in SSA came about may be understood by considering global institutional change. During the long-wave upswing of the 1950s–1960s, colonization contributed to the generation of institutional structures in SSA that had little capacity to foster economic development (Grabowski, Self, and Shields 2007). Collier and Gunning (1999a) explain that the deterioration of institutions (e.g., regulatory, financial, and legal) and political disarray hampered economic development in SSA. For example, this region had the opportunity to develop agriculture and mining, the latter thanks to the existence of major natural resources throughout the region (Collier and Gunning 1999b; Le Billon 2001; Geda-Fole 2003). However, as was typical in the Fordist era, the core countries took control of mining regimes in SSA (Bond 2008). This reduced productivity and exports, as the relationship between capital and labor was interrupted by lower wages, a result of colonizing regimes. As Figure 5.10c shows, contradictions occurred in the structural linkage of productivity to net export and net export to GDP per capita, suggested by the negative elasticity in those factors.

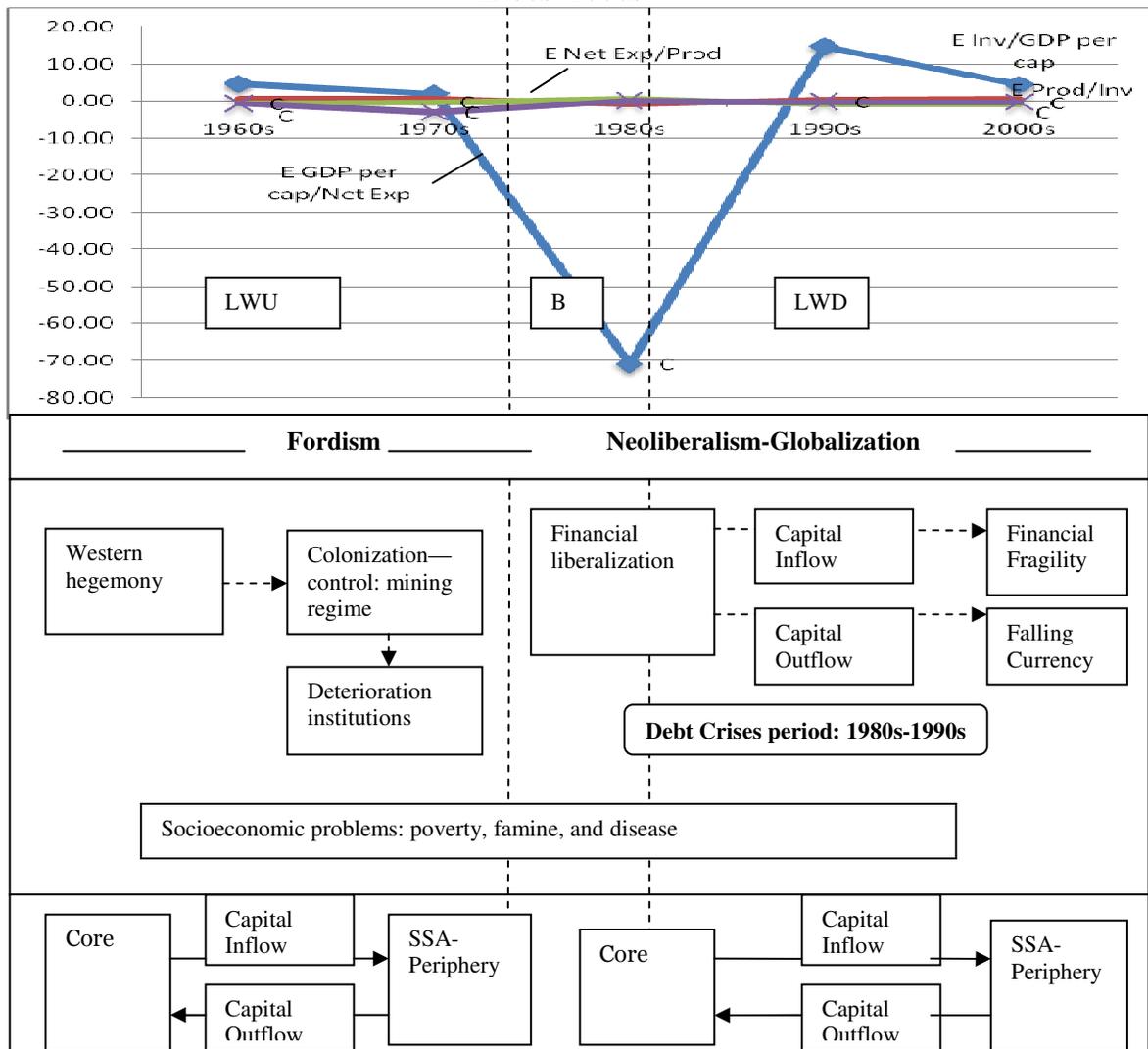
Table 5.8b Contradiction and CCC in the Peripheral Region of SSA Using Elasticity of Economic Factors, 1960s–2000s

	1960s- 1970s	1980s- 2000s	1960s	1970s	1980s	1990s	2000s	CCC and Contradiction- Years
SSA								
E Inv, GDP per capita	3.01	4.02	4.47	1.93	-71.09	14.59	4.22	1980s
E Prod, Inv	0.58	1.02	0.57	0.62	-0.81	0.28	0.67	1980s
E NX, Prod	-0.49	-0.55	-0.62	-0.29	0.46	-0.91	-0.95	1960s, 1970s, 1990s, 2000s
E GDP per capita, NX	-1.15	-0.45	-0.64	-2.94	-0.04	-0.27	-0.37	1960s, 1970s, 1980s, 1990s, 2000s
CCC and Contradiction- factors	NX, Prod, GDP per capita	NX, Prod, GDP per capita	NX, Prod, GDP per capita	NX, Prod, GDP per capita	NX, Prod, GDP per capita, Inv	NX, Prod, GDP per capita,	NX, Prod, GDP per capita,	

Source: Same as Table 5.8a. Note: Same as Table 5.8a.

In the 1970s, the change from Fordism to globalization led to a temporary upswing in several semi-peripheral and peripheral countries in SSA. This institutional change brought about some structural changes as a consequence of the deterioration of Western hegemony. Financial liberalization led to capital inflows, which led to foreign debts in exchange for investment and increased productivity. Increasing productivity and export levels propelled temporary aggregate demand, which led investment growth through capital accumulation. However, increasing capital inflows contributed to financial fragility, which, in turn, could be seen in a worsening balance of payments. The falling currency in this region caused by capital outflows is identified by the contradiction in the structural linkage of productivity to net exports.

Figure 5.10c Structural Linkages of C-SP-P Process and Contradiction in SSA, 1960s–2000s



Source: Data is calculated from Table 5.8b. Note: Same as Figure 5.10a.

During the 1980s–2000s, as seen in Figure 5.10c, contradictions typically existed in SSA in the structural linkages of productivity to net exports and net exports to GDP growth per capita. This region experienced a period of debt crises in the 1980–1990s, as most semi-peripheral and peripheral countries could not service debts with high interest rates. The pattern was a familiar one. Increasing capital inflows brought about temporary upswings followed by debt crises. The existence of fewer and fewer domestic institutions that could provide resources led to capital outflows, as seen in the structural linkage of investment and productivity. Moreover, socioeconomic problems such as poverty, famine, and diseases likely contributed to a sustained downswing of GDP growth per capita in SSA.

5.7 Sub-National Performance Variations 1950s–2000s

For a truly global investigation of uneven performance, an analysis of sub-national performance is critical. This section tries to capture this sub-national economic performance in order to elucidate core, semi-peripheral, and peripheral relationships. An understanding of sub-national performance is also required for a clear appreciation of the asymmetries at the global, regional, and national levels. This study comparatively examines some of the most interesting and important sub-national asymmetries, and provides an improved understanding of the complexity of world historic and institutional circumstances.

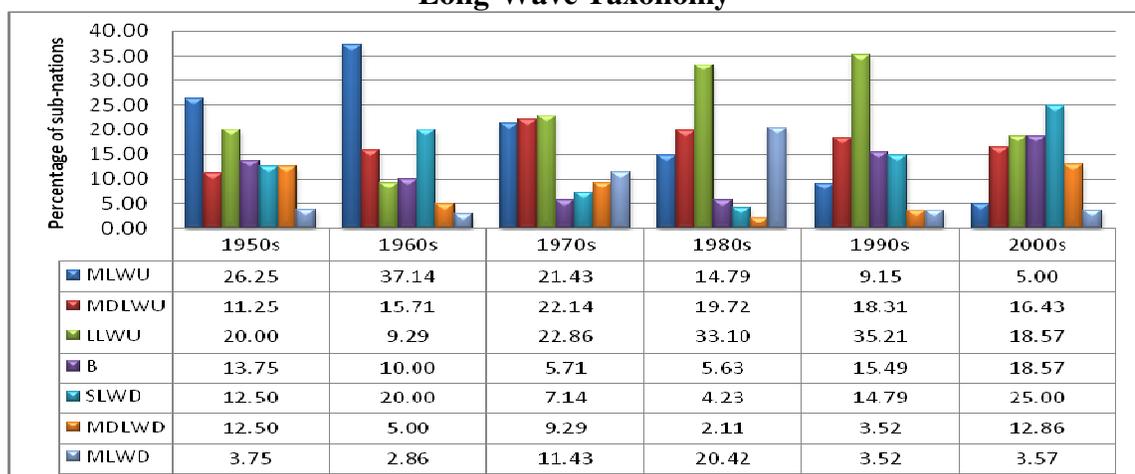
In this sub-section, the first analysis displays institutional transformation during the 1950s–2000s. Isolating sub-national data as much as possible, the transformation of institutions is investigated according to long-term performance. The second analysis illustrates the comparison between sub-national and global, regional, and national performances during the 1950s–2000s. This pattern is useful for examining varying institutional changes at different levels through the long wave.

For the first analysis, the institutional transformation of sub-nations during 1950–2010 is illustrated by Figures 5.11, 5.12, and 5.13. Figure 5.11 displays the distribution of sub-nations through the long-wave taxonomy. This study examines 80 to 143 sub-nations of differing regions and nations during the 1950s–2000s. In Figure 5.12, the pattern of sub-national performance amongst upswings, borderline and downswings in

sub-national performance is revealed through the comparison of a number of sub-nations. The percentage of sub-nations experiencing upswings, borderline, and downswings was calculated. In addition, Figures 5.13a, 5.13b, and 5.13c seek to show the range of sub-nations in different regions according to the long-wave taxonomy.

Certain stylized facts arise from the analysis of sub-nations. The first stylized fact is that the percentage of sub-nations that experienced major upswings during the 1950s–1970s was higher than it was during the 1980s–2000s. As shown in Figure 5.11, for the 1950s, 1960s, and 1970s, 21.43 per cent to 37.14 per cent of sub-nations included in this study experienced major upswings; yet, during the 1980s–2000s, only 5.00 per cent to 14.79 per cent of sub-nations had a major upswing. Moreover, more sub-nations underwent major downswing during the 1980s rather than in the other decades. At this time, 20.42 per cent of sub-nations experienced a major downswing during the 1980s, but, in the other decades, only 2.86–11.43 per cent of sub-nations underwent a major downswing.

Figure 5.11 Distributions of Sub-Nations 1950s–2000s in the World by Long-Wave Taxonomy

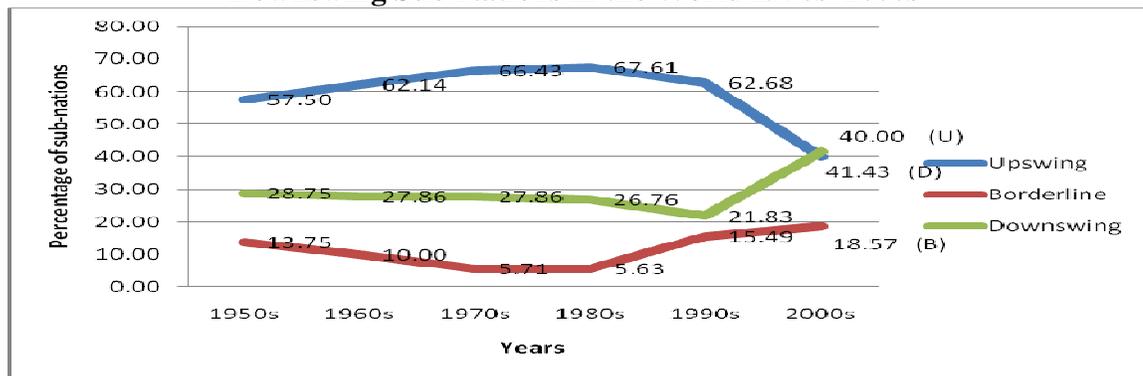


Source: Basic data is processed from GDP per capita growth for sub-nations. GDP growth per capita in the 1950s–2000s is calculated using period annual averages based on Paci and Pigliaru (1998), Xiaobin (1996), State Planning Board-Government of Kerala (2001), Boraine *et al.* (2006), Hill (2008), Li and Haynes (2010), Weiss and Rosenblatt (2010), US Bureau of Economic Analysis (2010). Note: Asia = China (27 provinces), India (3 provinces), Indonesia (27 provinces); LACA= Mexico (30 provinces), South Africa (4 cities), United States (50 states), Italy (2 provinces). Number of sub-nations: decade 1950s (80 sub-nations), 1960s (140 sub-nations), 1970s (140 sub-nations), 1980s (143 sub-nations), 1990s (142 sub-nations), 2000s (140 sub-nations). More complete explanations are given in Definitions of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-5 and Appendix B-8, and Calculation Results: Appendix D1-6–D1-8.

The second stylized fact is that sub-nations mostly experienced upswings from the 1950s to the 1990s. Figure 5.12 shows that the percentage of sub-nations

experiencing upswings was higher than that of those experiencing downswings or borderline positions during the 1950s–1990s. In particular, Figure 5.12 shows that more than half of the sub-nations included in this study experienced upswings (LLWU, MDLWU, and MLWU) during the 1950s–1990s. Since the 2000s, the percentage of downswing sub-nations has been higher than that of upswing sub-nations. In this decade, the percentage of borderline sub-nations increased to more than three times that of the 1980s. These facts are investigated further using empirical data from countries linked to sub-national performance, especially in the US and China. The results are displayed in Figures 5.13a, 5.13b, and 5.13c.

Figure 5.12 Comparison Percentages of Upswing, Borderline and Downswing Sub-Nations in the World 1950s–2000s



Source: Same as Figure 5.11. Note: Same as Figure 5.11.

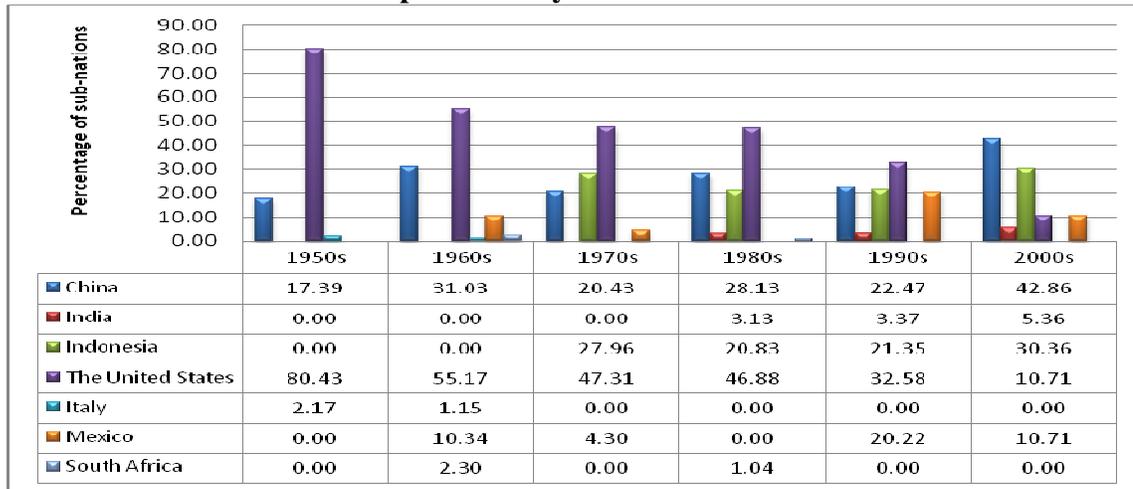
The increasing number of downswing and borderline sub-nations during the 1990s–2000s was partly determined by the declining number of sub-nations experiencing upswings in the US, as well as the increasing number of borderline sub-nations in Mexico during this period. In the series in Figure 5.13, the percentage of upswing sub-nations in the US for the 1990s and 2000s is seen to be lower than for the 1950s–1980s. In this period, the percentage of upswing states in the US was only between 10.71 per cent and 32.58 per cent, whereas nearly 47.31–80.43 per cent of states in the US experienced an upswing during the 1950s–1980s. In Mexico, the percentage of sub-nations experiencing a borderline and downswing rose during the 1990s–2000s. Mexico had an increasing percentage of borderline sub-nations, from 13.64 per cent of provinces in the 1990s to 26.92 per cent of provinces in the 2000s.

Concurrently, the percentage of sub-nations experiencing downswings in the 2000s was more than twice than that of the 1990s.

However, in the same period, the pattern of economic performance of most sub-nations in China was different from that of the US and Mexico. Provincial economic performance in China experienced upswings from the 1960s onward. This data is shown in Figure 5.12a. The percentage of upswing sub-nations in China during the 1980s–2000s was slightly higher than that during the 1950s–1970s, when 17.39 per cent to 31.03 per cent of provinces underwent upswings, most of which would be categorized as moderate (MDLWU). Throughout this period, economic growth in China increased rapidly at the national and sub-national level. This can be seen in the number of provinces experiencing an upswing. 28.13 per cent to 42.86 per cent of provinces in China experienced upswings during the 1980s–2000s.

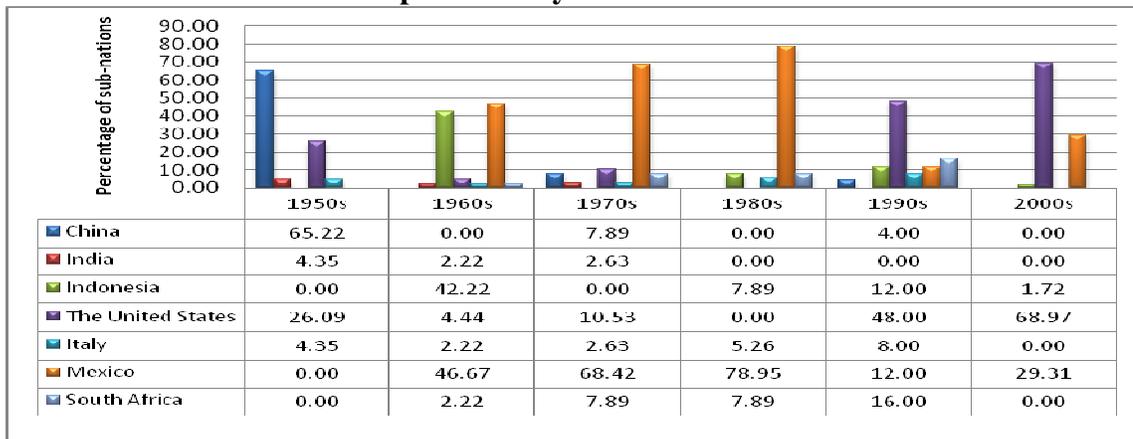
One more stylized fact is that most sub-nations that included in this study found themselves in a borderline position during the 1980–2000s. This is illustrated in Figure 5.13c. In the United States, 15.38 per cent to 62.50 per cent of states were on the borderline, possibly because of a major recession in the early 1990s. The economic performance of six provinces in China was interrupted by financial crisis. Similarly, during the 1980s, Indonesia also had an increased percentage of borderline provinces, and felt the impact of financial crisis in the second half of the 1990s. In the 1990s, nearly 18.18–37.50 per cent of the provinces in Indonesia experienced a borderline level of growth. Similarly, some provinces in South Africa and Mexico experienced a borderline level, a reflection of recovery after a period of debt crisis.

Figure 5.13a Upswing in GDP Growth per Capita by Percentage of Sub-Nations per Country 1950s–2000s



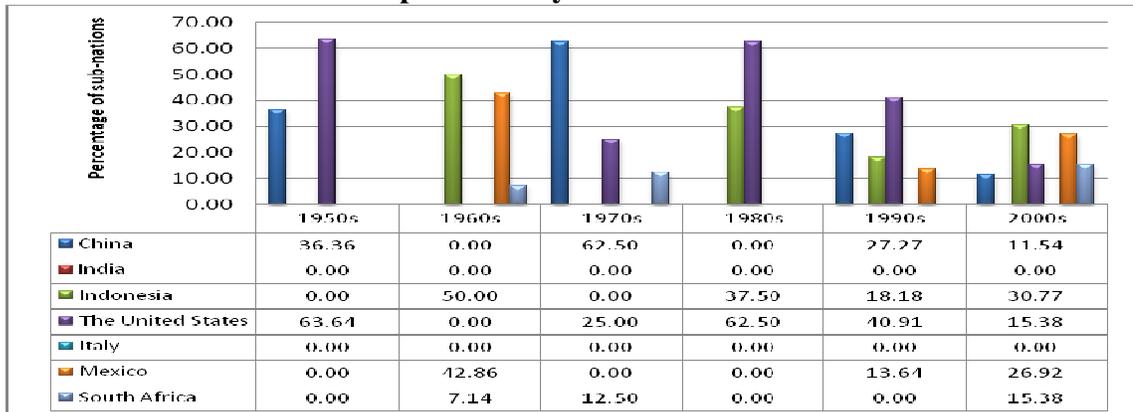
Source: Same as Figure 5.11. Note: Same as Figure 5.11.

Figure 5.13b Downswing in GDP Growth per Capita by Percentage of Sub-Nations per Country 1950s–2000s



Source: Same as Figure 5.11. Note: Same as Figure 5.11.

Figure 5.13c Borderline in GDP Growth Per Capita by Percentage of Sub-Nations per Country 1950s–2000s



Source: Same as Figure 5.11. Note: Same as Figure 5.11.

The second analysis in this section compares global–regional–national and sub-national performance during 1950–2010. This analysis seeks to examine typical differences between the patterns of sub-national performance and those of other levels. These differences are critical to the analysis of institutional transformation during long-wave phenomena at different levels. The patterns of sub-nations are displayed in Figures 5.14–5.17.

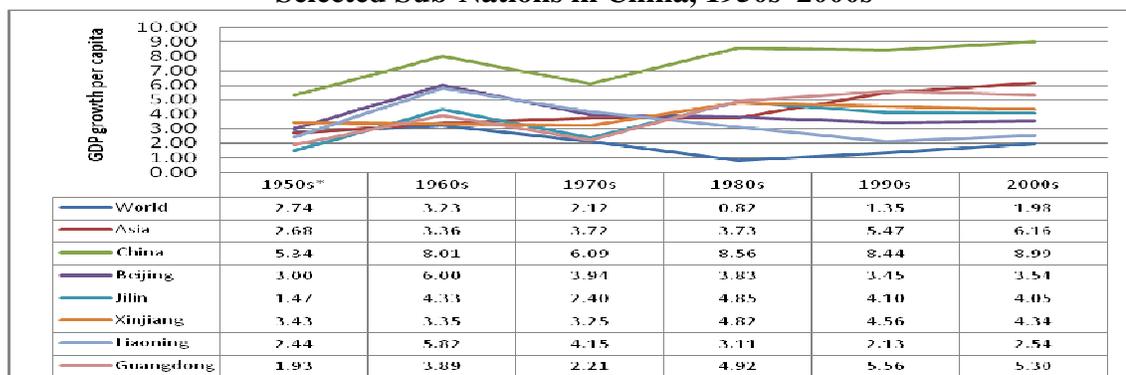
Figures 5.14–5.17 compare sub-national performance and global–regional–national performance by focusing on particular countries and sub-nations. Those figures can compare the patterns of sub-national and global-regional-national GDP growth per capita in every decade. For instance, Figure 5.14 shows the pattern of GDP growth per capita for some provinces in China, and this is compared to GDP growth per capita in the world, Asia, and China. Similarly, this study makes comparisons in relation to China, the United States, Mexico and Indonesia.

Throughout this chapter, the second analysis of those figures generates some stylized facts. The first stylized fact is that the variation between sub-national and regional and global patterns of economic performance tended to be heterogeneous in the long-wave upswing of the 1950s–1960s, the borderline position of the 1970s and the long-wave downswing of the 1980s–2000s. The second stylized fact is that an interrelationship between patterns of national and sub-national performance was absent in several countries. This suggests that the changes in the pattern of economic performance in regions and nations do not necessarily determine the pattern of sub-national performance.

The first stylized fact can be identified by comparing sub-nations in China, the Asian region, and global performance. In this case, the variation between sub-national and national–regional–global performance was higher in the long-wave downswing of the 1980s–2000s than in the long-wave upswing of the 1950s–1960s and the borderline position of the 1970s. In Figure 5.14, the difference between economic performances in sub-nations, the nation (China), the region (Asia), and the world was not great in the 1950s–1970s, yet this difference widened during the 1980s–2000s. For instance, in the 1960s, the global GDP growth per capita was 3.23 per cent, whereas the figure for Asia was 3.36 per cent. At the national level, GDP growth per capita in China was 8.01 per

cent, and Guangdong (a sub-nation) had GDP growth per capita of 3.89 per cent. The relationship differed in the 1990s with GDP growth per capita as follows: 1.78 per cent (the world), 7.18 per cent (Asia), 9.22 per cent (China) and 5.3 per cent (Guangdong–sub-nation).

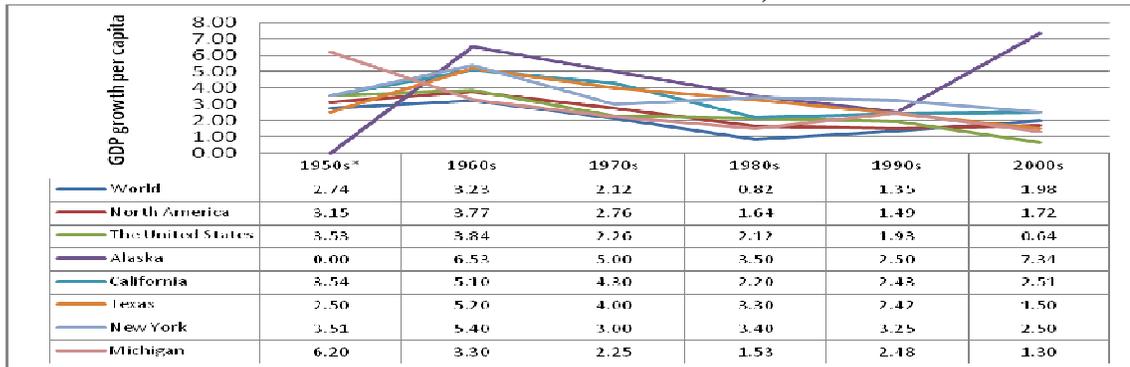
Figure 5.14 GDP Growth per Capita: World, Asia, China and Selected Sub-Nations in China, 1950s–2000s



Source: GDP growth per capita in the 1960s–2000s for World, Asia and China is calculated using period annual averages based on the World Bank (2010); GDP growth per capita 1950s for the world, Asia and China is calculated using period annual averages based on Maddison (2003). GDP growth per capita in the 1950s–2000s for sub-nations in China is calculated using period annual averages based on Xiaobin (1996), Li and Haynes (2010). Note: More complete explanations are given in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-1, Appendix B-5 and Appendix B-8 and Calculation Results: Appendix D1-6.

The pattern of economic performance in China also explains the second stylized fact, namely that an interrelationship between national and sub-national performance was absent in several nations. During the 1950s–2000s, China experienced a medium upswing (MDLWU) and a major upswing (MLWU), which partly determined the pattern of economic performance in Asia. This study compares variable patterns of economic performance in the provinces. For instance, in the 1950s, Guangdong and Jilin underwent slight downswings (SLDW); there were medium upswings in the 1960s and a borderline position in the 1970s. Subsequently, these provinces experienced a series of major upswings during the 1980s–2000s.

Figure 5.15 GDP Growth per Capita: World, North America, the United States and Selected Sub-Nations in the United States, 1950s–2000s

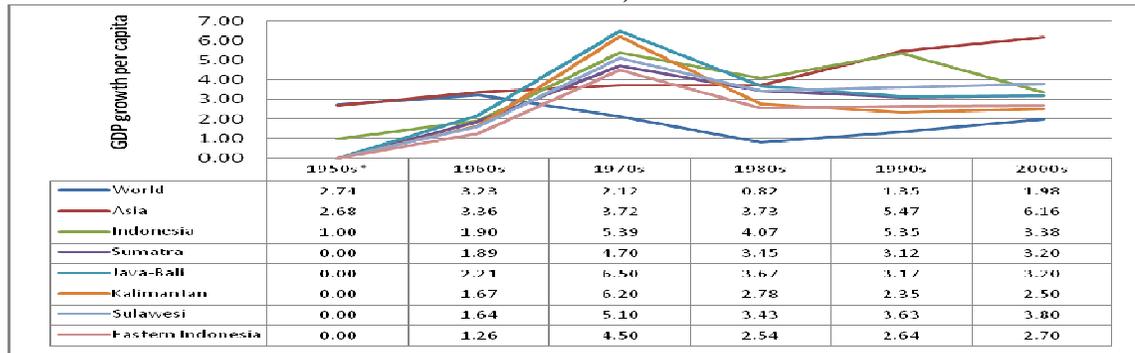


Source: GDP growth per capita in the 1960s–2000s for the world, North America and the United States is calculated using period annual averages based on the World Bank (2010); GDP growth per capita in the 1950s for the world, North America and the US is calculated using period annual averages based on Maddison (2003); GDP growth per capita in the 1950s–2000s for sub-nations in the US is calculated using period annual averages based on the US Bureau of Economic Analysis (2010). Note: The appendices are the same as Figure 5.14.

In the case of the US, an interrelationship between national and sub-national performance was sometimes seen, especially in the 1950s and 1960s. Increasing GDP growth per capita at the sub-national level followed an upswing in US national performance in the 1950s. In the 1960s, Alaska, California, Texas, Michigan, and New York were major upswing states in the US, suggesting that economic performance in the 1950s–1960s at the national level influenced performance at the sub-national level. For instance, in the 1950s, New York in the eastern US and California in the western US experienced medium upswings, while a major upswing occurred in Michigan, a northern state. Further, Texas in the southern US underwent a low upswing.

However, for the US, the variation between sub-national and regional–global performance was relatively heterogeneous during the 1950s–2000s. During the long-wave upswing of the 1950s–1960s, the United States experienced a moderate upswing as a result of more than half the states having an upswing. For instance, during the 1960s, most sub-nations experienced major upswings; likewise, the world, North America, and the US underwent upswings. Yet, in the 2000s, a variation in economic performance was seen in the US. GDP growth per capita throughout the world in relation to sub-nations in the US was 1.78 per cent (the world), 1.14 per cent (North America), and 1.83 per cent (the US); sub-nations were 7.34 per cent (Alaska), 1.50 per cent (Texas), and 2.50 per cent (New York).

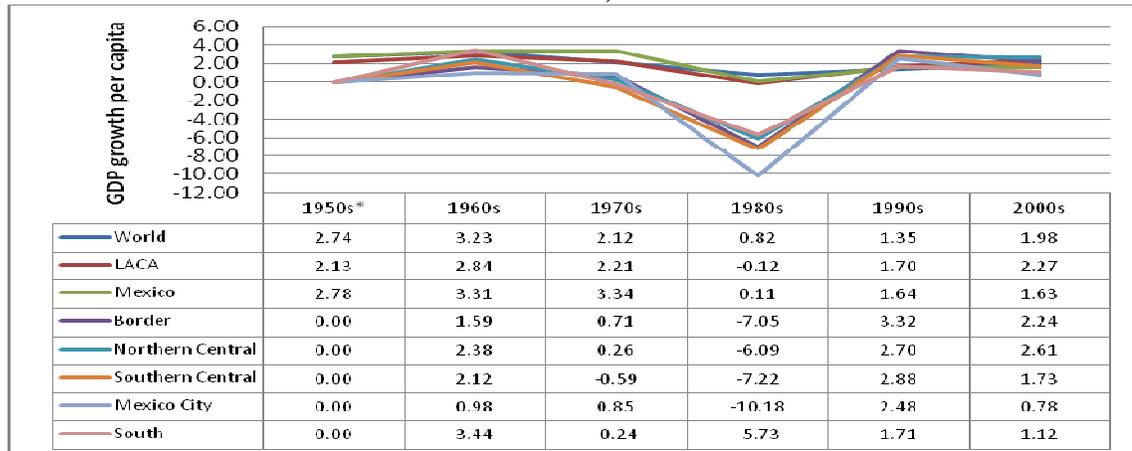
Figure 5.16 GDP Growth per Capita: World, Asia, Indonesia and Selected Sub-Nations in Indonesia, 1950s–2000s



Source: GDP growth per capita in the 1960s–2000s for the world, Asia and Indonesia is calculated using period annual averages based on the World Bank (2010); GDP growth per capita in the 1950s for the world, Asia and Indonesia is calculated using period annual averages based on Maddison (2003); GDP growth per capita in the 1950s–2000s for sub-nations in Indonesia is calculated using period annual averages based on Hill (2008). Note: The appendices are the same as Figure 5.14.

The focus now turns to Asia. During the 1950s–2000s, the pattern of sub-national economic performance in Indonesia tended to follow the national pattern; however, it sometimes differed from global and regional performance. Sub-national and national performance in Indonesia experienced downswings during the 1950s–1960s, followed by a major upswing in the 1970s; they then underwent low upswings during the 1980s–2000s. This differed from the pattern of global and regional performance. As noted, global GDP growth per capita underwent an upswing during the 1950s–1960s, was in a borderline position in the 1970s, and then experienced a downswing during the 1980s–2000s. By contrast, Asian economic performance has experienced a long-wave upswing since the 1950s. In Indonesia, the pattern differs. For instance, Java and Bali were in a borderline position in the 1960s, and experienced major and low upswings during the 1970s–2000s. This pattern was relatively close to the national pattern, but dissimilar to the global and regional pattern.

Figure 5.17 GDP Growth per Capita: World, LACA, Mexico and Selected Sub-Nations in Mexico, 1950s–2000s



Source: GDP growth per capita in the 1960s–2000s for the world, LACA and Mexico is calculated using period annual averages based on the World Bank (2010); GDP growth per capita in the 1950s for the world, LACA and Mexico is calculated using period annual averages based on Maddison (2003); GDP growth per capita in the 1950s–2000s for sub-nations in Mexico is calculated using period annual averages based on Weiss and Rosenblatt (2010). Note: The appendices are the same as Figure 5.14.

The sub-national performance in Mexico was at times dissimilar to the national as well as global and regional trends during the 1950s–2000s. The Mexican sub-nations displayed heterogeneous patterns that were slightly different from the national patterns, especially in the 1970s and 1990s. They were also dissimilar to global and regional patterns. For instance, Mexico City experienced a series of downswings during the 1950s–1970s, followed by a borderline position in the 1990s and a downswing in the 2000s. In the Northern Central region, the pattern commenced with a borderline in the 1950s, followed by downswings in the 1960s–1970s, and then a low upswing during the 1990s–2000s. At the national level, Mexican economic performance experienced an upswing during the 1950s–1970s, which was succeeded by downswings in the 1980s–2000s. These patterns also differ from global economic performance in the same period.

In brief, all countries had a pattern variation sub-nationally, regionally, and globally during the 1950s–2000s (i.e., all showed heterogeneous variation). As for the patterns of economic performance, sub-nations in China (Asia) and Indonesia (Asia) were strongly interrelated with national performance. The interrelationship between sub-nation and nation was weak in the US, meaning the national pattern in the US was not regularly followed by sub-nations. Finally, most sub-nations in Mexico had a similar pattern to the national; however, this was the case in three decades only.

5.8 Concluding Remarks

This chapter comprehensively investigates long waves of economic factors at the global, regional, national, and sub-national levels during 1950–2010. In order to examine long-wave performance, economic factors such as GDP growth per capita, investment, productivity, and net exports are considered for 160 countries in eight regions, namely Asia (25 countries), North America (three countries), Western Europe (22 countries), Eastern Europe (19 countries), Oceania and the Pacific (15 countries), Latin America and the Caribbean/LACA (28 countries), the Middle East and North Africa/MENA (20 countries), and Sub-Saharan Africa/SSA (28 countries). Sub-national economic performances are scrutinized by evaluating sub-national GDP growth per capita in seven countries, consisting of 143 sub-nations.

