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# Economic and Social Networks;Impacts on Regional Economic Outcomes and Concentrations

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ECONOMIC AND SOCIAL NETWORKS:

IMPACTS ON REGIONAL ECONOMIC OUTCOMES AND CONCENTRATIONS

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ECONOMIC AND SOCIAL NETWORKS:

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**ABSTRACT**

The Republic of Korea's efforts to accelerate the development of its economy in the aftermath of an extremely destructive civil war led to the concentration of capital and activity in areas that resemble the growth poles described by Perroux (1950) and Hirschman (1958). These poles led to an extreme centralization of economic activity and people in the Seoul Metropolitan Area (SMA). More than 48 percent of the GDP, 90 percent of the headquarters of major firms, and 48 percent of the population is concentrated in 11.8 percent of the Republic's land (2006 figures). Despite the agglomeration economies, the national government has investigated policies and practices to spatially reorganize the growth-pole regions' industrial base to bring more balanced growth to other parts of the country. These efforts have been mostly unsuccessful. To better understand factors that could be undermining efforts to decentralize and enhance the distribution of economic activity this study looks at the relationship between social linkages among power elites and the concentration of economic activity. After assessing the existence of growth poles and their dominance, this study also analyzes the consequences of the concentration of capital into two regions. The third and main part of the study uses social network analysis (SNA) to identify the existence of a powerful social system that sustains these growth-pole regions and impede meaningful change. The data analysis strongly suggests that

changes in the 'creative destruction' of social patterns at a minimum must occur at the same time that efforts are made to alter path-dependent economic patterns.    The final section of the dissertation presents some recommendations to achieve the needed reforms in social networks that must precede any change in the concentration of economic activity.

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# CHAPTER I

## INTRODUCTION

### Overview

The Republic of Korea (South Korea) implemented growth-pole strategies in

the early 1970s when it was a less developed country, and developed into an

Organisation for Economic Cooperation and Development (OECD) country by 1996.

There has been a severe cost to this rapid development; interregional disparities

increased and every recent national administration has been unsuccessful in reducing

the imbalance.   This dissertation analyzes the continual concentration of social

networks in the Republic's growth-pole areas.   It is argued that without changes in the

ways in which these social networks are formed economic changes cannot occur.   The

path to developing and presenting this line of reasoning is to document the existence of

economic and social growth poles and the statistical association or linkage between

them.   It will be argued that without a change in social networks economic disparities

cannot be minimized.

Tables 1-I and 1-II outline Korea's economic growth patterns.   As

urbanization and industrialization increased (Table 1-I), many people – elites and others

– migrated into Seoul, the 600-hundred-year capital city of the Korean peninsula.

While Seoul and the Busan-southeast area ('서울' and '남동임해' in Korean) –

designated as 'primate' growth-pole regions[1] by the Park Chung Hee regime –

attracted capital and labor from the rest of the country (Table 1-II) (Suh, 1993), other

regions grew less rapidly and disparities increased (Moon, 2009; Park, 2009b; Y. Choi,

Yang, & O. Choi, 2007; Hong, 2005; Y. Kim, Cha, & Kang, 2003; Douglass, 2000; Suh,

1993; Republic of Korea Government, 1982, 1992).   Reducing these imbalances is

why former and recent governments have been concerned with reducing regional

disparities and changing the patterns of economic concentration.   Economic

development was the foremost policy orientation of the Park's military regime since it

needed the rationale for administration after the coup d'état in 1961 (Lee, 2003).

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[1] In this dissertation 'Busan-southeast' as the second largest growth-pole region means Busan and Gyeongnam as its hinterland area, while 'southeast' means the (wider) southeast province.   The southeast province, which is called 'Youngnam' ('영남') in Korean, consists of Gyeongnam (south Youngnam) as the hinterland of Busan, and Gyeongbuk (north Youngnam) as the hinterland of Daegu (a growth center).   Note that Perroux (1950) referred a (growth) pole or center to a firm or an industry as an organized entity to 'attract or repulse' people and things in a mathematical structure of economic relations.   He called such a vector space of economic relations "economic space."   In contrast, a 'growth-pole region' in this dissertation means "a region that has grown with growth poles."   Boudeville (1966) tried to apply to the concept of growth pole in abstract space into geographical space.   Pointing out the growth pole theory's limitation in explaining urbanization (not localization), Darwent (1969) first demarcated growth pole and "growth center" (an area with growth poles planned or built usually in an urbanized region).   Perroux (1950, p. 103) also extended the meaning of economic space as an abstract space to "the space of political sovereignty" at the end of his article, but the meaning was not clear.   One of this dissertation's theoretical focuses is on defining "political space" based on Perroux (1950) and to examine the association between economic space and political space.

**Table 1-I. The Industrialization and Urbanization of South Korea**

| Year | GNP (billion $) | GNP per capita ($) | Industrial Sector's Production (%) | | | Urbanization Rate (%) |
|---|---|---|---|---|---|---|
| | | | Primary | Secondary | Tertiary | |
| **1962** | 2.3 | 87 | 36.6 | 16.5 | 46.9 | 38.5 |
| **1970** | 8.1 | 252 | 26.7 | 22.5 | 50.8 | 50.3 |
| **1980** | 60.5 | 1,592 | 14.9 | 31.0 | 54.1 | 71.8 |
| **1990** | 242.2 | 5,659 | 9.0 | 29.4 | 61.6 | 82.7 |
| **1995** | 457.9 | 10,076 | 6.5 | 27.1 | 66.4 | 86.4 |
| **2000 (GDP)** | 476.0 | 10,070 | 4.6 | 31.8 | 63.6 | 88.3 |
| **2007 (GDP)** | 969.8 | 21,695 | - | - | - | 90.5 |

Source: Korean Statistical Information Service (KOSIS) and Y. Kim et al. (2003).    GNP = Gross National Product (nominal).    GDP = Gross Domestic Product (nominal).

**Table 1-II. The Concentration of Population and Employment in South Korea**

| | Region | 1960 | 1970 | 1980 | 1990 | 1995 | 2000 |
|---|---|---|---|---|---|---|---|
| Population in thousands (%) | **National Total** | 24,989.3 **(100.0)** | 31,469.0 **(100.0)** | 37,436.3 **(100.0)** | 43,455.8 **(100.0)** | 44,905.7 **(100.0)** | 46,125.4 **(100.0)** |
| | **Seoul Metro** | 5,194.2 **(20.8)** | 8,894.0 **(28.3)** | 13,298.2 **(35.5)** | 18,586.1 **(42.8)** | 20,186.8 **(45.3)** | 21,346.4 **(46.3)** |
| | **Southeast** | 8,030.5 **(32.1)** | 9,560.0 **(30.3)** | 11,436.5 **(30.5)** | 12,560.1 **(28.9)** | 12,785.0 **(28.7)** | 12,861.3 **(27.9)** |
| | **Mid National** | 3,897.9 **(15.6)** | 4,343.0 **(13.8)** | 4,380.3 **(11.7)** | 4,453.2 **(10.3)** | 4,435.7 **(10.0)** | 4,687.3 **(10.1)** |
| | **Southwest** | 5,948.3 **(23.8)** | 6,440.0 **(20.5)** | 6,067.4 **(16.2)** | 5,761.4 **(13.2)** | 55,261.1 **(11.7)** | 5,238.8 **(11.4)** |
| | **Others** | 1,918.4 **(7.7)** | 2,232.0 **(7.1)** | 2,253.9 **(6.0)** | 2,095.0 **(4.8)** | 1,972.1 **(4.4)** | 2,000.2 **(4.3)** |
| Employment in thousands (%) | **National Total** | 566,667 **(100.0)** | 861,041 **(100.0)** | 2,014.761 **(100.0)** | 3,019,834 **(100.0)** | 2,942,685 **(100.0)** | 2,652,590 **(100.0)** |
| | **Seoul Metro** | 231,757 **(40.9)** | 396.014 **(46.0)** | 923,920 **(45.9)** | 1,443.365 **(47.8)** | 1,379,451 **(46.9)** | 1,234,960 **(46.6)** |
| | **Southeast** | 205,621 **(36.3)** | 296,778 **(34.5)** | 813,539 **(40.4)** | 1,142,852 **(37.8)** | 1,051,762 **(35.7)** | 922,551 **(34.8)** |
| | **Mid National** | 46,984 **(8.3)** | 65,494 **(7.6)** | 127,809 **(6.3)** | 204,700 **(6.8)** | 267,079 **(9.1)** | 271,177 **(10.2)** |
| | **Southwest** | 65,289 **(11.5)** | 78,561 **(9.1)** | 122,402 **(6.1)** | 189,188 **(6.3)** | 201,794 **(6.9)** | 187,355 **(7.1)** |
| | **Others** | 17,016 **(3.0)** | 24,194 **(2.8)** | 27,101 **(1.3)** | 39,729 **(1.3)** | 42,599 **(1.4)** | 36,567 **(1.4)** |

Notes: Data describing outcomes in 2010 will not be available for a few years.    The persistent gap in population and employment between the poles and other parts of the country are two-fold: the SMA and others, and southeast and southwest.    Recently the gap between the SMA and others has increased and become a national problem.    Source: Y. Kim et al. (2003, p. 454).

The growth literature, as well as the policy aspirations of various Korean

governments, has each pointed to the desirability of more balanced development to

advance social and economic stability.    Numerous studies have also affirmed that higher levels of political and social stability result from or are positively associated with decreased regional disparities in the United States (Alonso, 1968; Partridge, 2005; Rey, 2005), the European Union (Peruggini & Martino, 2008; Ezcurra, 2007; Paul & Verdier, 1996), and in developing countries such as Brazil and China (Zhao & Zhang, 2005; Chen & Fleisher, 1996), Africa (Nel, 2003; Easterly & Levine, 1997), and others (Mauro, 1995; Persson & Tabellini, 1994).    Although the Korean economy grew extraordinarily fast (e.g., annually about 10 percent: Table 1-I) during the Park Chung Hee coup d'état regime (1962-1979) regional disparities increased    In the two growth-pole regions there is a concentration of both economic activity and elites who lead these businesses and who were born, educated, and socialized in these areas.[2]    These individuals are the same ones that lead the businesses that continue to define the growth poles.    Other members of the elite groups assume leading roles in the government or military (Park, 2009b; Choi et al., 2007; Lee et al., 2006; Hwang, 1996).    For instance, the elites of the ruling Grand National Party, the party mostly leading the southeast province, have not strongly supported policies designed to decentralize economic activity.

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[2]  In Korea's fast-industrialized period (1962-1992), the decision making of regional development policies continued to be made by four presidents and elites, which were mainly from southeast. Many elites, still governing the Grand National Party Park (the party having represented southeast), are also from southeast.    The past military regime of Park Chung Hee (1962-1979), who was born and grown in southeast, designated Seoul and Busan-southeast as 'primate' growth-pole regions. Jun Du-whan (1981-1986), the chief general of the Martial Law Command (after a Korean CIA commander's assassination of Park Chung Hee in October 26, 1979) became a president, after having killed hundreds of people in the Gwangju (southwestern province's capital city) democratic protest in May 18, 1980 (the regime's official estimate announced on May 27, 1980: 'approximately' 200).    Although Jun focused on economic growth, it was inevitable to gain political legitimacy and stability by implementing export-oriented and some decentralization policies together in order to attenuate the trauma of the massacre and "anti-government sentiment" (Douglass, 2000).