Further, this chapter uses the SFR model that generates five main conclusions, each of which is linked to the five hypotheses in this study. The first conclusion identifies that the world, including most regions and countries, as well as sub-nations, experienced long-wave upswings during 1950–1973, followed by long-wave downswings during 1974–2010. This first conclusion also highlights that institutional change occurred in the world and most regions and countries, leading to the shift from a long-wave upswing to a long-wave downswing. The second conclusion shows that there are some structural linkages for assigning membership to the three classes of core, semi-periphery, and periphery (C-SP-P). This is suggested by the percentage of countries in each class that experienced either a temporary upswing or a temporary downswing in the 1970s. The third conclusion addresses the interrelationship among some technical factors (as defined by political economy), which, over time, tended to display correlation. This can be seen in long waves, which display cumulative increases in magnitude, especially in the Asian region. The fourth conclusion also concerns some interrelationships of a technical nature (i.e., political economy), and suggests the contradictions that occur during long waves, especially in Western regions. The fifth conclusion moderately supports the fifth hypothesis, as heterogeneous sub-national performances occurred in long-wave upswings as well as in long-wave downswings.

The first conclusion is based on the fact that the percentage of upswings countries in the 1950s–1970s was larger than the percentage of downswing and

borderline countries. Conversely, during the 1980s –2000s, the percentage of downswing countries exceeded the percentage of upswing and borderline countries. Results for the Western regions (North America, Western Europe, and part of Oceania) partly account for the pattern of performance of the world economy, as negative change of GDP (i.e., market growth) occurred in the world and in Western regions. By contrast, the Asian region is the only region that underwent a long-wave upswing over the past fifty years. Positive economic change in market growth took place in Asia, as it has generated development of institution from the 1950s through the 2000s. This first conclusion generally supports Hypothesis 1.

Regarding the second conclusion, the historical non-deterministic analysis identifies some structural linkages among core, semi-peripheral and peripheral countries during the 1950s–2000s. The analysis reveals an increasing number of countries that experienced change, either from an upswing to a downswing or from a downswing to an upswing. The 1970s was a decade in which some evidence suggests the structural linkage of C-SP-P, as many countries suddenly experienced ups and downs. This second conclusion generally supports Hypothesis 2.

In order to examine the process of C-SP-P, a historical pattern is hypothesized. This pattern suggests that the Fordist institution deteriorated in the first half of the 1970s during the collapse of the Bretton Woods regime. This situation led to the emergence of capital mobility, which substantially determined capital inflows and outflows among members of the C-SP-P. For instance, most LACA and SSA countries (semi-periphery and periphery) experienced an upswing due to capital inflows from Western regions (core) during the 1970s. However, dependency upon capital inflows did not lead to sustainable upswings, as most countries in LACA and SSA underwent a major downswing in the 1980s.

The third conclusion, identified by experiences in the Asian regions, suggests some interrelationships among technical factors (those relating to political economy) and economic factors, including GDP growth per capita, investment growth, productivity growth, and net export growth. The direction of these interrelationships remained similar over time. Asia experienced circular and cumulative causation (CCC) during the 1950s–1970s and the 1980s–2000s, seen in the fact that the technical economic factors had

positive elasticity in these periods. This CCC is found to have determined the sustained upswing in Asia over the past fifty years. The third conclusion generally supports Hypothesis 3.

By contrast, the fourth conclusion considers Western regions, and finds some contradictions in the interrelationship of technical economic factors (as defined by political economy). These contradictions are suggested by the negative elasticity of these factors, especially in the long-wave downswing of the 1980s–2000s. Contradictions in these economic factors were partly determined by the deterioration of economic performance in Western regions. For instance, the negative elasticity of productivity to net exports and net exports to GDP per capita suggests that a dependency on capital inflow would not contribute to an upswing. A contradiction between financial capital and industrial capital is also identified, because investment elasticity to productivity is negative. The fourth conclusion generally supports Hypothesis 4.

The last conclusion pertains to heterogeneous sub-national economic performance during the long-wave upswing of 1950–1973 and the long-wave downswing of 1974–2010. This finding gives some corroboration to the fifth hypothesis in this study. Sub-national data demonstrate that the percentage of upswings in sub-nations exceeded the percentage of downswings in sub-nations from the 1950s to the 1990s. This pattern differed at the global level. The study is limited by the availability of time-series data and the geographical area covered by the sample of sub-nations. This conclusion generally supports Hypothesis 5.

Thus, the present chapter describes several stylized facts illustrating that the global, regional, national, and sub-national performance of economic factors is influenced by global institutional change taking place throughout long waves. To extend this analysis, the complexity and heterogeneity of the transformation of economic factors should be viewed at broader levels; specifically, this transformation may be the result of non-economic factors such as social, environmental, and political factors. Following such a holistic perspective, the stylized facts of social, environmental, and political factors are investigated in Chapter 6.

Chapter 6

Long Waves of Social, Environmental, and Political Factors at the Global, Regional, National, and Sub-National Political Economies, 1950s–2000s

6.1 Introduction

As discussed in Chapter 5, the long-term pattern of economic growth suggests that the world experienced a long-wave upswing in 1950–1973 and a long-wave downswing in 1974–2010. Each situation was characterized by complexities, heterogeneities, and uncertainties from the global to the sub-national level, and they were considered to be following the pattern of CCC and the contradiction of multiple economic factors. These patterns describe the structural linkages of uneven development and hegemony at the global and regional levels. Chapter 5 also compares the pattern of economic growth at different levels and examines the interrelationship between national and sub-national patterns.

This chapter considers the long-term patterns of social, environmental, and political factors, which are partially investigated in political economies at the global, regional, national, and sub-national levels for the 1950s–2000s. Using the SFR model, this chapter consists of three main parts. The first part examines social factors that are measured by three indicators: life expectancy, the Human Development Index (HDI), and trust, for each of which long-term global and regional patterns are investigated. This first part also constructs a statistical classification model to capture the distribution pattern between regional and national levels in the sense of C-SP-P relationships. Additionally, social factors from the global to the sub-national level are compared. Following a similar approach, environmental factors are investigated in the second part. This part emphasizes the gap between biocapacity and ecological footprint, which is one indicator of ecological capital. The third part focuses on political factors that are divided into two aspects: political indicators (i.e., political rights and civil liberties) and the Corruption Perception Index (CPI).

The chapter is organized as follows. Section 6.2 illustrates the long-term patterns of life expectancy and the HDI from global to national levels, as well as the regional and national distribution patterns of these social factors. Section 6.3 considers another social

factor: the trust that is asserted at the global, regional, and national level for the period being considered. In Section 6.4, the long-term pattern of ecological capital is demonstrated in a four-quadrant analysis that is linked to the principle of C-SP-P. The long-term patterns of political rights, civil liberties, and the CPI are displayed from global to national levels in Section 6.5. Importantly, in each section 6.2 to 6.5, the social, environmental and political factors are examined at the sub-national level. The various sub-national findings are then compared to those at the national, regional and global levels. Lastly, Section 6.6 concludes this chapter.

6.2 Human Development Trends 1950–2010: World, Region and Nation

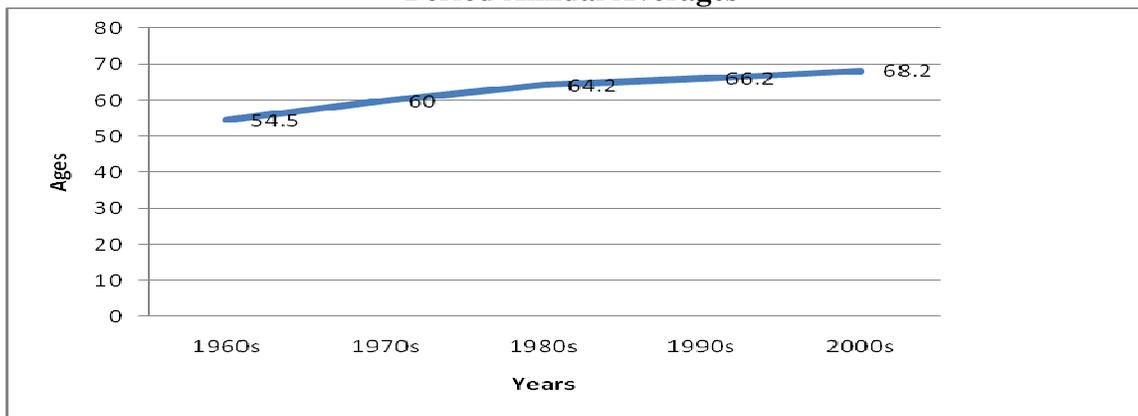
This section examines the trends of human development and social factor at different levels throughout long waves. Such an examination is needed to identify various social transformations due to changes in economic performance in the long term, specifically the 1950s–2000s. Prior to the Human Development Index (HDI) being developed by the UNDP, time-series data were limited. Therefore, this study employs life expectancy to describe human development trends. Further, the level of trust is investigated from the 1980s to the 2000s.

Initially, life expectancy is used to investigate the durable structures of human development over time. In line with the principle of uneven development, it is employed to view the pattern of human development at differing levels. The differences between the patterns of long-term life expectancy at the global and regional levels, as well as within regions, are also investigated. The period under consideration is the long wave of 1950-2010.

The long-term pattern of global life expectancy is shown in Figures 6.1a and 6.1b. Figure 6.1a displays the trends in global life expectancy during the 1960s–2000s. It also shows the level of ages that was achieved globally through the long wave. In addition, this study investigates the marginal value added of global life expectancy, which is shown in Figure 6.1b. This figure demonstrates the change in life expectancy for every decade during the 1960s–2000s. Note that the time-series data for life expectancy are available from the 1960s onward.

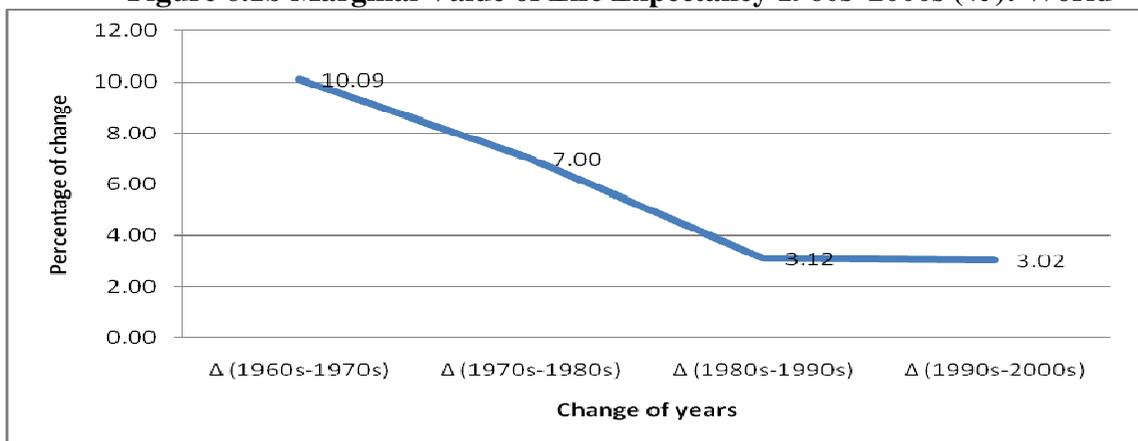
Figure 6.1 shows that global life expectancy was higher in the 1980s–2000s than in the 1960s–1970s. Life expectancy was 54.5 years in the long-wave upswing of the 1960s, followed by 64.2 years for the 1970s, through to a high of 68.2 years during the 1980s–2000s. This pattern posits that global life expectancy increased continually from the 1960s to the 2000s. Global life expectancy was higher during the long-wave downswing of the 1980s–2000s than it was during the long-wave upswing of the 1960s and the borderline 1970s.

Figure 6.1a Life Expectancy 1960s–2000s (years): World, Period Annual Averages



Source: Life expectancies during the 1960s–2000s are calculated using period annual averages based on World Bank data (2010). More complete explanations are given in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-10, and Calculation Results: Appendix D2-1.

Figure 6.1b Marginal Value of Life Expectancy 1960s–2000s (%): World



Source: Same as Figure 6.1a.

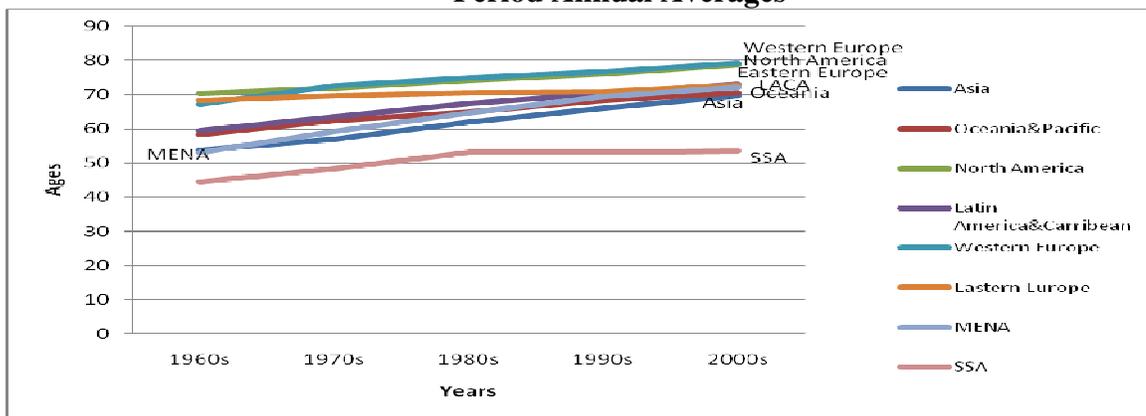
Figure 6.1b shows the change of life expectancy for every decade, used to calculate the marginal value. During the 1960s–2000s, the pattern of marginal life expectancy tended

to be high in the 1960s–1970s and low in the 1980s–2000s. For instance, the marginal gain of global life expectancy from the 1960s to 1970s was 10.09 per cent, followed by 7 per cent during the 1970s–1980s and a decline to nearly 3 per cent in the 1980s–1990s and 1990s–2000s. In line with global economic change, the marginal rate of growth in global life expectancy diminished from the long-wave upswing of the 1960s and the borderline 1970s to the long-wave downswing of the 1980s–2000s.

In the discourse of long-wave economic change, two stylized facts can be captured by comparing Figure 6.1a and 6.1b. Firstly, the global change in economic institution from Fordism to neoliberalism had little influence on the level of global life expectancy, as global life expectancy underwent a prolonged increase from the 1960s to the 2000s. By contrast, the second fact is that the marginal value of growth in global life expectancy showed a decreasing pattern during the 1960s–2000s as the global economy changed from a long-wave upswing to a long-wave downswing. Significantly, this second fact displays that a decline in global life expectancy occurred in the 1970s–1980s, when neoliberalism arose as the economic institution that replaced Fordism. As the shift from long-wave upswing to long-wave downswing coincided with the shift from Fordism to neoliberalism, the negative influence on the growth of life expectancy is properly viewed as caused by the joint action rather than a separate action

Following this global life expectancy analysis, this study now attempts to examine regional patterns. This regional analysis assesses the age levels in various regional societies. Again, regional levels of life expectancy as well as the regional marginal value are considered, as shown in Figures 6.2a and 6.2b.

Figure 6.2a Life Expectancy 1960s–2000s (years): Regions, Period Annual Averages

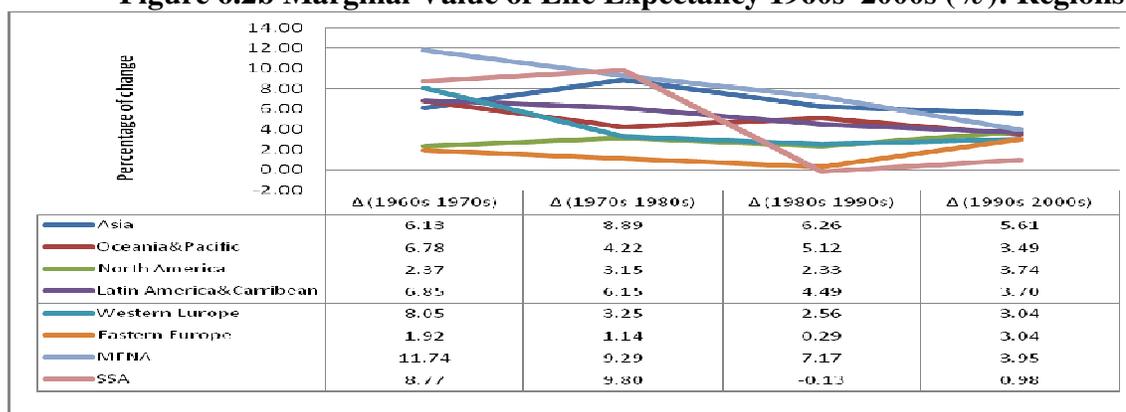


Source: Same as Figure 6.1a.

Figure 6.2a shows the patterns of regional life expectancy during 1960–2010. Some general patterns can be seen in this figure. Firstly, most regions had an increasing pattern of life expectancy during 1960–2010. Only two regions experienced periods of slight decrease, namely Eastern Europe in the 1980s and SSA in the 1990s. The second pattern is that three groups of regions could be formed regarding life expectancy throughout this long wave. North America and Western Europe are the first group, with life expectancy of 70–80 years during the 1960s–2000s. The second group consists of Oceania, LACA, MENA, and Asia, with life expectancies of 50 to 70 years. Special mention should be made of Eastern Europe; its life expectancies were similar to those of the first group in the 1960s, yet these declined to levels similar to the second group during the 1970s–2000s. Life expectancy was from 45 to 55 years in SSA, which is the third group.

Regional analysis investigates the marginal value of life expectancy during 1960–2010. Figure 6.2b reveals heterogeneous patterns among regions. The main general fact regarding regional levels of marginal life expectancy is that six out of eight regions continually experienced a decreasing growth rate for life expectancy during the 1960s–2000s. The changes in global economic institution and associated uncertainty (the results of such things as financial crises and debt crises), contributed to a decrease in the amount by which life expectancy increased in most regions (i.e., decreasing marginal value), which decreased the marginal rate of life expectancy in most regions. LACA and MENA are two such regions that underwent a continual decline. For instance, the growth rate of life expectancy in LACA was 6.85 per cent in the 1960s–1970s, followed by a descent to nearly 4.49 per cent in the 1980s–1990s and then declining to 3.70 per cent in the 1990s–2000s.

Figure 6.2b Marginal Value of Life Expectancy 1960s–2000s (%): Regions



Source: Same as Figure 6.1a.

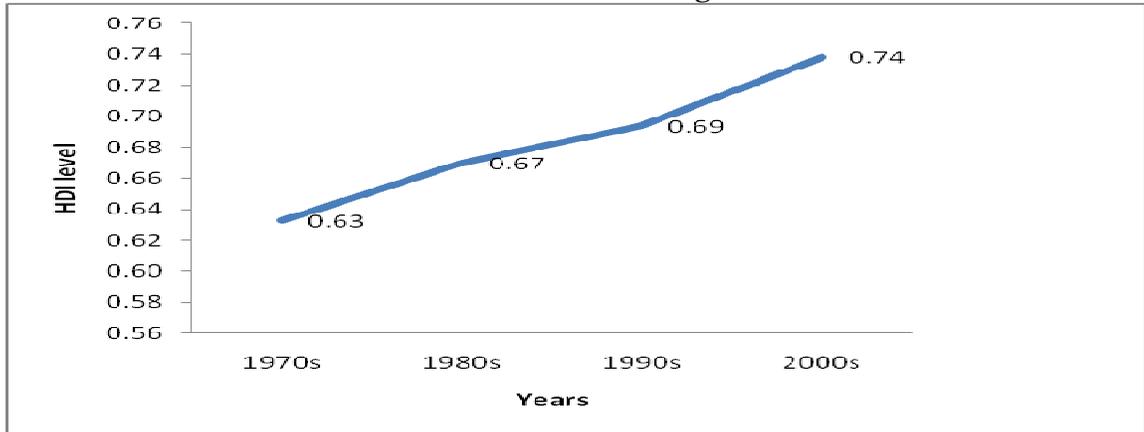
Further, this analysis particularly focuses on growth in life expectancy in the 1970s–1980s and the 1990s–2000s. The period of the 1970s–1980s is analyzed because the institution of neoliberalism arose in the first half of the 1970s (Maddison 2003). As for the 1990s–2000s, according to Lippit (1997) and Yaghmaian (1998), a new long wave may have emerged in the 2000s. As displayed in Figure 6.2b, most regions experienced declining patterns from the 1960s–1970s to the 1970s–1980s. Increasing patterns during these periods occurred only in Asia and North America. In addition, this figure shows that marginal life expectancy typically declined from the 1980s–1990s to the 1990s–2000s. Only three of eight regions displayed an increasing pattern during this period, i.e., North America, Western Europe, and SSA.

In order to further investigate social factors, life expectancy data are supplemented by the use of the Human Development Index (HDI). The HDI represents a varied stock of human development. According to the UNDP (2009, 2010), the HDI is a composite indicator, which comprises measures of education, health, and income. The HDI has been constructed by the UNDP to capture human development more broadly than is captured by GDP (UNDP 2010). This study surveys 160 countries and investigates human development by employing HDI data for the period 1970–2010 from UNDP. That is, this study examines the long-term movement in HDI, particularly as it relates to long waves of economic change.

The long-term pattern of global HDI is displayed in figures 6.3a and 6.3b. Figure 6.3a shows the global HDI level during 1970–2010. This figure suggests trends in the

level of the HDI over time. Changes in the HDI are identified by the marginal value of the global HDI for every decade, as displayed in Figure 6.3b. These figures give some indication of the development of global education, health, and income structures over the long term, as these components make up the HDI.

Figure 6.3a Human Development Index (HDI) Level 1970s–2000s: World, Period Annual Averages



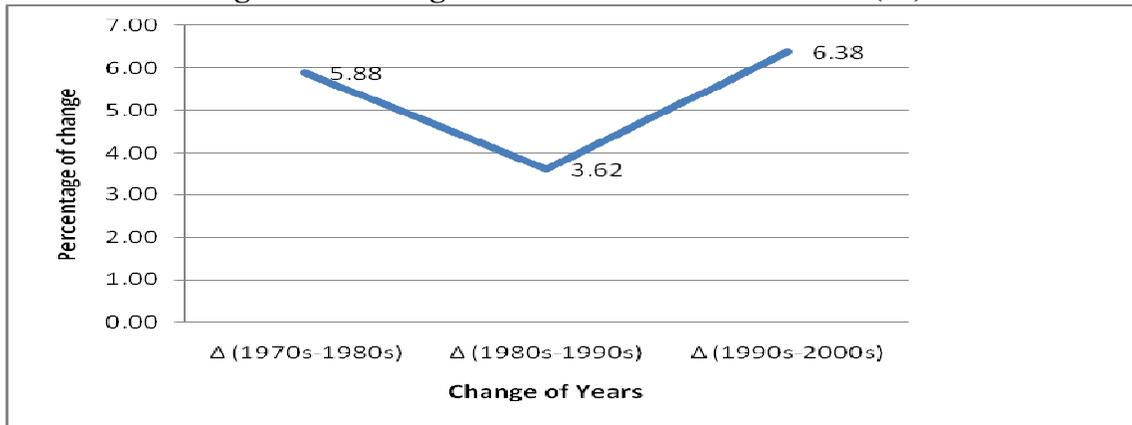
Source: HDI during the 1970s–2000s are calculated using period annual averages based on UNDP data (2010). More complete explanations are given in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-10, and Calculation Results: Appendix D2-1.

Figure 6.3a reveals the pattern of the global HDI level in the 1970s–2000s. Global HDI increased continually from the 1970s to the 2000s. It was 0.63 in the 1970s, followed by nearly 0.67 in the 1980s, and then increasing to 0.69 in the 1990s and 0.74 in the 2000s. Regarding global economic change, this pattern is unlikely to have been affected by the long-wave upswing under the institution of Fordism, as the time-series data commenced in 1970. However, this pattern does suggest that the global HDI level rose from the 1970s, early in the neoliberal era, and through the long-wave downswing of the 1980s–2000s, which coincided with the maturation of the institution of neoliberalism.

Long-term global HDI is also investigated using marginal values, as shown in Figure 6.3b. In this figure, the marginal value of the global HDI declined from the 1970s–1980s to the 1980s–1990s and then rose in the 1990s–2000s. With respect to global economic change, this figure posits that the marginal value of the global HDI was relatively lower during the emergence of the long-wave downswing—or emergence of

the neoliberal era—than it was during the maturation of this institution during the 1990s–2000s. For instance, the marginal value of the global HDI was 5.88 per cent in the 1970s–1980s, which is lower than the 6.38 per cent recorded in the 1990s–2000s.

Figure 6.3b Marginal Value of HDI 1970s–2000s (%): World



Source: Same as Figure 6.3a.

Following this global analysis, a regional HDI analysis is then presented in Table 6.1, which shows the long-term HDI level of regions during the 1970s–2000s. Global HDI levels are also included in this table. In order to examine the durable structures underlying the change of the HDI, this table shows the marginal value of the HDI from the 1970s to the 2000s. This pattern identifies the rate at which the institutional HDI underwent change during this period. Moreover, the changes in the HDI for every decade are also investigated in this table.

Some general facts are shown in Table 6.1. First, the HDI level for the world and most regions consistently increased from the 1970s to the 2000s. Only Eastern Europe and SSA experienced temporary declines during this period. The second fact is that there are three groups of regions with respect to trends in the HDI over this period. North America and Western Europe can be grouped, having HDI levels from 0.77 to 0.90. Some regions like Asia, Eastern Europe, LACA, MENA, and Oceania can be classified in the second group, having 0.56–0.78 for their HDI levels. Further, SSA was in the third group, having HDI levels from 0.39 to 0.49.

Table 6.1 Human Development Index (HDI) 1970s–2000s: Regions and World, Period Annual Averages

	1950s	1960s	1970s	1980s	1990s	2000s	Δ 1970s – 2000s (%)	Δ 1970s– 1980s (%)	Δ 1980s– 1990s (%)	Δ 1990s– 2000s (%)
Asia	n.a	n.a	0.56	0.59	0.61	0.66	18.08	5.21	3.52	8.42
North America	n.a	n.a	0.81	0.85	0.88	0.90	11.02	4.75	3.77	2.14
Western Europe	n.a	n.a	0.77	0.81	0.85	0.89	15.66	4.74	5.53	4.64
Eastern Europe	n.a	n.a	0.71	0.74	0.73	0.78	10.37	4.59	-1.30	6.92
MENA	n.a	n.a	0.56	0.61	0.66	0.72	29.12	9.23	8.99	8.46
SSA	n.a	n.a	0.39	0.46	0.44	0.49	27.68	18.22	-3.05	11.41
LACA	n.a	n.a	0.61	0.65	0.69	0.74	21.81	6.36	6.74	7.29
Oceania Pacific	n.a	n.a	0.66	0.66	0.69	0.72	9.03	0.11	3.32	5.41
World	n.a	n.a	0.63	0.67	0.69	0.74	16.72	5.88	3.62	6.38

Source: The HDI in the 1970s–2000s is calculated using period annual averages based on UNDP data (2010). More complete explanations are given in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-10, and Calculation Results: Appendix D2-1.

A third fact arises out of Table 6.1. As the marginal value of the HDI for the world and for all regions was positive from the 1970s to the 2000s, this suggests that, with respect to durable structures of HDI, a positive level of economic change occurred in the world and all of the regions. The fourth fact can be seen in the decadal marginal rate of HDI. This table reveals that the marginal HDI for five of the eight regions was less in the 1980s–1990s than it was in the 1970s–1980s. Eastern Europe and SSA had negative HDI during this period. For five out of the eight regions, these marginal rates of regional HDI increased from the 1980s–1990s to the period of the 1990s–2000s. Particularly, Asia, Oceania and Pacific Eastern Europe, and LACA had marginal values of HDI in the 1990s–2000s that were higher than period of the 1970s–1980s.

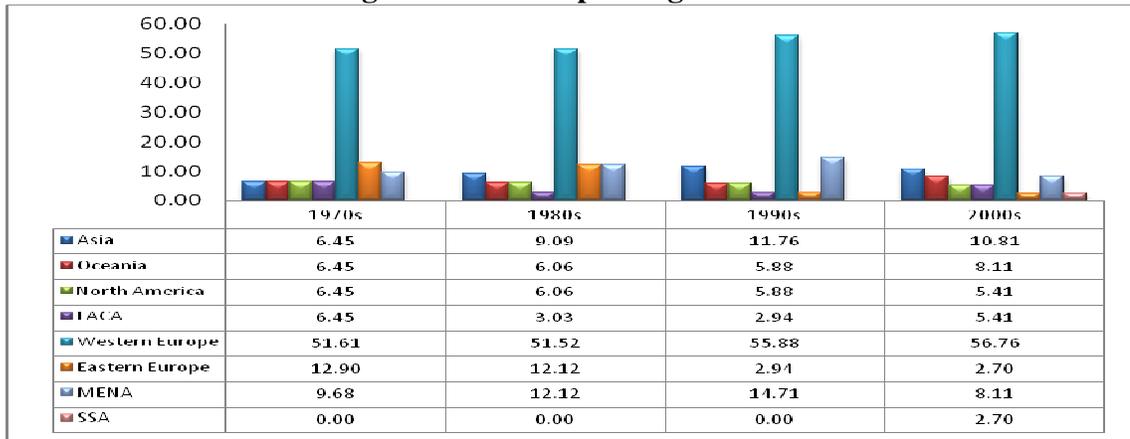
The long-term pattern of the HDI will now be considered at the national level. This national analysis is critical for evaluating the previous analyses of global and regional patterns. There are several reasons for this study using the pattern of the HDI for individual nations. One major reason is to investigate the regional HDI level and durability data. For instance, even though SSA had the highest level of economic change

in the HDI from the 1970s to the 2000s, the average national level of the HDI was one of the lowest among the regions. Moreover, analyzing the HDI of nations in the same region is important, as this study proposes the classification of nations according to their HDI level.

Prior to the HDI analysis for individual nations, 160 countries are classified based on their HDI level. This study uses the UNDP's (2010) classification scheme, which is the quartile method. There are four categories for the HDI level: Very High (VHDI), High (HHDI), Medium (MHDI), and Low (LHDI). Then, for each level of classification, each country's share of the regional HDI is assessed for the 1970s–2000s.

The long-term patterns of regional and national shares of the HDI level are displayed in Figures 6.4a, 6.4b, 6.4c, and 6.4d. Figure 6.4a shows the patterns of regional shares based on the percentage of countries which had HDI levels that were Very High during the 1970s–2000s. Most advanced regions typically had a Very High Human Development Index (VHDI), including Western Europe, North America and part of Oceania. The regional share of North America seems narrow in this figure, which is because this region only had three countries in this survey. Figure 6.4a also shows the long-term pattern and regional shares of the VHDI level among other regions, including Asia, LACA, MENA, Eastern Europe, and SSA. An increasing pattern also occurred in Asia. As the percentage of VHDI countries rose continually during the 1970s–1990s, MENA experienced slight increasing patterns during the 1970s–1990s, though it made medium contributions. The percentage of VHDI countries in SSA increased in the 2000s. On the other hand, Eastern Europe and LACA underwent a declining pattern during the 1970s–1990s, and they had low regional shares of this category.

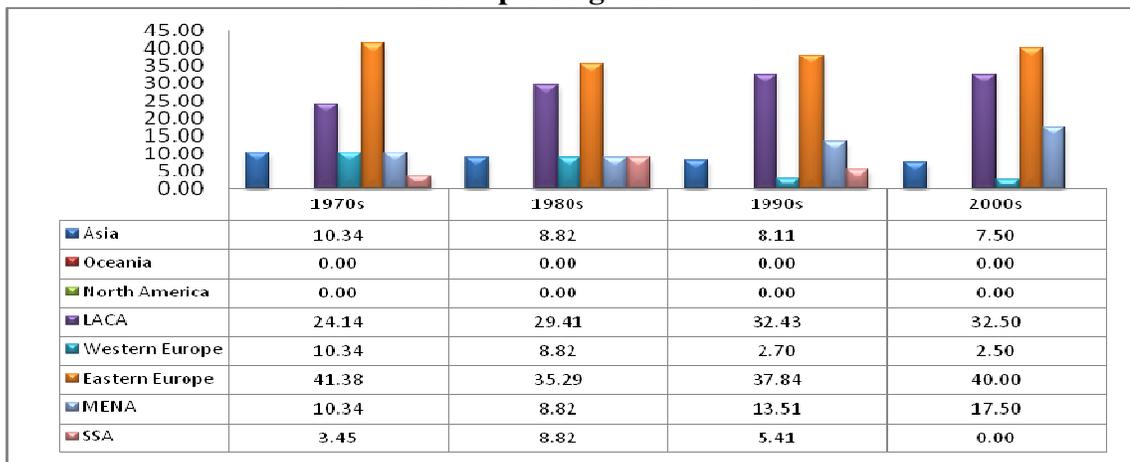
Figure 6.4a Very High Levels in the Human Development Index (HDI) by Percentage of Countries per Region 1970s–2000s



Source: The HDI for the 1970s–2000s is calculated using period annual averages based on UNDP data (2010). Note: The classification is determined by quartile of HDI levels among 160 countries during the 1970s–2000s. More complete explanations are given in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-10, and Calculation Results: Appendix D2-1.

Figure 6.4b reveals some patterns about the High Human Development Index classification. The first fact is that a High HDI classification was most common in Eastern Europe and LACA. The total percentage of countries from these regions was around 50 per cent during the 1970s–2000s. Secondly, almost no countries from advanced regions were in this classification after the 1990s. This is because almost all countries in the advanced regions were categorized by Very High HDI after the 1990s. One other noteworthy fact can be seen in the HHDI pattern: Eastern Europe, LACA, and MENA had a higher share of countries in the 1990s–2000s than they did in the 1970s–1980s.

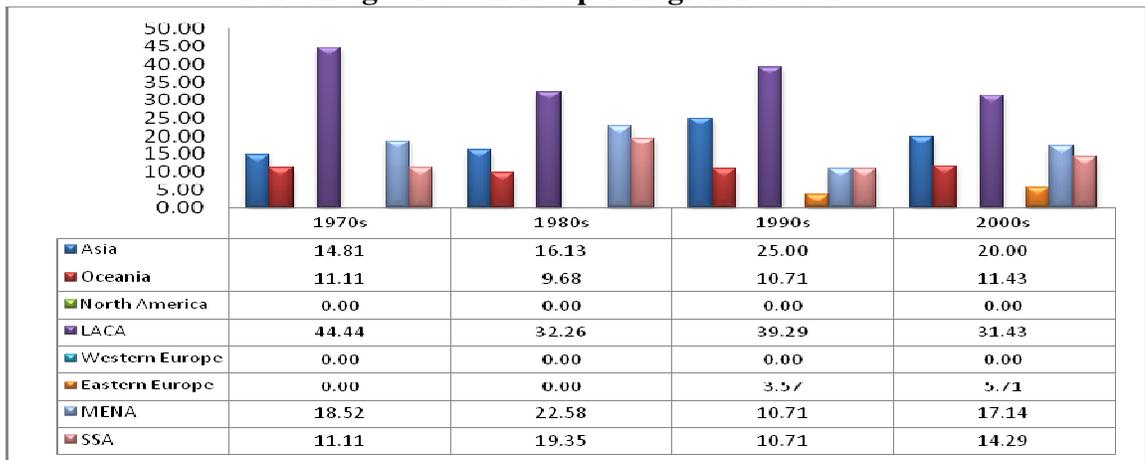
Figure 6.4b High Levels in the Human Development Index (HHDI) by Percentage of Countries per Region 1970s–2000s



Source: Same as Figure 6.4a. Note: Same as Figure 6.4a.

Figure 6.4c reveals one major pattern of the Medium Human Development Index (MHDI), namely that countries in LACA and Asia had the most shares in this category in the 1990s. They remained the major contribution in the 2000s, though their shares were fewer than in the 1990s. Secondly, no countries from advanced regions of Western Europe and North America were classified as MHDI. It is noteworthy that the regional share of countries from Oceania and the Pacific was not from any advanced country; rather, it came from some small countries in Melanesia and Polynesia, including Samoa and Tonga. The share of countries from SSA was higher in the 1980s than during the 1990–2000s.

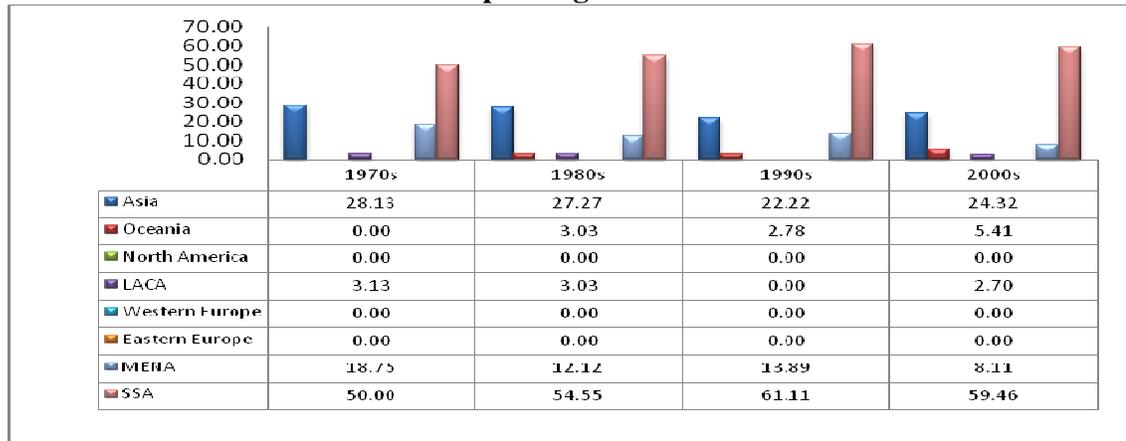
Figure 6.4c Medium Levels in the Human Development Index (MHDI) by Percentage of Countries per Region 1970s–2000s



Source: Same as Figure 6.4a. Note: Same as Figure 6.4a.

The pattern of the Low Human Development Index (LHDI) is displayed in Figure 6.4d. This pattern posits that countries in SSA were the major contributors in this category, contributing almost 60 per cent during the 1980s–2000s. The second largest contribution came from Asia, where some countries from South Asia are categorized as having low levels of human development. Finally, countries in MENA, LACA, and parts of Oceania made small contributions to this category. The decline in these regions' shares during the 1990s–2000s resulted from some countries moving to the level of Medium HDI.

Figure 6.4d Low Levels in the Human Development Index (LHDI) by Percentage of Countries per Region 1970s–2000s



Source: Same as Figure 6.4a. Note: Same as Figure 6.4a.

Following the partial investigation of each category, this regional–national analysis seeks to draw out some stylized facts for these categories. The first fact is that most of the regions had heterogeneous HDI levels based on this taxonomy. Five of eight regions contributed to all of the classifications during the 1970s–2000s. Second, countries from Western Europe and North America were typically classified in either the Very High or High Human Development Index (VHDI or HHDI). Almost all countries in these regions have been categorized as VHDI since the 1990s. Regarding global economic change, this shows that most countries in Western Europe and North America experienced increasing levels of human development from the inception to the maturation of the neoliberal era.

The third fact is that most countries in SSA fell in the Low Human Development Index (LHDI) category. This region increased its share of LHDI in the 1990s–2000s. Even though some SSA countries were in VHDI in the same period, this region was predominantly at low levels of HDI. The pattern of the HDI in SSA reveals that the neoliberal era was also accompanied by low HDI levels of SSA from the beginning to the end of the neoliberal era (i.e., 1970s–2000s).

Low human development in SSA also sheds light on the global and the regional analysis in Table 6.1. This is in the sense that even though a region experiences a positive change in HDI, this region may not improve its human development relative to other regions. As displayed in Table 6.1, SSA had the second highest level of change in

human development (HDI) during the 1970s–2000s, yet this was most highly represented in the Low Human Development Index (LHDI) category in the same period.

6.2.1 Sub-National Human Development Performance 1990s–2000s

In investigating uneven human development performance, this study also considers sub-national variations as a way of better understanding and explaining uneven performances at the global, regional and national levels. This section seeks to describe the patterns of sub-national human development in some particular countries. The complexity of the historical-institutional approach to human development in the world is likely to be better understood through such comparative pattern analysis at the sub-national level.

This section first compares sub-national and global, regional, and national human development performances during the 1950s–2000s. The sub-national data are isolated through this analysis as much as possible to investigate the transformation of institutions according to long-term performance. Second, variations across sub-national, global and regional levels in the human development pattern are analyzed.

The institutional transformation of sub-national human development during 1950–2010 is displayed in Figures 6.5a to 6.5d. These figures compare sub-national and global, regional and national human development in China, the United States, India, and Indonesia. These figures examine sub-national patterns in the Human Development Index (HDI) in these selected countries, and they capture state and provincial data. Time-series data for Figures 6.5a to 6.5d at the sub-national HDI are typically limited to the 1990s–2000s.

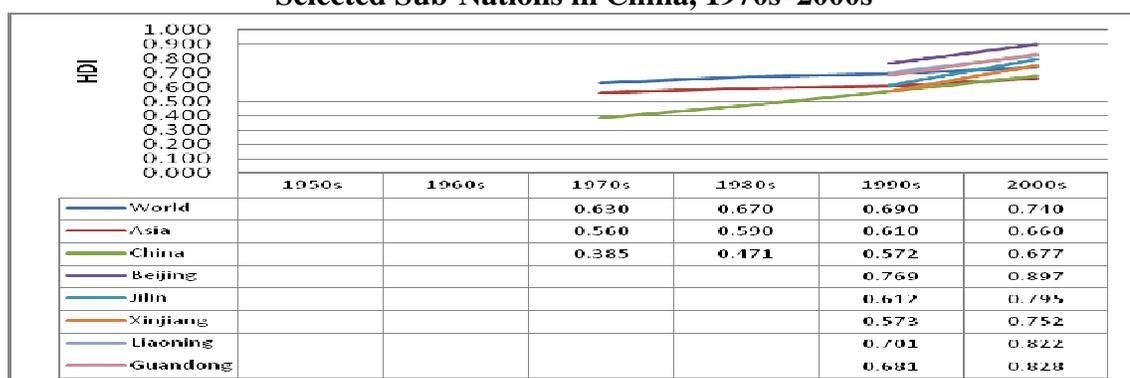
Analysis of these figures suggests some stylized facts. The first stylized fact is that the variations between sub-national and global, regional, and national HDI patterns tend to be heterogeneous in the selected countries. The second stylized fact is that little relationship can be seen between the HDI in the sub-national and national level in the selected countries. This suggests that the changes in the HDI in the national level do not necessarily follow those at the sub-national level.

The first stylized fact is evidenced by the sub-national pattern of HDI in all of the selected countries. In the period of the 1990s–2000s, the sub-national HDI in these countries displays an increasing pattern that is similar to global and regional patterns.

However, some variations in the amplitude of the sub-national HDI are evident in these countries. During the 1990s–2000s, the values of some sub-national HDIs were higher than the relevant global and regional HDIs. For instance, the sub-national HDI in states in the United States such as California, New York, Texas, and Michigan was above the global, regional and national levels of HDI. Similarly, three countries in Asia had high-performing sub-nations, the HDIs of which exceeded global, regional and national levels. These countries were China (Beijing and Liaoning), India (Kerala), and Indonesia (Jakarta and North Sulawesi).

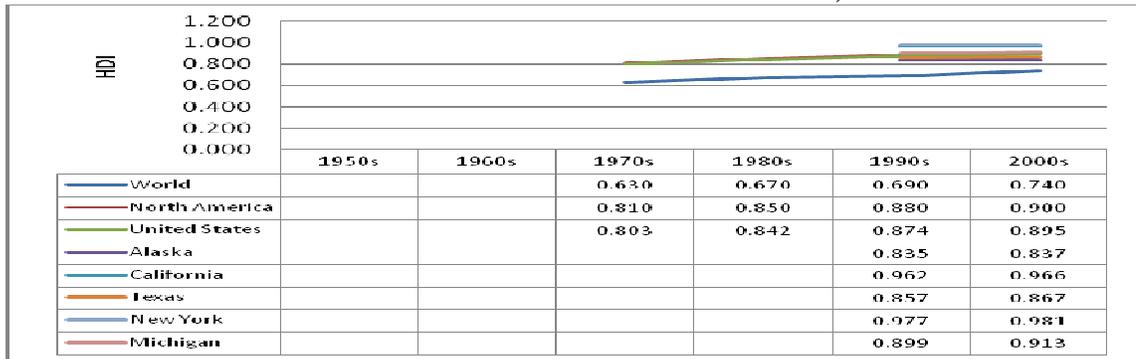
The second stylized fact is that an interrelationship between the sub-national and national HDIs is evidenced by the pattern of periodicity (movements), yet not in terms of the size of movements (amplitude). Most sub-nations in these selected countries had an increasing pattern among the nations during the 1990s–2000s. On the other hand, sub-nations in these selected countries mostly had heterogeneous HDI values above or below the national HDI. By way of example, China experienced an increasing pattern of HDI from 0.572 in the 1990s to 0.677 in the 2000s. Most sub-national HDIs in China also increased over the same period but by different amounts. For instance, the HDI in Beijing increased from 0.769 in the 1990s to 0.897 in the 2000s, while Jilin increased in HDI from 0.612 in the 1990s to 0.795 in the 2000s.

Figure 6.5a Human Development Index (HDI): World, Asia, China and Selected Sub-Nations in China, 1970s–2000s



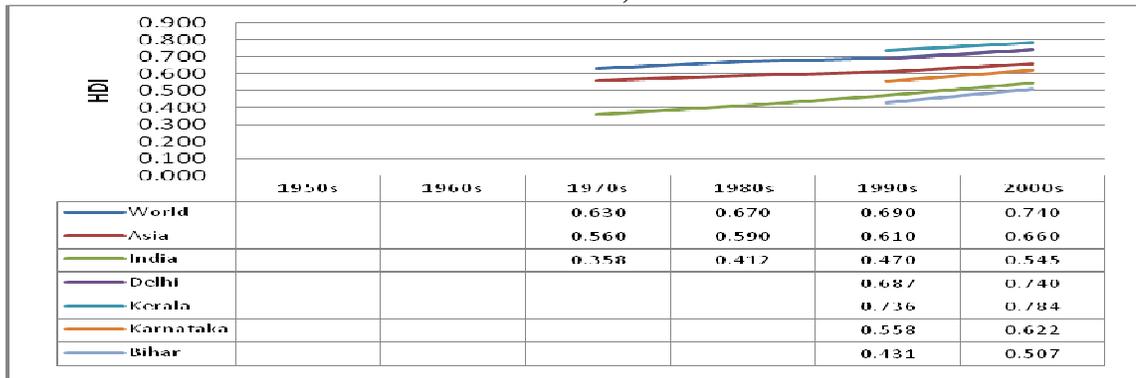
Source: The HDI in the 1970s–2000s is calculated using period annual averages based on UNDP (2010); The Sub-national HDIs in China in the 1990s–2000s are calculated using period annual averages based on Lai (2003) and UNDP China (2008). Note: HDI data for the world, regions and nations are available from the 1970s to the 2000s. HDI data for sub-nations are available from the 1990s to the 2000s. More complete explanations are given in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-15.

Figure 6.5b Human Development Index (HDI): World, North America, the United States and Selected Sub-Nations in the United States, 1970s–2000s



Source: The HDI in the 1970s–2000s is calculated using period annual averages based on UNDP (2010); The Sub-national HDIs in the US in the 1990s–2000s are calculated using period annual average based on Agostini and Richardson (1997) and the Social Science Research Council (2009, 2011). Note: Same as Table 6.5a.

Figure 6.5c Human Development Index (HDI): World, Asia, India and Selected Sub-Nations in India, 1970s–2000s



Source: The HDI in the 1970s–2000s is calculated using period annual averages based on UNDP (2010); The Sub-national HDIs in India in the 1990s–2000s are calculated using period annual average based on Kumar (1991) and UNDP India (2008). Note: Same as Table 6.5a.

Figure 6.5d Human Development Index (HDI): World, Asia, Indonesia and Selected Sub-Nations in Indonesia, 1970s–2000s



Source: The HDI in the 1970s–2000s is calculated using period annual averages based on UNDP (2010); The Sub-national HDIs in Indonesia in the 1990s–2000s are calculated using period annual averages based on Indonesian Statistical Board (2010). Note: Appendices is same as Table 6.5a.

In summary, all of the selected countries had heterogeneous HDI patterns (sub-national– regional–global) during the 1990s–2000s. As for the relationship between sub-nations and nations, all countries had sub-nations whose HDIs appeared is strongly related to those of their nations. For example, during the 1990s–2000s, the HDI levels in sub-nations in these countries typically increased, as did the national HDI levels. However, in the sense of amplitude, the sub-national HDIs in all of the selected countries differed from the HDIs of the corresponding nations.

6.3 Uneven Global, Regional and National Distribution of Social Capital 1950–2010

This section examines the impact of the social economy on global development and inequality dynamics. Many scholars stress the role of social capital in economic growth. For instance, according to Bourdieu (1983) and Paxton (2002), social capital is a collection of resources related to potential cooperation in a long-term institutional relationship. Further, social capital is a form of social structure that motivates and influences individual activities in a society (Coleman 1988; Paxton 2002: p. 92).

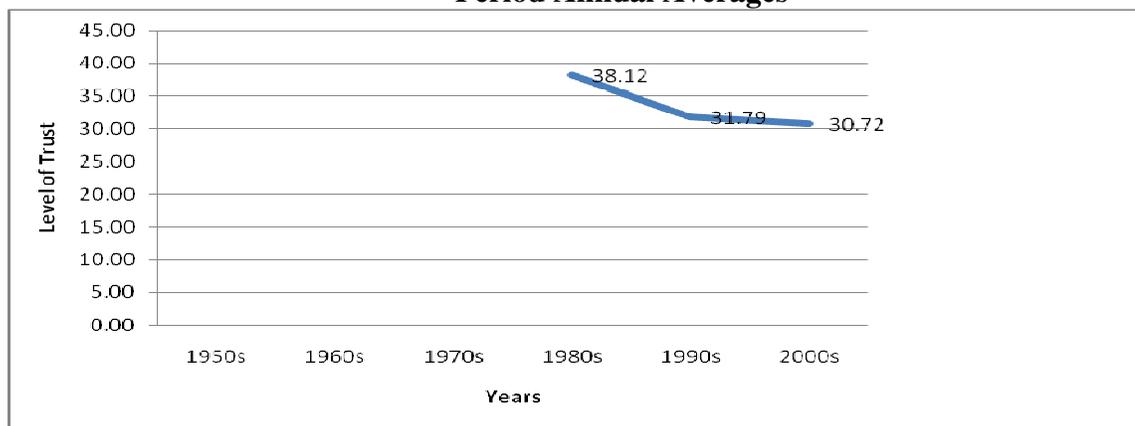
A core element of social capital is trust. Trust is foremost in the individual relationships which constitute and give rise to community activities (Paxton 2002, 2007; Delhey, Newton, and Welzel 2011). High levels of trust are likely to encourage institutional networks and non-formal activities. According to Zak and Knack (2001) and van Schaik (2002), non-formal trust or interpersonal trust is determined by the question, “Would you say that most people can be trusted or that you can’t be too careful in dealing with people?” Following this question, two responses are possible: 1. “Most people can be trusted”; 2. “You can’t be too careful.” Institutionally, networks can transform trust into the existence of some public or corporate institutions, such as a religious institution, a business networks, an educational system, a trade unions, the armed forces, and other public institutions.

Trust in this study encompasses both interpersonal and institutional trust, as described above. According to Zak and Knack (2001), trust levels have a positive contribution to economic growth, requiring both interpersonal and formal institutional trust. Thus, this study measures level of trust through the general question, “Would you say that most people can be trusted or that you can’t be too careful in dealing with

people?” Long-term trust levels determine durable structures of relationships for individuals and societies and many aspects of their wellbeing and performance over time.

Long-term patterns of the global trust level during the 1980s–2000s are displayed in Figure 6.6. As can be seen, the global level of trust in the 1980s was slightly higher than that in the 2000s, which suggests that global trust level decreased from early on in the long-wave downswing of the 1980s to the 2000s. For instance, the global level of trust was 38.12 in the 1980s; it declined to 31.79 in the 1990s and to 30.72 in the 2000s.

Figure 6.6 Trust Level 1980s–2000s: World, Period Annual Averages



Source: The level of trust is calculated using period annual averages based on WVS data (2010). Note: This study investigates 68 countries on the WVS surveys in 1981, 1990, 1995–1997, 1999–2004, and 2005–2008. More complete explanations are given in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-11 and Calculation Results: Appendix D2-2.

Following the global trust analysis, a regional analysis is provided to examine the varied patterns of trust among regions, as well as the similarities and differences in global and regional patterns. Table 6.2 contains the relevant data. Table 6.2 identifies long-term patterns in global and regional trust levels from the 1980s to 2000s. The three right-hand columns show the marginal value of global and regional trust levels for the same period. The marginal values of global and regional trust in the 1980s–2000s are critical to appreciating the level of institutional change of durable structures of trust.

In Table 6.2, some heterogeneous patterns can be seen in the level of trust in the regions. First, all regions had declining trust levels during the 1980s to the 1990s, yet most of them experienced increasing patterns in the 1990s–2000s. In this latter period, only North America and LACA showed declining patterns of trust. The second pattern is

that negative marginal values of trust occurred in most regions in the 1980s–1990s and the 1990s–2000s. However, the less negative marginal values of trust over these two periods suggested that most regions showed a slowing in the decline of trust levels. For instance, the marginal value of trust in Western Europe in the 1980s–1990s was -5.92 per cent, followed by -2.52 per cent in the 1990s–2000s. Levels of trust in Asia and Oceania showed progressive improvement, and both had positive marginal values of trust between the 1990s and 2000s.

**Table 6.2 Trust 1980s–2000s: Regions and World,
Period Annual Averages**

	1950s	1960s	1970s	1980s	1990s	2000s	Δ 1980s– 1990s (%)	Δ1990s– 2000s (%)	Δ1980s– 2000s (%)
Asia	n.a.	n.a.	n.a.	38.00	32.25	41.00	-15.13	27.13	7.89
North America	n.a.	n.a.	n.a.	44.80	44.00	37.30	-1.79	-15.23	-16.74
Western Europe	n.a.	n.a.	n.a.	38.00	35.75	34.85	-5.92	-2.52	-8.29
Eastern Europe	n.a.	n.a.	n.a.	33.10	26.53	21.80	-19.86	-17.81	-34.14
MENA	n.a.	n.a.	n.a.	n.a.	n.a.	27.70	n.a.	n.a.	n.a.
SSA	n.a.	n.a.	n.a.	n.a.	22.48	18.55	n.a.	-17.46	n.a.
LACA	n.a.	n.a.	n.a.	27.00	17.05	15.90	-36.85	-6.74	-41.11
Oceania Pacific	n.a.	n.a.	n.a.	47.80	44.50	48.65	-6.90	9.33	1.78
World	n.a.	n.a.	n.a.	38.12	31.79	30.72	-16.59	-3.38	-19.41

Source: The level of trust is calculated using period annual averages based on WVS data (2010). Note: This study investigates 68 countries on the WVS survey in the 1981, 1990, 1995–1997, 1999–2004, and 2005–2008. More complete explanations are given in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-11 and Calculation Results: Appendix D2-2.

In Table 6.2, another major pattern is that most regions had negative rates of change during the 1980s–2000s, which explains the negative change in the level of trust that occurred in most regions over this period. For instance, negative change occurred in North America, where the marginal value of trust during the 1980s–2000s was negative. By way of contrast, only two regions – Asia and Oceania – experienced positive change in the level of trust. The increase in the level of trust in Asia was 7.89 per cent during the 1980s–2000s. It must be noted that, analysis in this table does not capture MENA and SSA, as data were not available for trust levels during the 1980s–2000s.

The institution of globalization proposed the power of capital, ignored cooperation, workmanship and labor power. The domination of capital power led to increased individualism rather than social respect: people put forward individual benefits

and an advanced lifestyle. When social relationships were marginalized, the proportion of people who trusted one another declined.

Declining general levels of social trust were a critical factor in interactions among people on the world stage. Two possible reasons for such declining trust were changes in lifestyle that accompanied globalization (for example, change in the attitudes toward family – as seen in the increase in the proportion of working mothers) –and a general rise of consumption. In summary, increased economic freedom came at a cost to social capital.

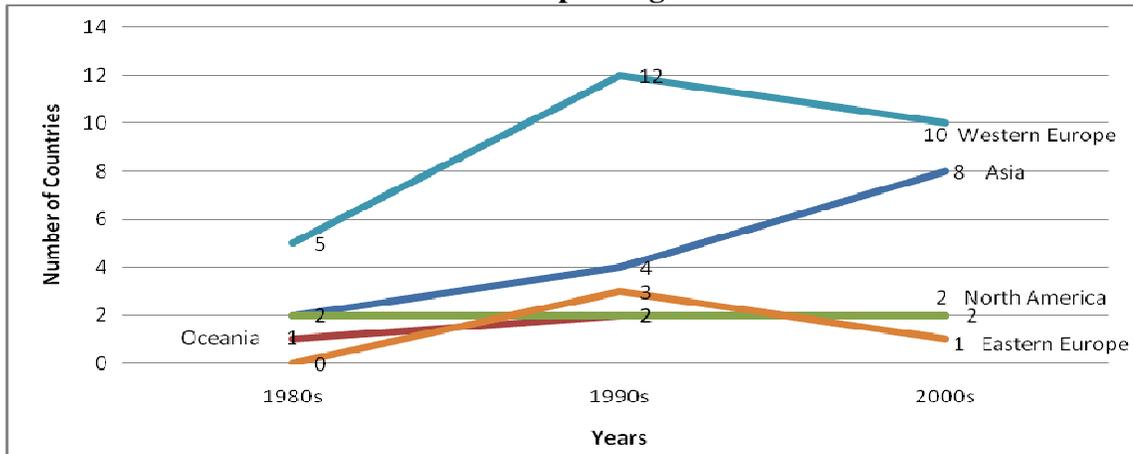
In investigating the relationship between economic problems and social capital, LACA and Eastern Europe are suitable regional examples. They had greater rates of negative change of trust than other regions during the 1980s to the 2000s. With respect to long waves of economic change, LACA experienced a debt crisis in the 1980s–1990s, the consequence of this region’s dependence upon capital inflows in the mid-1970s. Increasing capital inflows were indicative of greater capital mobility – economic freedom being a central characteristic of the neoliberal era. Following this, social capital declined through various changes in the ways of life in these countries. In Eastern Europe, the Soviet economy collapsed as free capital markets became dominant in the 1990s. As freedom in the capital market increased, social trust then declined.

This study now examines national trust levels to provide a richer global–regional analysis. As mentioned, the global–regional analysis only partially captures the unevenness in the pattern of social trust. As noted, Western Europe had declining social trust during the 1980s–2000s; social trust increased in Oceania and the Pacific in the same period. However, the absolute values of WVS measures in Oceania and the Pacific did not surpass those in Western Europe. Western Europe may have had a negative change in social trust during the 1980s–2000s, yet this region had average trust levels that were higher than those in Oceania. Conversely the positive change in Oceania did not lead to an average trust level in this region that was higher than Western Europe.

As previously discussed, the national analysis employs the relative classification of trust levels among countries, using four groups: Very High Level of Trust (VHT), High Level of Trust (HLT), Medium Level of Trust (MLT), and Low Level of Trust (LLT), each of which represents a quartile. This national analysis can be seen in Figures

6.7a, 6.7b, and 6.7c. Note that Figure 6.7a combines the categories of Very High (VHLT) and High (HLT). The combination considers that the absolute value of VHLT and HLT countries was slightly similar.

Figure 6.7a Very High Level of Trust (VHLT) and High Level of Trust (HLT) by Number of Countries per Region 1980s–2000s

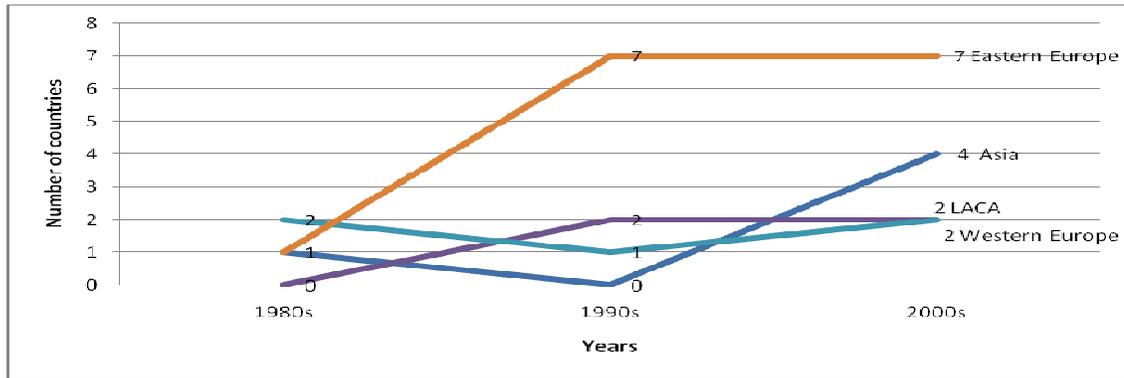


Source: The level of trust is calculated using period annual averages based on WVS data (2010). Note: This study investigates 68 countries using the WVS in survey 1981, 1990, 1995–1997, 1999–2004, and 2005–2008. More complete explanations are given in Definition of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-11 and Calculation Results: Appendix D2-2.

Figure 6.7a shows three stylized facts. The first is that Very High and High Level of Trust countries were typical in Western Europe. Second, Asia was the only region in which the number of VHLT and HLT countries consistently increased. Third, the pattern of Western Europe and Eastern Europe increased from the 1980s to the 1990s; and then declined during the 1990s–2000s.

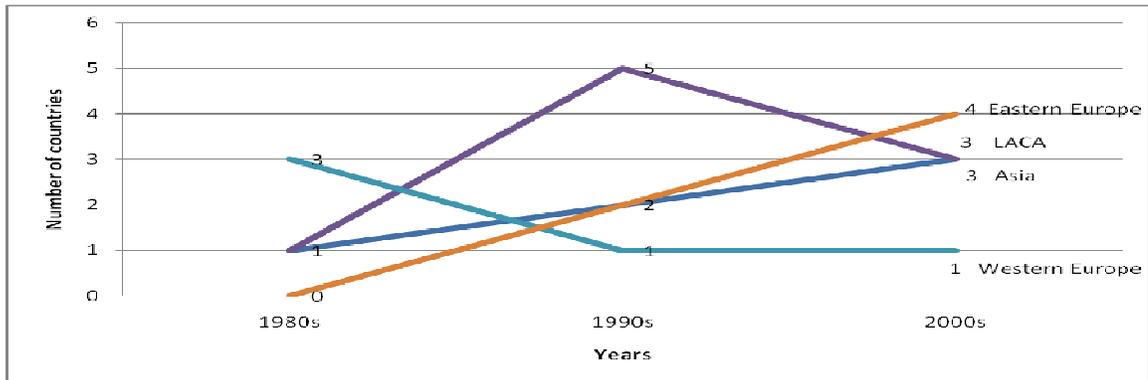
Figure 6.7b reveals the number of countries that had a Medium Level of Trust (MLT) during the 1980s–2000s. In this category, Eastern Europe was “dominant” in that it had more countries rather than other regions. Another fact can be identified by the pattern of periodicity. During the 1980s–1990s, Eastern Europe and LACA had an increasing pattern of the number of MLT countries; this was followed by a stable pattern from the 1990s to the 2000s. For example, in the 1980s–1990s, the number of MLT countries in Eastern Europe was only one, followed by seven countries in the 1990s and 2000s. By way of contrast, the number of MLT countries in Asia and Western Europe slightly decreased during the 1980s–1990s, yet both increased from the 1990s to the 2000s.

Figure 6.7b Medium Level of Trust (MLT) by Number of Countries per Region 1980s–2000s



Source: Same as Figure 6.8a. Note: Same as Figure 6.8a.

Figure 6.7c Low Level of Trust (LLT) by Number of Countries per Region 1980s–2000s



Source: Same as Figure 6.8a. Note: Same as Figure 6.8a.

Regional patterns of long-term Low Level of Trust (LLT) by number of countries are shown in Figure 6.7c. One important fact that can be seen in this figure is the change in regions having maximum number of countries during the 1980s–2000s. Western Europe was uppermost in the 1980s, followed by LACA in the 1990s and then Eastern Europe in the 2000s. Second, the number of LLT in three of the four regions increased during the 1980s–1990s, namely Eastern Europe, Asia, and LACA.

6.3.1 Sub-National Social Trust Performance in the 2000s

This section investigates sub-national levels of trust and movements in these levels. As discussed previously, a sub-national investigation helps explain asymmetries at the global, regional and national levels. Two main analyses are conducted. The first analysis compares the pattern of sub-national trust and global, regional and national trust during

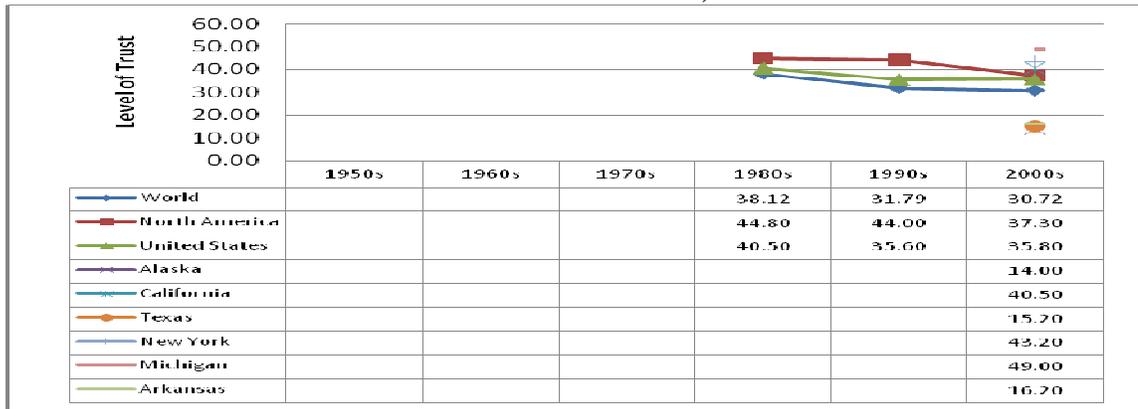
the 1950s–2000s. The second analysis, seen in Figures 6.8a to 6.8c, considers the trust levels of various sub-nations in the US, China and Canada in the 2000s. It is noteworthy that the time-series data for sub-nations are limited; data for the 2000s are only available in the literature.

The first analysis is contained in the series of Figures 6.8a, 6.8b and 6.8c. In these figures, the patterns of sub-national trust levels are compared with global, regional, and national patterns. Due to the limited data for sub-nations, a comprehensive comparison is difficult. However, this analysis focuses on comparing sub-national trust levels among countries. The areas that represent sub-nations (cities, provinces, and states) were chosen to give comprehensive geographical coverage of the nations in which they are located, i.e., sub-nations from the north, south, east, and west of a nation.

In Figures 6.8a to 6.8c, it can be seen that sub-national trust levels among countries tended to be heterogeneous. In the core region (i.e., North America), sub-nations in the United States and Canada were characteristically varied. For instance, as displayed in Figure 6.8a, the global trust level was 30.72 per cent in the 2000s, while North America had a level of trust of 37.30 per cent. At the national level, the level of trust in the United States was 35.80 per cent and some sub-nations had a trust level as follow: Alaska (14.00 per cent), California (40.50 per cent), Texas (15.00 per cent), New York (43.20 per cent) and Michigan (49.00 per cent).

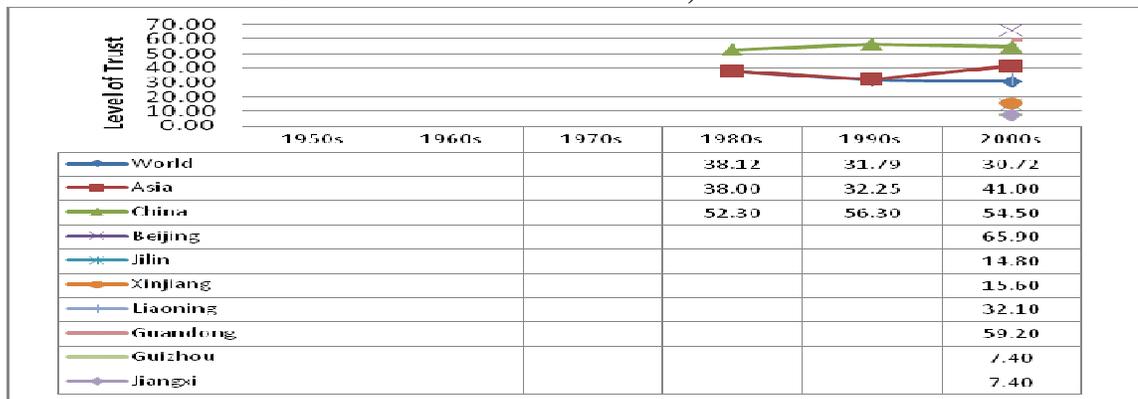
Sub-nations in Asia also had heterogeneous trust levels. For instance, the level of trust in China was 54.50 per cent in the 2000s, while global and Asian (regional) trust levels were 30.72 per cent and 41.00 per cent. Sub-national trust in China also varied: Beijing (65.90 per cent), Jilin (14.80 per cent), Xinjiang (15.60 per cent), Liaoning (32.10 per cent) and Guandong (59.20 per cent).

Figure 6.8a Level of Trust: World, North America, the United States and Selected Sub-Nations in the United States, 1980s–2000s



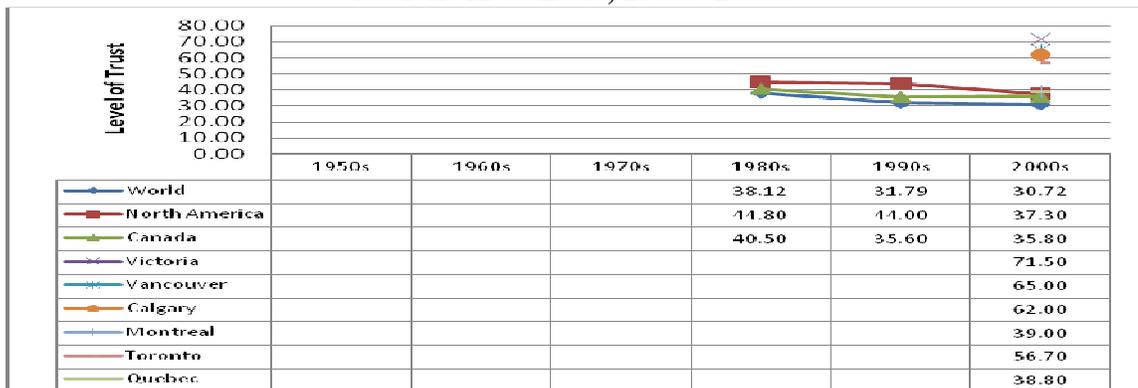
Source: The level of trust is calculated using period annual averages based on WVS data (2010); Sub-national Trust in the US in the 2000s is calculated using period annual average based on Putnam (2001), Alesina and La Ferrara (2003), and Rahn *et al.* (2009). Note: Trust data for the world, regions and nations are available from the 1980s to the 2000s. Trust data for sub-nations are available only for the 2000s. More complete explanations are given in Definition of Statistical Terms: Appendix A-1 and Technical Notes: Appendix B-16.

Figure 6.8b Level of Trust: World, Asia, China and Selected Sub-Nations in China, 1980s–2000s



Source: The level of trust is calculated using period annual averages based on WVS data (2010). Sub-national trust in China in the 2000s is calculated using period annual average based on Ke and Zhang (2003), Pan and He (2010). Note: Same as Figure 6.8a.

Figure 6.8c Level of Trust: World, North America, Canada and Selected Sub-Nations in Canada, 1980s–2000s



Source: The level of trust is calculated using period annual averages based on WVS data (2010). Sub-national Trust in Canada in the 2000s is calculated using period annual average based on Kazempur (2006, 2008). Note: Same as Figure 6.8a.

This second analysis generates one main stylized fact about the pattern of the distribution of sub-national trust levels among regions and countries in the 2000s. A certain pattern of distribution occurred in the core regions as well as in the semi-peripheral regions. For instance, in the United States, high levels of trust typically occurred in northern states, such as New York (43.20 per cent), Michigan (49.00 per cent) and California (40.50 per cent), while low trust levels were found in southern states, such as Texas (15.20 per cent) and Arkansas (16.20 per cent). In Canada, some sub-nations in western Canadian cities, such as Vancouver (65.00 per cent) and Calgary (62.00 per cent) mostly had high levels of trust, whereas low levels of trust typically occurred in eastern Canada, for example in Montreal (39.00 per cent) and Quebec (38.80 per cent).

In the semi-peripheral region of Asia, the distribution of sub-national trust also varied in China. For instance, Beijing in north-eastern China had high levels of trust, namely 65.90 per cent, whereas some provinces in south-eastern China had low levels of trust, for example Guizhou (7.40 per cent) and Jiangxi (7.40 per cent). In China, Jilin's low level of trust (14.80 per cent) differed markedly from the high levels of its northern counterparts, i.e., Beijing. In the south, Guandong's high level of trust (59.20 per cent) contrasted to that of Guizhou and Jiangxi.

6.4 Ecological Capital and Sustainability 1950–2010: World, Region, and Nation

This section seeks to examine the relationship between uneven development and environmental factors during long waves. Environmental factors are explained through the notion of ecological capital, as developed in the literature over the past forty years; see, for example Jorgenson and Clark (2009), O'Hara (2009), and Dauvergne and Neville (2010). This section discusses how certain indicators of ecological capital can capture global, regional and national development trends in the 1950s–2000s and, thereby, contribute to an understanding of uneven development in long waves. Specifically, patterns of change in ecological capital stock, viewed as an economic institution, are considered.