After Park Chung Hee's presidency four individuals from the southeast province assumed the presidency in successive terms (Busan-southeast and Daegu, circa 1962-1997: see Table 1-III) and implemented regional development policies designed to reduce disparities (Park, 2009b; Lee et al., 2006; Hwang, 1996). These leaders more or less resisted (but could not appropriately control) the rent-seeking actions of regional elites' in pursuit of profits. Those rents were artificially made through the elite-led government action that would sustain the existing growth poles (especially in terms of 'government as a collective institution and organization designed to undertake action for the wealth of the group': Buchanan & Musgrave, 1999; Tollison, 1982; Buchanan et al., 1980; Tullock, 1967). The SMA-Busan axis ('경부축' in Korean) (see Figure 1-1), delineated by the Seoul-Busan Express Highway as the nation's development corridor (Douglass, 2000), explicitly separated the more-benefited region (SMA-Busan axis) from those less-developed (Park, 2009b; Y. Kim et al., 2003; Douglass, 2000; Suh, 1993). (The political and economic "inner circle" [Useem, 1984] of) regional elites from the SMA-Busan regions were across time generally antipathetic to balanced development issues and disparities (Park, 2009b).[3]

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[3] In particular, the southeast-southwest conflict ('영호남갈등' in Korean) is very problematic (Im, 1989; Choi et al., 2007; Hong, 2005; Kim et al., 2003), and "recently the conflict has also developed and transformed into the SMA-and-non-SMA conflict" (Hong, 2005), as the SMA continues not to trickle down its development outcomes (Park, 2009b; Choi et al., 2007; Kim et al., 2003). Consider the role of regional elites in the fast-grown Korea in laying the highways and subsidizing (the industrial complexes of) big business groups (i.e., chaebols like Samsung, LG, and Hyundai) through the SMA-Busan axis. Without regional elites' roles and interventions in regional development, there would have been different patterns and consequences of disparities between regions (Park, 2009b; Hwang, 1996). Among citizens and scholars there is consensus that the historically-deep-rooted confrontation between two political parties (Grand National Party: GNP, whose political base is 'southeast') and Democratic Party (DP, whose political base is 'southwest') was mainly due to (political) elites' government action (in regional development processes). Differential regional development plans distorted antipathies among regions (Im, 1989; Park, 2009b). In Autumn 2008 politicians of these two parties came to fight with hammers and extinguishers in the National Assembly (L.A. Times, 2009). The present ruling party GNP (and

Their influence in the development and implementation of decentralization policies requires an assessment of the extent to which social networks reinforce the biases against decentralization.

Rho's administration concentrated its domestic policy agenda on reversing or mitigating the negative consequences of the unbalanced growth strategies.[4]   The current administration of President Lee (political base in Seoul and southeast) has also included policies and programs designed to change or mitigate the negative effects of the disparities created by the existence of growth-pole regions.   Neither administration, however, included a focus on the role of social networks in reducing inequities or changing patterns of economic activity.   Elites from those regions are charged with implementation of programs to change the patterns of development.   These individuals might prefer to continue to work within their existing social networks or be less than enthusiastic regarding policies designed to shift economic development away from their home areas where their businesses or politics dominate.   Further, as it will be argued, social networks can sustain economic linkages requiring attention to altering those networks to adjust or change patterns of development.

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Lee administration) has not strongly supported balanced regional development while the opposition party DP (and the former Rho administration) have.   A majority of elites associated with the GNP (data to be provided in Chapters Three and Four) born, educated, and socialized in the Busan-Daegu-Southeast pole.   A majority of elites associated with the DP (data to be provided in Chapters Three and Four) were born, educated, and socialized in the southwestern province (Lee et al., 2006), which was also another largest social pool of labor and capital (Table 2) but were less benefited because it was out of the SMA-Busan axis.

[4] Rho Moohyun was from southeast Korea and elected as the presidential candidate for the former ruling party, Democratic Party.   Its political base was 'southwest' Korea.   The present President Lee Myung Bak was born and grown in southeast Korea and the political base of the ruling party is mostly 'southeast' Korea.   Except Kim Dae Jung (presidency: 1998-2002), most Korean presidents and regimes were from the southeast province.   There is a political and economic divide between two regions.

**Growth-Pole Strategy: Adoption, Implementation, and Consequences**

The Republic of Korea adopted and implemented growth-pole (Perroux, 1950; Boudeville, 1966; Darwent, 1969; Parr, 1999) and unbalanced growth (Hirschman, 1958) strategies from 1972 (and implicitly from the 1960s) (Park, 2009b; Y. Kim et al., 2003; Suh, 1993).    The primary issue of concern was to move the country as quickly as possible from its underdeveloped state towards development and the creation of a far more prosperous society.    The results of emphasis on growth and the concentration of economic activity are illustrated in Tables 1-I and 1-II.    Unbalanced growth strategies (Hirschman, 1958) also led to the concentration of backward linkages in the production chains of the propulsive industries that drive the 'growth-pole regions.'    Table 1-II shows the increased number and percent of the two primary growth-pole regions' (especially the SMA) employment or population compared other regions.    In contrast, the population of the southwestern region, the less benefited area has decreased (Table 1-II); younger and skilled human capital has also moved to the SMA (Figure 1-1).[5]

The persistent gap in population and employment growth between the poles and other parts of the country created a self-sustaining cycle (Figure 1-1).    Once attracted and settled down, firms were reluctant to relocate for fear that geographic proximity to other businesses and nearby markets – as well as access to a talented labor force – were substantial factors in its financial success.    Relocation could risk a loss in position in a production chain.

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[5]  Aside from Seoul, the capital city, Incheon—the eastern harbor city of the SMA—records the highest registration rate (96.4 %) of freshmen in colleges and universities in 2008 in the Republic. In contrast, Jeonnam and Jeonbuk (literally, 'the southwestern province' in Korean) record the lowest registration rates: 85.2% and 86.8%, respectively.

**Figure 1-1. Two Primate Growth-Pole Regions, Other Lagging Regions, and Economic Growth (1953 – 2007)**
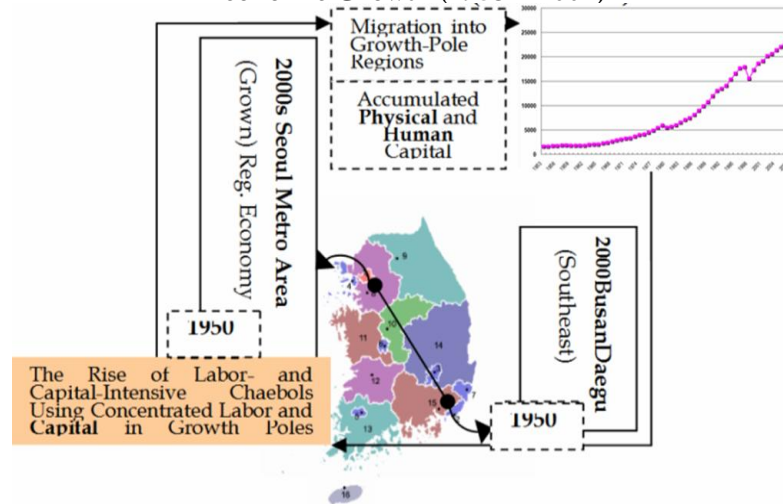


Notes: The graph on the upper right corner is intended to indicate the rapid (per capita; real) GDP growth from 1953 to 2007 in Korea.   The value is deflated in USD (the reference year of 1996).

In addition, firms would also be concerned with any disadvantages related to location in an area with slowly increasing agglomeration effects despite short-term governmental incentives tied to a voluntary relocation.   As Myrdal (1957) noted, (external) economies of scale tend to self-reinforce inequality.   Myrdal's model (1957) simply formulates: Where there is more opportunity, ceteris paribus, there is more opportunity, or vice versa.   Hence, persistent and cumulatively-caused disparity matters in understanding why decentralization policies do not work as intended. People and firms are less likely to start from scratch in a new city where less opportunity is available, or vice versa.

Analyzing social networks and their contribution to elite-led economic growth in and for the Republic of Korea is especially valuable as a result of the country's inevitable and official (if not explicit) adoption of growth-pole and unbalanced growth strategies to overcome its poverty after the Korean War.   In the regional development policy process, Korean elites as policy makers adopted and implemented growth-pole

(Perroux, 1950) and unbalanced growth strategies (Hirschman, 1958) to propel its economy.[6]   Since 1972 growth-pole strategies were 'officially' implemented and produced a set of negative consequences relative to the 'distribution' of wealth despite its effectiveness in elevating the country to its current status as a developed nation.

If the "cumulative causation" (Myrdal, 1957) of interindustrial linkages (production linkages as the most influential constituent of economic networks) and elites' social networks contribute to the disparities in income then reformation efforts need to include a focus on changing the ways in which social networks develop and are sustained.   A failure to analyze and then change the spatial distribution of social network formation may well mean that efforts to change economic development patterns and reduce regional disparities in income will be unsuccessful.


**Implementation and Negative Consequences of Growth-Pole Strategies**

Korea's growth-pole and unbalanced growth strategies may have been effective in maximizing efficiency and advancing the nation's growth, but these policies lacked a focus on reducing disparities between regions (Park, 2009b; Lee, 2008; Choi et al., 2007; Y. Kim et al., 2003; Douglass, 2000; Suh, 1993).   It was expected that there would be some negative outcomes (e.g., continued dominance of polarization and congestion costs) but the risks were seen as worthwhile relative to the anticipated

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[6] However, Perroux's (1950) concept of 'abstract space' had not been fully tested enough to give rationale for past-regime policy makers' employment of his insightful concept (Darwent, 1969; Parr, 1999a, 1999b).   Aside from such theoretical vulnerability, growth-pole strategies, together with unbalanced growth strategies, in practice were very effective to grow the Korean economy (Table 1 and Figure 1).   Since 1960 and 1962, Japan also implemented growth-pole strategies from its first Comprehensive National Development Plan by the Ikeda cabinet's National Income-Doubling Plan (Kim et al., 2003; Yoon & Lee, 1997).   The plan laid the groundwork for the Pacific Belt (Takafusa, 2004).

gains.[7]    This means-goal relationship has been rationalized by the nation's consensus

regarding the sloganized "Growth First, and Its Distribution Later" ('선성장, 후분배' in

Korean) regional development policy orientation (e.g., National Comprehensive

Physical Plan [NCP], Economic Development Plan [EDP]), across social classes,

regions, and time (Park, 2009b; Douglass, 2000).

Disparities have increased across regions (and social classes) over time.

These growing differences are what have focused several of Korea's national

governments on new strategies.    In the Jun (1981-1987), Rho Tae Woo (1988-1992)

Kim Young Sam (1993-1997), Kim Dae Jung (1998-2002) and Rho (2003-2007)

administrations there were some policies and programs implemented to reduce

disparities and balance regional development (Park, 2009b; Lee, 2008; Choi et al.,

2007; Y. Kim et al., 2003; Hong, 2005; Douglass, 2000; Suh, 1993).    The regional

development policy orientations of these administrations are summarized in Table 1-IV.

Even the three military regimes (1962-1992: the last, Rho Tae Woo administration was

officially civil but the president himself was the second most influential commander

under the martial law after Park's military regime), which implemented growth-pole

strategies, also 'considered' programs to reduce the negative consequences of

increasing disparities (Park, 2009b; Choi et al., 2007; Y. Kim et al., 2003; Douglass,

2000; Suh, 1993; Republic of Korea Government, 1982, 1992).    Hardly any set of

programs and policies consequently have been notably successful in reducing the levels

of economic concentration and disparity (Park, 2009b; Douglass, 2000).

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[7] Such negative potentials were predicted by Hirschman's (1958) unbalanced growth strategy.
That is the reason Hirschman (1958) noted that government should intervene when disparities
continue to increase. Richardson (1976) and Parr (1999a, 199b, 1977) also pointed out such
negative potentials of implementing growth-pole and unbalanced growth strategies.

**Table 1-III. The Configuration of Administrations and Government Forms**

| Period | President | Regime | Government Form | Political Base |
|---|---|---|---|---|
| 1948 – 1960 | Lee Seung Man | Civil | Presidential | - |
| 1960 – 1961 | Yoon Bosun | Civil | Parliamentary | - |
| 1963 – 1979 | Park Chung Hee | Military | Presidential | N. Southeast |
| 1980 – 1980 | Choi Kyu Ha | Civil | Presidential | - |
| 1981 – 1987 | Jun Du-whan | Military | Presidential | N. Southeast |
| 1988 – 1992 | Rho Tae Woo | Military/Civil | Presidential | N. Southeast |
| 1993 – 1997 | Kim Young Sam | Civil | Presidential | S. Southeast |
| 1998 – 2002 | Kim Dae Jung | Civil | Presidential | Southwest |
| 2003 – 2007 | Rho Moohyun | Civil | Presidential | (Southwest) |
| 2008 – 2012 | Lee Myung Bak | Civil | Presidential | N. Southeast/Seoul |

Notes: The Rho Tae Woo administration was 'officially' civil. However, the president himself was the second influential commander in the martial-law period after the end of the Park Chung Hee (coup d'état) regime. The political base region does not mean a dichotomy between a political base and others, but it intends to account for a distinction of the particular 'area' whose regional elites were/are most dominant. In the political base column, N. refers to 'the north part of,' while S. refers to 'the south part of.'

**Table 1-IV. Regional Development Policy Orientations by Period**

| Period | EDP | **NCP** | Main Orientation (EDP; **NCP**) | Efficiency | Equity |
|---|---|---|---|---|---|
| 1962 - | ● | | Toward being out of the vicious circle of poverty<br>Building the economic base for self-sufficiency | ○ | |
| 1967 - | ● | | Export-Oriented Industrialization (SMA-southeast)<br>Modernizing the industrial base and structure | ○ | |
| 1972 - | ● | | (Heavy and chemical) industrialization; | ○ | |
| | | ● | **Expanding the base from the SMA to southeast** | | |
| 1977 - | ● | | Capital- and labor-intensive industrialization;<br>**Developing 6 centers with 2 growth-pole regions** | ○ | |
| 1982 - | ● | | Technology-intensive industrialization; | ○ | ○ |
| | | ● | **15 growth centers, managing 2 pole region growth** | | |
| 1987 - | ● | | Balance between: businesses; regional economies;<br>**Expanding 5 agglomerations, 15 local centers** | ○ | ○ |
| 1992 - | ● | | R&D internationalization competitiveness-oriented | ○ | ○ |
| | | ● | **Expanding balanced polycentric development** | | |
| 1997 - | | | **Fostering local self-sufficiency and welfare rise** | ○ | ○ |
| 2001 - 2020 | | ● | **Building open, competitive, livable nation with efficient logistics-ICT balanced nat. development** | ○ | ○ |

Notes: A solid circle denotes an implementation period of either 5-Year Economic Development Plans (EDP) or 10-Year National Comprehensive Physical Plans (NCP). An open circle denotes the emphasis on either efficiency or equity. The most distinguishable change is from the 'local' growth center strategy to the strategy of 'urban' "extended growth centers" (Y. Kim, 1997). In metropolitan area-wide development planning, an extended growth center means the wider center of the synergistic agglomeration economies with the commonality and complementarity of 'networked' production factors, industrial linkages, and infrastructures. Source: Author's summarization based on Suh (1993), J. Choi (1995), KRHIS (1996), and Y. Kim et al. (2003).

Why did these efforts fail? A response to this question lies in two consequences of Korea's regional development (policies): the limited amount of secondary economic development that trickled down to other regions and the factors that inhibited the trickling down or relocation of economic activity to these areas. The first consequence, the insufficient level of activity trickling down can be seen in quantitative evidence documenting how much socio- economic activity has been concentrated in growth-pole regions and its negative consequence (Park, 2009b; Lee, 2008; Y. Kim et al., 2003; Suh, 1993). To show and discuss the existence of these negative consequences previous studies often used location quotients (LQ), shift-share analyses, input-output (I-O) examinations, and correlation or regression analyses of disparities (Moon, 2009; Choi et al., 2007; Hong, 2005; Y. Kim et al., 2003; Park, 1997; Suh, 1993; Kim, Jung, & Rho, 1991; Hur, 1989).

Second, neither economic development studies nor policies, however, considered or reflected upon the impact of social networks on the resulting economic patterns, although Korea's regional development policies have been made and implemented by the very elites produced by these social networks. While the growth-pole strategy may well have helped advance Korea's economy, overall imbalances and inequities grew as other parts of the country lagged in development more than decision-makers and scholars expected. In the formulation and implementation processes of unbalanced growth strategies, the necessary scientific identification of how much imbalance they expected was intentionally skipped by military regimes, which wanted to strengthen their political legitimacy by attaining a certain amount of exports and economic growth (Park, 2009b; Douglass, 2000).

For instance, the Park regime promised the nation that Korea would attain 10-billion-dollars in yearly exports before 1980, and the regime surpassed that goal in 1977. Balanced growth or balancing growth was not a foremost policy concern. The growth-pole and unbalanced growth strategies were effective in attaining targeted levels of overall development. Numerous studies, however, also acknowledged the insufficient amount of trickling down or disparities using LQ and shift-share analysis or descriptive statistics (Choi et al., 2007; Y. Kim et al., 2003; Douglass, 2000; T. Kim, 1989). More causal models (Moon, 2009; Na, 2008; Park et al., 1998; Suh, 1993; S. Kim et al., 1991; Hur, 1989) were focused on measuring the disparity or (welfare) inequality between regions. Based on previous studies Park (2009b) analyzed and presented the amount of 'polarization' and 'trickling down' in terms of the existence of growth poles. Park (2009b) conducted social network analysis (SNA) of interregional I-O tables of all six economic regions (ERs) (regarding ER, see the note below Table 1-V). The level of polarization indicated by Park's (2009b) indices of 'degree centrality and centralization' strongly supported the persistent growth of primate growth-pole regions with limited trickling down.

To understand the scale of the negative consequences that have attracted the attention of numerous national administrations, Figures 1-2 and 1-3 illustrate the resulting population congestion. Figures 1-4 and 1-5 describe the land price disparity between regions and the cost of such congestion and the resulting pollution levels as 'negative consequences' of unbalanced growth. There is clear evidence of the costs of the creation of growth poles that contributed to the country's rapid economic development.

There are now considerable population concentrations resulting in congestion and excessive crowding and traffic levels (Figures 1-2 and 1-3).    Rapidly escalating land values are also in evidence (Figure 1-4) despite increasing traffic congestion and high levels of air pollution (Figures 1-5).    In particular, congestion has become increasingly problematic reducing the quality of life in the country's leading cities, raising costs for those businesses and families that must live in the areas (Park, 2009b; Y. Kim et al., 2003).    Figure 1-6, Figure 1-7, and Figure 1-8 show 'persistent disparities' in economic opportunities.    Regarding persistent disparities in economic opportunities for the other parts of the country, illustrated are the gaps in financial independence rates (Figure 1-6), the disparities in real Gross Regional Domestic Product (GRDP) growth rates (Figure 1-7), and the difference in Foreign Direct Investment (FDI) (Figure 1-8), for regions outside of the growth-pole regions.

Figures 1-2 through 1-8 show the population, industrial, and investment concentrations resulting from the two poles and an unbalanced growth strategy that has led to increased congestion costs and economic disparities.    Increased disparity is likely to decrease incentives for economic agents' fair competition for pursuing benefits in such a united country, since persistent gaps in opportunity reduce motivation for active economic participation (Y. Kim et al., 2003; Hagen, 1980).    There have been increased calls for changes to improve the conditions in other regions (Park, 2009b; Lee, 2008; Hong, 2005; Y. Kim et al., 2003, Douglass, 2000).    The consequences of unbalanced growth may well be related to the decrease in local regions' productivity and the perpetual gaps in regional productivity (see Figure 1-7).

**Figure 1-2. Comparative Changes in Population Share of Capital Regions**

**Comparative Population Share of Capital Regions**
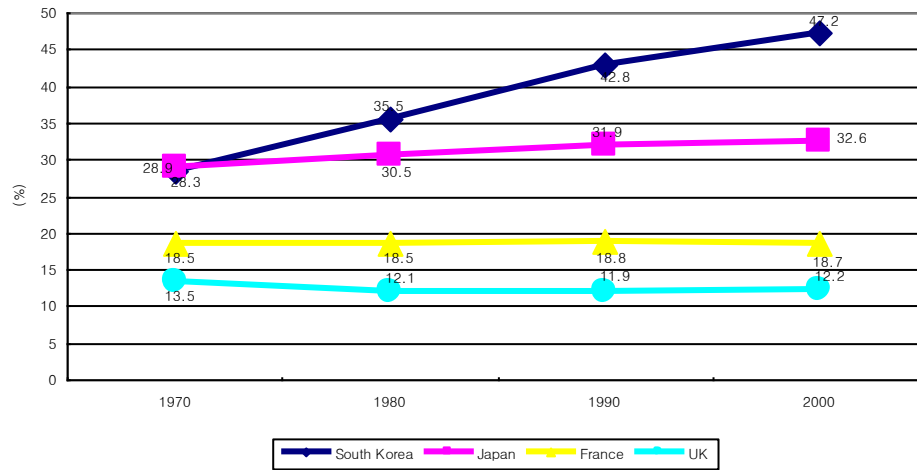


Notes: The SMA had the 20.8% of the national population in 1960, and increased to 48.9% in 2007. South Korea and the SMA have limited 'usable' land, and this 'land availability' is explicitly lower than other countries where 'distance costs' differently matter.   The SMA (11,745km$^2$) covers 11.8% of the Republic's land.   Within this area, about 1.1% of land is usable for residential purpose.   In South Korea 5.8% of the national land is usable for urbanization (Japan: 7.1%; United Kingdom: 13%) since 65% of its land is mountainous.   The per capita land area (not residential area) of Seoul is 0.058m$^2$ (SMA: 0.47m$^2$).   The population density of Seoul, Incheon, (excluding the Ganghwa Island region), and cities adjacent to Seoul was 16.7 thousand persons/km$^2$ as of 2007. For other cities' densities the Tokyo and Yokohama area showed 4.7 (Tokyo: 7.0; Greater Tokyo: 26.4 in 13,754km$^2$; Kanto: 12.9 in 32,423km$^2$) thousand persons/km$^2$, the New York metropolitan area showed 2.0 thousand persons/km$^2$, and the Sao Paulo area showed 9.0 thousand persons/km$^2$. Source: Compiled from KOSIS and the Presidential Committee on Balanced National Development (PCBND: currently, PCRD [Presidential Committee on Regional development]) (2004).