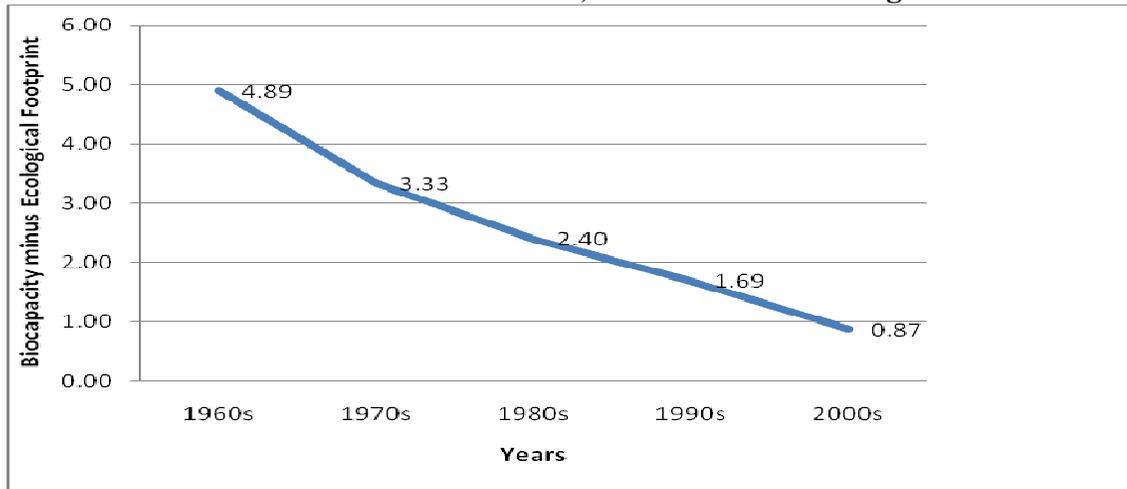
To investigate long-term patterns of ecological capital, this study considers the levels of environmental capital, as well as changes and long-term trends in these levels.

As Kapp (1970) suggests, economic activities have interdependencies with social and environmental systems. Further, they tend to bring about entropy and declining ecological capital. There is a trade-off between increasing economic capital, as denoted by GDP, consumption and corporate financial investment, and the wellbeing of the environmental system (Daly 1999; Lawn 2003). For instance, declining stocks of ecological capital such as forests and land suitable for crops and grazing, and diverse plants and animal species are among the long-term trade-offs due to increasing consumption and its associated increases in production and manufacturing, which are all too often carried out without a sense of environmental sustainability.

The ecological footprint (EF) and biocapacity capture the patterns of change in ecological capital and sustainability at the global, regional, national and sub-national levels. The long-term gap between the EF and biocapacity causes for the change in the durable structure of ecological capital, whether by way of surplus or deficit. The aim is to explain the durable structure of ecological capital as it relates to global economic change and development. In investigating these indicators, this study employs data for the 1960s–2000s, which are available from 1960 onward. The availability of data for countries limits the number of countries to 125.

The long-term global pattern of ecological capital is shown in Figures 6.9a and 6.9b. Stock levels are considered in the sense of the gap between biocapacity and the EF and changes in these levels. In Figure 6.9a, the values of global ecological capital are positive, although they decline from the 1960s to 2000s. This decline reflected global economic change and development in the same period. The gap between biocapacity and the EF was 4.89 in the 1960s; 3.33 for the 1970s and then it declined from 2.40 to 0.87 during the 1980s–2000s. This pattern suggested that the gap continually declined during the 1960s–2000s, while global economic institutions also changed in that period.

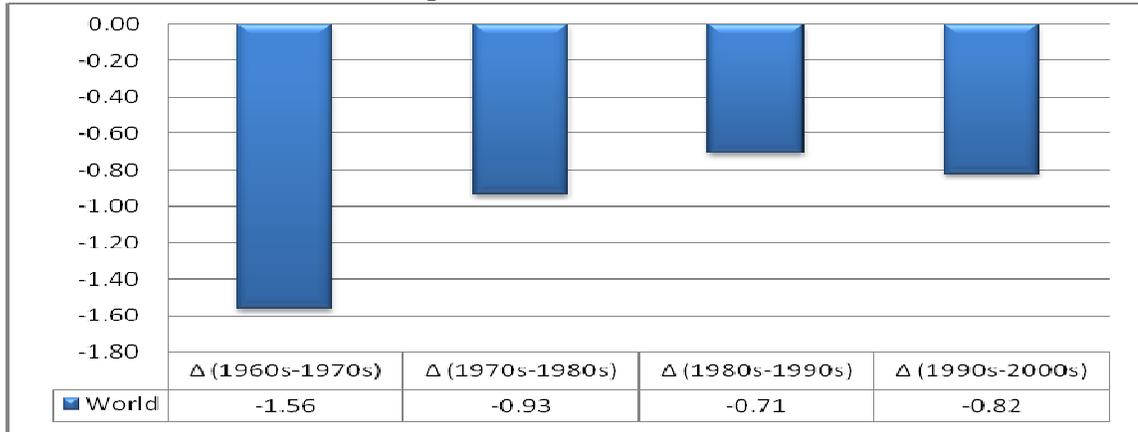
**Figure 6.9a Biocapacity Minus the Ecological Footprint (GHA per Capita)
1960s–2000s: World, Period Annual Averages**



Source: Biocapacity and the Ecological Footprint are calculated using period annual averages based on data from the New Economic Foundation (2005) and Global Footprint Network (2010). Note: Data are available for 125 countries during the 1960s–2000s. More complete explanations are given in the Definitions of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-12 and Calculation Results: Appendix D2-3.

The change in the gap between biocapacity and the EF during the 1960s–2000s is identified in the decadal marginal value of gap, which is displayed in Figure 6.9b. Negative changes in the long-term gap of ecological capital are evident for each decade from the 1960s to the 2000s. During the 1960s–1970s, the marginal value of the gap was -1.56 gha per capita. This then slightly declined to -0.93 in the 1970s–1980s and -0.71 gha per capita during the 1980s–1990s, while in the 2000s it slightly increased to -0.82 gha per capita. Concerning global economic change, the global economic institution changed from Fordism to neoliberalism (in the first half of the 1970s) (Maddison 2003). The negative marginal value of ecological capital was slightly greater near the zenith of the neoliberal era, especially from the 1980s–1990s to the 1990s–2000s.

Figure 6.9b Marginal Value of Biocapacity Minus Ecological Footprint (GHA per Capita), 1960s–2000s: World



Source: Same as Figure 6.9a. Note: Same as Figure 6.9a.

Following the long-term global analysis of ecological capital, a long-term regional analysis is conducted, and global and regional patterns of ecological capital are compared. This regional analysis is crucial in demonstrating uneven patterns of ecological capital levels among regions during the two long waves of economic change. The comparison of global and regional patterns suggests the structural linkage of core, semi-peripheral and peripheral areas, in terms of ecological capital.

Declining trends of ecological capital posit one major contradiction of globalization. The global institution increased the sourcing of production inputs and market distribution, while, it ignored environmental protection. New products and innovation came with a globally integrated market, which focused on establishing corporate profits and revenues. These contributed to an increased ecological footprint and decreased biocapacity in the long term.

The global–regional analysis is depicted in Table 6.3 and Figure 6.10. In Table 6.3, the long-term global–regional levels of ecological capital for the 1960s–2000s are displayed. The change in ecological capital from the 1960s to the 2000s is shown in the fourth column from the right-hand side. The level of institutional change in the long-term pattern of global–regional ecological capital can be seen by comparing the ecological capital in the 1960s–1970s and the 1980s–2000s. In addition, Figure 6.10 is useful for examining ecological capital in the sense of the structural linkage of core, semi-periphery and periphery.

**Table 6.3 Biocapacity Minus the Ecological Footprint (GHA per Capita)
1960s–2000s: World and Regions, Period Annual Averages**

	1950s	1960s	1970s	1980s	1990s	2000s	$\Delta(1960s-2000s)$	Average (1960s–1970s)	Average (1980s–2000s)	$\Delta(1960s-1970s) - (1980s-2000s)$
Asia	n.a	2.15	0.74	0.30	-0.36	-0.54	-2.69	1.45	-0.45	-1.90
North America	n.a	8.77	7.20	4.72	3.74	1.85	-6.92	7.99	2.79	-5.19
Western Europe	n.a	0.06	-0.80	-0.91	-1.31	-1.56	-1.63	-0.37	-1.43	-1.07
Eastern Europe	n.a	-0.10	-0.32	-0.37	-0.26	-0.68	-0.58	-0.21	-0.47	-0.26
MENA	n.a	2.45	0.73	-0.74	-1.26	-1.94	-4.39	1.59	-1.60	-3.19
SSA	n.a	7.43	5.61	4.03	2.88	2.12	-5.30	6.52	2.50	-4.01
LACA	n.a	5.68	3.98	2.91	2.21	1.49	-4.18	4.83	1.85	-2.98
Oceania	n.a	12.71	9.52	9.27	7.89	6.22	-6.49	11.12	7.05	-4.06
World	n.a	4.89	3.33	2.40	1.69	0.87	-4.02	4.11	1.28	-2.83

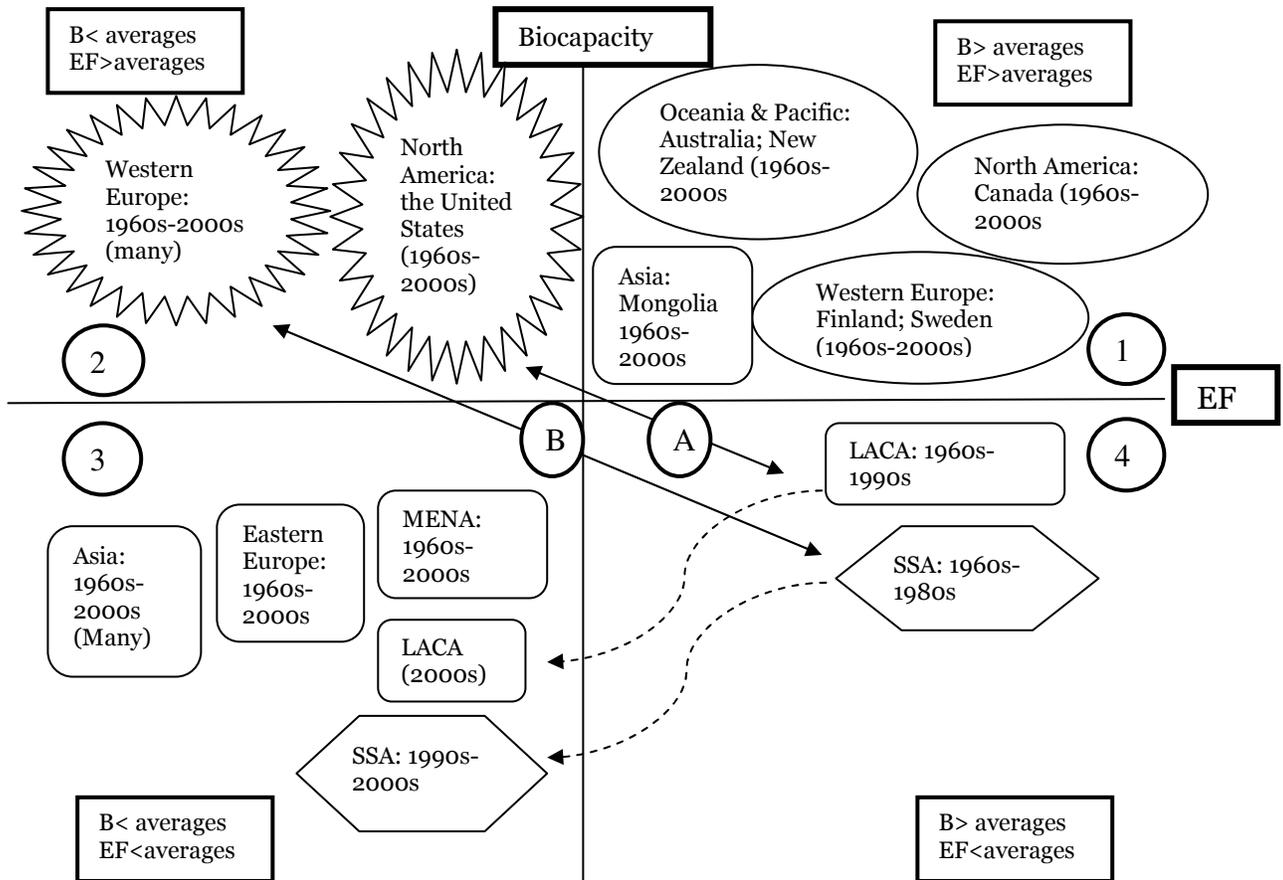
Source: Same as Figure 6.9a. *Note:* Same as Figure 6.9a.

In Table 6.3, some general facts are linked to global–regional patterns of ecological capital through the long wave. The first is that for the world and all regions ecological capital declined from the 1960s to the 2000s, as the marginal value of the gap between biocapacity and the EF was negative over this period. Second, from the 1960s to the 2000s, the gap between biocapacity and the EF for the world and some regions, including North America, Oceania & the Pacific, LACA and SSA was consistently positive, even though these marginal values tended to be large negative values. Conversely, some other regions, including Eastern Europe, Asia, Western Europe, and MENA experienced a low marginal value in the gap of biocapacity and the EF, even though these regions also had negative values during that period. Eastern Europe had consistently negative values since the 1960s.

Another crucial fact shown in Table 6.3 is the change in institutional ecological capital. Comparing the average of ecological capital in the 1960s–1970s and that in the 1980s–2000s, the world and regions had a negative change of ecological capital during the 1960s–2000s. The global level of negative change from the 1960s–1970s to the 1980s–2000s was 2.83 gha per capita. North America, Oceania, and the Pacific and the SSA had high levels of negative change of ecological capital, although these regions had

all positive values for the gap between biocapacity and the EF in the 1960s–1970s and 1980s–2000s. By way of contrast, Eastern Europe and Western Europe had negative average values for those periods, yet the level of negative change in these regions tended to be low.

Figure 6.10 Four-Quadrant Analyses: Biocapacity and Ecological Footprint (GHA per Capita) 1960s–2000s: Regions



Source: Biocapacity and the Ecological Footprint are calculated using period annual averages based on the New Economic Foundation (2005) and Global Footprint Network (2010). Note: Data are available for 125 countries during the 1960s–2000s. Solid lines with two arrows (A and B) = structural linkages between core regions (e.g., Western Europe and North America) and semi-peripheral and peripheral regions (e.g., LACA and SSA); broken lines with single arrow = the process of change in LACA and SSA from quadrant 4 to quadrant 3.

Figure 6.10 summarizes the above findings. It includes a four-quadrant analysis of the regions' biocapacities and ecological footprints among regions during the 1960s–2000s. Four categorizations are derived from the global biocapacity and EF averages. In the first quadrant, are some particular regions which had biocapacity and EF over the global averages, such as North America (e.g., Canada), Western Europe (e.g., Finland and Sweden), and Oceania and the Pacific (e.g., Australia and New Zealand). The

second quadrant contains a number of regions—for example most Western European countries and North America (e.g., the United States)—that had biocapacities below the global averages and their EFs above the global averages. Regions that had biocapacities and EFs below the global averages are located in the third quadrant—for example most Asian countries, Eastern Europe, MENA, LACA (since the 2000s) and SSA (during the 1990s–2000s). The fourth quadrant contains regions that had biocapacities above the global averages but EFs below the global averages.

Further, Figure 6.10 reveals certain stylized facts that can be linked with structural linkages of C-SP-P. The first is that the core regions typically had EFs above the global averages as they are represented in the first and third quadrants. These core regions can be categorized into two groups with respect to biocapacity: 1. Biocapacity > the global averages (in the oval boxes) – North America (e.g., Canada), Western Europe (e.g., Finland and Sweden) and Oceania and the Pacific (e.g., Australia and New Zealand). 2. Biocapacity < the global averages (in the thirty-two star boxes) – most of Western Europe and North America (e.g., the United States).

On the other hand, the second fact is that the EF was characteristically below the global averages in most semi-peripheral (in the rounded rectangular boxes) and peripheral (in the hexagonal boxes) regions. This is suggested in the third quadrant which consists of certain semi-peripheral regions including most of Asia, Eastern Europe and MENA. These regions experienced biocapacities and EFs below the global averages. It is interesting to note that LACA and SSA were in the fourth quadrant during the 1960s–1990s and then shifted into the third quadrant in the 1990s (SSA) and in the 2000s (LACA), as their biocapacities tended to decline from the 1960s–1980s to the 1990s–2000s.

The third fact is that the structural linkage of the C-SP-P can be seen in two solid lines with arrows at each end (A and B). These connect two core regions: Western Europe and North America (e.g., the United States) with two semi-peripheral and peripheral regions: LACA and SSA. Historically, these two core regions have to a degree, exploited biocapacities in the semi-peripheral and peripheral regions through colonization. One indicator of this is their biocapacities during the 1960s–2000s. For the core regions, biocapacity was crucial in helping them establish large-scale

industrialization through the long-wave upswing that occurred during the period of the Fordist institution, especially during the 1950s to the early 1970s.

As a consequence of colonization, most core regions experienced EFs above the global averages, partly as a result of the continual process of industrialization and its attendant pollution and chemical waste. Such harmful impacts contributed to increased EFs and the negative marginal values of the gap between biocapacity and the EF during the 1970s–2000s. This is a reason why core regions, including Western Europe and North America (e.g., the United States) had a negative change in ecological capital. However, North America seemed to have a positive ecological capital, as can be seen in Table 6.3. Most likely, this is because Canada (part of North America) typically had a high biocapacity, which, in turn, influenced the aggregate gap between biocapacity and the EF for North America. North America showed a positive ecological capital (biocapacity minus the EF) as well as negative change.

In the semi-peripheral and peripheral regions, LACA and SSA experienced declining patterns of ecological capital, as biocapacity in their lands was exploited by the core under the Fordist institution, especially during the 1950s to the early 1970s. Following this, during the 1980s–2000s, the gap between biocapacity and the EF continually decreased. As a result, LACA and SSA had a high negative change of ecological capital from the 1960s–1970s to the 1980s–2000s, even though, on average, they experienced positive ecological capital in these periods.

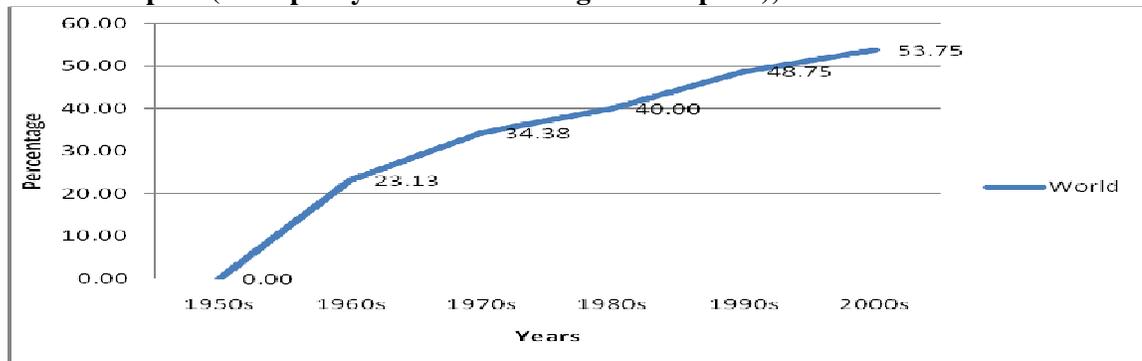
This study now presents a national analysis of levels of ecological capital during the 1960s–2000s, which informs the prior global and regional analyses. The global–regional analyses do not reveal the heterogeneous national patterns of ecological capital for every region. Moreover, differences in ecological patterns sometimes occur across core, semi-peripheral, and peripheral regions. For instance, as previously discussed, the United States had negative ecological capital, whereas positive ecological capital levels occurred in Canada. However, the pattern of ecological capital in these two countries suggested negative change.

In investigating the national level, this study uses two types of analysis for 125 countries. Figures 6.11 and 6.12 show the first national analysis. Figure 6.11 shows the percentage of countries at the global level for which the decadal gap of biocapacity and

the EF was negative during the 1960s–2000s. This figure gives a national point of comparison for the global pattern of ecological capital. Nations in every region are investigated. In a similar manner, the graph in Figure 6.12 compares the percentage of countries in each region that have a “negative” between the gaps of biocapacity and the EF decade by decade.

Figure 6.11 shows that the percentage of countries with negative ecological capital increased progressively at the global level from the 1960s onward. The percentage of countries with a negative gap of biocapacity and the EF in the 1960s was 23.13 per cent (out of the 125 countries in this investigation). This rose to 34.38 per cent in the 1970s, followed by 40.00 per cent in the 1980s. It then increased from 48.75 to 53.75 per cent in the 1990s–2000s. In regards to the long wave of economic change and development, the global pattern of countries with negative ecological capital rose from the 1960s–1970s under the institution of Fordism to the 1980s–2000s under the institution of neoliberalism.

Figure 6.11 Percentage of Countries Experiencing Negative Levels (Deficit) of Ecological Capital (Biocapacity Minus the Ecological Footprint), 1960s–2000s: World

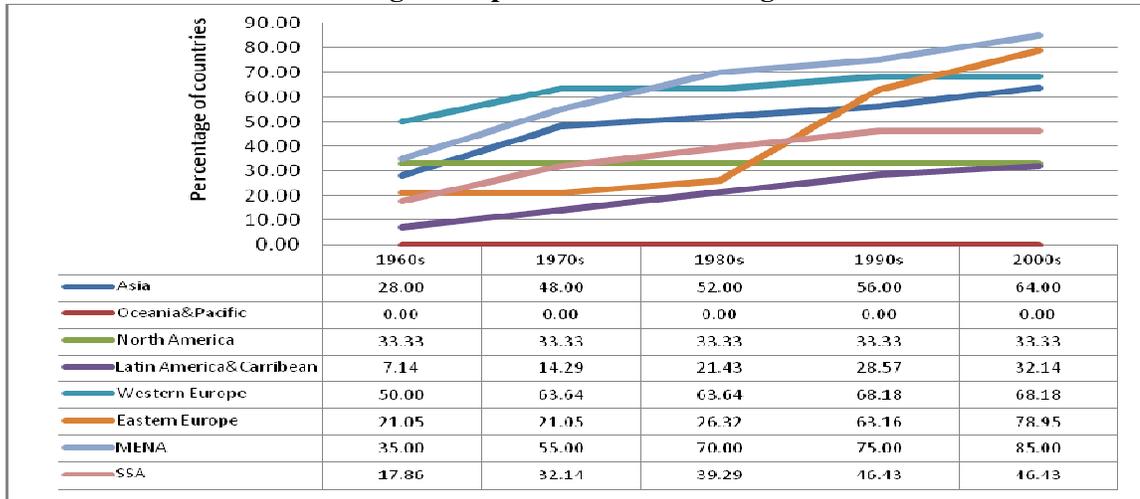


Source: Same as Figure 6.9a. Note: Same as Figure 6.9a.

Some general regional patterns can be observed from Figure 6.12. First, most regions experienced an increase in the percentage of negative countries from the 1960s to the 2000s. For example, the percentage of negative countries in Asia, MENA, Eastern Europe, and LACA steadily increased from the 1960s onward. Western Europe and SSA experienced increasingly negative levels of ecological capital from the 1960s to the 1990s, but this was followed by a stable pattern in the 2000s. The data from North American countries cover only two countries, as follows: the United States (consistently

negative) and Canada (consistently positive). Second, Oceania and the Pacific had no countries with a negative gap between biocapacity and the EF. All three countries in Oceania and the Pacific region had positive gaps between biocapacity and the EF during the 1960s–2000s.

Figure 6.12 Percentage of Countries Experiencing Negative Levels (Deficits) in the Ecological Capital 1960s–2000s: Regions



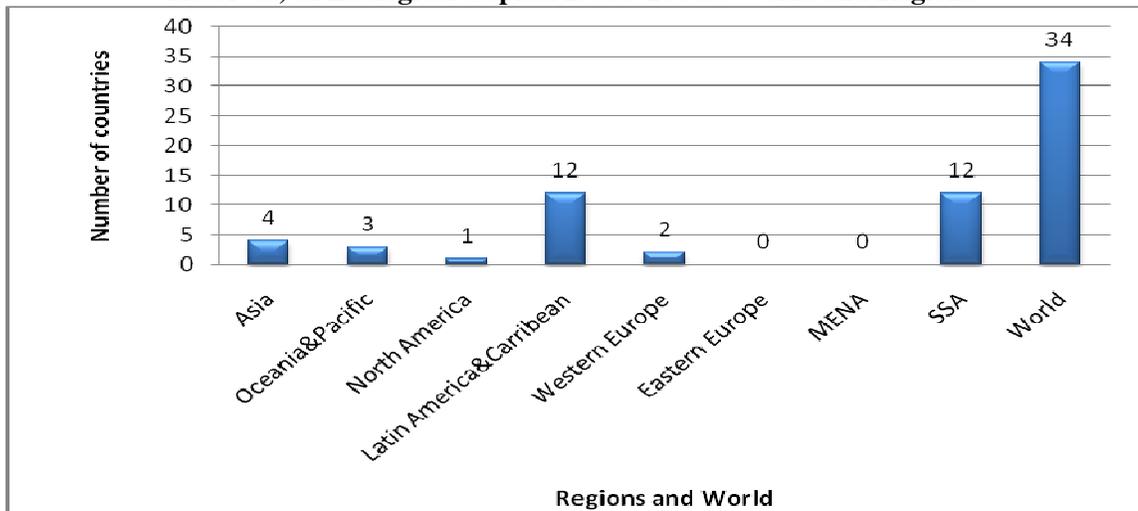
Source: Same as Figure 6.9a. Note: Same as Figure 6.9a.

The second analysis of national ecological capital examines the number of countries that had consistent levels of ecological capital (positive or negative) from the 1960s to the 2000s. Such patterns suggest the sustainability of a country’s ecological capital. The number of these positive or negative countries is displayed for every region to enable results to be compared among regions.

This second analysis is shown in Figures 6.13 and 6.14. Figure 6.13 posits that 34 out of 125 countries in this investigation experienced consistently positive gaps during the 1960s–2000s. Twelve of these countries were from LACA and SSA. In LACA countries, Bolivia, Brazil, and Paraguay had consistently positive gaps. The Republic of Congo, Gabon, and Mauritania, each as part of SSA, had continually positive ecological capital from the 1960s to the 2000s. At least four countries in Asia also had consistently positive gaps, namely Indonesia, Mongolia, Laos, and Myanmar. In core regions, Australia and New Zealand, in Oceania and the Pacific had consistently positive gaps, as did Finland and Sweden in Western Europe and Canada in North

America. By contrast, no country had a consistently positive gap in Eastern Europe or MENA over the same period.

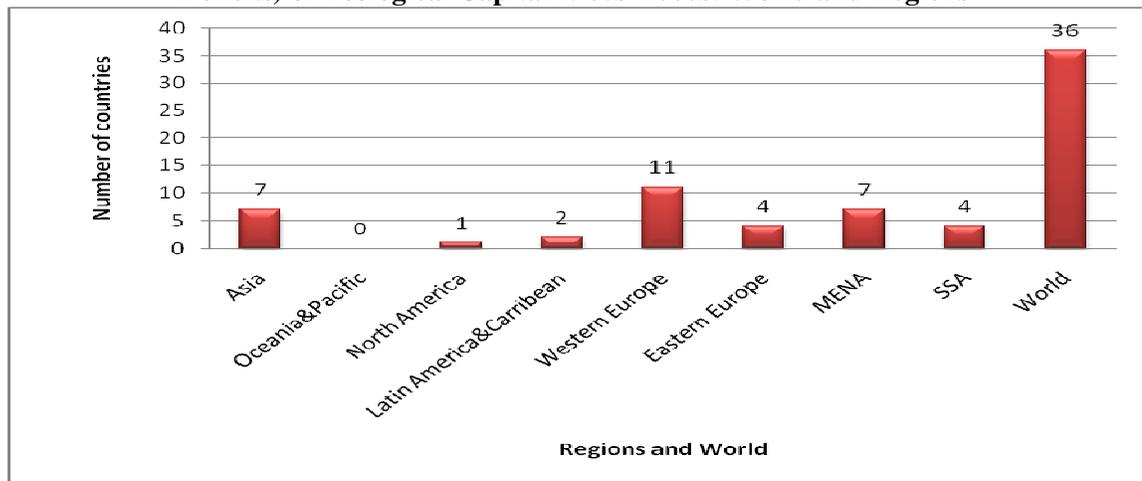
Figure 6.13 Number of Countries Experiencing Consistently Positive Gaps (Long-Term Reserves) of Ecological Capital 1960s–2000s: World and Regions



Source: Same as Figure 6.9a. Note: Same as Figure 6.9a.

In Figure 6.14, the number of consistently negative countries on the global stage was 36. Western Europe accounted for most of these countries, namely 11, including France, Germany, the United Kingdom, and Italy. Asia and MENA were the second highest regions, each having seven countries. Japan, India, the Korean Republic, and Singapore in Asia had consistently negative gaps, as did Egypt, Israel, Kuwait, and Libya in MENA. Eastern Europe and SSA each had four countries with consistently negative ecological gaps. Hungary, Poland, and Rumania had consistently negative gaps in Eastern Europe. Consistently negative gaps were found in Swaziland, Lesotho, and Burundi in SSA. Similarly, the United States had a consistently negative gap from the 1960s to the 2000s. In contrast, Oceania and the Pacific is the only region in which no country displayed consistently negative gaps.

Figure 6.14 Number of Countries Experiencing Consistently Negative Gaps (Long-Term Deficits) of Ecological Capital 1960s–2000s: World and Regions



Source: Same as Figure 6.9a. Note: Same as Figure 6.9a.

6.4.1 Sub-National Ecological Capital Performance in the 2000s

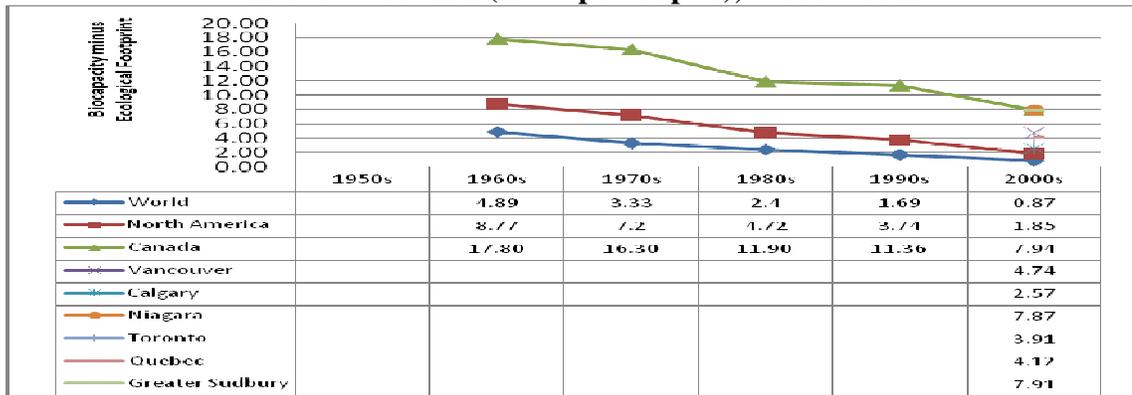
This section examines sub-national ecological capital (biocapacity minus ecological footprint), with a view to providing a clearer appreciation of uneven global ecological performance. Two analyses are used to examine sub-national levels of ecological capital. The first is a comparison between the pattern of sub-national ecological capital and global, regional, and national patterns. For this analysis, the sub-national pattern of ecological capital in certain countries is investigated using data from various sources of literature (see the notes beneath Figures 6.15a to 6.15c for more information). Sub-national biocapacity and ecological footprint data are typically available for the 2000s only, whereas global, regional, and national time-series data are available from the 1960s to the 2000s. The second analysis examines the pattern of distribution of the sub-national ecological capital amplitude for each country in the 2000s.

The first analysis is illustrated by Figures 6.15a, 6.15b and 6.15c, which examine sub-national biocapacities and ecological footprints in some selected countries such as China (27 provinces), Indonesia (33 provinces), and Canada (16 municipalities). In these figures, the patterns of ecological capital for these sub-nations are compared with global, regional, and national patterns.

Figures 6.16 illustrate one main stylized fact, namely that during the 2000s, the levels of ecological capital in most sub-nations in these countries differed. Further, these sub-national levels differed from the levels of the countries and regions to which they

belonged. In addition, the sub-national levels of ecological capital differed from the global levels. For instance, as displayed in Figure 6.15a, ecological capital in Canada was 7.94 gha per capita in the 2000s, while global and regional ecological capital was 0.87 gha per capita and 1.85 gha per capita. The sub-nations in Canada had varied ecological capital, such as Vancouver (4.74 gha per capita), Calgary (2.57 gha per capita), Niagara (7.87 gha per capita), and Greater Sudbury (7.91 gha per capita).

Figure 6.15a Ecological Capital: World, North America, Canada and Selected Sub-Nations in Canada (GHA per Capita), 1960s–2000s



Source: Biocapacity and the Ecological Footprint are calculated using period annual averages based on the New Economic Foundation (2005) and Global Footprint Network (2010). Sub-national Biocapacity and the Ecological Footprint in Canada the 2000s is calculated using period annual averages based on Wilson and Anielski (2005) and Wilson and Grant (2009). Note: Ecological capital data for the world, regions and nations are available from the 1970s to the 2000s. Ecological capital data for sub-nations are available for the 2000s. More complete explanations are given in the Definitions of Statistical Terms: Appendix A-1 and Technical Notes: Appendix B-17.

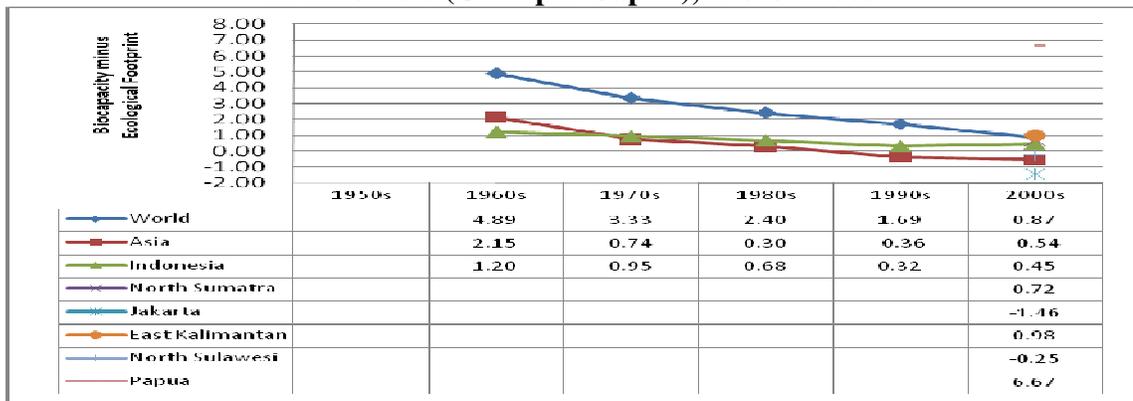
As displayed in Figure 6.15b, Chinese ecological capital was -1.15 gha per capita in the 2000s, whereas the levels for the sub-nations in this country varied as follows: Beijing (-3.54 gha per capita), Jilin (-0.51 gha per capita), Xinjiang (0.57 gha per capita), Liaoning (-1.00 gha per capita), and Guandong (-2.09 gha per capita). Similarly, as can be seen in Figure 6.15c, heterogeneous levels of ecological capital were also presented in Indonesian sub-nations. For the 2000s, national ecological capital was 0.45 gha per capita, whereas sub-nations' ecological capital varied as follows: North Sumatra (0.72 gha per capita), Jakarta (-1.46 gha per capita), East Kalimantan (0.98 gha per capita), North Sulawesi (-0.25 gha per capita), and Papua (6.67 gha per capita).

Figure 6.15b Ecological Capital: World, Asia, China, and Selected Sub-Nations in China (GHA per Capita), 1960s–2000s



Source: Biocapacity and the Ecological Footprint are calculated using period annual averages based on the New Economic Foundation (2005) and Global Footprint Network (2010). Sub-national Biocapacity and the Ecological Footprint in China in the 2000s is calculated using period annual averages based on WWF China (2001, 2010). Note: Same as Figure 6.15a.

Figure 6.15c Ecological Capital: World, Asia, Indonesia, and Selected Sub-Nations in Indonesia (GHA per Capita), 1960s–2000s



Source: Biocapacity and the Ecological Footprint are calculated using period annual averages based on the New Economic Foundation (2005) and Global Footprint Network (2010). Sub-national Biocapacity and the Ecological Footprint in Indonesia in the 2000s is calculated using period annual averages based on Indonesian Ministry of Works (2010). Note: Same as Figure 6.15a.