**Figure 1-3. Population Change by Province**
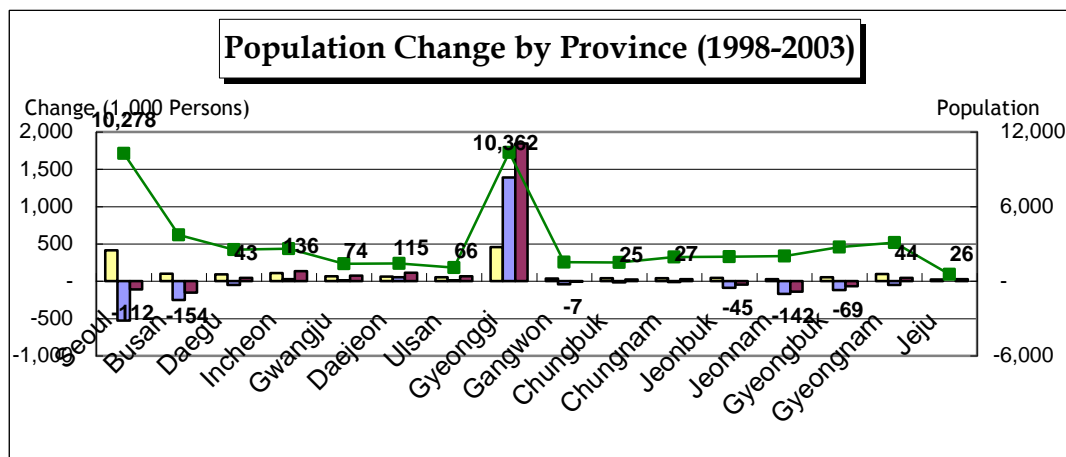


Notes: For Gyeonggi, 10,362,000 is 'total' population, which is denoted by the dot (that is linked horizontally).   It comprises the SMA, together with Seoul and Incheon.   The bar in the left-hand side of each region denotes the natural change.   The central bar denotes the social change.   The right-hand side bar denotes the total change.   Source: Compiled from KOSIS and PCBND (2004).

**Figure 1-4. Land Price (%) Disparity between the SMA and Other Regions (1982 – 2005)**
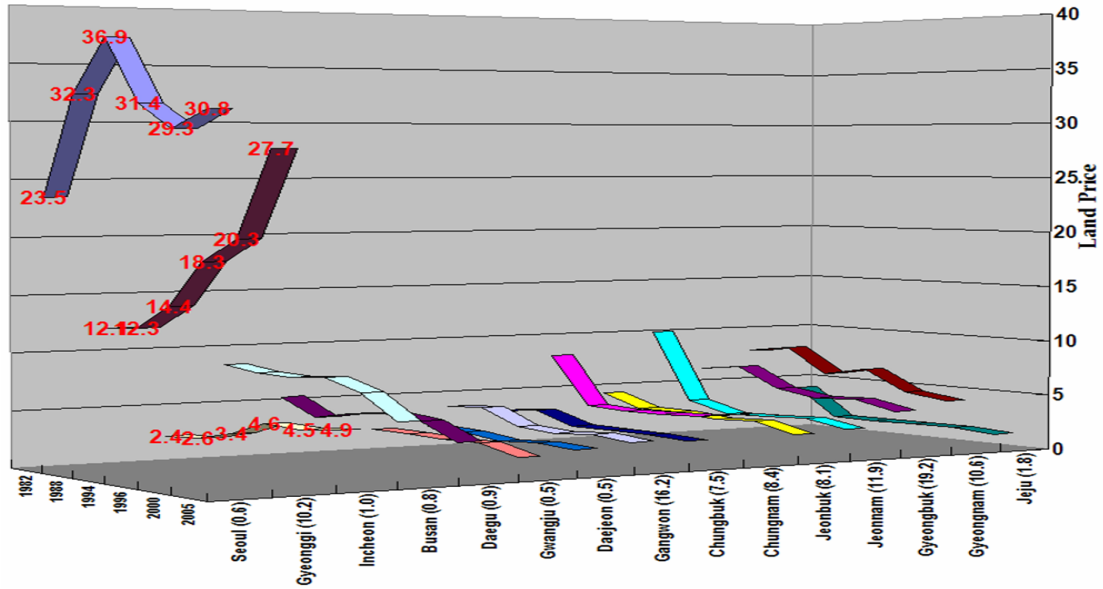


Notes: Compiled from the "Publicly-Announced Land Prices" (2005) by the Ministry of Construction and Transportation (presently, the Ministry of Land and Ocean) and Jung and Jin (2003).    A value in parenthesis next to a region's name denotes the region's land size (%) of the national land (e.g., Seoul's land size = 0.6 percent of the national land).    Before 1996 the land price of Ulsan was included in the land price of Gyeongnam, and was inevitably omitted for consistency and brevity after 1997.    The SMA consists of Seoul, Gyeonggi (Seoul's hinterland area), and Incheon (a harbor city west to Seoul), and covers 11.8 percent of the national land.    During past several decades Seoul continued to account for more than one fifth of the national population. Among land prices, Gangnam District, a district in Seoul below the Han River accounts for 16 percent of the nation's total apartment prices in its 0.04 percent of the national land.    Seoul's (house) price to (annual) income ratio (PIR) was the highest in the OECD countries as of late September, 2006 (Park, 2009a; SARIF, 2007).    Seoul's PIR was 13.0, while other cities such as London (6.9), New York City (7.9), Sydney (8.5), and Los Angeles (11.2) showed lower PIRs. This suggests a household with average annual income would take 13 years to afford a house with an average price in Seoul.    South Korea's total land price exceeded two times Canada's total land price as of December, 2007, and the land price of SMA increased faster than other parts of the country from December, 2005 to January, 2007 (Park, 2009a).    (Canada's land size is more than 100 times South Korea's land size.)    In the late 1990s there was a sharp decrease in land price during the Asian financial crisis, and the land price of Seoul declined the most.    The price share, however, began to be recovered after 2000.    Thus it was highly plausible that the people or agents who could afford multiple (apartment) houses as 'price-makers' were largely benefited by such price fluctuations, though the individual transaction data could not be obtained for this period (Park, 2009a).    In the on-site real estate markets, many of these transactions of multiple apartment houses are called "blue-chip apartment transactions by lucky ladies."    In the GINI index on the Lorenz curve of owned real estate asset and population showed 1 percent of people owned 56.7 percent of the Republic's land in 2007.    Recently the deregulation of greenbelts around Seoul, together with new construction or development projects have been initiated; hence, these new plans are expected to foster expectations for further capital gains in markets.    In 2003, real estate and related service industry shows the highest centrality (but lower backward linkage effects) in the industrial network structures among all 28 industries in the SMA, together with the industries of construction and of electronic/electric equipments (Park, 2009b).    Y. C. Kim (2008) suggested the 'growing together' strategy through 'horizontal equalization development fund' (the SMA's special grant of property taxes, charge on development gains, shared tax revenue, or the framework act of relevant finance).

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**Figure 1-5. A Biannual Trend of Traffic Congestion Cost in the SMA (1992 – 2002)
And Air Pollution in the SMA and the Rest of the Country (2002)**

Traffic Congestion Cost in the SMA (Billion USD)

| | 1992 | 1994 | 1996 | 1998 | 2000 | 2002 |
|---|---|---|---|---|---|---|
| | 3.5 | 4.7 | 6 | 4.8 | 7.2 | 12.4 |

Air Pollutants in the SMA and the Rest of the Country 2002 (/km²)

| Tons | Total | CO | Nox | So2 | PM10 | VOC |
|---|---|---|---|---|---|---|
| | 32.9 / 94.2 | 8.6 / 32.5 | 11.1 / 30.3 | 5 / 5.9 | 0.9 / 1.6 | 7.3 / 23.9 |
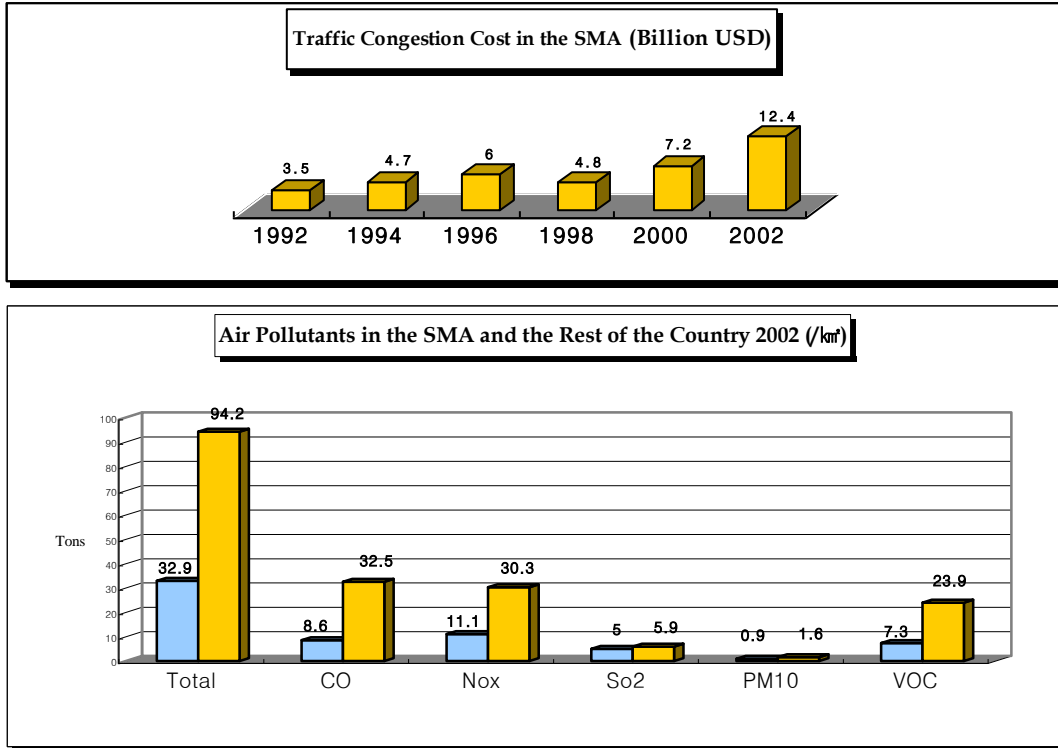
Source: Compiled from KOSIS and PCBND (2004).

**Figure 1-6. Financial Independence Rate by Region (2007)**

Financial Independence Rate by Province (2007)

| Province | Rate |
|---|---|
| Seoul | 90.5% |
| Gyeonggi | 74.9% |
| Incheon | 69.8% |
| Gyeongnam | 39.1% |
| Chungnam | 36.9% |
| Jeonbuk | 23.5% |
| Jeonnam | 20.1% |
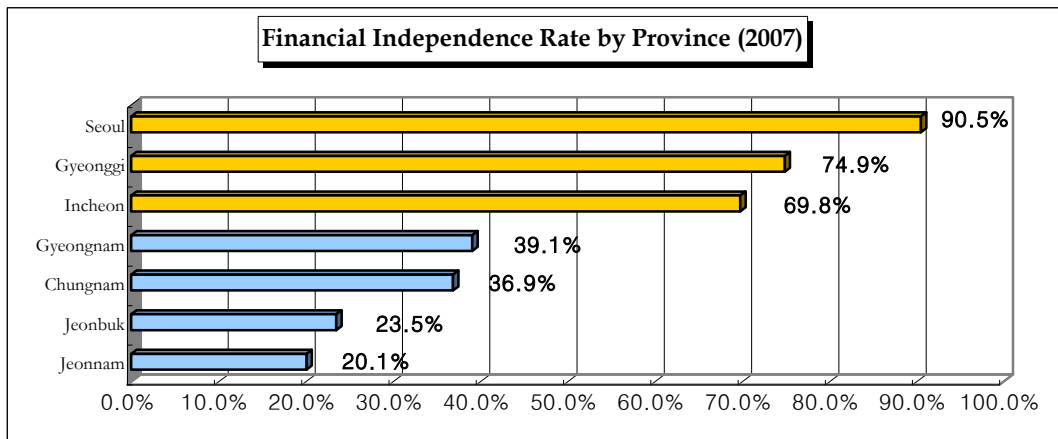
Source: Compiled from KOSIS. Financial Independence Rate = (local tax + non-tax revenues)/{(the sum of subsidy, local grant tax, local borrowing, and local transfer tax) + (local tax + non-tax revenues)}.

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**Figure 1-7. Trends of the SMA and non-SMA Real GRDP Growth Rates (%)**
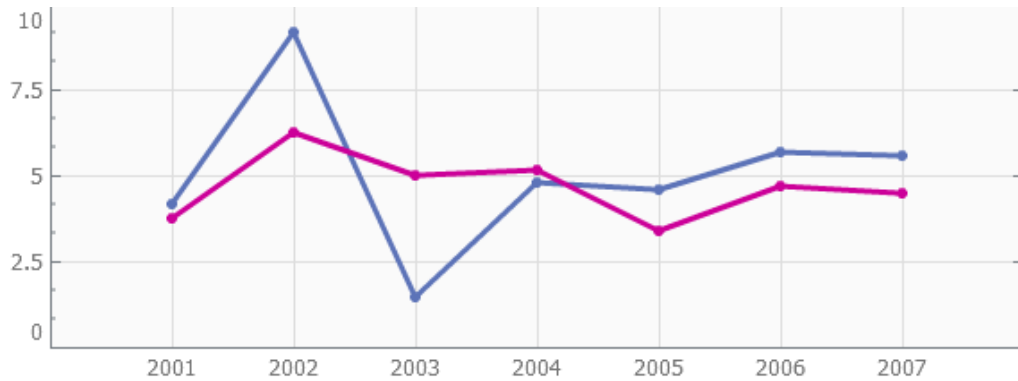


Note: ▬▬▬ (SMA) ▬▬▬ (non-SMA).   There was a (credit) card crisis between 2002 – 3, which impacted urbanized areas more (for the information of the crisis and IMF crisis, footnote 33). Source: Downloaded from the Korea Statistical Office's eIndex service (www.index.go.kr).

**Figure 1-8. FDI by Region (2002)**
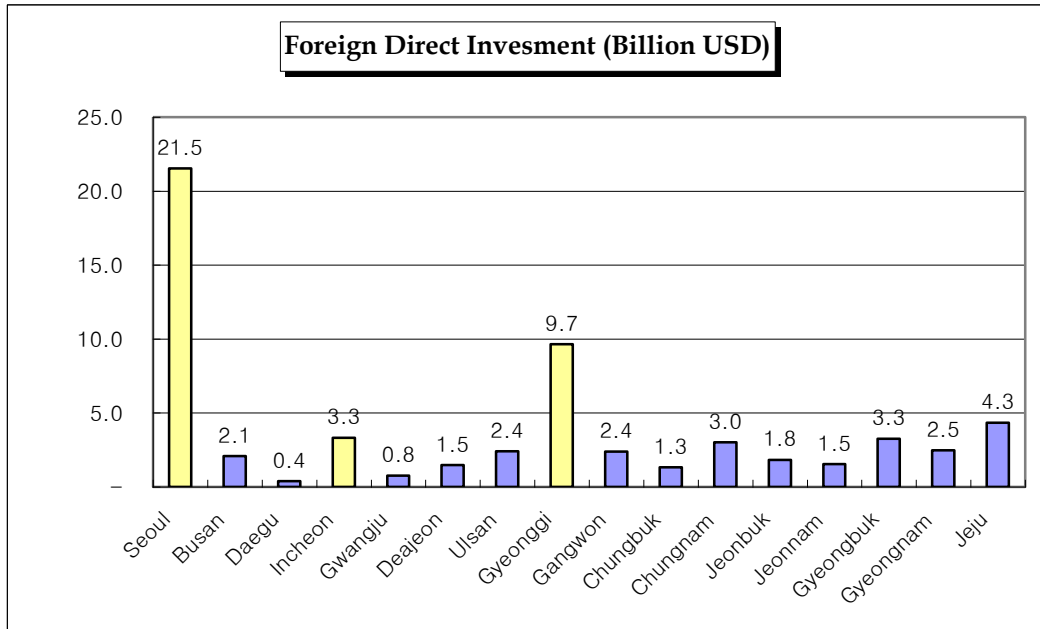


Source: Compiled from KOSIS and PCBND (2004).

Facing increased disparities, the Rho administration (2003 – 2007) became most concerned with disparities (Park, 2009a; Kim, 2005) (Table 1-V).    The areas outside of the growth-pole regions have not been the beneficiaries of the nation's economic success (Park, 2009b; Douglass, 2000).    That is the reason the Rho

administration implemented Balanced National Development (BND) policies.    The

dominant logic or policy orientation of the two governments' regional development can

be summarized as in Table 1-V.

**Table 1-V. Recent Governments' Approaches to Balancing Regional Development**

| Rho Administration (2003 – 2007) | Lee Administration (2008 – [2012]) |
| --- | --- |
| - Ideological and **Innovative**<br>- **Regional Innovation Systems (RIS)**<br>- Equity Emphasized in the Long Run<br>- To Diffuse **Innovation** among Regions<br>- Leading Institution: Presidential<br>  Committee on BND (PCBND) | - Practical and **Strategic**<br>- **Economic Regions (ER)**<br>- Efficiency Emphasized (Equity Considered)<br>- To Foster **Competitiveness** (in **Glocalization**)<br>- Leading Institution: Presidential Committee on<br>  Regional Development (PCRD) |

Notes: The ERs refer to Economic Regions.    The SMA and Busan, Ulsan and Gyeongnam (s. southeast) ERs are two largest urbanized areas, which has the highest potential as one of the leading "mega-regions" in Northeast Asia (Florida et al., 2008).    The ER is a spatially-reformulated economic zone to cope with globalization and localization.    Five zones and two special zones were designated.    Five zones are 1) The SMA (northwest), 2) Chungchung (mid-nation), 3) Honam (southwest), 4) Daegu and Gyeongbuk (n. southeast), and 5) Busan, Ulsan and Gyeongnam (s. southeast) Zones.    Two special zones are Jeju and Gangwon Zones, which emphasizes tourism industries and natural environments.    Like the Rho administration's BND, the Kim Dae Jung administration also showed the decentralization policy orientation.    It tried to enhance the 'local self-sufficiency and autonomy' with increased government subsidies and empowerment, establishing the Presidential Committee on Balanced Regional Development.    A similar committee was established in the beginning period of the Rho Tae Woo government (1988 – 1992), but it was disorganized in 1990.    The Kim Young Sam administration (1993 – 1997) has helped the establishment of local autonomous governments, but many regional and political pros and cons prevented local governments from having the more and better autonomy since the mid-1990s.    The primary policy goal of Kim Dae Jung was centered on overcoming the 1997-8 International Monetary Fund (IMF) crisis.    The IMF crisis was caused by the structural problem of South Korea's industrial structures and business practices and the failure in coping with the increasing instability in international financial markets (for the background explanation, see footnote 33 in Chapter Three).    Although the Kim Dae Jung administration has adopted and implemented "decentralization" and "balanced regional development" as two of the nation's 20 policy priorities in 2001 (as two of the nation's 100 policy priorities in 1998), the aftermath of the IMF crisis that has lagged during Kim's tenure (1998 – 2002) made those policy priorities harder to surpass other foremost priorities about the restructuring and stabilization of economy and industrial structures.

The opposition party (Grand National Party [GNP]), having mostly represented

the southeast, has not supported Rho Moo Hyun's suggestion and implementation of

the BND.   The GNP mostly oppose changes (e.g., Sejong City [Multifunctional

Administrative City]) since the party needs to differentiate itself from the former ruling

party and strong BND policies could mean some loss to the party and (the networks

from) their 'growth-pole' region (especially the SMA).   The Rho administration's

(whose political base is southwest) concern with disparities (Table 1-V and 1-VI) did

not resonate with elites from the two growth-pole regions who feared a diminution of

existing wealth levels.

Although the current Lee administration has increasingly considered equity

and balance through the development of ERs as super development zones in non-

growth pole areas as well, the administration of Lee Myung Bak (also from the

southeast part of the country and the SMA), the former CEO of Hyundai Construction

did not concentrate much on correcting interregional or interpersonal disparities as

much as the Rho administration (Park, 2009a).   That is, the primary concern of his

administration has been to maximize 'economic efficiency' while its policies do not

ignore disparity issues (Table 1-V and 1-VI).[8]

**Table 1-VI. Former and Current Administrations' Policy Orientations and Emphasis**

| Administration | Rho Administration | Lee Administration |
|---|---|---|
| **Emphasis** | Distribution and Equity | Allocation and Efficiency |
| **Orientation** | Inefficiency (Problem) → Ensuring Equity (Remedy) → Efficiency (Goal) | Inefficiency (Problem) → Efficiency (Means)→ Equity (Consideration) |

Source: Park (2009a).   The means-ends relationships in these orientations are not direct or strong.

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[8] Facing harsh criticism from the local regions, he has 'officially' turned his administration's policy orientation to balanced growth in the summer of 2008.   However, such changes in orientation appear to attenuate increasing local voices because it is not consistent.

The administrative personnel consist of elites mainly from the SMA and the southeast province.   Although the southeast province has slightly more than one half of the residents of the SMA, the southeast's percent (share) of high-rank administrative personnel in the Korean central government is almost compatible to the SMA's share in the Lee administration.   The SMA's portion abruptly increased while the southeast's portion decreased.   The SMA also has the greatest portion of the power elite measured by college graduates in each province, and a major set of universities – so-called 'SKY' (Seoul National, Korea, and Yonsei), Military Academy, and Chung-Ang – are all located 'within' Seoul (Figure 1-9).   Their associated linkages have formed 'school networks' in Korea (Lee et al., 2006).   These networks also contributed to sustaining the nodes of socioeconomic activity in the growth-pole regions (Park, 2009b).