As the second analysis, the patterns of distribution of ecological capital are different between sub-nations and each of the nations in which they are located. Countries in the core (Canada) and in semi-peripheral regions (China and Indonesia) experienced different distributions of sub-national ecological capital levels in the 2000s. For instance, positive or reserve ecological capital mostly occurred in Canadian sub-nations, with these having moderately varying levels. Specifically, high levels of ecological capital were experienced by municipalities in central Canada such as Greater Sudbury (7.91 gha per capita) and Niagara (7.87 gha per capita).

6.5 Uneven Political Capital Performance 1950–2010: World, Region, and Nation

The last dimension of uneven development and global inequality relates to political capital. This section examines patterns of political capital linked with institutional changes in the global economy. The first political factor measures the degree of political freedom. The second factor measures the activities of these governments and political regimes.

Various notions of political capital have been developed in prior literature with politics seen as a part of human development that is utilized by people to enhance their goals and choices. People's choices are sometimes maintained by certain policies of governments. Smith (1759) suggests that the social behavior of people and their desire for power are associated with socioeconomic activities. Welzel and Inglehart (2005) and Bartels (2008) explain that political capital may increase people's freedom in terms of the activities, they can pursue and the choices that are available to them. Moreover, Camerer (2006) and Rothstein and Teorell (2008) suggest that the activity of government and its respect for citizens is crucial to measures of political capital.

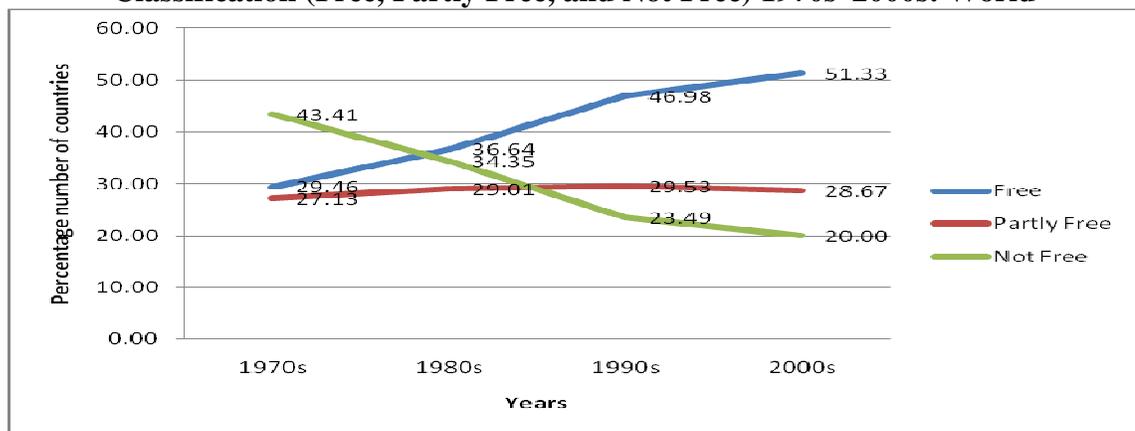
The two political indicators employed to represent political capital are political rights and civil liberties. According to Freedom House (2010), political rights refers to the freedom of citizens to participate in the political process, i.e., the freedom to participate in the election process, the freedom to participate in political parties and the freedom to participate in choosing the legislature. Civil liberties correspond to a form of freedom of expression for citizens. Even though both of these indicators consider the political activities of citizens, they also capture the activities of governments' policies to control citizens (Rothstein and Teorell 2008).

This study utilizes the political rights and civil liberties indicators in 160 countries during the 1950s–2000s. Between 129 and 150 countries have data available for the decades from the 1970s to the 2000s. These data are sufficient to represent the long-term durable structure of political capital.

Two analyses are used to investigate the long-term pattern of global political rights. The first analysis compares three different classifications of countries during the 1970s–2000s, as shown in Figure 6.16. Three general facts can be seen in this figure. First, the percentage of “free” countries increased from the 1970s to the 2000s. As

displayed in Figure 6.16, the percentage of “free” countries in terms of political rights was 29.46 per cent in the 1970s; then it rose to 36.64 per cent and increased further to 46.98 per cent in the 1990s and 51.33 per cent in the 2000s. Second, the global percentage of “partly free” countries did not change significantly during the 1970s–2000s, the results falling between 29.53 per cent and 28.67 per cent. Finally, the global percentage of “not free” countries decreased over the 1970s to 2000s. With respect to the global economic change, these results suggest that global political rights were mostly low at the end of the long-wave upswing under the institution of Fordism, while they then had an increasing pattern during the long-wave downswing of the 1980s through the 2000s under the institution of neoliberalism.

Figure 6.16 Percentage of Countries According to Political Rights Classification (Free, Partly Free, and Not Free) 1970s–2000s: World



Source: Political Rights are calculated using period annual averages based on Freedom House (2010). Note: Data are available for between 129 and 150 countries for decades from the 1960s to the 2000s. More complete explanations are given in the Definitions of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-13 and Calculation Results: Appendix D2-4.

In the second analysis, the durable structure of political rights at the global and regional level is displayed in Table 6.4. The last column on the right-hand side shows changes in levels of political rights. A negative result suggests that the level of political rights in the world and/or a region improved towards “free” throughout the period. In contrast, a positive result suggests that the political rights in the world and/or a region moved towards being “not free.” A zero score signifies that there was no change in the position of political rights for the given period.

**Table 6.4 Political Rights 1970–2010: World and Regions,
Period Annual Averages**

	1950s	1960s	1970s	1980s	1990s	2000s	Δ (1970s-2000s)
Asia	n.a	n.a	5(PF)	4(PF)	2(F)	2(F)	-3
North America	n.a	n.a	1(F)	1(F)	1(F)	1(F)	0
Western Europe	n.a	n.a	1(F)	1(F)	1(F)	1(F)	0
Eastern Europe	n.a	n.a	6(NF)	6(NF)	5(PF)	2(F)	-4
MENA	n.a	n.a	6(NF)	6(NF)	6(NF)	6(NF)	0
SSA	n.a	n.a	6(NF)	6(NF)	6(NF)	6(NF)	0
LACA	n.a	n.a	6(NF)	5(PF)	2(F)	2(F)	-4
Oceania Pacific	n.a	n.a	2(F)	1(F)	1(F)	1(F)	-1
World	n.a	n.a	6(NF)	2(F)	2(F)	2(F)	-4

Source: Same as Figure 6.16. Note: F= Free-Countries, PF= Partly-Free Countries, NF= Not-Free Countries. Note: Same as Figure 6.16.

In Table 6.4, the global pattern of political rights can be described as “not free” in the 1970s, followed by a series of “free” ratings during the 1980s–2000s. Positive change occurred in the sense that political rights went from “not free” to “free”. At the regional level, the highest improvement in political rights occurred in Eastern Europe and LACA, whose ratings changed from 6 (not free) to 2 (free). Positive change also took place in Asia, whose rating improved towards the “free” category. No change in political rights ratings occurred in North America and Western Europe, with both regions having “free” ratings since the 1970s. On the other hand, MENA and SSA also had no change in their political rights rating, with both regions having been classified as “not free” since the 1970s.

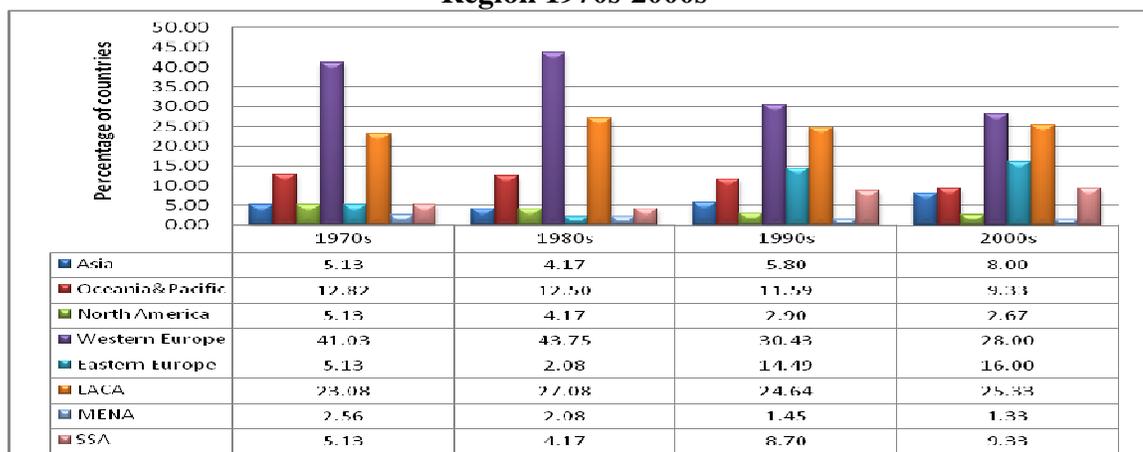
These results can be linked to global economic change and the structural linkage of C-SP-P. Core regions have typically had “free” political rights since the 1970s and their position did not change from the long-wave upswing under Fordism to the long-wave downswing under the institution of neoliberalism. In the same period, semi-peripheral regions, such as Eastern Europe, Asia and LACA, experienced significant changes as their ratings improved from “not free” or “partly free” to “free.”

One important observation that can be made about the data above is that increasing political rights came in line with the emergence of globalization and neoliberalism. As neoliberalism “championed” competition and the power of capital, it also promoted individual rights, including political rights that include the freedom to participate in the election process, to join political parties and to have a say in the choice

of a legislature. In numerous ways, strong political rights can be a good thing for government activities in certain countries. However, greater political participation can lead to more political competition. This political competition can lead, in the long term, to lower levels of political process (e.g., election and political parties), inferior government activities (e.g., regulation, public policy), and greater levels of political conflicts (e.g., ethnic and religious conflicts). The long-run viability of political rights thus needs government regulation, such as political party regulation, election regulation and legislature regulation.

Next, this study examines political rights at the national level in order to further refine analysis at the global and regional level. In the national analysis, 150 countries in eight regions are investigated by graphical patterns, in order to view the distribution of countries. The graphical patterns are based on the three classifications “free”, “partly free” and “not free”, each classification being shown in Figures 6.17a, 6.17b, and 6.17c respectively. It is noteworthy that each figure uses percentages of countries, as the number of countries differed across the decades from the 1970s to the 2000s.

Figure 6.17a “Free” Countries of Political Rights by Percentage of Countries per Region 1970s-2000s



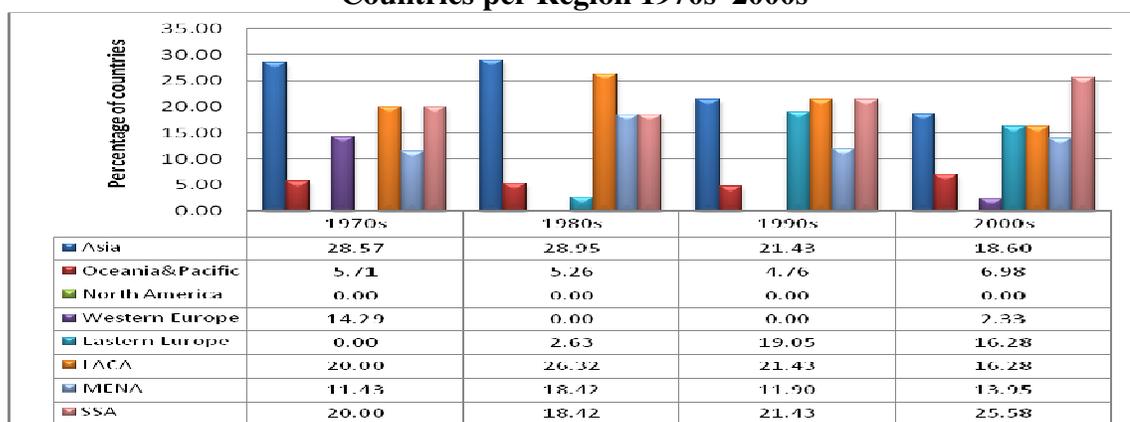
Source: Same as Figure 6.16. Note: Same as Figure 6.16.

Figure 6.17a shows that core regions, such as Western Europe, North America, and part of Oceania had the greatest proportions of “free” countries during the 1970s–2000s, with a combined contribution of over 50 per cent of the total “free” countries during the 1970s–1980s. Among semi-peripheral regions, LACA contributed roughly a quarter of all “free” countries during the 1970s–2000s. In other regions, Eastern Europe,

Asia, and SSA experienced an increasing pattern in the 1980s-2000s. In Eastern Europe, the percentage of “free” countries rose significantly in the 1990s and the 2000s. The collapse of the Soviet-style regime in Eastern Europe was succeeded by political liberalization and a free-market economy. By way of contrast, a decline in the number of “free” countries occurred in MENA. This region was even in the lowest position in term of contribution in every decade regarding political conflicts, such as the Gulf War and the West Bank and Gaza conflicts.

The “partly free” countries were dominated by Asia, LACA and SSA for the given period. Even though Asia had a decreasing pattern during the 1970s–2000s, this region represented from 18.60 per cent to 28.57 per cent of the total countries investigated. LACA also had a decreasing pattern, yet it contributed 16.28–26.32 per cent in the same period. Decreasing patterns in both regions were mostly the result of countries shifting from a “partly free” to a “free” classification, especially in the 2000s. The percentage of “partly free” countries in SSA continually increased from the 1980s to the 2000s. It increased by three per cent during the 1980–1990s and by four per cent from the 1990s to the 2000s. Some “not free” countries in SSA were classified as “partly free” in the period of the 1990–2000s.

Figure 6.17b “Partly Free” Countries of Political Rights by Percentage of Countries per Region 1970s–2000s



Source: Same as Figure 6.16. Note: Same as Figure 6.16.

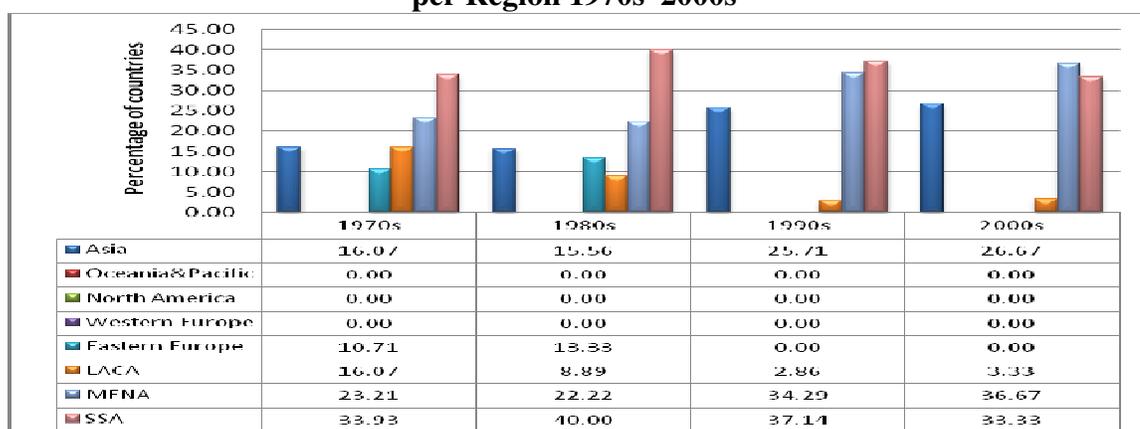
The percentage of “partly free” countries in Eastern Europe increased by more than nine times from the 1980s to the 1990s, as this region experienced significant political change, from the Soviet-style regime to liberal political environments. In the 2000s, some “partly free” countries in Eastern Europe shifted to the ‘free’ classification.

In MENA, the percentage of “partly free” countries increased from 11.43 per cent in the 1970s to 18.42 per cent in the 1980s. It then declined 7 per cent during the 1980s–1990s due to the impact of political conflicts, such as the Iran-Iraq War, the Gulf War, and the West Bank and Gaza conflicts. The percentage of “partly free” countries then increased by 2 per cent from the 1990s to the 2000s as the effects of these conflicts abated.

Figure 6.17c shows the pattern of “not free” countries among regions. Three semi-peripheral and peripheral regions, namely MENA, SSA and Asia, accounted for more than 90 per cent of these countries during the 1970s–2000s. MENA contributed from 23.21 to 36.67 per cent of “not free” countries in this period. The percentage of countries from MENA increased, especially in the 1980s–2000s, due to the effect of political conflicts. In SSA, an increasing pattern of “not free” countries occurred from the 1970s to the 1980s, while from the 1980s to the 2000s, percentage of “not free” countries in this region steadily decreased from 40.00 per cent to 33.33 per cent. This pattern posits that “not free” countries in SSA shifted to a “partly free” classification, including the emergence of political liberalization in Botswana and Mauritius, the ceasing political apartheid in South Africa and the ceasing war in Angola.

Turning to Asia, Figure 6.17c shows that, in the 1990s and 2000s, Asian countries accounted for about one-quarter of all “not free” countries. Decreases in ratings of political rights in Pakistan and Indonesia reflected political conflicts at the end of the 1990s. Some countries were classified as “not free” throughout the 1970s–2000s, such as Myanmar, Vietnam, and China.

Figure 6.17c “Not Free” Countries of Political Rights by Percentage of Countries per Region 1970s–2000s



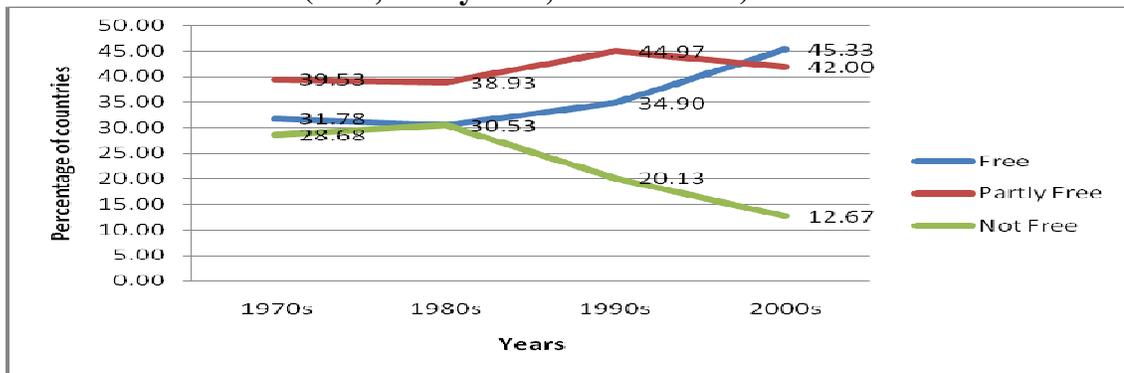
Source: Same as Figure 6.16. Note: Same as Figure 6.16.

This study now investigates patterns in civil liberties with two analyses that link these patterns to long waves of economic change. The first analysis shows three classifications of countries in the period of the 1970s–2000s, while the second shows the change of global civil liberties to shed light on the durable structure of global civil liberties during the 1970s–2000s. The global pattern of the durable structure of civil liberties is investigated together with regional patterns.

Figure 6.18 shows that the percentage of countries classified as having “partly-free” civil liberties was higher than other classifications during the 1970s–1990s. In the 2000s, the global civil liberties indicator suggested that the percentage of “free” countries increased to exceed the percentage of “partly free” countries. In the same period, the percentage of “not free” countries was below that of other classifications for the 1970s as well as the 1990s to the 2000s, but above that of the 1980s.

Second, Figure 6.18 also posits that the 1980s was an important decade for civil liberties. The percentages of “free” and “partly free” countries slightly decreased from the 1970s to the 1980s, while the percentage of “not free” countries increased. Thereafter, the percentage of countries classified as being “free” with regard to civil liberties continually increased during the 1980s–2000s. For “partly free” countries, an increasing pattern also occurred during the 1980s–1990s, followed by a decreasing pattern during the 1990s–2000s. “Not free” countries experienced a decreasing pattern from the 1980s to the 2000s.

Figure 6.18 Percentage of Countries According to Civil Liberties Classification (Free, Partly Free, and Not Free) 1970s–2000s: World



Source: Civil Liberties are calculated using period annual averages based on Freedom House (2010). Note: Same as Figure 6.16

The percentages of “free” and “partly free” countries were greater than “not free” countries early on in the long-wave downswing of the 1970s–1980s until the 2000s. The percentage of “free” countries increased from 30.53 per cent in the 1980s to 45.33 per cent in the 2000s. On the other hand, the percentage of “not free” countries declined by a significant 17.76 per cent in the same period. This suggests that the global institutional change from the Fordist to the neoliberal era led to increased civil liberties.

Shifting to the second analysis, the long-term durable structure of civil liberties can be seen in Table 6.5, which shows the pattern of civil liberties in each region during the 1970s–2000s. The world experienced positive change in the civil liberties, as the indicator of civil liberties shifted from a “partly free” to a “free” position in that period. At the regional level, four out of eight regions moved from a “not free” or a “partly free” position to a “free” position. Eastern Europe had the largest positive change in civil liberties, experiencing a change from 6 (“Not Free”) to 2 (“Free”). A significant improvement also occurred in LACA. Asia and SSA also underwent institutional positive change in civil liberties. Asia improved from “partly free” to “free”, while SSA moved from a “not free” region to a “partly free” region.

Table 6.5 Civil Liberties 1970–2010: World and Regions, Period Annual Averages

	1950s	1960s	1970s	1980s	1990s	2000s	Δ (1970s-2000s)
Asia	n.a	n.a	5(PF)	4(PF)	4(PF)	3(PF)	-2
North America	n.a	n.a	1(F)	1(F)	1(F)	1(F)	0
Western Europe	n.a	n.a	1(F)	1(F)	1(F)	1(F)	0
Eastern Europe	n.a	n.a	6(NF)	6(NF)	5(PF)	2(F)	-4
MENA	n.a	n.a	5(PF)	5(PF)	6(NF)	5(PF)	0
SSA	n.a	n.a	6(NF)	6(NF)	5(NF)	5(PF)	-1
LACA	n.a	n.a	5(PF)	5(PF)	3(F)	2(F)	-3
Oceania Pacific	n.a	n.a	1(F)	1(F)	1(F)	1(F)	0
World	n.a	n.a	5(PF)	4(PF)	4(PF)	2(F)	-4

Source: Same as Figure 6.16. *Note:* Same as Figure 6.16.

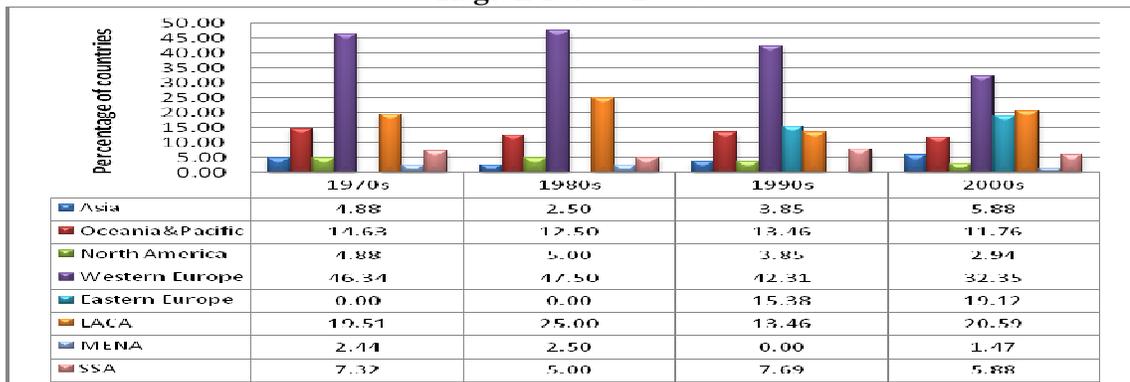
Table 6.5 posits that four regions had no change in their position for the civil liberties indicator. A zero score in North America, Western Europe, and part of Oceania and the Pacific signified that these regions were stable in the “free” classification of their

civil liberties. Conversely, although MENA also had a zero score, it was consistently classified as a “partly free” region during the 1970s–2000s.

Since the 1970s, the institutions of globalization and neoliberalism have led to a greater freedom for civilians to express attitudes, beliefs, and norms. In numerous cases, freedom of expressions has led to people being more creative and dynamic – both of which are positive. Yet, with freedom of expression came an emphasis on individualism. When people put forward their personal interests ahead of those of the societies, higher levels of social conflicts and less of social cooperation was encouraged. For more civil liberties to endure, people and governments are required to prevent the negative effects of freedom of expression.

A further national analysis is put forward to identify the heterogeneity. In Figure 6.19a, the percentage of “free” countries liberties on the civil liberties scale is dominated by the core regions of North America, Western Europe and part of Oceania. These regions contributed 50–60 per cent of total “free” countries in the world. In semi-peripheral regions, LACA contributed between 13.46 per cent and 25.00 per cent in the same period. The most significant improvement occurred in Eastern Europe, where the percentage of “free” countries increased 15.38 per cent from the 1980s to the 1990s. “Free” countries in Asia increased, though its percentage remained below the core regions. In MENA, the percentage of “free” countries was low and even declined to zero in the 1990s. Surprisingly, the percentage of “free” countries in SSA was 5–7 per cent of the total “free” countries.

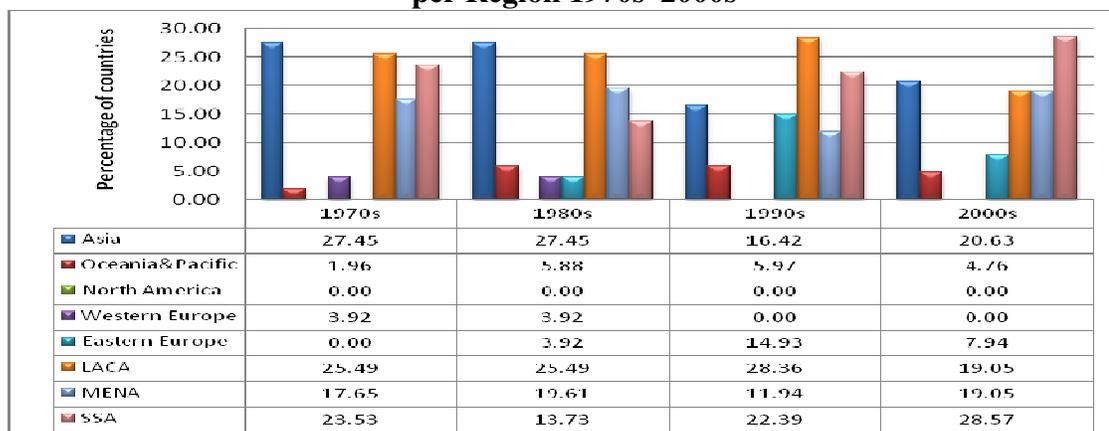
Figure 6.19a “Free” Countries of Civil Liberties by Percentage of Countries per Region 1970s–2000s



Source: Same as Figure 6.16. Note: Same as Figure 6.16.

In the “partly free” classification, Asia, LACA, MENA and SSA had dominant contributions during the 1970s–2000s with over 50 percent of the total number of “partly free” countries but with a changing composition over the decades. As shown in Figure 6.19b, Asia experienced a declining pattern from the 1970s to the 1990s, followed by an increasing pattern during the 1990s–2000s. MENA had an increasing percentage in the 1970s–1980s and the 1990s–2000s and a decreasing percentage in the 1980s–1990s. An increasing percentage occurred in LACA during the 1980s–1990s, yet the percentage of “partly free” countries in this region declined during the 1990s–2000s. In SSA, the percentage of “partly free” countries declined by 10 per cent from the 1970s to the 1980s, but increased during the 1980s–2000s.

Figure 6.19b “Partly-Free” Countries of Civil Liberties by Percentage of Countries per Region 1970s–2000s



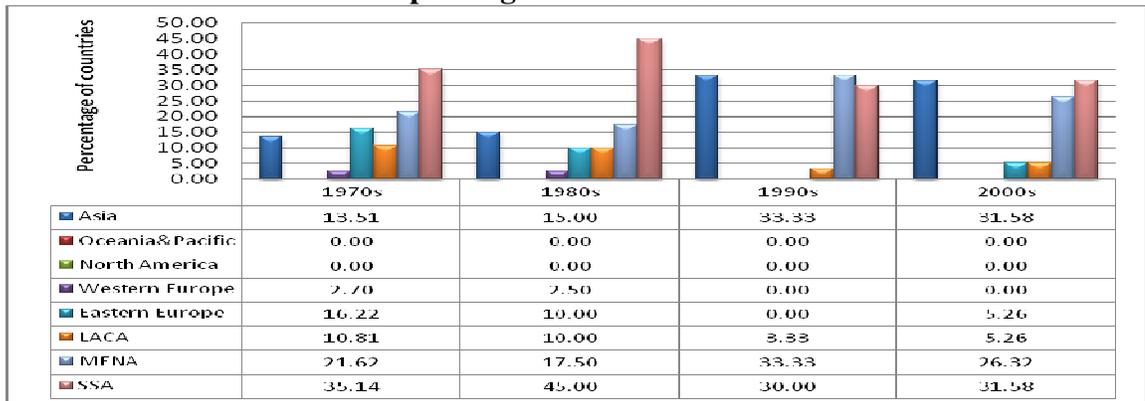
Source: Same as Figure 6.16. Note: Same as Figure 6.16.

Figure 6.19b also shows that countries in Eastern Europe experiencing “partly-free” civil liberties rose from zero in the 1970s to 3.92 per cent in the 1980s, and then by 14.93 per cent in the 1990s before declining in the 2000s. Semi-peripheral countries in Oceania and the Pacific had an increasing percentage of “partly-free” countries from the 1970s to the 1990s, with small countries, such as Fiji, Kiribati and Samoa, becoming classified as “partly free”.

The pattern of “not free” countries for civil liberties was dominated by SSA, MENA and Asia. As shown in Figure 6.19c, the contribution of these regions was over 50 per cent of the total of “not free” countries. SSA contributed 30.00 to 45.00 per cent

of the “not-free” countries during the 1970s–2000s but even exhibited an increasing pattern, especially in the 1970s–1980s. In MENA, the percentage of “not-free” countries slightly decreased during the 1970s–1980s, then increased in the 1980s–1990s and declined from the 1990s to the 2000s. In Asia, the percentage of “not-free” countries almost doubled from the 1980s to the 1990s, but slightly declined during the 1990s–2000s.

Figure 6.19c “Not-Free” Countries of Civil Liberties by Percentage of Countries per Region 1970s–2000s



Source: Same as Figure 6.16. Note: Same as Figure 6.16.

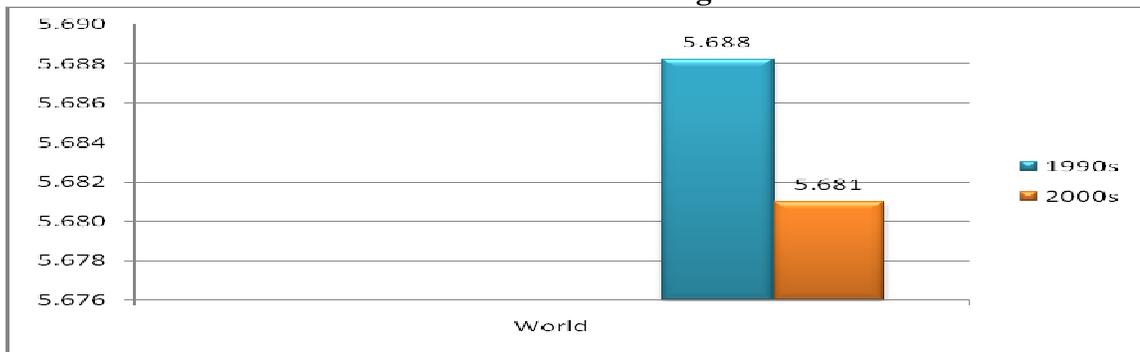
This study now considers another indicator to evaluate government activities. The corruption indicator reflects the extent to which corruption affects government activities at the personal and institutional levels and is linked to the effectiveness of government on social welfare policies in a country (Rothstein and Uslaner 2005). According to Lessmann and Markwardt (2010), measuring corruption is useful for monitoring the effectiveness of a government’s behavior. Government activities tend to generate ineffective policies when an increasing pattern of corruption occurs in a country. Further, Seim and Soreide (2009) link corruption and government institutions, suggesting that corruption leads to complexity in government institutions, which, in turn, leads to a declining lower standard of utility in society.

In investigating corruption, three analyses are carried out. The first analysis is that of the global corruption performance during the 1990s–2000s. Figure 6.20 shows the aggregate scores of the CPI in the world. The second analysis based on Figure 6.21 examines the regional patterns of corruption in the same period. To supplement the global and regional analyses, the national analysis is shown in Figures 6.22a to 6.22d.

The effect of a different number of countries in every decade is eliminated by evaluating the percentage of countries in each region.

In the first analysis, Figure 6.20 shows that the global CPI level slightly declined from 5.688 in the 1990s to 5.681 in the 2000s. This result suggests that global corruption tended to be moderate, as the extreme scores are between 0 (highly corrupt) and 10 (highly clean). However, this result needs to be tested by regional and national analyses, as the total number of countries investigated by the CPI ratings differed in each decade.

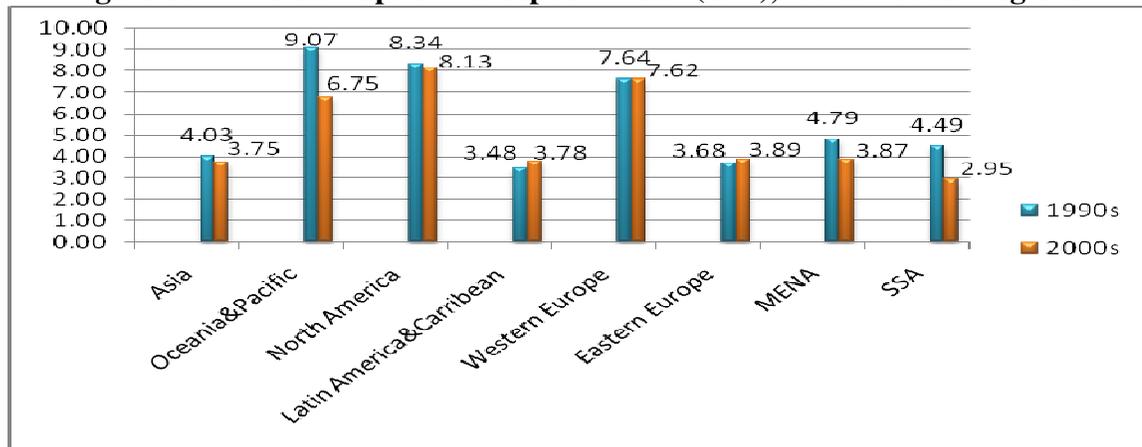
Figure 6.20 The Corruption Perception Index (CPI), 1990s–2000s: World, Period Annual Averages



Source: The Corruption Perception Index (CPI) is calculated using period annual averages based on Transparency International (2010). Note: Data are available for 81-146 countries during the 1990s–2000s. More complete explanations are given in the Definitions of Statistical Terms: Appendix A-1, Technical Notes: Appendix B-14 and Calculation Results: Appendix D2-5.

The global analysis is supplemented by regional analyses displayed in Figure 6.21. This figure shows that six out of eight regions experienced a decreasing pattern in the CPI from the 1990s to the 2000s. For instance, the CPI in Asia declined from 4.03 in the 1990s to 3.75 in the 2000s. In the same period, Western Europe and North America also experienced a modest decrease, as did Oceania and the Pacific, MENA and SSA. By way of contrast, LACA and Eastern Europe experienced an increasing pattern of the CPI, which suggests that various aspects of corruption declined in these regions. The CPIs in LACA and Eastern Europe respectively increased by 0.30 and 0.21 points.

Figure 6.21 The Corruption Perception Index (CPI), 1990s–2000s: Regions

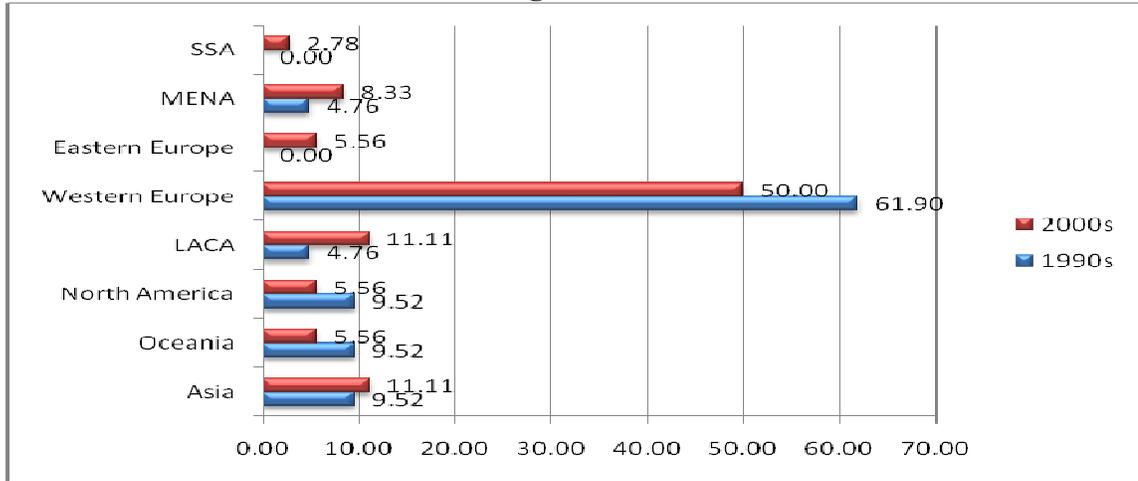


Source: Same as Figure 6.20. Note: Same as Figure 6.20.