**Figure 1-9. The Configuration of the Lee Administration's (2008 – ) Elite**
(A) By Province (Birth Place)                         (B) By College
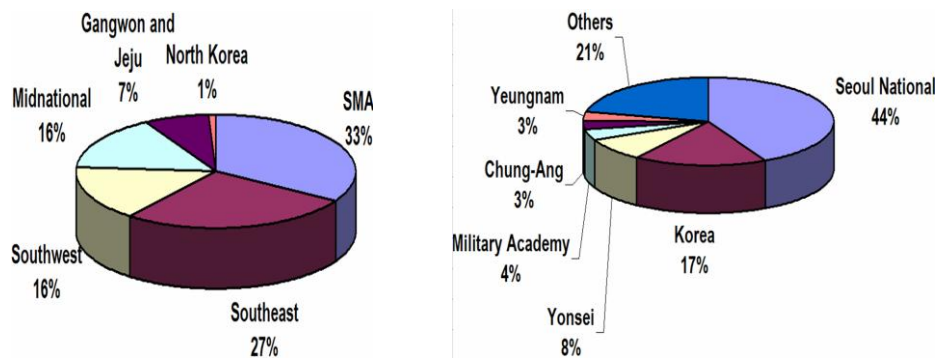


Source: Author's compilations based on Chosun Ilbo (2009).   Dated February 24, 2009.

The business linkage within chaebols[9] was also very influential in forming and

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[9]  Korean big business groups such as Samsung, LG, and Hyundai.   These business conglomerates are still run or controlled by their founding families.   In terms of total revenues (in US$ billion) in 2004, ten largest chaebols are as follows: Samsung (89.1), Hyundai Motors (57.2), LG (50.4), SK (46.4), Hanjin (16.2), Hyundai Heavy Industries (10.5), Lotte (6.3), Doosan (4.5), Hanhwa (4.4), and Kumho Asiana (2.8).   Most of their founding families are from Seoul or Youngnam (literally, 'southeast province' in Korean), let alone Kumho Asiana, whose founding families were from

sustaining the nodes of socioeconomic activity in the growth-poles (Park, 2009b).

After the early years of Park Chung Hee's military regime, the central government of

three military regimes joined with the hierarchical structure of the country's chaebol or

corporate regimes to maximize their economic rents through a growth coalition of "big

businesses and 'strong' (having high capabilities to penetrate society, regulate social

relationships, and extract and appropriate resources in determined ways [Migdal, 1988,

pp. 4-5]) state" (E. Kim, 1997).

**Figure 1-10. Regional High-Rank Elites (Y: %) in Governments**
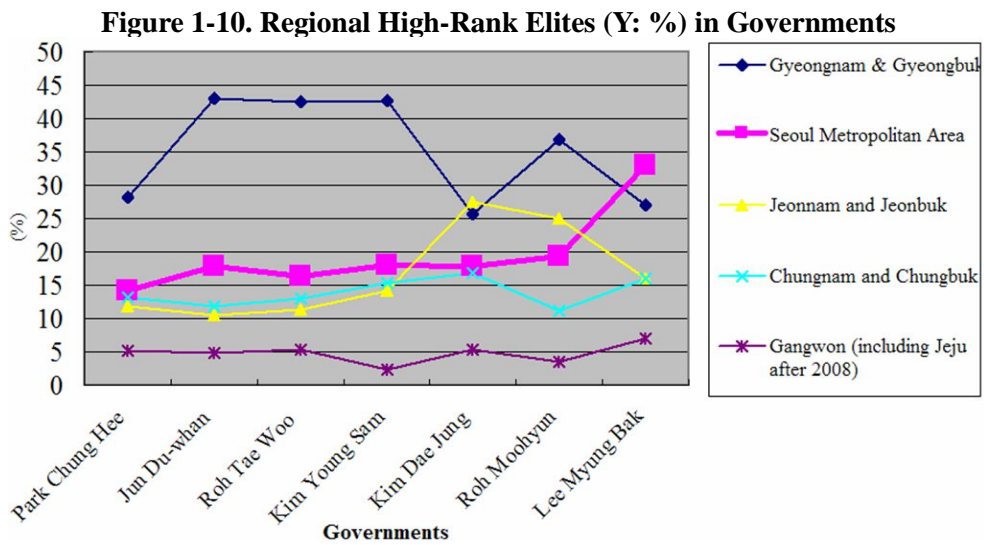


Notes: Literally, Gyeongnam + Gyeongbuk = southeast province (영남); Jeonbuk + Jeonnam = southwest province (호남).   Recently SMA (수도권) elites have sharply increased.   The remaining percent of power elites reflects the shares of some elderly elites born in North Korea, Japan, or China, which are not included in this study.   For selection criteria, refer to Appendix A. Source: Author's compilations based on Chosun Ilbo (2009), Lee et al. (2006), and JoongAng Ilbo (2005).

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Gwangju in the southwestern province, Jeonnam.   The SMA (Seoul Metropolitan Area) and Youngnam were two growth poles of concentrated decentralization strategies.   These Korean-style organizations of business are similar to Japan's keireitsu. Keiretsu refers to a Japanese-style business organization that, after World War II, replaced zaibatsu, the family-controlled vertical monopoly. Mitsubishi is the largest keireitsu.   Toyota and Toshiba belong to the affiliated companies of Mitsui. NEC, Canon, Fujitsu, and Hitachi are also affiliated to other keireitsus. Keireitsus are managed by more non-family-affiliated professionals than chaebols.   Their ownership is less centralized to founding or leading families by cross-shareholdings than chaebols. Many keireitsus own their banks while chaebols were prohibited from owning private banks by Korean central governments.

In *Big business, strong state*, E. Kim (1997) described the process that Korean political and military elites, which implemented 'top-down' (e.g., ones like military command) development policies, used to build growth coalitions with chaebols in the development state. Many of the political, military, and economic elites were from the two growth-pole regions, and these networks built coalitions that were likely to weaken other regional economies and local governments (Park, 2009b; Hwang, 1996).

Political networks were also influential in regional development policies. The political personnel in power during three successive military regimes united with the nation's chaebol industrial structure to chart regional development policies of the 'development state' (E. Kim, 1997). Each of those policies sustained support for the primate growth-pole regions (Figure 1-10). Recently the SMA's portion of the high-rank elites in the government has greatly increased. The 'junior' elites as the children of the elites who migrated and settled down in the SMA few decades ago are the usual suspects of this increasing "lion's share." The rise of new elites from the SMA is related to the trend that the old conflicts between southeast and southwest have recently turned into the conflicts between the SMA and other (relatively) lagging regions, as Hong (2005) noted. The data provided shows that decentralization policies have not worked as Figure 1-2 through Figure 1-8 show. That set the stage for underscoring the importance of this dissertation: What should be the next step in the logical elements behind government efforts to change the concentration of economic activity and the failed policies?

**Growth-Pole Regions and Social Networks**

The "power elite" (Mills, 1956) made and implemented regional development policies in Korea and those policies established a set of social networks (Lee et al., 2006). Social networks of the economic or political elite (e.g., chaebol or military regimes) matter more in Korean regional development (process) than the mass public. Mills (1956) would suggest that is true in all societies. Korea's power elites have played a decisive role (in 'planning' regional development) through participating in government policies (Lee et al., 2006). Many of the leaders were from two growth-pole regions (the SMA and the southeast province) or major cities (Park, 2009b; C. Kim, 2006). Many were also concerned with the improvement of their hometown regions' welfare (Hwang, 1996). This makes Korean regional development efforts to accelerate the development of the economy producing a concentration of capital and activity into real spaces that resemble the unbalanced growth pivoting around two 'primate' growth-pole regions described by Perroux (1950)'s abstract space and Hirschman (1958).[10]

Cho (1975), Choi (1991), and Hwang (1996) also discussed the decisive role of social networks in determining regional development (processes) in the informal politics of economic development in Korea although he did not precisely define the concept of social network.[11] Hwang (1996) emphasized the crucial role of 'lines' in

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[10] In particular, this has led to the concentration of economic activity and people in the Seoul Metropolitan Area (SMA). More than 47.5 percent of the GDP, 90 percent of the major headquarters, and 46 percent of the population is concentrated in 11.8 percent of the Republic's land (in 2006). In addition, the Korea National Statistical Office (KNSO) (2006) forecasted the increasing trend of SMA's increasing share in population and production the future.

[11] Most high-rank bureaucrats admit and acknowledge the decisive role of the subjective criterion in in-field superiors' personnel screening (Cho, 1975; Choi, 1991; Hwang, 1996). In sum, one can

selecting (nine-rank) career bureaucrats and political appointees in the Ministry of Finance and Economy, Economic Planning Board (EPB), and Korea Development Institute (KDI).   It was natural that the 'planned' outline of economic networks has more or less formed through the regional development policies and plans by their social networks as well.

**Lack of Research Focused on Social Networks and Their Association with Growth-Pole Regions**

Most existing literature on balanced national development (BND) has concentrated on economic indices and traditional tools such as location quotients (LQ), shift-share, or I-O analysis and correlation or regression analyses (Moon, 2009; Choi et al., 2007; Hong, 2005; Y. Kim et al., 2003; S. Park, 1997; Suh, 1993; S. Kim et al., 1991; Hur, 1989).   Therefore it will be valuable to understand if social networks – which were considered an endogenous determinant of regional economic outcomes and concentrations – are indeed integrally bound into and with growth-pole regions.

These historical trends and the sustaining levels of disparity raise the following questions for this dissertation.

● What are the patterns and properties of Korean elite's hometown-centered social networks?
● What is the relationship of economic and social networks in defining regional economic outcomes and concentrations?

propose (himself or herself up to the fifth level,) but the 'line' disposes. In Korea, it is a common sense that this line is synonymous to 'social network.' That is the reason a young elite is often asked, "Do you have a link?"

● What are the implications of the relationship of social and economic networks for policies designed to balance the regional economic outcomes that are now locally concentrated?

**A Summary of the Dissertation's Approaches to Economic and Social Networks**

**An outline of development context.**

● Korea pursued policies to maximize the trickling-down effects from its growth centers (2 primate growth-pole regions and 6 local growth centers) to advance development of other parts of the country.    These policies have been largely unsuccessful.
● Korea pursued policies to manage the growth of its 5 largest agglomerations (Seoul, Busan, Daegu, Gwangju, and Daejeon) and implemented programs to foster 15 smaller local growth centers together in an effort to balance regional development through the second NCP 1982 – 1991.
● Since the 1990s, increasing BND (Balanced National Development) efforts and fostering local autonomy, Korea has pursued a change from localization economies (i.e., external economies of scale from co-locating [growth poles'] similar industries in a region) to urbanization economies (i.e., external economies of scale from co-locating diverse industries in an urban region) through metropolitan wide development planning.

**An outline of developed economic and social networks.**

● Not only are economic networks (i.e., [transactional] relations between economic entities) but social networks (i.e., [transactional] relations between social entities) are also deeply ingrained in local areas.
● With both entrenched there are powerful cross linkages that make changes difficult unless there are policies to alter both sets of networks.
● The "strong state" (Y. Kim, 1997) policies and programs implemented by several national administrations have advanced the interests of large businesses and fortified existing economic linkages and the resulting social networks.

**An outline of trickling down.**

● The SMA has succeeded in rebuilding and sustaining its urbanization economies through trickling down to the hinterland, while the (labor-intensive) Busan and (heavy and chemical industrial) southeast region has not succeeded as much as the SMA.

● The distinguishable trickling down from Seoul to the hinterland is due to its 'maximized' capacity of employment while the "residence-oriented" (Kwon and Chung, 2007, p. 56) central city of the Busan-southeast region has not reached a critical mass to trickle down its employment.   [The weaker primate growth-pole region]

● The employment transfers that did occur from the decentralization of activity out of Seoul were largely confined to suburban cities surrounding Seoul while the decentralization of the Busan-southeast region was relatively weak and other local growth centers continued to lag.

● Despite Seoul's employment decentralization in the SMA, Seoul's GRDP continued to increase except for the most severe period of the IMF crisis (1997 – 1998), while other local growth centers have the less employment or GRDP that was impacted during the same period.   [Service-oriented or high value-adding industries in Seoul]

● The economic and social networks have been deeply ingrained especially in the SMA.

**Organization of the Following Chapters**

The literature review in Chapter Two will look at both the economic networks of growth poles and social networks.   The section on growth-pole (regions) will not only review the concept but focus on why the concept is important to policy makers and to governments such as those in Korea.   The discussion will be driven by the point of minimizing regional disparities to promote stability and incentives for fair competition.   The second part of the literature review will focus on social networks

and their potential role in sustaining growth-pole regions.    Chapter Three documents

the existence of growth poles (using shift share analysis) and the existence of

disparities that could be detrimental to Korea's future.    The chapter will also assess

efforts to use different policies and practices to balance development.    The

methodology used to study social networks is explained in Chapter Four and the

research questions and hypotheses will be specified.    The data analysis is contained in

Chapter Five and the final chapter focuses on the conclusions about the "creative

destruction" of the old growth-pole networks and recommendations supported by the

data analysis.

# CHAPTER II

## LITERATURE REVIEW

This chapter consists of two sections: 1) a review of literature dealing with growth poles to help in understanding the centrifugal and centripetal forces that can lead to a concentration of social relations; and 2) a review of studies of social networks to illustrate their impact on economic networks. The analysis of growth pole theory will also include a discussion of its relevance for South Korea. The analysis will consider the overlapping nature of growth poles, economic (or industrial) linkages, and social (or political) networks. As will be demonstrated, an association or causality of such overlapped networks needs to be further investigated if changes in existing patterns of economic activity are to be achieved (Park, 2009b) as does the relationship between growth poles and regional disparities or economic concentrations. Previous research on disparities (Alonso, 1968; Rey & Janikas, 2005; Partridge, 2005; Peruggini & Martino, 2008; Ezcurra, 2007; Canaleta, Arzoz, & Garete, 2002; Paul & Verdier, 1996; Zhao, 2005; Chen & Fleisher, 1996; Yildirim & Ocal, 2006; Nel, 2003; Easterly,

1997; Persson & Tabellini, 1994) has not fully explained how natural or artificial

growth poles could be associated with observed differences in the distribution of

wealth[12].   The second section of the review will discuss the social networks of elite

groups and their potential role in sustaining or reinforcing growth-pole regions.   (A

growth pole is a (propulsive) industry or firm, while a 'growth-pole region' in this

dissertation means a region that 'has growth with' growth poles.)   The final section of

this chapter will review the concept of a growth coalition as a political economic

institution of elites' social networks and its effects on economic networks.

## Growth Pole: Theory and Policy

### The Three Relations Defining a Growth Pole in Economic Space

François Perroux (1950)[13]  was one of the original theorists who suggested

growth poles can exist and lead to an excessive concentration of resources and activity.

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[12]  In the economic growth literature, the concept of disparity usually stresses the state of static inequality whereas the concept of imbalance emphasizes the process and structure of dynamic disequilibrium (Choi et al., 2007). Since this dissertation addresses the state, process, and structure in a simultaneous framework, these two concepts will be used interchangeably except when a strict distinction is needed.

[13]  François Perroux's (1950). Economic space: Theory and applications was influential in developing growth pole theory in the growth literature.   This article, which had been prepared for his lecture at Harvard University in November, 1949, was re-delivered through *Quarterly Journal of Economics*, 64(1), by the help of Harvard's regional scientist Walter Isard.   The dissertation's review of this original theory, however, mainly relies on his 1950's work since few of his works were translated into English.   This 1950's work is important since it explains the concept and theory of growth poles, while it was not until more than ten years later that his other articles and books were translated into English.   His work in 1955, Note sur la notion de pôle de croissance, *Economée appliquée*, 8, was translated and reprinted as Chapter Seven, Note on the concept of growth poles in D. L. McKee, Dean, R. D. & Leahy, W. H. (eds.). (1970), *Regional economics: Theory and practice* (pp. 93-104). New York: The Free Press.   It was the 1980s when his articles and books regarding growth poles have been more widely known by the following two works: 1) *A new concept of development* (1983), London and Paris: Croom Helm, UNESCO; and 2) The pole of development's new place in a general theory of economic activity. In Higgins, B., & Savoie, D. J. (eds.) (1988), *Regional economic development* (pp. 48-86). Boston: Unwin Hyman.

His ideas were based on concepts originally proposed in the 17th century by Sir

William Petty.   Perroux described a growth pole as (a grouping of) businesses or firms

(or a set of economic units; activities) that attracts desired resources or repulses

unneeded resources in a mathematical structure of 'economic' relations or space.

Perroux (1950) defined the vector space of abstract relations which defines an object as

a form of "abstract space" within which the firm or an individual operates.   Following

the French mathematician Maurice Fréchet's original definition, Perroux (1950, 1955)

suggested these units existed in a set of agglomerated networks that are connected

through centrifugal and centripetal forces.   As an abstraction, economic space was

defined by the relations that exist between elements in a business relationship such as

supply chains (Perroux, 1950) (see Table 2-I).

**Table 2-I. Meanings of Abstract Space and Economic Space in Perroux (1950)**

| Space | Meaning |
|---|---|
| Abstract Space | A mathematical structure of abstract relations which defines an object [A vector space] |
| Economic Space | A space defined by the economic relations which exist between economic elements [A kind of abstract space] |

Perroux's (1950) abstract space differs from "geonomic" space, which is filled

with people and things as units in physical territories.[14]   The meaning of Perroux

(1950)'s geonomic space was closer to physical or geometric in a current use of

language; thus, it will be replaced as "physical" or "geometric" (i.e., delineated or

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[14] Perroux (1950) described that rigid shapes of people and things in Euclidian geometry (e.g., drivers and commodities in trucks on interstate highways) are situated in a "containing" space, which he meant Euclidean geometry by.   For a more expanded discussion on the concept of geonomic space and economic space, please refer to Lambooy, J. (1973). "Economic and geonomic space," *Papers in Regional Science*, 31(1); Moseley, M. J. (1974). *Growth centers in spatial planning*. Oxford: Pergamon Press; and Brookfield, H. C. (1975), *Interdependent development*, London: Methuen (especially, pp. 90-97).

contained by a physical surface or solid's shape) in this study.    Emphasizing the

perception of the Euclidean space (e.g., everyday, people do not perceive but think the

earth as a globe "round" although a part of the curvature of their front yards will be

asymptotically a straight line), Perroux (1950) also repeatedly used the expression of

"geonomic" when he described political or jurisdictional boundaries and territorial

areas.    These boundaries are delineated by the borders that people (or governments)

define which in this perspective is shaped by their economic relations and business

linakges.    The interactive force among the "physical units" in geometric space also

exists in physical relations between points, lines, surfaces, and volumes.    In order to

contrast the relational property of economic space to the Euclidean attribute of physical

space, Perroux (1950) used the concepts of "a plan," "a field of forces," and "a

homogeneous aggregate" (see the following definitions (1), (2), and (3)).

(1) **Planning** [**relation of (I-O) transaction**]: the interaction between the supplier
    units of 'input' (raw materials, labor, power, or capital) and the buyer units of
    the (intermediary and final) 'output' (Perroux, 1950, p. 95)

(2) **Magnetic force** [**relation of attracting and removing resource and activity**]:
    centripetal force (attracting personal and material aggregates of economic
    elements, supplies, and demands around the firm) and centrifugal force
    (diverting economic activities, land reserved for further expansion, etc.) among
    units in space as 'a field of forces' (Perroux, 1950, p. 95-96)

(3) **Homogeneous aggregation** [**relation of homogeneity**]: the interaction of
    homogeneity is relative to the units and to their structures, or relative to the
    relations between these units (Perroux, 1950, p. 96); usually identified by
    analyzing the "cost-plus-distance" relationship (Brookfield, 1975, p. 91).

Perroux suggested that the interactive forces among units in economic space (as an abstract space) are formed by the three different relationships.    With respect to economic space Perroux (1950) defined a "growth pole" as a polarized grouping of businesses or firms (or a set of economic units; activities) around an industry or a dominant firm.    Is it only economic units, agents, or activities that can be polarized? Can "social" (or political) units, agents, or activities be similarly concentrated into poles of activity that facilitate growth in one area while restricting it in others?    In order to answer the question this dissertation proceeds to a review of studies of related theories about (coordinating) networks in and around polarized "social" institutions or organizations, as well as Perroux's (1950) economic institutions or units.    In particular, the next section will focus on the application of the three sets of relationships to explain growth poles in both economic and political space.    In this study "political space" refers to a type of abstract space (Perroux, 1950), which is defined by planning, magnetic force, and homogeneous aggregation as "political relations," in the same way that Perroux (1950, 1955) defined economic space by economic relations.

## The Application of the Three Relational Properties to Define Growth Poles in 'Political Space'

The proverb, "Birds of a feather flock together," seems to express a perspective on the role of social relationships in furthering the existence of economic growth poles. Studies of growth coalitions and the resulting perspectives summarized under the heading of urban regime theory (Molotch, 1976; Logan & Molotch, 1987; Stone, 1989; Wolman, 1996; Rosentraub & Helmke, 1996; Logan et al., 1999) have illustrated the

effects and importance of interactions and relationships between local economic and

political elites to direct if not shape local economic activity. Other students of

political economy (Tollison, 1982; Buchanan et al., 1980; Tullock, 1967) also tried to

apply an economic approach to explain political behavior in terms of rational actors in

what has been labeled rational actor theory or public choice theory.

What these perspectives have in common with each other, even though they

use different terms, is that they deal with the coordination of transactional relationships.

It is explicit that such an inter-organization network or institutional tie is a kind of

relational property that abstract space can have when it is approached either as an

economic or political space. Similar to people in economic space, people in political

space can implement and direct a plan to attract resources and activity to a specific

geographic area.[15] These relationships form social networks that in turn define

economic outcomes or space.