Next, this study conducts a national analysis using a relative classification on the CPI among countries. This classification includes four groups, as follows: “Very High Free from Corruption” (VHFC), “High Free from Corruption” (HFC), “Medium Free from Corruption” (MFC) and “Low Free from Corruption” (LFC). These employ quartile-based classification.

In Figure 6.22a, the percentage of countries experiencing “Very High Free from Corruption” (VHFC) were mostly in core regions, such as Western Europe, North America, and part of Oceania. Six countries in Western Europe were in the top 10 “clean countries”, namely Denmark, Finland, Sweden, Norway, the Netherlands, and Switzerland. Two core countries in Oceania (Australia and New Zealand) and one country in North America (Canada) were in the top 10. However, a declining pattern of the CPI occurred in these core regions.

Figure 6.22a Very High Free from Corruption (VHFC) Levels, 1990s–2000s, by Percentage of Countries



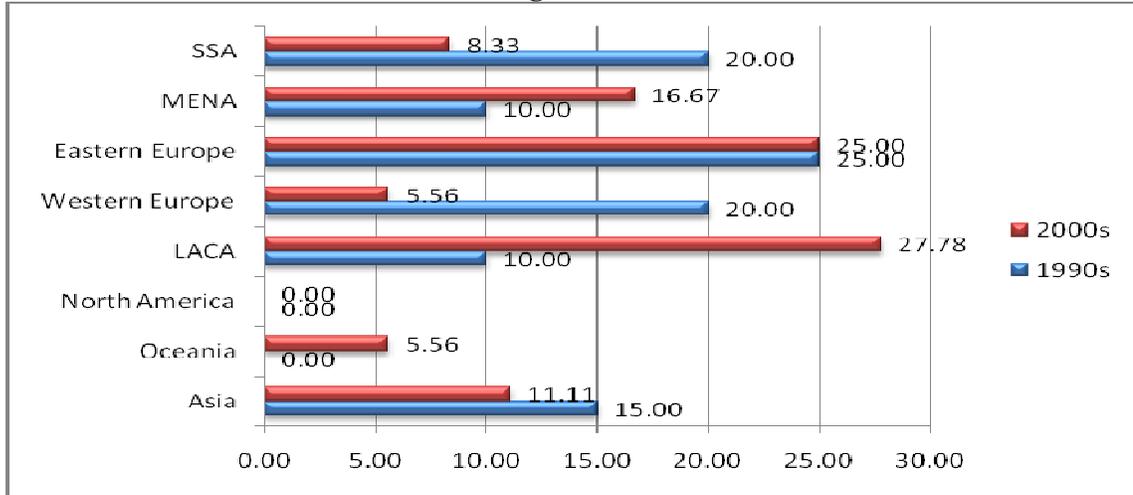
Source: Same as Figure 6.20. Note: Same as Figure 6.20.

On the other hand, the CPI scores of countries in the semi-peripheral and peripheral regions improved during the 1990s–2000s. LACA had the highest increase in the CPI, as a percentage of the VHFC countries increased in that period with countries such as Barbados, Chile, Uruguay, and Puerto Rico classified as VHFC. Eastern Europe had no VHFC countries in the 1990s, yet in the 2000s, the CPI scores of Estonia and Slovenia were in the VHFC group. Singapore, Japan, Hong Kong SAR, and Taiwan were the main contributors to the increasing pattern of VHFC in Asia. Israel, Qatar, and the United Arab Emirates contributed to MENA’s improved CPI. Further, the increase in the percentage of VHFC countries from the 1990s to the 2000s in SSA was due to Botswana’s improvement.

Figure 6.22b shows that LACA, Eastern Europe, and MENA had the highest percentages of countries experiencing “High Free from Corruption” (HFC). In the 2000s, these regions together contributed roughly 69.45 per cent of the total HFC countries. There were several HFC countries in LACA, such as Costa Rica, Dominica, Brazil, and El Salvador. Eastern Europe contributed nine countries, including Hungary, the Czech Republic, Lithuania, and Poland. LACA and MENA were two regions that had an increasing pattern of HFC from the 1990s to the 2000s. For the five other regions, the percentage of countries experiencing HFC levels decreased, excluding North America and Oceania and the Pacific. For instance, Western Europe decreased

from 20.00 per cent in the 1990s to 5.56 per cent in the 2000s. Similarly, the percentage of HFC countries in SSA declined nearly 11.67 per cent during the 1990s–2000s.

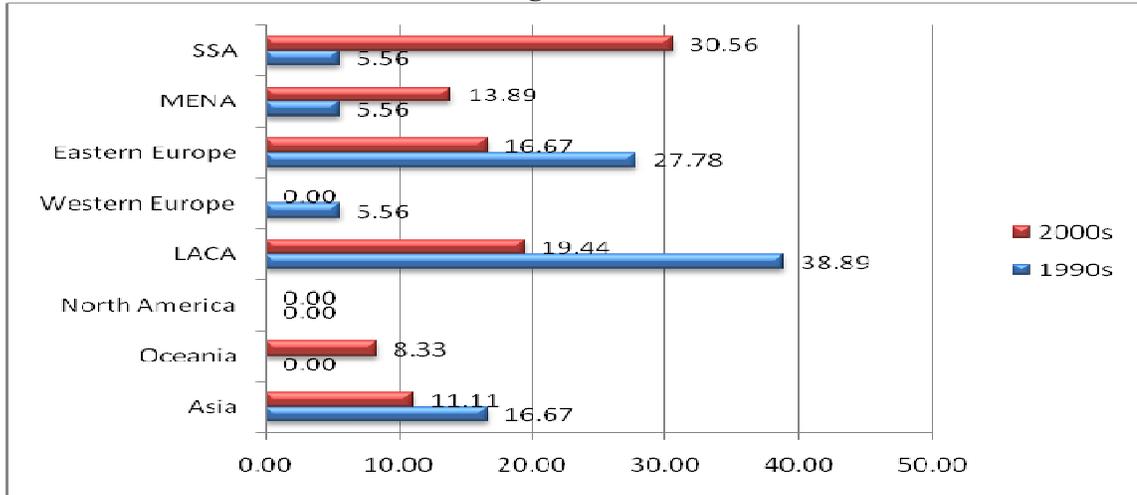
Figure 6.22b High Free from Corruption (HFC) Levels, 1990s-2000s, by Percentage of Countries



Source: Same as Figure 6.20. Note: Same as Figure 6.20.

Figure 6.22c reveals that the classification “Medium Free from Corruption” (MHFC) primarily comprised semi-peripheral and peripheral regions during the 1990s–2000s. LACA, Eastern Europe, and Asia contributed 50 to 80 per cent of the total MHFC countries in the 1990s. In the 2000s, the percentage of MHFC countries in SSA increased to five times its level in the 1990s. Countries such as Lesotho, Swaziland, Senegal, and Gabon were categorized as MHFC. During the 1990s–2000s, SSA, MENA and part of Oceania were regions that had an increasing pattern of MHFC. The MHFC countries in MENA were in Lebanon, the Syrian Arab Republic, Tunisia, and Egypt. An increase in the percentage of MHFC countries occurred in Oceania, as some periphery countries (e.g., Kiribati, Vanuatu, and Tonga) were classified as MHFC. By way of contrast, LACA, Eastern Europe, and Asia had a declining pattern of MHFC during the 1990s–2000s.

Figure 6.22c Medium Free from Corruption (MHFC) Levels, 1990s–2000s, by Percentage of Countries



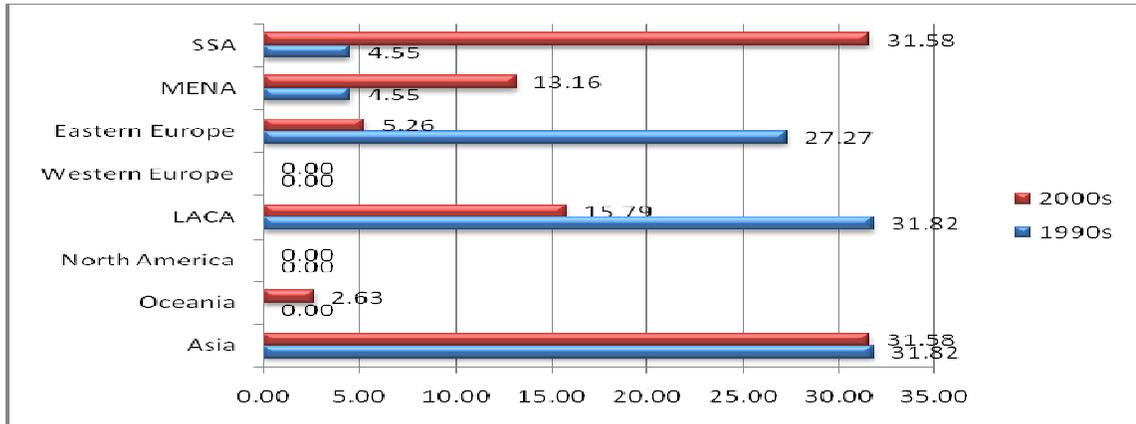
Source: Same as Figure 6.20. Note: Same as Figure 6.20.

In Figure 6.22d, Asia, SSA, LACA and Eastern Europe led in the percentage of countries experiencing “Low Free from Corruption” (LFC) during the 1990s–2000s. This suggests that high levels of corruption were present in several countries in these regions. In the 1990s, the contribution of Asia, LACA, and Eastern Europe was nearly 80 percent of the total LHFC countries. In the 2000s, Asia and SSA held the highest share of this classification, followed by LACA. Several Asian countries had low CPIs in the 2000s, such as Myanmar, Cambodia, Bangladesh, Indonesia, and Pakistan. Several countries in SSA had extremely low CPI levels, with these ranging from 1 to 2.5 (for example Cote d’Ivoire, Cameroon, the Democratic Republic of Congo, Angola, Kenya, and the Central African Republic). In LACA, low CPIs occurred in Honduras, Bolivia, Ecuador, and Venezuela. Similarly, corruption was also high in several Eastern Europe countries (for example, the Russian Federation and Ukraine).

In the sense of durability, the patterns of the semi-peripheral and peripheral regions displayed in Figure 6.22d differed. Asia, LACA, and Eastern Europe had a decreasing pattern in the percentage of LFC countries during the 1990s–2000s. The percentage of LFC countries in Eastern Europe declined from 27.27 per cent in the 1990s to 5.26 per cent in the 2000s. In LACA, the percentage of LFC countries in the 2000s was half that of the 1990s. A slight declining pattern occurred in Asia. On the other hand, the percentage of SSA with low LFC levels in the 2000s increased by over

seven times what it was in the 1990s. Similarly, MENA had an increasing pattern during the 1990s–2000s.

Figure 6.22d Low Free from Corruption (LFC) Levels, 1990s–2000s, by Percentage of Countries



Source: Same as Figure 6.20. Note: Same as Figure 6.20.

To summarize the preceding investigation, this study concludes the following stylized facts about the links between corruption and the long wave: First, some core regions, such as Western Europe, North America, and part of Oceania, had a high percentage of countries that were “free from corruption” (VHFC and HFC), even though they displayed a slightly declining pattern during the 1990s–2000s. Under the institution of globalization, most countries in the core regions tend to manage their governments and bureaucrats in order to reduce corruption.

Second, the semi-peripheral and peripheral regions had various patterns in the percentages of countries according to this classification schema for the CPI. Asia had an increase in the percentage of VHFC and HFC during the 1990s–2000s, even though it had the highest percentage of LFC countries. LACA had substantial percentages of HFC and MFC countries as well as having an increasing percentage of VHFC countries. Yet, this region also had a high percentage of LFC countries. In Eastern Europe, the percentage of HFC countries was high and accompanied by a decreasing pattern in the number of MFC and LFC countries. In contrast, SSA ranked high in the percentage of MFC and LFC countries, though it also had a slightly increasing percentage of VHFC countries.

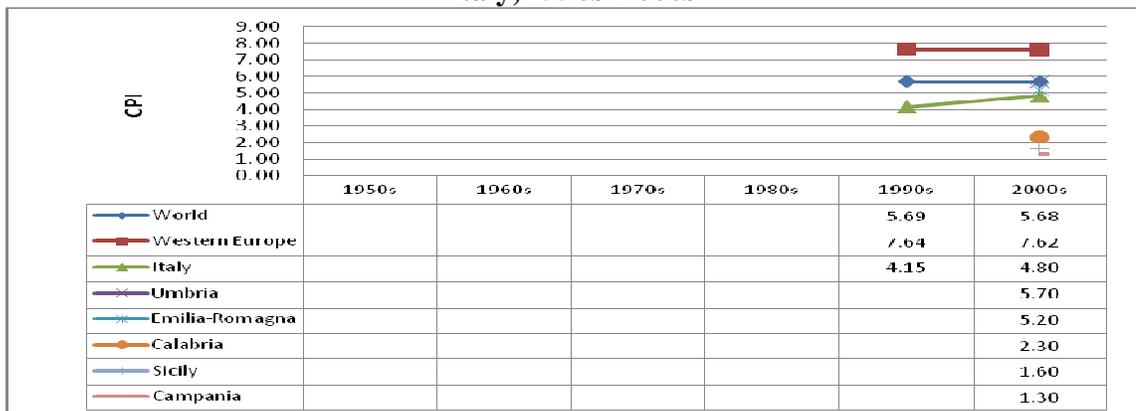
6.5.1 Sub-National Political Capital Performance in the 2000s

In this section, sub-national Corruption Perception Index (CPI) levels for sub-nations are discussed using a comparison between the pattern of sub-national CPI and that of global, regional, and national during the 2000s. Sub-national CPI data are available only for the 2000s.

Figures 6.23a to 6.23d show sub-national CPI in China (27 provinces), Indonesia (33 provinces), Italy (20 sub-nations), and Mexico (30 sub-nations). The selection of these countries is in line with the applying C-SP-P, as it includes Western Europe (Italy) as a core region and both Asia (China and Indonesia) and Latin America (Mexico) as the semi-peripheral region.

The major stylized fact shown in Figures 6.23a to 6.23d is that sub-national CPI was heterogeneous in the selected countries in the 2000s. These sub-nations' levels differed from the levels of the countries and regions to which they belonged. For instance, the Italian CPI was 4.80 in the 2000s, while the world and Western Europe had CPIs of 5.68 and 7.62. At the sub-national level, sub-nations in Italy had CPIs as follow: Umbria (5.70), Emilia-Romagna (5.20), Calabria (2.30), Sicily (1.60), and Campania (1.30).

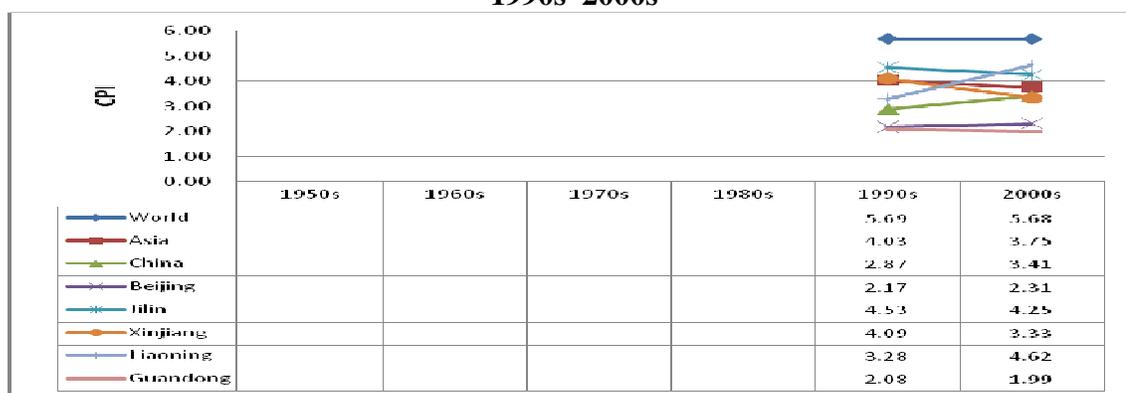
Figure 6.23a The CPI: World, Western Europe, Italy, and Selected Sub-Nations in Italy, 1990s–2000s



Source: The Corruption Perception Index (CPI) for the world, LACA and Italy is determined using period annual averages based on Transparency International (2010). Sub-national CPI in Italy in the 2000s is calculated using period annual averages based on Golden and Picci (2005). Note: the CPI data for the world, regions and nations are available from the 1990s to the 2000s. The CPI data for sub-nations are available for the 2000s. More complete explanations are given in the Definitions of Statistical Terms: Appendix A-1 and Technical Notes: Appendix B-18.

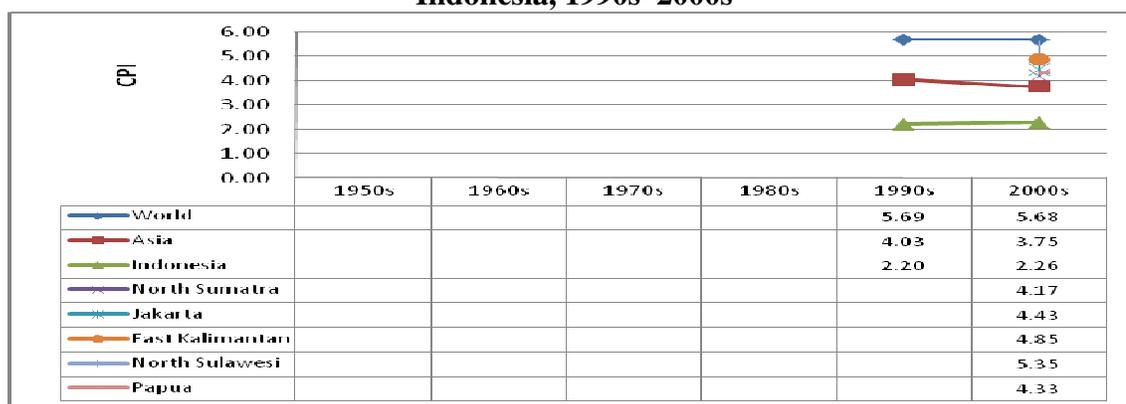
In the semi-peripheral regions, China, Indonesia, and Mexico all showed heterogeneity in the pattern of sub-national CPI. For instance, sub-nations in China had a varied CPI in the 2000s: Beijing (2.31), Liaoning (4.62), and Guandong (1.99), whereas the Chinese CPI was 3.41. In Indonesia, the national CPI was 2.26 in the 2000s, while sub-nations had CPIs as follows: North Sumatra (4.17), Jakarta (4.43), East Kalimantan (4.85), North Sulawesi (5.35), and Papua (4.33). In Mexico, sub-national CPIs were as follows: Distrito Federal (1.20), Est. de Mexico (1.60), Colima (5.60), and Nayarit (4.60); while Mexican CPI was 3.37.

Figure 6.23b The CPI: World, Asia, China and Selected Sub-Nations in China, 1990s–2000s



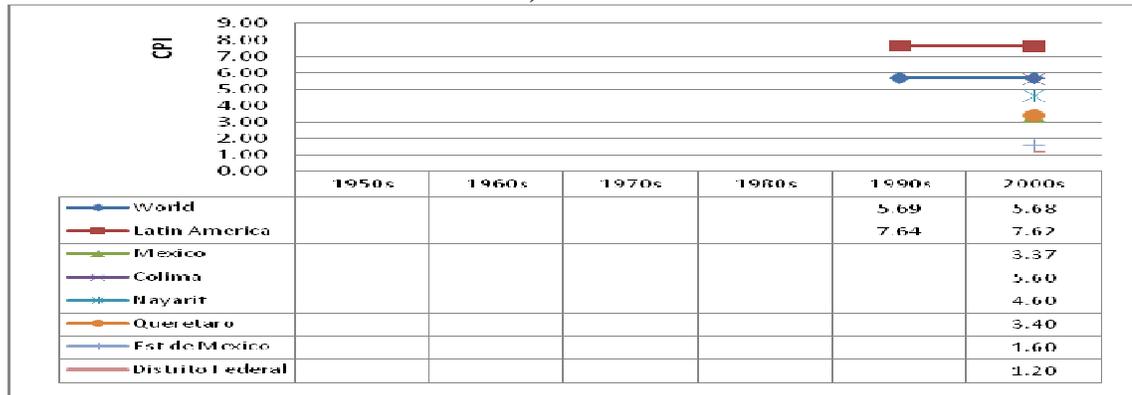
Source: The Corruption Perception Index (CPI) for the world, Asia and China is calculated using period annual averages based on Transparency International (2010); Sub-national CPI in China in the 1990s–2000s is calculated using period annual averages based on Cole, Elliot, and Zhang (2009). Note: Same as Figure 6.23a.

Figure 6.23c The CPI: World, Asia, Indonesia and Selected Sub-Nations in Indonesia, 1990s–2000s



Source: The Corruption Perception Index (CPI) for the world, Asia and Indonesia is calculated using period annual average based on Transparency International (2010); Sub-national CPI in Indonesia in the 2000s is calculated using period annual averages based on Transparency International Indonesia (2010). Note: Same as Figure 6.23a

Figure 6.23d The CPI: World, LACA, Mexico, and Selected Sub-Nations in Mexico, 1990s–2000s



Source: The Corruption Perception Index (CPI) for the world, LACA and Mexico is calculated using period annual averages based on Transparency International (2010). Sub-national CPI in Mexico in the 2000s is calculated using period annual averages based on Wangnerud (2010). Note: Same as Figure 6.23a.

In summary, sub-national CPI levels in these selected countries were heterogeneous, i.e. they differed from the global, regional, and national patterns for the 2000s. The distribution of sub-national CPI amplitude shows the difference in patterns between sub-nations in Italy (Western Europe) and those in semi-peripheral regions (e.g., Asia and LACA). A specific distribution pattern in Italy was more apparent than in China, Indonesia, and Mexico. This was because sub-nations with high levels of the CPI converged in northern Italy, whereas sub-nations in southern Italy had low levels of the CPI.

6.6 Concluding Remarks

Chapter 6 investigates long-term patterns of social, environmental, and political factors at the global, regional, national and sub-national levels during the 1950s–2000s. This chapter evaluates up to 160 countries in eight regions, as well as up to 143 sub-nations. The application of the SFR model to this chapter suggests four main analyses for each factor, which are linked with the principles of uneven development and of C-SP-P. The first analysis is the global analysis, which examines the long-term pattern of the fixed (level of the factors). The second analysis scrutinizes long-term patterns at the regional level by considering the fixed (level) and marginal values of the factors. The third analysis emphasizes the classification of countries based on the relative distributions in every region. The percentages of countries in each classification are used to describe long-term national patterns. In the fourth analysis, the sub-national patterns of these

factors are investigated with a twofold emphasis: the comparison of global, regional, national, and sub-national levels, and the interrelationship between national and sub-national patterns.

The results suggest five main conclusions relevant to the hypotheses in this study. The first conclusion is that the global pattern of social, environmental, and political factors had diverse change during the 1950s–2000s. Increases occurred in global life expectancy and global HDI from the 1970s to the 2000s. Global political rights and civil liberties also increased, as the percentage of “free” countries increased during the 1970s–2000s. Conversely, decreases were seen in the level of trust, ecological capital, and the CPI at the global level. The level of trust decreased during the 1980s–2000s at the global level, while the global ecological capital decreased from the 1960s to the 2000s. A decreasing pattern of global CPI occurred during the 1990s–2000s, the only period for which data were available. These findings generally support O’Hara (2007a, 2008a).

The second conclusion is that the marginal value of these factors also displayed diverse patterns at the global level during the 1950s–2000s. A decreasing pattern in the marginal value of life expectancy occurred in the world from the period of the 1970s–1980s to the period of the 1990s–2000s. A fluctuating pattern was evident in the global marginal value of HDI, with decreases from the period of the 1970s–1980s to the period of the 1980–1990s and increases from the period of the 1980s–1990s to the period of the 1990s–2000s. The same pattern could be seen in the global marginal value of ecological capital, which increased from the period of the 1960s–1970s to the period of the 1980s–1990s, followed by a pattern of decrease from the period of the 1980s–1990s to the 1990s–2000s. Finally, the global marginal value of trust increased from the period of the 1980s–1990s to the period of the 1990s–2000s.

The third conclusion emphasizes the period of the 1970s–1980s and the period of the 1980s–1990s, which were crucial periods in the sense of long-term institutional transformation, with the emergence of globalization and neoliberal institutions. This led to change and increased complexity in social, environmental and political factors. In these periods, the changes in marginal values at the global level, such as the HDI, trust and ecological capital generally supports Hypothesis 1.

The fourth conclusion is that regions and nations demonstrated several heterogeneous patterns in the structural linkage of C-SP-P in the sense of regional and national distribution during the 1950s–2000s. The core regions (North America, Western Europe, and part of Oceania) and countries recorded the highest levels for factors such as HDI, political rights, civil liberties, and the CPI. By way of contrast, peripheral regions (e.g. SSA) had a low ranking for most factors. Further, semi-peripheral regions (Asia, LACA, MENA, and Eastern Europe) and countries tended to have medium rankings. This pattern supports the four-quadrant analysis that describes the structural linkage of ecological capital between the core regions (Western Europe and North America) and the semi-peripheral and peripheral regions (LACA and SSA), as generally suggested in Hypothesis 2.

The fifth conclusion is that the sub-national patterns were complex and heterogeneous during the 1950s–2000s. This is seen in the comparison of global, regional, national, and sub-national levels, with patterns that are diverse and changing over time. The interrelationships of the national and sub-national patterns were also complex and variable. This fifth conclusion generally supports Hypothesis 5.

These conclusions suggest that the institutional transformations generated complexity and heterogeneity at the global, regional, national and sub-national levels. This complexity and heterogeneity was evident for social, environmental, and political factors. However, one key question remains for further analysis, namely, how structural linkages of all factors (economic, social, environmental, and political) have generated endogenous processes at different levels throughout the period being considered? This question is comprehensively addressed in Chapter 7. The data of economic factors (from Chapter 5) and social, environmental and political factors (Chapter 6) are used in Chapter 7.

Chapter 7

Integrative and Heterogeneous Analysis of Four Factors at the Global, Regional, National, and Sub-National Political Economies, 1950s–2000s

7.1 Introduction

The previous chapters have investigated the individual patterns of economic, social, environmental and political factors in the world, its regions, nations and sub-nations from the perspective of political economy during the 1950s–2000s. Chapter 5 discusses long waves of economic growth at different levels, by describing performance in the long-wave upswing of 1950–1973 and the long-wave downswing of 1974–2010. Chapter 6 shows the long-term performance patterns of social, environmental and political factors at different levels with regard to the principles of uneven development and hegemony.

The objective of this chapter is to examine the integrative patterns of economic, social, environmental, and political factors from the global through to the sub-national levels during the 1950s–2000s. The key empirical question is how the structural linkages among these multiple factors led to institutional transformation at different levels throughout this period. In order to evaluate the patterns of the structural linkages among these factors, this chapter constructs an integrative model that is linked to principles of long wave, CCC, contradiction as well as hegemony. The current chapter uses the data from Chapter 5 for economic factors and from Chapter 6 for social, environmental and political factors.

The rest of the chapter is organized as follows. Section 7.2 explains the patterns of the structural linkages of economic growth and social, environmental and political factors across global to national levels during the 1950s–2000s. In Section 7.3, the structural linkages of social and environmental and political factors are presented through global, regional, and national analyses. Section 7.4 examines global, regional and national patterns of structural linkages of environmental and political factors. Significantly, in each section from 7.2 to 7.4, the structural linkages of economic, social, environmental and political factors are examined at the sub-national level. The various sub-national findings are then compared to those at the national, regional, and global

levels. Worthy of note is that sub-national data are only available in the period of the 1990s–2000s. Thus, the sub-national analysis focuses on the approach of C-SP-P rather than trends in the long-term period. Section 7.5 examines some sub-hypotheses of CCC and contradiction based on the results of the structural linkages among multiple factors. Finally, conclusions and discussions are drawn from the analyses.

7.2 The Structural Linkages of Economic Factors to Social, Environmental, and Political Factors: World, Region, and Nation

This section investigates the patterns that are generated by the linkage of economic factors to social, environmental and political factors during the long waves of the 1950s–2000s. The long-term pattern of GDP growth per capita as a proxy of economic performance is linked with the Human Development Index (HDI), trust, the biocapacity–ecological footprint, political rights and the Corruption Perception Index (CPI). These linkages are examined at the global, regional, national, and sub-national levels to identify global, regional, national, and sub-national patterns of circular and cumulative causation (CCC) and contradiction.

CCC means that the pattern of economic factors moves in the same direction as social, environmental, and political factors for the given historical period. For example, CCC occurs in a decade in which global or regional/national economic performance experienced an upswing concurrently with a Very High or High HDI. Contradiction recognizes endogenous processes in which anomalies are generated by structural linkages between economic factors and social, environmental and political factors. An example is when there is economic growth at the global, regional or national level but ecological capital (biocapacity minus ecological footprint) is negative or in a deficit.

In constructing the model, the patterns of the performance of factors in the world, regions, nations and sub-nations are firstly classified by specific taxonomies. For instance, GDP growth per capita is categorized by the long-wave taxonomy (e.g., upswing, borderline and downswing). Social, environmental and political factors are classified by previously specified taxonomies such as VHDI, HEC, MLT, PF, and VHFC. In the second step, nations are selected for analysis. These countries are selected based on the categories of core, semi-periphery and periphery (C-SP-P).

This analysis employs 45 countries in eight regions that include core, semi-peripheral and peripheral countries. The process of selecting countries is based on the method of the identification of the C-SP-P relationship developed by Horvath and Grabowski (1999) and Lee (2009) with slight modifications, resulting in Table 7.1 below.

Table 7.1 Selected Countries in the Analysis of Structural Linkage

Regions [Number of countries] in the study	Selected countries	Core, semi- periphery and periphery	Linked to Principle of C-SP-P	Based on existing literature
Asia [25]	6	1 core (C), 4 semi-periphery (SP) 1 periphery (P)	Japan (C); China, Thailand, India and Indonesia (SP); Nepal (P)	Horvath and Grabowski (1999); Grabowski, Self and Shields (2007)
Western Europe [22]	8	7 (C) 1 (SP)	France, Germany, Italy, the United Kingdom, Spain, Norway, Sweden (C); and Cyprus (SP)	Pini (1995); Horvath and Grabowski (1999),
North America [3]	2	2 (C)	United States and Canada (C)	Grabowski, Self and Shields (2007)
Oceania [15]	3	2 (C) 1 (SP)	Australia and New Zealand (C); Fiji (SP)	Grabowski, Self, and Shields (2007)
Eastern Europe [19]	7	1 (C) 6 (SP)	Russian Federation (C); Latvia, Lithuania, Czech Republic, Bosnia, Hungary, and Poland (SP)	Kornai (2006)
LACA [28]	6	6 (SP)	Argentina, Brazil, Mexico, Chile, Cuba, and Honduras (SP)	Horvath and Grabowski (1999); Grabowski, Self, and Shields (2007)
MENA [20]	5	4 (SP) 1 (P)	Egypt, Iran, Morocco and Jordan (SP); and Yemen Republic (P)	Issawi (2006); Messkoub (2008); Richards and Waterbury (2008)
SSA [28]	8	3 (SP) 5 (P)	Botswana, South Africa, Mauritius, and Gabon (SP); the Congo, Nigeria, Angola, and Mauritania (P)	Collier and Gunning (1999a); Geda-Fole (2003); Grabowski, Self, and Shields (2007)
Total	45	13 (C), 24 (SP), 7 (P)	-	-

The third step in the analysis identifies the heterogeneity of the data in this analysis. Heterogeneous data are used in this analysis, as the data sets span different periods. For instance, GDP growth per capita data are available during the 1950s–2000s, whereas the Ecological Footprint and the HDI commenced in the 1960s and the 1970s. Moreover, incommensurable values arise in the linkage of multiple factors, as these factors come from various systems (Boulding 1984).

Table 7.2 illustrates the model of integrative analysis for economic factors and social, environmental, and political factors. This integrative model is developed based on the model of CCC and the model of contradiction (see Chapter 3: Figures 3.3 and 3.5). The structural linkage of GDP growth per capita and the HDI at the world and regional level is the object of this analysis. For example, in the column “The 1970s”, the world and the eight regions are classified by the long-wave taxonomy, which includes Upswing (e.g., Asia, North America, Western Europe, and the World), Borderline (e.g., LACA) and Downswing (no country). Categorizations according to HDI are also given, for example, Asia: Medium Human Development Index (MHDI), North America: Very High Human Development Index (VHDI) and LACA: Medium Human Development Index (MHDI).

Table 7.2 Structural Linkage of GDP Growth per Capita and the Human Development Index (HDI): World and Regions

		1950s	1960s	1970s	1980s	1990s	2000s
Upswing	Region	Asia: n.a.; North Am: n.a.; Western Europe: n.a.; Eastern Europe: n.a.; MENA: n.a.	Asia; North Am; Western Europe; Eastern Europe; MENA; LACA; Oceania	Asia: MHDI ; North Am: VHDI ; Western Europe: VHDI ; Eastern Europe: VHDI ; MENA: MHDI ; SSA: LHDI ; Oceania: VHDI	Asia: MHDI	Asia: MHDI	Asia: MHDI ; Eastern Europe: HHDI
	World	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Cont'd

(Cont'd from page 245)

Borderline	Region	n.a.	n.a.	LACA: MHDI	Western Europe: VHDI	Western Europe: VHDI	LACA: HHDI ; MENA: MHDI ; SSA: LHDI ;
	World	n.a.	n.a.	World: MHDI	n.a.	n.a.	n.a.
Downswing	Region	n.a.	n.a.	n.a.	North Am: VHDI ; Eastern Europe: HHDI ; Oceania: VHDI ; LACA: MHDI ; MENA: MHDI ; SSA: LHDI	North Am: VHDI ; Eastern Europe: HHDI ; Oceania: VHDI ; LACA: HHDI ; MENA: MHDI ; SSA: LHDI ;	North Am: VHDI ; Western Europe: VHDI ; Oceania: VHDI ;
	World	n.a.	n.a.	n.a.	World: MHDI	World: MHDI	World: MHDI
CCC		n.a.	n.a.	North America (++), Western Europe (++), Eastern Europe (++), Oceania (++), LACA(++), World	SSA (- -)	SSA (- -)	Eastern Europe (++), MENA (++)
<i>Number of regions (percentages in brackets)</i>		n.a.	n.a.	5 (62.50%)	1 (12.50%)	1 (12.50%)	2 (25.00%)
Contradiction		n.a.	n.a.	Asia, MENA, SSA,	Western Europe, Eastern Europe, North America, Oceania, Asia, LACA, MENA, World (C)	Asia, Western Europe, Eastern Europe, North America, Oceania, LACA, MENA	Asia, Western Europe, North America, SSA, Oceania, World (C)
<i>Number of regions (percentages in brackets)</i>		n.a.	n.a.	3 (37.50%)	7 (87.50%)	7 (87.50%)	6 (75.00%)

Source: Table 5.2 and Table 6.1. Note: GDP growth per capita is calculated during the 1950s-2000s; HDI is calculated during the 1970s-2000s, as data is available from the 1970s to 2000s.

Table 7.2 classifies the world and these regions in terms of CCC and Contradiction. CCC occurs when positive economic performance is experienced along with positive human development in the same decade (i.e., “both positive”) or when there is negative economic performance and negative human development performance (i.e., “both negative”), or, alternatively, when there is borderline economic performance and a Medium Human Development Index (MHDI). For instance, North America, Western Europe, Eastern Europe, and Oceania experienced CCC as “both positive” (++) in the 1970s and SSA experienced CCC as “both negative” (--) in the 1980s.

In the 1980s, the world and seven of the eight regions underwent contradictions when they had “positive-negative” (+-) performance for economic and human development respectively, (for example when the world or a region had VHDI or HHDI in the long-wave downswing or borderline). For instance, North America had a contradiction, as it had a VHDI throughout a long-wave downswing in the 1980s. A “positive-negative” also takes place when a LHDI occurs in the world or a region along with a long-wave upswing or a borderline economic performance, as when SSA underwent a long-wave upswing in the 1970s and had a LHDI. Moreover, a contradiction occurs in the world or a region that has a MHDI when a long-wave upswing or downswing is experienced simultaneously. For instance, Asia recorded a MHDI while experiencing a long-wave upswing in the 1980s. All permutations of CCC and contradiction in the structural linkages of economic factors to social, environmental and political factors are shown in Table 7.3 below.

Table 7.3 Permutations of CCC and Contradiction: Economic Factors to Social, Environmental and Political Factors

Economic	HDI				Trust				Ecological Capital				Political Rights			CPI			
	VH	H	M	L	VH	H	M	L	VH	H	M	L	F	PF	NF	VH	H	M	L
Upswing	++	++	C	C	++	++	C	C	++	++	C	C	++	C	C	++	++	C	C
Borderline	C	C	++	C	C	C	++	C	C	C	++	C	C	++	C	C	C	++	C
Downswing	C	C	C	--	C	C	C	--	C	C	C	--	C	C	--	C	C	C	--

Note: VH = Very High, H= High, M= Medium, L= Low, F= Free, PF= Partly Free, NF= Not Free, ++ = ‘both positive CCC’, -- = ‘both negative CCC’ and C= contradiction

Further, Table 7.2 shows calculations of the percentage of regions that experienced CCC and contradiction in every decade. The method of calculation is

developed from the study of Ocampo and Vos (2008) and O'Hara (2012a). This helps to present the pattern of CCC and contradiction in the linkage of economic and human development performance over time, which illustrates long-term institutional transformation in world economy. For instance, in the 1970s, four regions experienced CCC, so 50.00 per cent of the eight regions, and the other 50.00 per cent of the eight regions experienced contradictions. In the 1980s, the percentage of regions that exhibited CCC was lower than the percentage exhibiting contradictions with seven regions experiencing contradictions (87.50 per cent) and only one CCC region (12.50 per cent).

Table 7.4 displays the patterns of CCC and contradiction as in Table 7.2, but is extended to include social, environmental and political factors at the global and regional levels during the 1950s–2000s. Table 7.4 shows four major stylized facts about the structural linkage of economic and social, environmental, and political factors during the 1950s–2000s. The first stylized fact is the global contradiction that occurred in most pairs of factors for every decade during the 1960s–2000s (contradiction at the world level is indicated by “W [C]”), excluding the pairs of GDP growth per capita to the HDI, GDP growth per capita to ecological capital and GDP growth per capita to political rights in the 1970s.

The second stylized fact is that for every decade in the 1960s–2000s, the percentages of regions that experienced contradiction was higher than the percentage of CCC regions for all pairs of these factors. Excluding the pairs economic factors to social factors and economic factors to environmental factors in the 1970s, contradictions were far more prevalent for all other pairs of factors at the global and regional levels. For instance, during the 1980s–2000s, a contradiction occurred in the linkage of GDP growth per capita and the HDI, as the percentage of regions that experienced contradiction was greater than that which underwent CCC. In the linkage of GDP growth per capita and ecological capital, the percentage of regions displaying contradiction exceeded the percentage of CCC regions during the 1970s–2000s.

Table 7.4 Structural Linkage of Economic Factor to Social, Environmental and Political Factors, 1950s–2000s, CCC and Contradiction: World and Regions

	CCC-Contradiction	1950s	1960s	1970s	1980s	1990s	2000s
Economic-Social Factor (the Human Development Index) (position and sign in brackets)	CCC (%)	n.a.	n.a.	62.50 [NA, EE, WE, OC, LACA (++)]	12.50 [SSA(--)]	12.50 [SSA (--)]	25.00 [EE, MENA (++)]
	Contradiction (%)	n.a.	n.a.	37.50 [AS, MENA, SSA]	87.50 [WE, EE, NA, OC, AS, LACA, MENA]	87.50 [WE, EE, NA, AS]	75.00 [WE, NA, OC, AS, LACA, SSA]
	World	n.a.	n.a.	W (CCC)	W (C)	W (C)	W (C)
Economic-Social Factor (Trust) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	16.67 [WE (++)]	28.57 [AS (++) LC (--)]	25.00 [AS, MENA (++)]
	Contradiction (%)	n.a.	n.a.	n.a.	83.33 [AS, EE, NA, OC, LACA]	71.43 [WE, EE, NA, OC, LACA, SSA]	75.00 [WE, EE, NA, OC, LACA, SSA]
	World	n.a.	n.a.	n.a.	W (C)	W (C)	W (C)
Economic-Environmental Factor (Ecological Capital -Biocap minus Ecological Footprint) (position and sign in brackets)	CCC (%)	n.a.	50.00 [NA, OC, LC (++)]	37.50 [NA, OC, SS (++)]	12.50 [MENA (--)]	12.50 [MENA (--)]	0.00 [no region]
	Contradiction (%)	n.a.	50.00 [WE, EE, MENA, SSA]	62.50 [LC, AS, WE, EE, MENA]	87.50 [AS, WE, EE, NA, OC, LACA, SSA]	87.50 [AS, LACA, WE, EE, NA, OC, SSA]	100.00 [WE, EE, NA, AS, OC, LACA, MENA, SSA]
	World	n.a.	W (C)	W (CCC)	W (C)	W (C)	W (C)
Economic-Political Factor (Political Rights) (position and sign in brackets)	CCC (%)	n.a.	n.a.	37.50 [NA, WE, OC (++)]	37.50 [MENA SSA, EE (--)]	37.50 [AS (++) MENA (--), SSA (--)]	12.50 [AS (++)]
	Contradiction (%)	n.a.	n.a.	62.50 [LACA, AS, EE, SSA, MENA]	62.50 [AS, WE, NA, OC, LACA]	62.50 [LACA, WE, EE, NA, OC]	87.50 [WE, EE, NA, OC, LACA, MENA, SSA]
	World	n.a.	n.a.	W (CCC)	W (C)	W (C)	W (C)

Cont'd

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Economic-Political Factor (the CPI) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	n.a.	0.00 [no region]	25.00 [LACA, MENA (++)]
	Contradiction (%)	n.a.	n.a.	n.a.	n.a.	100.00 [AS, LACA, WE, EE, NA, OC, SSA, MENA]	75.00 [WE, EE, NA, OC, AS, SSA]
	World	n.a.	n.a.	n.a.	n.a.	W (C)	W (C)

Source: Same as Table 5.2, Table 6.1, Table 6.2, Table 6.4, Table 6.7 and Figure 6.20. More complete explanations are given in Calculation Results: Appendices D3-1, D3-3, D3-5, D3-7 and D3-19. Note: Contradiction (C), World (W), North America (NA), Western Europe (WE), Eastern Europe (EE), Asia (AS), Oceania (OC), Latin America and the Caribbean (LACA), Middle East and North Africa (MENA) and Sub-Saharan Africa (SSA).

The third stylized fact in this table focuses on historical patterns of these linkages. During the 1960s–2000s, the percentage of regions experiencing contradictions increased and occurred in the structural linkages of GDP growth per capita to ecological capital and GDP growth per capita to political rights. On the other hand, the percentage of regions exhibiting contradictions in the structural linkages of GDP growth per capita to the HDI, GDP growth per capita to trust, and GDP growth per capita to the CPI decreased over the same period.

Finally, the fourth stylized fact is that the distribution patterns of CCC and contradiction in core regions were more consistent than they were in the semi-peripheral and peripheral regions. Some core regions experienced CCC from the 1960s to the 1970s, yet most of them experienced contradiction during the 1980s–2000s. For instance, Western Europe, North America and part of Oceania underwent CCC in the linkage of GDP growth per capita to the HDI and GDP growth per capita to political rights in the 1970s, followed by some contradictions during the 1980s–2000s. In semi-peripheral and peripheral regions, distribution patterns of CCC and contradiction tended to be heterogeneous during the 1950s–2000s. For instance, Asia experienced CCC in the linkage of GDP growth per capita to trust and GDP growth per capita to political rights during the 1990s–2000s, yet it experienced contradictions in the linkage of GDP growth per capita to ecological capital during the 1960s–2000s. LACA exhibited CCC in the linkage of GDP growth per capita to ecological capital in the 1960s and of GDP growth per capita to the CPI in the 2000s, whereas it experienced some contradictions in other linkages during the 1970s–2000s. In SSA, contradictions occurred in most pairs of

factors during the 1960s–2000s, excluding GDP growth per capita to the HDI in the 1980s and the 1990s.

Regarding long-term institutional-transformation, the results in Table 7.4 posit that contradictions in the linkages of these factors were common at the global level during the 1980s–2000s under the institution of globalization and neoliberalism. This situation was the case in all regions. As for the linkage of economic and social factors, increasing human development in core regions did not lead to a long-wave upswing during the 1980s–2000s. Under the neoliberal institution, the economic development of core regions had little effect upon social trust and ecological capital, as can be seen in the number of contradictions for these factors. In the same period, high levels of political rights and “freedom from corruption” were not able to restore economic performance in the core to its levels in the Fordist era.

Semi-peripheral and peripheral regions also experienced contradictions in the linkage of these factors, though some of these regions underwent CCC for one or two decades under the institution of globalization. For instance, the progress of human development only generated CCC in the linkages of economic and social factors for Eastern Europe and MENA in the 2000s, whereas other semi-peripheral regions experienced contradictions in this linkage. Even though SSA underwent CCC during the 1980s–1990s, it had “both negative” CCC, which suggests that low human development occurred during the downswing in economic performance. The consistent long-wave upswing in Asia was accompanied by a decreasing pattern of ecological capital as well as an increasing pattern of corruption; however, it was positively associated with social trust and political rights.

Table 7.5 Structural Linkages of Economic Factors to Social, Environmental and Political Factors, 1950s–2000s, CCC and Contradiction: Countries (45 countries)

	CCC-Contradiction	1950s	1960s	1970s	1980s	1990s	2000s
Economic-Social Factor (the Human Development Index) (position and sign in brackets)	CCC (%)	n.a.	n.a.	38.10 [(++), (--)]	16.67 [(++), (--)]	30.23 [(++), (--)]	37.78 [(++), (--)]
	Contradiction (%)	n.a.	n.a.	61.90	83.33	69.77	62.22
Economic-Social Factor (Trust) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	40.00 [(++), (--)]	17.39 [(++), (--)]	26.67 [(++), (--)]
	Contradiction (%)	n.a.	n.a.	n.a.	60.00	82.61	73.33

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(Cont'd from page 251)

Economic-Environmental Factor (Ecological Capital - Biocap minus Ecological Footprint) (position and sign in brackets)	CCC (%)	n.a.	43.24 [(++), (--)]	43.24 [(++), (--)]	31.58 [(++), (--)]	32.56 [(++), (--)]	41.86 [(++), (--)]
	Contradiction (%)	n.a.	56.76	56.76	68.42	67.44	58.14
Economic-Political Factor (Political Rights) (position and sign in brackets)	CCC (%)	n.a.	n.a.	30.95 [(++), (--)]	28.57 [(++), (--)]	24.44 [(++), (--)]	26.67 [(++), (--)]
	Contradiction (%)	n.a.	n.a.	69.05	71.43	75.56	73.33
Economic-Political Factor (the CPI) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	n.a.	19.35 [(++), (--)]	35.56 [(++), (--)]
	Contradiction (%)	n.a.	n.a.	n.a.	n.a.	80.65	64.44

Source: Same as Table 7.4. More complete explanations are given in Calculation Results: Appendices D3-2, D3-4, D3-6, D3-8 and D3-10.

A national analysis of the same linkages as above employs the selected countries shown in Table 7.1. Table 7.5 illustrates the percentage of countries that experienced CCC and/or contradiction during the 1950s–2000s. The percentages of countries describe the pattern of CCC and contradiction throughout each decadal period, with the position and sign for the CCC also shown for every decade. Though this table does not indicate the names of countries in the rows of CCC and contradiction, all countries are listed in Appendix D.

This national analysis suggests four main stylized facts. The first stylized fact is that all pairs of these factors, for each decade considered, underwent more contradictions than CCC in these selected countries during the 1960s–2000s. For instance, a contradiction in the linkage of GDP growth per capita to the HDI was at a higher percentage in these countries than for countries experiencing CCC for each decade from the 1970s to the 2000s.

The second stylized fact is that excluding trust and the CPI, the percentages of countries demonstrating contradiction tended to be low during the 1960s–1970s, but high in the 1980s and slightly decreased from the 1990s to the 2000s. In the linkage of GDP growth per capita to the HDI, the percentages of contradiction countries increased from the 1970s to the 1980s; it then decreased steadily during the 1980s–2000s. Furthermore, the third stylized fact is that the pattern of CCC countries generated “both

positive” and “both negative” for all pairs of factors in every decade during the 1960s–2000s.

The fourth stylized fact is that core, semi-peripheral and peripheral countries had differences in their patterns. Core countries mostly experienced “both positive” CCC in the 1960s–1970s, whereas semi-peripheral countries experienced “both positive” CCC in the 1980s–2000s. For instance, core countries such as France, Germany, Canada, Norway, Italy, and Japan underwent “both positive” CCC in the structural linkage of GDP growth per capita to the HDI in the 1970s; yet they experienced contradiction during the 1980s–2000s. Australia and New Zealand had “both positive” CCC in the structural linkage of GDP growth per capita to ecological capital in the 1960s, followed by contradictions during the 1980s–2000s. In the linkage of GDP growth per capita to political rights, “both positive” CCC occurred in France, Germany, Norway, and Japan in the 1970s before each experienced contradiction during the 1980s–2000s

In the semi-periphery, Thailand, Poland, Argentina, and Chile experienced “both positive” CCC during the 1980s–2000s, which took place after contradiction occurred in the linkage of GDP growth per capita to the HDI. Indonesia and Chile had “both positive” CCC in the structural linkages of GDP growth per capita to ecological capital during the 1980s–2000s. China and India consistently underwent “both positive” CCC in the structural linkage of GDP growth per capita to trust from the 1980s to the 2000s. After it experienced contradictions in the 1970s, India had “both positive” CCC in the structural linkage of GDP growth per capita and political rights.

Of interest is the case of peripheral countries in SSA and MENA. Most of them experienced “both negative” CCC during the 1950s–2000s. For instance, Mauritania, the Democratic Republic of Congo, Nigeria, Angola, and the Republic of Yemen experienced “both negative” CCC in the linkage of GDP growth per capita to the HDI during the 1970s–2000s. In the structural linkage of GDP growth per capita to political rights, a series of “both negative” CCC occurred in the Congo and Angola from the 1970s to the 2000s. Mauritania underwent “both negative” CCC in the 1970s and the 1990s, and Nigeria and Gabon during the 1990s–2000s. Similarly, Yemen, Angola, and the Congo generated “both negative” CCC in the structural linkage of GDP growth per capita to the CPI in the 2000s.

The majority of countries displayed contradiction rather than CCC in the structural linkage of GDP growth per capita to the HDI during the 1980s–2000s, which suggests that human development and economic growth moved in opposite directions during the economic downswing of the long wave under the institutions of globalization and neoliberalism. In the neoliberal era, destruction of ecological capital and social trust occurred in most countries, as demonstrated by the percentages of countries displaying higher contradiction in the structural linkage of GDP growth per capita and trust.

Institutional transformation from the Fordist era to that of globalization also affected the C-SP-P relationship. Most core countries experienced “both positive” CCC in the 1960s and the early 1970s under the Fordist era, then they underwent contradiction during the 1980s–2000s under the globalization era. This situation suggests that Fordism generated positive results in some factors (e.g., economic factors and social factors) in the core countries which, in turn, stimulated positive results for other factors.

In semi-peripheral and peripheral countries, some underwent CCC, though most of them experienced contradictions as they moved from the Fordist era to those of globalization and neoliberalism. Globalization and neoliberalism contributed unevenly to structural linkages among factors. Semi-peripheral countries such as China and India experienced “both positive” CCC of the linkage of GDP growth to trust, yet they had some contradictions in the linkage of GDP growth per capita to the HDI and GDP growth per capita to the CPI. Chile, Argentina and Indonesia had “both positive” CCC for the structural linkage of GDP growth per capita to ecological capital. Conversely, some contradictions occurred in the linkage of GDP growth per capita to the HDI and GDP growth per capita to the CPI for Indonesia. Chile and Argentina had contradiction in the structural linkage of GDP growth per capita to the HDI and GDP growth per capita to trust. Likewise, most peripheral countries in SSA experienced various contradictions during the 1950s–2000s.

7.2.1 Structural Linkages of Economic Factors to Social, Environmental, and Political Factors: Selected Sub-Nations

This sub-section provides analysis at the sub-national level. This sub-national analysis provides a deeper appreciation of the pattern of CCC and contradiction at the sub-national level that is crucial to understanding global, regional and national patterns.

The principle of hegemony is a sub-national analysis, for which data are only available during the 1990–2000s. Data for 103 sub-nations are used from China (27 sub-nations), the United States (50 sub-nations) and Indonesia (26 sub-nations). The US is a core country, while the semi-peripheral and peripheral countries are represented by China and Indonesia, respectively.

Table 7.6 shows the pattern of CCC and contradiction at the sub-national level. The number of sub-nations indicated in the column “country (number of sub-nations)” is investigated for every pair of factors. Moreover, this table presents “position and sign” of the pattern of sub-national CCC. Positions of individual sub-nations are listed in Appendix D.

In Table 7.6, this sub-national analysis proposes three stylized facts. The first stylized fact is that sub-national data generates a heterogeneous pattern of CCC and contradiction in the linkage of factors during the 1990s–2000s. In seven of thirteen sub-national linkages investigated (across four pairs of factors), the percentage of sub-nations experiencing contradiction in a country exceeded the percentage of sub-nations experiencing CCC for every pair of factors. For instance, the percentage of contradiction sub-nations in China was lower than the percentage of CCC sub-nations in the linkage of GDP growth per capita to the HDI. Conversely, more contradictions occurred in Indonesia in the linkage of GDP growth per capita to the HDI than did CCC. Further, sub-nations in the United States experienced contradiction in the linkage of GDP growth per capita to the HDI for the 1990s, yet percentage of CCC sub-nations in this country increased and exceeded sub-nations that experienced contradiction in the 2000s.

The second stylized fact is that the sub-nations experiencing CCC had no clear pattern in the given period and according to the relationship of C-SP-P. For instance, sub-nations in China generated “both positive” and “both negative” CCC in the 1990s and ‘both positive’ in the 2000s in the linkage of GDP growth per capita to the HDI.

Conversely, sub-nations in the United States experienced “both positive” CCC during the 1990s, followed by “both positive” and “both negative” in the 2000s.

Table 7.6 Structural Linkages of Economic Factor to Social, Environmental and Political Factors, 1990s–2000s, CCC and Contradiction: Selected Sub-Nations

	Country [number of sub- nations]	CCC- Contradiction	1950s	1960s	1970s	1980s	1990s	2000s
Economic-Social Factor (the Human Development Index) (position and sign in brackets)	China [27 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	62.96 [[++], (--)]	51.85 [[++]]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	37.04	48.15
	United States [50 states]	CCC (%)	n.a.	n.a.	n.a.	n.a.	46.00 [[++]]	52.00 [[++], (--)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	54.00	48.00
	Indonesia [26 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	30.76 [[++]]	46.15 [[++]]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	69.24	53.85
Economic-Social Factor (Trust) (position and sign in brackets)	China [27 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	55.56 [[++]]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	44.44
	United States [50 states]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	41.30 [[++], (--)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	58.70
	Indonesia [26 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Economic-Environmental Factor (Ecological Capital - Biocap minus the Ecological Footprint) (position and sign in brackets)	China [27 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	48.15 [[++]]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	51.85

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(Cont'd from page 256)

	Indonesia [26 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	38.46 [(++)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	61.54
	United States [50 states]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Economic-Political Factor (Political Rights) (position and sign in brackets)	n.a.	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Economic-Political Factor (the CPI) (position and sign in brackets)	China [27 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	44.44 [(++), (--)]	55.56 [(++), (--)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	55.56	44.44
	Indonesia [26 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	50.00 [(++)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	50.00
	United States [50 states]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Same as Figures 5.13, Figures 6.5, Figures 6.8, Figures 15 and Figures 23. More complete explanations are given in Calculation Results: Appendices D3-31 – D3-35.

7.3 The Structural Linkages of Social Factors to Environmental and Political Factors: World, Region and Nation

This section examines the structural linkage of social to environmental and political factors at the global, regional and national levels during the long wave of the 1950s–2000s, although data are available mostly from the 1970s through 2000s using the principles of CCC and contradiction. Three forms of analyses are used to explore for the structural linkages of social factors to environmental and political factors. The first analysis considers the structural linkages of these factors at the global level through the patterns of CCC and contradiction during the 1950s–2000s, while the second analysis emphasizes the regional pattern of CCC and contradiction. Finally, national patterns of CCC and contradiction are identified by the third analysis.

Table 7.7 contains seven pairs of social factors to environmental and political factors measured at the global and regional levels during the 1950s–2000s. For each pair

in each decade, this table illustrates the position of the world and the percentage of regions that experienced CCC and contradiction. Moreover, in the column CCC, the sign indicates the direction of CCC as either “both positive” or “both negative”.

The first stylized fact shown in Table 7.7 is that the world mostly experienced CCC in the structural linkages of social, environmental, and political factors. For instance, in the structural linkage of the social factor (the HDI) to the social factor (trust), the pattern of CCC occurred in the world in each decade from the 1980s to the 2000s. The world underwent CCC in the structural linkage of the HDI to ecological capital in each decade during the 1970s–2000s, as well as in the structural linkage of trust to ecological capital.

The second stylized fact is that the percentages of regions that underwent contradiction slightly exceeded the percentages of CCC regions in the structural linkages of the HDI to trust, the HDI to ecological capital and trust to ecological capital. However, in other structural linkages of factors such as the HDI to corruption, trust to political rights, and trust to the CPI, more regions experienced CCC than contradiction for each decade during the 1970s–2000s.

The third stylized fact is that during the 1980s–1990s the percentages of regions experiencing contradiction increased in the structural linkage of these factors including the HDI to trust, the HDI to ecological capital, and trust to ecological capital. However, for some pairs, the structural linkages of factors decreased or remained stagnant during the 1980s–1990s, such as the structural linkage of the HDI to political rights, the HDI to the CPI, trust to political rights, and trust to the CPI.

In terms of C-SP-P, the fourth stylized fact is that peripheral regions had an identifiable pattern of CCC and contradiction, whereas the core and semi-peripheral regions did not. SSA experienced contradiction and “both negative” CCC from the 1970s to the 2000s. For instance, in the structural linkage of the HDI to ecological capital, SSA experienced contradiction during the 1970s–2000s. A series of “both negative” CCC occurred in the structural linkage of the HDI to political rights for each decade from the 1970s to the 2000s. The structural linkage of trust to political rights in SSA generated contradiction in the 1990s and then experienced ‘both negative’ CCC in the 2000s.

By way of contrast, the core and semi-peripheral regions had heterogeneous patterns of CCC and contradiction during the 1970s–2000s. For example, a series of contradictions in the structural linkages of the HDI to ecological capital and trust to ecological capital occurred in Western Europe during the 1970s–2000s, whereas North America and Oceania experienced CCC in this period. Furthermore, both Western Europe and North America experienced a series of CCC patterns in the structural linkages of the HDI to the CPI and trust to the CPI. As a semi-peripheral region, Asia underwent a series of CCC in the structural linkage of the HDI to ecological capital during the 1970s–2000s, whereas this region experienced a series of contradictions in the structural linkage of trust to ecological capital during the 1980s–2000s. Both CCC and contradiction in the structural linkage of the HDI to ecological capital occurred in LACA during the 1970s–2000s. LACA also experienced a series of contradictions in the linkage of trust to ecological capital.

Table 7.7 Structural Linkages of Social Factors to Environmental and Political Factors, 1950s–2000s, CCC and Contradiction: World and Regions

	CCC- Contradiction	1950s	1960s	1970s	1980s	1990s	2000s
Social Factor (the HDI)- Social Factor (Trust) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	50.00 [NA, OC,AS (++)]	42.86 [WE,NA, OC (++)]	50.00 [NA,OC, MN (++), SSA (-)]
	Contradiction (%)	n.a.	n.a.	n.a.	50.00 [WE,EE, LACA]	57.14 [EE, AS,SSA, LACA]	50.00 [WE,AS, LACA,EE]
	World	n.a.	n.a.	n.a.	W (CCC)	W (CCC)	W (CCC)
Social Factor (the HDI)- Environmental Factor (Ecological Capital - Biocap minus Ecological Footprint) (position and sign in brackets)	CCC (%)	n.a.	n.a.	50.00 [NA, OC,AS, MENA (++)]	37.50 [NA, OC,AS (++)]	50.00 [NA, LACA, OC, AS (++)]	50.00 [NA, LACA,OC, AS, (++)]
	Contradiction (%)	n.a.	n.a.	50.00 [WE,EE ,LACA, SSA]	62.50 [EE,WE, LACA, SSA, MENA]	50.00 [EE,WE, SSA, MENA]	50.00 [EE, WE,SSA, MENA]
	World	n.a.	n.a.	W (CCC)	W (CCC)	W (CCC)	W (CCC)

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(Cont'd from page 259)

Social Factor (the HDI)- Political Factor (Political Rights) (position and sign in brackets)	CCC (%)	n.a.	n.a.	62.50 [NA, WE,OC, AS(++), SSA (--)]	62.50 [NA,WE, OC, AS (++), SSA (--)]	62.50 [NA,WE, OC, LACA (++),SSA (--)]	62.50 [NA,WE, OC,LACA (++),SSA (--)]
	Contradiction (%)	n.a.	n.a.	37.50 [EE, MENA, LACA]	37.50 [EE, MENA, LACA]	37.50 [EE, MENA, AS]	37.50 [EE, MENA,AS]
	World	n.a.	n.a.	W (CCC)	W (CCC)	W (CCC)	W (CCC)
Social Factor (the HDI)- Political Factor (the CPI) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	n.a.	62.50 [WE,NA, OC,AS, MENA (++)]	62.50 [WE,NA, OC,MENA (++), SSA (--)]
	Contradiction (%)	n.a.	n.a.	n.a.	n.a.	37.50 [EE, SSA, LACA]	37.50 [EE, AS,LACA]
	World	n.a.	n.a.	n.a.	n.a.	W (C)	W (C)
Social Factor (Trust)- Environmental Factor (Ecological Capital - Biocap minus Ecological Footprint) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	66.67 [NA, OC,AS, EE (++)]	42.86 [EE,NA, OC(++)]	25.00 [NA,OC (++)]
	Contradiction (%)	n.a.	n.a.	n.a.	33.33 [WE, LACA]	57.14 [WE,AS, SSA, LACA]	75.00 [WE,AS, LACA,EE, SSA, MENA]
	World	n.a.	n.a.	n.a.	W (CCC)	W (CCC)	W (CCC)
Social Factor (Trust)- Political Factor (Political Rights) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	50.00 [NA, OC,AS (++)]	71.43 [WE,NA, OC,AS, EE (++)]	62.50 [NA,OC,AS EE (++) SSA (--)]
	Contradiction (%)	n.a.	n.a.	n.a.	50.00 [WE, EE, LACA]	28.57 [SSA, LACA]	37.50 [WE, LACA, MENA]
	World	n.a.	n.a.	n.a.	W (C)	W (C)	W (C)
Social Factor (Trust)- Political Factor (the CPI) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	n.a.	71.43 [WE,NA, OC,SSA (++), LACA (--)]	62.50 [NA,OC,EE ,MENA (++), SSA (--)]
	Contradiction (%)	n.a.	n.a.	n.a.	n.a.	28.57 [EE, AS]	37.50 [WE,AS, LACA]
	World	n.a.	n.a.	n.a.	n.a.	W (CCC)	W (CCC)

Source: Same as Table 7.4. More complete explanations are given in Calculation Results: Appendices D3-11 – D3-17

Regarding long-term institutional transformation, these four stylized facts suggest that the structural linkages of social, environmental and political factors generated various patterns at differing levels during the era of globalization in the 1980s–2000s. Even though the structural linkages of these factors at the global level

mostly experienced CCC, the percentages of regions experiencing contradictions in the structural linkage of trust to ecological capital and the HDI to ecological capital outstripped those experiencing CCC during the 1980s–2000s. Increasing levels of human development may have contributed to improve political rights in the world and some regions during the 1970s–2000s as the relatively high percentage of CCC regions for this linkage attest. This was accompanied by increased global efforts to eliminate corruption, as identified by the percentages of regions undergoing CCC in the structural linkage of the HDI to the CPI slightly exceeding the percentages of regions experiencing contradictions. Conversely, for each decade in the 1980s–2000s, ecological capital and trust had a uniformly contradiction pattern associated with human development. Further, the percentage of regions undergoing contradiction exceeded the percentage of those experiencing CCC in the structural linkage of the HDI to ecological capital and to trust.

In terms of C-SP-P, globalization and the neoliberal era led to heterogeneous patterns of structural linkages in core and semi-peripheral regions, as a result of the progress in human development and technology. Western Europe, North America and Oceania experienced CCC in the structural linkage of the HDI to political rights and the HDI to the CPI during the 1970s–2000s. However, Western Europe is noteworthy that for undergoing a decreasing pattern of ecological capital during the 1970s–2000s and a declining pattern of trust in the 2000s. In the semi-periphery, increasing human development generated improvements in political rights, yet it was followed by ongoing high levels of corruption in Asia and LACA. In MENA, human development was associated with moderate measures against corruption and declining levels of political rights.

Shifting to the peripheral region, SSA experienced some crucial problems in the structural linkages of social and environmental factors to political factors. Low human development and trust in this region contributed to low levels of political rights during the globalization era of the 1980s–2000s, with a series of “both negative” for the pattern of CCC in the structural linkages of the HDI to political rights and trust to political rights. In the structural linkage of the HDI to ecological capital, some contradictions occurred in this region.

Structural linkages of social factors to environmental and political factors were characterized by CCC for four pairs of factors and contradiction for three pairs of factors at the global level. However, the CCC was negative in regards to the structural linkage between the HDI and social trust. This result was predominant in semi-peripheral and peripheral regions. Lower levels of human development accompanied inequality of opportunities for future economic progress (Rothstein and Uslaner 2005). Greater economic inequality leads to lower levels of trust.

Table 7.8 shows the structural linkages of social, environmental, and political factors. In this table, seven pairs of factors generate the patterns of CCC and contradiction at the national level. The categories and presentation of the data are as per the global analysis, that is, percentage levels of CCC and contradiction are displayed decade by decade and signs indicate that the structural linkages of these factors create either “both positive” or “both negative” for the national pattern of CCC in that decade. Appendix A gives an explanation of the details of the list of countries.

The first stylized fact from Table 7.8 is that the percentage of countries experiencing contradiction exceeded that of countries undergoing CCC, with particular examples being the structural linkages of the HDI to ecological capital and trust to ecological capital from the 1970s to the 2000s. A similar situation occurred in the structural linkage of trust to the CPI during the 1990s–2000s; and the HDI to trust for the 1980s and the 2000s. However, the percentage of CCC countries was greater than for those that underwent contradictions with the structural linkages of the HDI to political rights and trust to political rights during the 1970s–2000s.

Table 7.8 Structural Linkages of Social Factors to Environmental and Political Factors, 1950s–2000s, CCC and Contradiction: Countries

	CCC- Contradiction	1950s	1960s	1970s	1980s	1990s	2000s
Social Factor (the HDI)- Social Factor (Trust) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	46.67 [[++]	56.52 [[++]	43.33 [[++]
	Contradiction (%)	n.a.	n.a.	n.a.	53.33	43.48	56.67
Social Factor (the HDI)- Environmental Factor (Ecological Capital - Biocap minus the Ecological Footprint) (position and sign in brackets)	CCC (%)	n.a.	n.a.	32.43 [[++], (--)]	35.14 [[++], (--)]	34.88 [[++],(--)]	34.88 [[++],(--)]
	Contradiction (%)	n.a.	n.a.	67.57	64.86	65.12	65.12

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(Cont'd from page 262)

Social Factor (the HDI)- Political Factor (Political Rights) (position and sign in brackets)	CCC (%)	n.a.	n.a.	45.24 [[++], (--)]	57.14 [[++], (--)]	64.44 [[++], (--)]	73.33 [[++],(--)]
	Contradiction (%)	n.a.	n.a.	54.76	42.86	35.56	26.67
Social Factor (the HDI)- Political Factor (the CPI) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	n.a.	54.84 [[++]]	71.11 [[++],(--)]
	Contradiction (%)	n.a.	n.a.	n.a.	n.a.	45.16	28.89
Social Factor (Trust)- Environmental Factor (Ecological Capital - Biocap minus the Ecological Footprint) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	46.67 [[++], (--)]	30.43 [[++]]	31.03 [[++]]
	Contradiction (%)	n.a.	n.a.	n.a.	53.33	69.57	68.97
Social Factor (Trust)- Political Factor (Political Rights) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	53.33 [[++]]	52.17 [[++]]	57.14 [[++]]
	Contradiction (%)	n.a.	n.a.	n.a.	46.67	47.83	42.86
Social Factor (Trust)- Political Factor (the CPI) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	n.a.	38.46 [[++]]	46.43 [[++]]
	Contradiction (%)	n.a.	n.a.	n.a.	n.a.	61.54	53.57

Source: Same as Table 7.4. More complete explanations are given in Calculation Results: Appendices D3-21 – D3-24; Appendix D3-28 – D3-30.

In terms of C-SP-P relationships, the distribution pattern of core, semi-peripheral and peripheral nations is heterogeneous. The core countries experienced “both positive” CCC in the structural linkages of the following factors: the HDI to political rights, the HDI to the CPI, and trust to the CPI. Core countries such as the United States, the United Kingdom, Australia, Japan and Germany had a series of CCC in the structural linkage of the HDI to political rights in each decade during the 1970s–2000s. In the structural linkage of the HDI to the CPI, “both positive” CCC occurred in most core regions during the 1990s–2000s, including the United States, the United Kingdom, Norway, France, Germany, and Australia. However, the core countries exhibited various patterns in some structural linkages of the HDI to trust, the HDI to ecological capital, and trust to ecological capital. Core regions such as Canada, Australia and New Zealand experienced “both positive” CCC during the 1970s–2000s, yet others such as the United States, the United Kingdom, Germany and France had a series of contradictions.

Semi-peripheral countries experienced varied patterns of “both positive” CCC and contradictions. For instance, in the structural linkage of the HDI to ecological

capital, some semi-peripheral countries such as Argentina, Chile and Brazil, experienced CCC during the 1980s–2000s, whereas Jordan, Morocco, Indonesia, Cuba and Honduras had some contradictions in the same period. A similar situation also occurred in the structural linkage of the HDI to political rights in that Brazil and Morocco underwent CCC during the 1970s–2000s, while Argentina, Cuba, Indonesia and Botswana displayed a series of contradictions.

Shifting to the peripheral countries, a clear distribution pattern was experienced by most SSA countries—some countries in MENA and some Asian countries. SSA countries had “both negative” CCC and contradiction in the structural linkages of several factors. For instance, a series of “both negative” CCC occurred in the structural linkages of HDI to political rights for SSA countries such as Mauritania, Nigeria, Angola, and Congo. In Asia, Nepal continually experienced “both negative” CCC in the structural linkages of the HDI to ecological capital during the 1970s–2000s. In MENA, the structural linkage of the HDI to the CPI generated “both negative” CCC in Yemen. Moreover, in the structural linkages of the HDI to ecological capital and the HDI to the CPI, most SSA countries experienced some contradictions during the 1970s–2000s, including the Congo, Angola, and Nigeria.

The stylized facts above suggest that the national patterns of structural linkages of social factors to environmental and political factors were heterogeneous. In terms of long-term institutional transformation, these structural linkages are inconclusive. Under the institution of globalization, contradictions commenced in the early 1970s and 1980s as the percentages of countries undergoing contradictions exceeded those experiencing CCC for most structural linkages of factors.

7.3.1 The Structural Linkages of Social Factors to Environmental and Political Factors: Selected Sub-Nations

Sub-section 7.3.1 examines the sub-national pattern of the structural linkages of social factors to environmental and political factors during the 1950s–2000s. The principle of hegemony is emphasized, as sub-national data are only available during the 1990–2000s, which means trends in the long-term period are not observable. Table 7.9 displays

results for the selected sub-nations. The names of some sub-nations are given in Appendix D.

The first stylized fact from the sub-national analysis is that the pattern of contradiction was somewhat greater than the pattern of CCC during the 1990s–2000s. For example, for the structural linkages of the HDI to ecological capital in China and Indonesia, the percentage of sub-nations undergoing contradictions exceeded that of those experiencing CCC. Contradictions were also predominant in Chinese sub-nations for the 2000s in the structural linkage of trust to ecological capital. Sub-nations in the United States generated contradictions in the structural linkage of the HDI to trust during the 2000s. However, the structural linkage of HDI to trust and HDI to political rights in Chinese sub-nations had more CCC than contradictions.

Secondly, the sub-national patterns of CCC generated “both positive” and “both negative” in the structural linkages of factors during the 1990s–2000s. For example, the pattern of CCC in the Chinese and United States’ sub-nations had “both positive” and “both negative” in the structural linkages of the HDI to trust in the 1990s and 2000s.

Table 7.9 Structural Linkages of Social Factor to Environmental and Political Factors, 1990s–2000s, CCC and Contradiction: Selected Sub-Nations

	Country [number of sub-nations]	CCC- Contradiction	1950s	1960s	1970s	1980s	1990s	2000s
Social Factor (the HDI)- Social Factor (Trust) (position and sign in brackets)	China [27 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	74.07 [[++], (--)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	25.93
	United States [50 states]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	47.73 [[++], (--)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	52.27
	Indonesia [26 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Social Factor (the HDI)- Environmental Factor (Ecological Capital -Biocap minus the Ecological Footprint) (position and sign in brackets)	China [27 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	37.04 [[++], (--)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	62.96
	Indonesia [26 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	30.77 [[++]]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	69.23

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(Cont'd from page 265)

	United States [50 states]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Social Factor (the HDI)-Political Factor (Political Rights) (position and sign in brackets)	n.a.	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Social Factor (the HDI)-Political Factor (the CPI) (position and sign in brackets)	China [27 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	59.26 [(++), (--)]	51.85 [(++), (--)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	40.74	48.15
	Indonesia [26 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	38.46 [(++), (--)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	61.54
	United States [50 states]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Social Factor (Trust)-Environmental Factor (Ecological Capital -Biocap minus the Ecological Footprint) (position and sign in brackets)	China [27 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	29.63 [(++)]	
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	70.37
	Indonesia [26 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	United States [50 states]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Social Factor (Trust)-Political Factor (Political Rights) (position and sign in brackets)	n.a.	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Social Factor (Trust)-Political Factor (the CPI) (position and sign in brackets)	China [27 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	40.74 [(++), (--)]	
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	59.26
	Indonesia [26 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	United States [50 states]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Same as Table 7.6. More complete explanations are given in the Calculation Results: Appendices D3-38 – D3-44; Appendix D3-46 – D3-48.

Turning to institutional transformation, some stylized facts at the sub-national level suggest important features, which include contradictions and “both negative” CCC. Under globalization and the neoliberal era, the sub-national structural linkages of social and environmental to political factors predominantly generated contradictions during the 1990s–2000s. “Both negative” CCC suggested that some negative factors in these selected sub-nations tend to promote negative cumulative causation on other factors.

However, core, semi-peripheral and peripheral countries displayed no particular institutional transformation in their sub-nations, as the structural linkages of factors mostly generated heterogeneous patterns of CCC and contradiction.

7.4 The Structural Linkages of Environmental and Political Factors: World, Region, and Nation

This section examines the structural linkages of environmental and political factors at the global, regional and national levels. As with previous sections, pairs of environmental factors (e.g., ecological capital) and political factors (e.g., political rights and the CPI) are assessed according to principles of CCC and contradiction.

Table 7.10 shows global experiences of CCC and contradiction for the structural linkage of environmental and political factors during the 1970s–2000s, as data are not available for earlier decades. The table is organized as per those in previous sections.

In Table 7.10, the first stylized fact is the dominant pattern of contradiction in the structural linkages during the 1970s–2000s. The world had a series of contradictions in the structural linkages of ecological capital to political rights during the 1970s–2000s. A global pattern of contradictions also occurred in the structural linkages of ecological capital to the CPI from the 1990s to the 2000s.

The second stylized fact is that regions experienced mixed patterns of contradiction and CCC in some structural linkages of factors. For example, in the 1990s, for the structural linkage of political rights to the CPI, contradiction was greater than CCC, while in the 2000s, this changed dramatically, with CCC regions being entirely dominant. Further, the regions undergoing CCC were equal to those experiencing contradiction during the 1970s–1980s for the structural linkage of ecological capital–political rights, but CCC then increased to exceed contradiction during the 1990s–2000s.

The third stylized fact relates to the regional patterns of CCC that were “both positive” and “both negative” in the structural linkage of these factors during the 1970s–2000s. For instance, “both positive” CCC and “both negative” CCC occurred in the structural linkage of ecological capital to political rights during the 1970s–2000s. North America and Oceania frequently underwent “both positive” CCC, whereas “both negative” CCC mostly occurred in MENA.

Table 7.10 Structural Linkages of Environmental and Political Factors, 1950s–2000s, CCC and Contradiction: World and Regions

	CCC-Contradiction	1950s	1960s	1970s	1980s	1990s	2000s
Environmental Factor (Ecological Capital-Biocap minus the Ecological Footprint)-Political Factor (Political Rights) (position and sign in brackets)	CCC (%)	n.a.	n.a.	50.00 [NA,OC,AS(++),EE(--)]	50.00 [NA,OC,AS(++),MENA(--)]	62.50 [NA,OC,LACA,EE(++),MENA(--)]	62.50 [LACA,NA,OC,EE(++),MENA(--)]
	Contradiction (%)	n.a.	n.a.	50.00 [SSA,LACA,WE,MENA]	50.00 [LACA,SSA,WE,EE]	37.50 [AS,WE,SSA]	37.50 [AS,WE,SSA]
	World	n.a.	n.a.	W (C)	W (C)	W (C)	W (C)
Environmental Factor (Ecological Capital-Biocap minus the Ecological Footprint)-Political Factor (Corruption-CPI) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	n.a.	50.00 [NA,OC,AS,EE(++)]	25.00 [NA,OC(++)]
	Contradiction (%)	n.a.	n.a.	n.a.	n.a.	50.00 [WE,LACA,SSA,MENA]	75.00 [AS,WE,EE,LACA,MENA,SSA]
	World	n.a.	n.a.	n.a.	n.a.	W (C)	W (C)
Political Factor (Political Rights)-Political Factor (the CPI) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	n.a.	37.50 [NA,OC,WE(++)]	100.00 [NA,OC,WE,EE,AS,LACA(++),SSA,MENA(--)]
	Contradiction (%)	n.a.	n.a.	n.a.	n.a.	62.50 [LACA,MENA,AS,EE,SSA]	0.00 [no region]
	World	n.a.	n.a.	n.a.	n.a.	W (C)	W (CCC)

Source: Same as Table 7.4. More complete explanations are given in the Calculation Results: Appendices D3-18 – D3-19.

In the fourth stylized fact, the distribution patterns of core, semi-peripheral, and peripheral regions in the structural linkages among factors yielded no definite conclusion during the 1970s–2000s. In the core regions, North America and Oceania exhibited a series of “both positive” CCC in the structural linkage of ecological capital to political rights from the 1970s to the 2000s, whereas Western Europe experienced contradictions. In the structural linkage of ecological capital to the CPI, a series of contradictions occurred in Western Europe during the 1990s–2000s while a series of “both positive” CCC occurred in North America and Oceania.

For semi-peripheral regions, in the structural linkage of ecological capital to political rights, Asia underwent contradictions during the 1990s–2000s after it had a series of “both positive” CCC from the 1970s to the 1980s. In LACA, some contradictions occurred during the 1970s–1980s and were followed by a series of “both positive” CCC. MENA experienced a fluctuation pattern during the 1970s–2000s as it had two decades of contradiction in the 1970s and 1990s, as well as two decades of “both negative” CCC in the 1980s and 2000s. Eastern Europe experienced “both negative” CCC in the 1970s; this was followed by a contradiction in the 1980s and then “both positive” CCC during the 1990s–2000s.

Among peripheral regions, SSA had more identifiable patterns than core and semi-peripheral regions during the 1970s–2000s. This region underwent contradictions in the structural linkage of ecological capital to political rights from the 1970s to the 2000s. In the structural linkage of ecological capital to the CPI, a series of contradictions occurred in SSA during the 1990s–2000s. The structural linkage of political rights to the CPI generated “both negative” CCC during the 1990s–2000s.

In terms of long-term institutional transformation, these stylized facts above illustrate that the structural linkages of environmental and political factors experienced contradictions and heterogeneity from the 1970s to the 2000s. Globalization and neoliberalism apparently generated variety and complexity in the structural linkage of environmental and political factors, which created uncertainties and complexity at the global and regional level.

Table 7.11 shows national patterns of the structural linkage of environmental and political factors during the 1950s–2000s and suggests three stylized facts. The first stylized fact is that in the structural linkages of these factors more countries experienced contradictions than CCC during the 1970s–2000s. The percentage of countries experiencing contradictions exceeded those experiencing CCC for the structural linkages of ecological capital to political rights and ecological capital to the CPI during the 1970s–2000s. However, the structural linkages of political rights to the CPI generated a greater percentage of countries undergoing CCC than contradiction during the 1990s–2000s.

In the second stylized fact, the percentages of countries exhibiting contradictions in the structural linkages of ecological capital to political rights, ecological capital to the CPI and political rights to the CPI increased from the 1990s to the 2000s. Shifting to the third stylized fact, “both positive” and “both negative” in the pattern of CCC occurred in all of these structural linkages of environmental and political factors during the 1970s–2000s.

Table 7.11 Structural Linkages of Environmental and Political Factors, 1950s–2000s, CCC and Contradiction: Countries

	CCC-Contradiction	1950s	1960s	1970s	1980s	1990s	2000s
Environmental Factor (Ecological Capital-Biocap minus the Ecological Footprint)-Political Factor (Political Rights) (position and sign in brackets)	CCC (%)	n.a.	n.a.	30.95 [[++], (--)]	38.10 [[++], (--)]	33.33 [[++], (--)]	28.89 [[++]]
	Contradiction (%)	n.a.	n.a.	69.05	61.90	66.67	71.11
Environmental Factor (Ecological Capital-Biocap minus the Ecological Footprint)-Political Factor (the CPI) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	n.a.	45.16 [[++], (--)]	28.89 [[++]]
	Contradiction (%)	n.a.	n.a.	n.a.	n.a.	54.84	71.11
Political Factor (Political Rights)-Political Factor (the CPI) (position and sign in brackets)	CCC (%)	n.a.	n.a.	n.a.	n.a.	70.97 [[++], (--)]	64.44 [[++],(--)]
	Contradiction (%)	n.a.	n.a.	n.a.	n.a.	29.03	35.56

Source: Same as Table 7.4. More complete explanations are given in Calculation Results: Appendices D3-25 – D3-26.

With regards to the relationship of C-SP-P, the core and peripheral countries experienced more recognizable patterns than semi-peripheral countries. The core countries primarily experienced the pattern of CCC in the structural linkage of political rights to the CPI including the United States, the United Kingdom, France, Germany, and Japan during the 1990s–2000s. However, the core countries displayed no identifiable pattern in the structural linkages of ecological capital to political rights and

ecological capital to the CPI. For example, during the 1970s–2000s, Australia and New Zealand underwent ‘both positive’ CCC in the structural linkage of ecological capital to political rights, whereas some other core countries such as the United States, the United Kingdom, France, and Germany experienced contradictions.

In the semi-periphery, there was a mix of contradiction and CCC in the structural linkages between environmental and political factors. Countries such as India, Jordan and Argentina had a series of contradictions in the structural linkage of political rights to the CPI, while Chile, South Africa, and Botswana experienced CCC. In the structural linkage of ecological capital to political rights, India, Botswana, and Chile experienced CCC during the 1980s–2000s, whereas Indonesia, Mexico, Honduras, and Morocco had a series of contradictions in the same period.

For most peripheral countries, contradiction and “both negative” CCC occurred for many countries in all of the structural linkages. Countries such as the Congo, Angola, and Mauritania underwent a series of contradictions during the 1970s–2000s for the structural linkage of ecological capital to political rights. “Both negative” CCC occurred in Nepal for the 1970s. In the structural linkage of ecological capital to the CPI, a group of SSA countries (e.g., Angola, the Congo, Mauritania, Gabon, and Nigeria) exhibited contradiction.

Stylized facts associated with the structural linkages of environmental and political factors posit that heterogeneity occurred at the national level during the 1970s–2000s. Under globalization, the occurrence of contradictions, “both negative” of CCC and “both positive” of CCC, suggest that complexities in C-SP-P were evident. Moreover, the relationship among C-SP-P countries tended to be heterogeneous, indicating that institutional transformation influenced different countries in different ways.

7.4.1 The Structural Linkages of Environmental and Political Factors: Selected Sub-Nations

This sub-section reviews sub-national patterns in the structural linkages of environmental to political factors. Sub-national data was available only in the 2000s. The pattern of contradiction and CCC is shown in Table 7.12, which is presented as in

the previous tables. No clear pattern of contradiction and CCC emerges from these limited data.

Table 7.12 Structural Linkages of Environmental and Political Factors, the 2000s, CCC and Contradiction: Selected Sub-Nations

	Country [number of sub-nations]	CCC- Contradiction	1950s	1960s	1970s	1980s	1990s	2000s
Environmental Factor (Ecological Capital -Biocap minus the Ecological Footprint)- Political Factor (the CPI) (position and sign in brackets)	China [27 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	51.85 [(++),(--)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	48.15
	Indonesia [26 provinces]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	42.31 [(++),(--)]
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	57.69
	United States [50 states]	CCC (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
		Contradiction (%)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Same as Table 7.6. More complete explanations are given in Calculation results: Appendices D3-36, D3-37, D3-45, and D3-49.

7.5 Integrative Analysis and Sub-Hypotheses of CCC and Contradiction

This section explains the connection between some sub-hypotheses and the results of the CCC and contradiction analyses. Some of the CCC and contradiction sub-hypotheses incorporate the structural linkages between economic factor (GDP growth per capita) and non-economic factors (the HDI, trust level, ecological capital, political rights, and the CPI).

Table 7.13 shows how these sub-hypotheses are tested by the results of structural linkages among multiple factors from the 1950s–2000s. In that table, a set of the CCC and contradiction sub-hypotheses is displayed in the left column (SH 3a–SH 4e). The results shown in this table are generated by the results of the structural linkages among multiple factors (see Table 7.4, 7.5, and 7.6) and the sub-hypotheses 3a–4e (see Chapter 3). For instance, sub-hypothesis 3a is accepted (Ac) in the global level (G) in the 1970s as the results of the structural linkage between GDP growth per capita and the HDI generated CCC. On the other hand, during the 1980s, contradiction in the structural linkage between GDP growth per capita and ecological capital at the regional level (R) led to a rejection (Rj) of sub-hypothesis 3c. The rest of the results are identified in a similar manner.

Table 7.13 Integrative Analysis and Sub-hypotheses of CCC and Contradiction

	1950s	1960s	1970s	1980s	1990s	2000s
SH 3a	n.a.	n.a.	Ac(G)	Rj(G)	Rj(G)	Rj(G)
	n.a.	n.a.	Ac(R)	Rj(R)	Rj(R)	Rj(R)
	n.a.	n.a.	Rj(N)	Rj(N)	Rj(N)	Rj(N)
SH 3b	n.a.	n.a.	n.a.	Rj(G)	Rj(G)	Rj(G)
	n.a.	n.a.	n.a.	Rj(R)	Rj(R)	Rj(R)
	n.a.	n.a.	n.a.	Rj(N)	Rj(N)	Rj(N)
SH 3c	n.a.	Rj(G)	Ac(G)	Rj(G)	Rj(G)	Rj(G)
	n.a.	Ac(R)	Rj(R)	Rj(R)	Rj(R)	Rj(R)
	n.a.	Rj(N)	Rj(N)	Rj(N)	Rj(N)	Rj(N)
SH 3d	n.a.	n.a.	Ac(G)	Rj(G)	Rj(G)	Rj(G)
	n.a.	n.a.	Rj(R)	Rj(R)	Rj(R)	Rj(R)
	n.a.	n.a.	Rj(N)	Rj(N)	Rj(N)	Rj(N)
SH 3e	n.a.	n.a.	n.a.	n.a.	Rj(G)	Rj(G)
	n.a.	n.a.	n.a.	n.a.	Rj(R)	Rj(R)
	n.a.	n.a.	n.a.	n.a.	Rj(N)	Rj(N)
SH 4a	n.a.	n.a.	Rj(G)	Ac(G)	Ac(G)	Ac(G)
	n.a.	n.a.	Rj(R)	Ac(R)	Ac(R)	Ac(R)
	n.a.	n.a.	Ac(N)	Ac(N)	Ac(N)	Ac(N)
SH 4b	n.a.	n.a.	n.a.	Ac(G)	Ac(G)	Ac(G)
	n.a.	n.a.	n.a.	Ac(R)	Ac(R)	Ac(R)
	n.a.	n.a.	n.a.	Ac(N)	Ac(N)	Ac(N)
SH 4c	n.a.	Ac(G)	Rj(G)	Ac(G)	Ac(G)	Ac(G)
	n.a.	Rj(R)	Ac(R)	Ac(R)	Ac(R)	Ac(R)
	n.a.	Ac(N)	Ac(N)	Ac(N)	Ac(N)	Ac(N)
SH 4d	n.a.	n.a.	Rj(G)	Ac(G)	Ac(G)	Ac(G)
	n.a.	n.a.	Ac(R)	Ac(R)	Ac(R)	Ac(R)
	n.a.	n.a.	Ac(N)	Ac(N)	Ac(N)	Ac(N)
SH 4e	n.a.	n.a.	n.a.	n.a.	Ac(G)	Ac(G)
	n.a.	n.a.	n.a.	n.a.	Ac(R)	Ac(R)
	n.a.	n.a.	n.a.	n.a.	Ac(N)	Ac(N)

Note: SH: Sub-hypothesis; Ac: Accept; Rj: Reject; G: Global; R: Regional; N: National

7.6 Concluding Remarks

The present chapter adopts an integrative model to analyze the structural linkages of economic, social, environmental, and political factors at the global, regional, national, and sub-national levels during the 1950s–2000s. As a complement of the SFR model, this integrative model analyzes the global situation in reference to the structural linkages of multiple factors with regard to the principles of CCC and contradiction through decadal periods. This model shows the distribution of the percentages of CCC and contradiction across regions, nations, and sub-nations. However, data at the sub-national level are available only from the 1990s to the 2000s.

The results generally support several conclusions. First, the structural linkages among multiple factors generated both contradiction and CCC across different levels

during the 1950s–2000s. Second, the pattern of CCC reveals a “both positive” and “both negative” direction at different levels. These findings generally support Hypothesis 3 and Hypothesis 4. More specifically, the explanation for sub-hypotheses 3 and 4 provides further evidence to support the fact that most of the ideas presented in sub-hypotheses 4a–4e are valid. These results generally suggest that contradiction dominates the structural linkages among multiple factors.

The third conclusion is that the world experienced contradictions in the structural linkages among multiple factors, which, in turn, corresponded to some contradictions at the regional, national, and sub-national levels from the 1980s to the 2000s. The third conclusion generally supports O’Hara (2006b, 2007b, 2010), Lippit (2006), and Kotz (2008). The percentages of contradiction at the regional, national and sub-national levels during the 1980s–2000s were higher than those during the 1950s–1970s.

This third conclusion leads to the fourth conclusion, namely that the world, regions, nations, and sub-nations experienced more heterogeneous patterns during the 1980s–2000s than during the 1950s–1970s when geographical levels were considered as core, semi-peripheral, and peripheral areas. In the core and semi-periphery, regions, nations, and sub-nations had no specific patterns of CCC and contradiction, whereas in the periphery, most regions and nations experienced contradictions and “both negative” CCC. The fourth conclusion is generally linked to Hypothesis 2.

Lastly, the fifth conclusion is that the sub-national performance of CCC and contradiction among sub-nations tended to be heterogeneous during the 1990s–2000s. This fifth conclusion generally supports Hypothesis 5.

Overall, the institutions of globalization and neoliberalism contributed to a long-wave downswing that was characterized by heterogeneity at different levels during the 1980s–2000s. Within this context, the structural linkages of multiple factors often generated contradiction rather than CCC. In the C-SP-P relationship, “both negative” CCC occurred in the peripheral regions and nations. The sub-nations displayed various patterns, supporting the complexities of institutional transformation during the period of the study.

In summary, the present chapter illustrates the pattern of structural linkages among multiple factors in order to scrutinize the effects of globalization and

neoliberalism. The institutions of globalization and neoliberalism are associated with integrated business networks, transnational production and distribution, and accelerating profit. Moreover, international education, modern innovation, faster communication, and associated increases in freedom of expression are part of the neoliberal institution. However, the structural linkages among multiple factors showed the contradictory effects of these institutions at different levels. Globalization has generated uneven development, including declining stock in ecological capital, lower levels of trust, and greater opportunities for corruption.

Chapter 8 Conclusions

8.1 Introduction

This thesis investigates the uneven development at the global, regional, national, and sub-national levels that occurred during 1950–2010. As the perspective of political economy suggests, this involves consideration of economic, social, environmental, and political factors. The principles of political economy and multiple performance indices inform the assessment. These principles include the following: the long wave, hegemony, CCC, contradiction, and uneven development.

The literature review identifies seven major issues associated with uneven development, namely that such an analysis should be holistic and historical in nature. Furthermore, the analysis is heterogeneous, complex, requires multiple proxies, produces incommensurable values, and is fraught with uncertainty.

The stylized-fact–roulette-model of political economy (SFR) is used to scrutinize the long-term transformation of the performance of multiple factors at different levels of aggregation as global institutional change that occurred during 1950–2010. For each decade in the period, the integrative model identifies structural linkages of economic, social, environmental, and political factors with regard to principles of CCC and contradiction.

The rest of the chapter is organized as follows. Section 8.2 explains some key results of the study, Section 8.3 considers the implications of the study and its links to other theories and policies, and Section 8.4 outlines the potential shortcomings of the study and the scope for further research.

8.2 Key Results

The Stylized Fact-Roulette (SFR) model's investigation of the long wave of economic growth at the global, regional, national, and sub-national levels during 1950–2010 substantially supports the findings of prior studies. The world, regions, nations, and sub-nations experienced a long-wave upswing during 1950–1973, followed by a long-wave downswing during 1974–2010, as the percentage of upswing and borderline countries in the 1950s–1970s was larger than the percentage of downswing countries from the 1980s

to the 2000s. Negative changes in most factors occurred in the world, in most regions, and in countries with the shift from a long-wave upswing to a long-wave downswing.

When applied to economic factors and viewed through the perspective of hegemony that divides the world into core, semi-periphery, and periphery (C-SP-P), the results of the SFR model suggest that during 1950–2010 some significant structural linkages existed among three classes of areas. The 1970s was the decade in which most countries experienced a temporary change either from upswing to downswing or, less often, from downswing to upswing, as global institutional change led to changes in the structural linkages of C-SP-P.

Circular and cumulative causation (CCC) occurs in the SFR models when the variables within each of the two sets of data move up and down in conjunction with one another. For example, this applies to the relationships among technical economic factors such as GDP growth per capita, investment growth, productivity growth, and net export growth in Asia in over the long term. Furthermore, interrelationships of economic factors tend to demonstrate a contradictory pattern, when as one factor moves up, the others move down. Contradictions in these economic factors typically occur in economic performance for Western (core) regions. These contradictions were linked with the long-wave downswing of the 1980s–2000s.

The SFR analysis also reveals complex and heterogeneous patterns for sub-national economic factors in the period ranging during 1950–2010. The percentage of sub-nations experiencing upswings exceeded the percentage of sub-nations experiencing downswings during the 1950s–1990s. However, for the 2000s, the percentage of sub-nations undergoing upswings was lower than that of the percentage of sub-nations undergoing downswings.

From the perspective of hegemony, the SFR model for social, environmental, and political factors shows that regional and national levels had different patterns for the structural linkage of C-SP-P during the 1950s–2000s. The core regions (e.g., North America, Western Europe, and part of Oceania) and advanced countries were dominant in several factors, such as the HDI, political rights, civil liberties, and the CPI. Correspondingly, the peripheral regions (e.g., SSA) typically ranked lowest in most

factors. In the semi-peripheral regions (e.g., Asia, LACA, MENA, and Eastern Europe), the factors had mixed outcomes.

The process of the hegemony for social, environmental and political factors influences the structural linkage of C-SP-P of ecological capital among the core regions (e.g., Western Europe and North America) as well as the semi-peripheral and peripheral regions (e.g., LACA and SSA). Here, the core regions held sway over the environmental resources of the peripheral regions through the long wave.

Furthermore, the sub-national pattern of these factors often differed from the global, regional, and national patterns of the 1950s–2000s. The interrelationships of the sub-national and national levels displayed complexity. In particular the distribution of factors across sub-nations in most countries was erratically heterogeneous.

Turning to the structural linkages of economic, social, environmental, and political factors, the integrative model of structural linkage is applied. The integrative model reveals that the structural linkages of multiple factors typically generated contradiction and CCC at different levels during the 1950s–2000s (see Chapter 7).

In the sense of C-SP-P relationships, the integrated structural linkage model proposes that the world, the regions, the nations, and the sub-nations had more heterogeneous patterns during the 1980s–2000s than they did during the 1950s–1970s. The core and semi-peripheral regions, nations, and sub-nations experienced either patterns of “both positive” CCC or contradiction, whereas most regions and nations in the periphery experienced contradictions and “both negative” CCC during the 1970s–2000s. The integrated structural linkage model also reveals that the distribution of sub-nations experiencing both CCC and contradiction was heterogeneous during the 1990s–2000s.

8.3 The Implications for Theory and Policy

The results of the SFR model specifically support several pieces of existing literature of the long wave and transformational growth, namely Gordon, Bowles, and Weisskopf (1983), Nell (1998a,1998b), Kotz (2008), and O’Hara (2006a, 2008a, 2012a). These results support the notion of historical specificity, as the global institutions led to the transformation of socioeconomic performance. Historically, global institutional changes

occurred from the period of 1950–1973 under the institution of Fordism to the period of 1974–2010 under the institutions of globalization and neoliberalism. Moreover, the transformation of economic growth in the form of the long-wave upswing of the 1950s–1960s, the borderline of the 1970s, and the long-wave downswing of the 1980s–2000s are associated with these institutional changes. Globalization and neoliberal institutions clearly have not promoted a sustained upswing.

As this principle suggests, and as the results of this study shows, the structural changes of economic factors were accompanied by either positive or negative change, as the global institution was transformed from the period of 1950–1973 to the period of 1974–2010. Globalization and the neoliberal institutions that have arisen since the 1970s–1980s have contributed to the change and complexity in social, environmental, and political factors. Global patterns of social, environmental and political factors experienced a heterogeneous pattern of change during the 1950s–2000s.

In terms of uneven development and hegemony, the results of the SFR model generally support the studies of Baran (1957), Baran and Hobsbawm (1961), Amin (1972), Frank (1992), and Wallerstein (1974, 2010a) that connect dependency theories to the analysis of C-SP-P. The institution of Fordism underwent deterioration in the first half of the 1970s during the collapse of the Bretton Woods regime. This situation saw the emergence of capital mobility, with increased capital inflows and outflows among the C-SP-P. For instance, most LACA and SSA countries (semi-periphery and periphery) experienced an upswing due to capital inflows from Western regions (core) during the 1970s. However, this dependency on capital inflows did not support sustained growth upswings, as most countries in LACA and SSA underwent major downswings in the 1980s. These results suggest that global institutional changes influenced the structural linkages of C-SP-P regions and nations, which generated contradictions in LACA and SSA, and in the world.

The core regions dominated the peripheral regions through social, environmental, and political factors, particularly environmental factors. The structural linkages of C-SP-P suggest that core regions (North America and Western Europe) held sway over semi-peripheral and peripheral regions (LACA and SSA) for the entire period of the 1950s–

2000s (see Figure 6.10 in Chapter 6 for details), extending from the Fordist era to the era of globalization and neoliberalism.

The results of the SFR model for economic factors that are linked to circular and cumulative causation (CCC) generally support a body of prior research that discusses the theory of dynamic CCC, including the theory of the structural linkage of demand to investment as well as theories of the business cycle and institutional innovation (Keynes 1936; Schumpeter 1939; Kaldor 1961; Nell 1998b; O'Hara 2006a; Berger 2008c, 2009b). These results support historical specificity, complexity, and multiple proxy issues, seen clearly in Asia, which underwent CCC during the period of the 1950s–1970s under Fordism and during the period of the 1980s–2000s under the institutions of globalization and neoliberalism. The consistent long-wave upswing in Asia, led by the mechanism of CCC, diverged from the upswing and downswing elsewhere and was reflected in a variety of factors, including demand, investment, productivity and export.

The results generally support the existing literature on contradictions, particularly the theory of the nature of contradiction and the disembedded economy (Zedong 1937; Polanyi 1944; Berger 2008a; O'Hara 2009). In supporting historical specificity, complexity, and multiple proxy issues, the results show contradictions within core regions (e.g., North America, Western Europe, and part of Oceania). Contradictions in the structural linkages of economic factors promoted long-wave downswings in these regions during the 1980s–2000s.

The analysis of the SFR model interestingly includes patterns of the performance of multiple factors at the sub-national level. These results generally support prior studies by Putnam (2001), Royuela, Romani, and Artis (2009) and Pan and He (2010) on uneven development in sub-nations. The implications of these results demonstrate the complexity and heterogeneity issues inherent in uneven development. The sub-national patterns of multiple factors differed from the global and national patterns of the 1950s–2000s. A clear relationship among factors across national and sub-national levels only occasionally occurred. The results at the sub-national level suggest that sub-national patterns of performance were heterogeneous and complex from the Fordist era to the era of globalization and neoliberalism.

The SFR model uses the integrated structural linkages model. These results generally support all of the issues related to uneven development that have been raised: holistic, historical specificity, heterogeneity, complexity, incommensurable value, multiple proxies, and uncertainty. The results suggest that the institution of globalization and neoliberalism contributed to contradictions in the structural linkages of multiple factors. These results also imply that peripheral regions primarily underwent contradictions and “both negative” CCCs under the institution of globalization and neoliberalism, whereas the core and semi-peripheral regions experienced either “both positive” CCC or contradictions. At the sub-national level, global institutional changes led to heterogeneous patterns and complex structural linkages.

In summary, these results suggest that changes in social, environmental and political factors accompanied the emergence of economic institutions of globalization and neoliberalism. The trends of the HDI levels and their marginal rates increased coincidentally with a greater globalization of economic affairs. Integrated business could more easily trade goods and services. The international networks were enhanced by easy in communication and the ability to transmit information quickly over the internet lines. These global activities stimulated a general rise in levels of education. Moreover, the standard of health increased following the transnational diffusions of improved medicine.

Nevertheless, as is reflected in the pattern of HDI levels, a greater degree of well-being is seen in the core regions than in semi-peripheral and peripheral regions. This pattern is consistent with the institution of globalization. Core regions use institutions to support their role as the center of global human development. As education increases internationally, people of semi-peripheral and peripheral regions travel to core regions to obtain better knowledge. Core regions also maintain dominance in the transnational production of medication and health equipment. This situation leads to semi-peripheral and peripheral regions being dependent upon the standard of global human development that is held by core regions.

The results show that the level of trust differs across nations. This result generally supports the findings of van Schaik (2002), Rothstein and Uslaner (2005), and Rothstein (2010). The heterogeneous level of trust is determined by differences in

economic equality and equality of access within a society. Economic equality focuses on how resources are distributed within a society, while equality of access emphasizes the opportunity for people to use the benefits of economic progress in preparing for their future lives. When a country can guarantee economic equality and access, people's trust in one another appears to increase. As Rothstein and Uslaner (2005) claim, people who have a greater opportunity to improve their future lives also demonstrate an increase in the level of trust in society.

The ability of a country to develop economic equality is influenced by global institutions. During the 1980s–2000s, individualism in society seems to have increased as the institution of globalization and neoliberalism emphasized the power of capital more than the power of labor. People then sought economic benefits for individual wellbeing and ignored social relationships. When individualism is emphasized in a society, economic resources are stratified. You (2005) shows that countries with higher levels of economic inequality have lower levels of trust. The world as a whole, and most regions within it, experienced an extended decline in equality and the equality of future opportunities from the 1980s to the 2000s. The global level of trust generally decreased during this period.

The result of the ecological capital analysis generally supports the findings of Bunker (1985, 2003), Rice (2007), Hornborg (2009), and McMichael (2009). The structural linkage of C-SP-P regarding the distribution and consumption of energy and materials in the global economy provides less consideration of the environmental system. According to Rice (2007), semi-peripheral and peripheral regions are involved in an unequal ecological exchange, with environmental cost-shifting and areas of uncompensated environmental use. Lower levels of environmental protection increase environmental degradation and the extraction of natural resources goes from semi-peripheral and peripheral regions to core regions. These regions also lack environmental support, such as for renewable resources and environmental protection.

The effects of the unequal ecological exchange on semi-peripheral and peripheral areas are determined by global institutions. Core regions use these institutions to hold sway over semi-peripheral and peripheral region resources and biocapacity in order to support their own material consumption needs. The results of this study, like that of

Jorgenson and Rice (2005) and Jorgenson (2009), illustrate that semi-peripheral and peripheral regions have a lower average ecological footprint, yet their biocapacity has also become interrupted. For example, LACA shifted from a high biocapacity to a comparatively low biocapacity as core regions extracted its resources through industrialization and financial investment. Another such example is from the Republic of Korea. Rapid industrialization during the 1960s–1990s led to a shift in the Republic of Korea from having a low ecological footprint to a comparatively high ecological footprint (Wackernagel *et al.* 2004).

The results also illustrate that corruption was one of the negative effects of globalization and neoliberalism. The institutions of globalization and neoliberalism were associated with freedom of expression and the dominance of capital, and most core regions differed from semi-peripheral and peripheral regions in their responses to these conditions. Greater emphasis on the interests of individuals and more opportunities to acquire capital led people to seek economic benefits through illegal means, causing corruption. In this case, core regions tended to constrain individual interests more than other regions. Core regions had lower levels of corruption (higher CPI) than semi-peripheral and peripheral regions. Increasing levels of corruption in semi-peripheral and peripheral regions suggests that these regions lacked the capabilities to respond effectively to the effects of globalization, due to lower levels of regulation, poorer education, and lower standards of living.

The pattern of regional and national corruption supports the work of Orkeney and Szekelyi (2000), Uslaner and Badescu (2004), and Rothstein and Uslaner (2005), who analyze differences between core and semi-peripheral and peripheral countries in controlling corruption. Rothstein and Uslaner (2005) claim that Western people consider “hard work,” rather than corruption, as the pathway to success and wealth. By way of contrast, people in semi-peripheral and peripheral regions utilize connections and dishonesty as the pathway to wealth.

The illegal pathways to wealth are promoted by a decreased level of trust. When people have high individual interests and a lack of trust in one another, they use illegal means to achieve their goals, leading to corruption. For instance, Eastern Europe experienced a transition era during the 1990s–2000s as globalization led to political

liberalization and a free-market economy succeeding the Soviet-style regime. This, in turn, led to greater individual interests, which then promoted the use of illegal means to gain wealth.

8.4 The Limitations and Scope for Further Study

In terms of historical range, the SFR model in this study compiles and combines several different data sources to construct time-series data during the 1950s–2000s. To do so, it makes use of frequent statistical adjustment. It could be beneficial to apply the model using the complete data sources from one main source that provides data during 1950–2010. As for a holistic perspective, the present study uses overlapping time-series data for the economic factors and to evaluate the structural linkages between economic factors and non-economic factors (e.g., social, environmental, and political factors). For instance, GDP growth per capita is available during 1950–2010, whereas the compilation of time-series data for HDI and political rights does not begin until 1970. Moreover, for areas (levels) in which the present study compares the performance of multiple factors, the time-series data overlap. For instance, the availability of global GDP growth per capita data is during 1950–2010, whereas the sub-national GDP growth per capita used for Indonesia is during 1970–2010. Synchronizing the time-series of multi-level data sets is another avenue for future work.

With regard to other issues, because uneven development is heterogeneous, it is complex and requires multiple proxies and produces incommensurable values, resulting in several opportunities for future studies. To address heterogeneous and complex issues, this study employs 11 performance indices (see Chapter 4). The investigation of uneven development could use other multiple indices to assess economic, social, environmental, and political factors, such as profit rates and the political instability index. The complex issues also link to sub-national data that are only used for sub-nations in selected countries (e.g., China, Indonesia, India, Mexico, the United States, Canada, Italy, and South Africa). Other suitable countries could be used that are important for representing C-SP-P if data were obtained.

With regard to the issue of incommensurable value and multiple proxies, this study utilizes several indices as proxies for the patterns of multiple factors. Other indices

could be employed in future research. For instance, the present study uses political rights, civil liberties, and the CPI as proxies for political factors. Political indices, such as the regulatory index, the freedom indicator, and the political instability index, could yield interesting results.

As for uncertainty, the SFR model summarizes the linkages of the principles, theories, and issues related to uneven development, using the approach of political economy. The results of this model provide one way of comprehending the transformation of multiple factors in the world system as the global institution has changed over time. Alternative methods for investigating the multi-impacts of global institutional change can be developed. These methods should manage heterogeneous data sets and focus on the comparison between global and sub-national levels.

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Appendix A

Appendix A-1: Definitions of Statistical Terms

Appendix A-2: Country groupings

(Attached file in CD ROM)

Appendix B

**Appendix B: Technical notes - Constructing and Calculating Technical (Political-Economy) of Four Factors – diagram presentation
(Attached file in CD ROM)**

Appendix C

**Appendix C: SWOT Analysis for Multiple Performance Indices
(Attached file in CD ROM)**

Appendix D

**Appendix D: Calculation Results of Chapter 5, 6 and 7
(Attached file in CD ROM)**