Perroux (1950) embraced the idea of political space and the role social

networks assumes in defining economic space. He noted (1950, p. 100) that political

space (or cultural space) could "coincide more or less" with economic space (e.g., as

the space configured by economic networks and social networks in Figure 2-1 on the

next page). Perroux (1950) was careful to note that physical and abstract space may

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[15] Likewise, theories of network governance and transaction-cost approaches about the
coordination of inter-organizational networks or institutional ties (Jones et al., 1997; Liebeskind et
al, 1996; Granovetter, 1985; Kreiner & Shultz, 1993; Alter & Hage, 1993; Larson, 1992; Gerlach &
Lincoln, 1992; Dubini & Aldrich, 1991; Powell, 1990; Miles & Snow, 1986) support the
conceptualization of political space defined by "plan(ning)" as (coordinating) a set of transaction
relations and the homogenous aggregation of such relations. The new institutional economics –
which Ronald Coase (1937, 1960), Oliver Williamson (1975, 1985), Douglass North (1990, 1991,
2005), et al. developed with an emphasis on the "economic interaction of diverse social institutions"
– also supports the conceptualization of political space defined by planning as (coordinating) a set
of transaction relations and the homogenous aggregation of such relations.

not coincide but do overlap.   He criticized the illusion that physical space and abstract space must be identical to affirm the role of social networks in the direction and creation of growth poles of economic activity.

**Figure 2-1. Reinterpreting Perroux's (1950) Economic into Socioeconomic Space**

**Economic space defined by a plan; field of forces; homogenous aggregate**
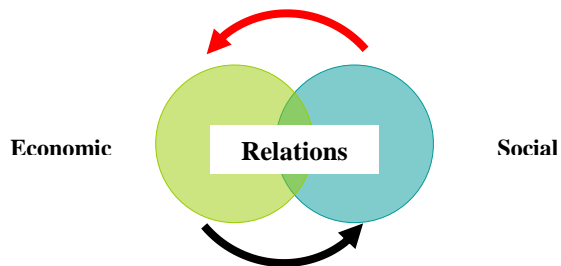


**Political space defined by a plan; field of forces; homogenous aggregate**

Perroux (1950) did not develop his idea of political space as an abstraction. He also did not explain or develop the concept in terms of regional development.   No where in the growth-pole literature (Parr, 1999a, 1999b, 1973; Richardson, 1987, 1981, 1978, 1976; Higgins, 1972; Hansen, 1975, 1972; Moseley, 1974; Lambooy, 1973; Kuklinski, 1972; Kuklinski & Petrella, 1972; Darwent, 1969; Boudeville, 1966) is there a substantial development of the concept of political space as an abstract space for regional development.

Introducing three relational properties defining space (a plan, a magnetic force, and a homogeneous aggregation), Perroux contends that abstract economic space does not correspond to geographic or "geometric" boundaries delineated by (the points, lines, and volumes of) regions.[16]   As a result a growth pole can span political or social

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[16] When translated, "superimposition" (Perroux, 1950, p. 100) seems to mean to have the same

boundaries.    In addition to abstract "economic space," the same rule may apply to

abstract "political space" or cultural space.    Cultural space is beyond the scope of this

dissertation.    However, even in the literature on economic development or "political

economy," most traditional approaches to geometric places[17]  intentionally ruled out the

locational interpretation of political (or cultural) spaces.    Growth coalition or urban

regime theories did, but their investigation was also limited.    Rosentraub and Helmke

(1996) pointed out such a limitation noting that "Part of the frustration of social

scientists in the development of an overarching theory of urban political economy is

that communities are both diverse and dynamic" (p. 56).    Political relations have a

reciprocal impact on or association with "economic relations" within and between

location(s) (Park, 2009b) (as in Figure 2-1).

There is value in examining political space and its impact on economic

outcomes even though Perroux did not fully discuss the concept and its potential effects

on the concentration of economic activity.    Expanding on the idea of a growth pole,

several years later, Hirschman (1958) placed great emphasis on political decision-

making processes and their impact on economic relations.    He raised the view that a

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meaning as "coincidence," which refers to 'occupying the same place in space,' in this original
article in 1950 (Brookfield, 1975):

> A banal sense of space location creates the illusion of the coincidence of political
> space with economic and human space … we go on depicting to ourselves the
> relations between different nations as consisting exclusively of men and things in
> *one* space, conceiving them as *material* objects *contained* in a *container*. (Perroux,
> 1950, p. 90, italics in original)

In contrast, Perroux (1950, p. 92) pointed out that "nation" as a territorial area surrounded
by political frontiers does not coincide with abstract space.    That is the reason why he
criticized the illusion that spaces of judicial ownership and spaces of political sovereignty
superimpose spaces of power of economic utilization.
[17]  For instance, Germanic geometry inclusive of Weberian locational models; Christaller's and
Lösch's central place theory.

propulsive industry can have dominance effects in the interaction with other industries.

In essence, Hirschman (1958) may have identified some of the founding concepts that underpin regime theory, by paying more attention to the role of inter-industry linkage effects and policy processes or experiences than the economics of final demand in regional development.   His theory of political economy – which steps over the borderlines between disciplines as in *The strategy of economic development* (1958) and *The passions and the interests* (1977) – was an attempt to connect and creatively destruct (or self-subvert) the existing paradigms of development studies (Santiso, 2000).

   Although Hirschman's (1958) vision of political 'strategic' efforts to be empowered by communities' collective or group-focused "social energy" (interpreted into a pre-concept of social capital in Woolcock [1998]) was frustrated by the persistence of disparities in developing countries (Park, 2009b), he added other 'political economic' ideas to the concept of a growth pole.   For example, polarization refers to the negative process through which a developed region attracts people and capital in "economic relations" with less developed regions (Hirschman, 1958; Darwent, 1969; Parr, 1999a, 1999b; Park, 2009b) (Figure 2-2).   Myrdal (1957) and Hirschman (1958), however, argued that there is a positive force from growth poles that can "spread" and share already-attracted resources and activities to their hinterlands or less developed regions.   Different agglomeration processes of regional industries or economies in regions are the spatial manifestations of the polarizing or magnetic interaction of negative (−) force and positive (+) forces.   Introducing the concept of "cumulative causation," Myrdal (1957) called the former "backwash" and the latter "spread."   Hirschman (1958) named the former "polarization" and the latter "trickling

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down" of already-attracted resources and activities.

Hirschman (1958) also termed "backward linkages" as those that an

downstream[18] industry has in purchasing inputs from its upstream industries and

"forward linkages" as those that upstream businesses have in selling outputs to their

downstream industries (Figure 2-2).   In terms of Perroux (1950), it can be interpreted

that the pattern and structure of these linkages is a plan, the interaction between them is

a magnetic force, and the agglomeration of them is a homogeneous aggregation (Figure

2-2).

**Figure 2-2. Economic Relations Developed in Perroux's (1950) Economic Space**
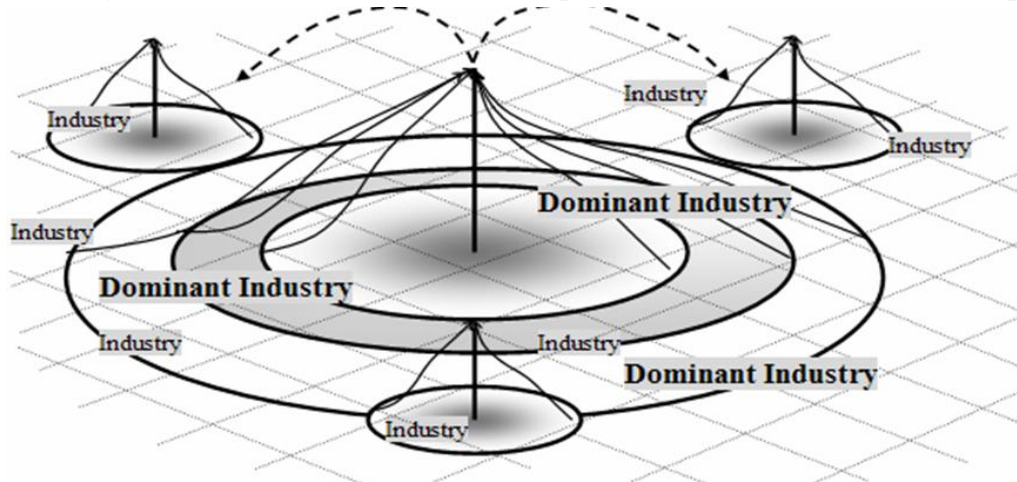


*Note: Arrows denote "polarization." Dotted arrows denotes "trickling down." Thicker lines denote "(the domains of) horizontal linkages" whereas the dotted lines denote "(the domains of) vertical linkages."
Source: Author.   For definitions of horizontal and vertical linkages, see footnote 19.

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[18] Upstream industries are those that supply inputs for a downstream industry that purchases their inputs.   Regarding the strategy of economic development for less developed countries, Hirschman (1958) emphasized the positive impact of backward linkages from the downstream industry to upstream industries.   If a certain downstream industry becomes 'propulsive,' this dominant corporation determines its plan and economic relations with upstream industries.   Those businesses can then become extremely dependent on the propulsive business (e.g., heavy and chemical industries in South Korea and Japan).   For instance, the steel industry in Pohang, South Korea is a propulsive industry.   The central government's intervention in sustaining propulsive industries helped develop (the industrial linkages of) Pohang City (Markusen, 1996).   To better understand a growth pole and its success it is important to clarify how a propulsive industry changes the distribution of economic activity relative to what is described as downstream or upstream businesses.

These linkages are not necessarily spatially concentrated since there are other political, locational, historical, geomorphological, environmental, or cultural factors to prevent such linkages from being clustering or agglomerated. Thus, if a local community in "physical space" wants to attract resources and activities into their local region, policy efforts should focus on the businesses with strongest relationships to upstream and downstream organizations. The interaction of linkages to attract (or polarize) resources and activities is a magnetic force. The abstract structure of such linkages in economic space and political space is a plan, and linkages can also form a homogenous aggregation. With respect to economic relations, traditional studies have focused on the negative (−) and positive (+) aspects of growth-poles' "industrial relations." Traditionally the concept of growth pole has been tightly linked and developed into the economic concept of "linkages" as industrial interdependences reinforcing external economies of scale or agglomeration economies (for a brief summary of the relevant literature, see footnote 19 below).[19] The locational

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[19] Providing the well-known typology of agglomeration economies (i.e., internal scale economies, localization economies, urbanization economies), Hoover & Fisher (1949) suggested a framework for connecting 'sectoral changes' in the industrialized economy with increasingly specialized economic base to 'linkages' (Hirschman, 1958) in regional economic growth processes. In "External economies and the doctrine of balanced growth, Fleming (1955) also developed this structural view on the interaction of inter-industry relationships and external economies for his criticism on big-push and balanced growth theories. Discussing how industrial linkages can foster regional growth by integrating interindustry relations and locational factors, Hoover (1971) also suggested three concepts of linkages. First, a "horizontal linkage" as a supply-constraint linkage between regional firms or industries can have the mutually repulsive (centrifugal) or attracting (or centripetal) effect in the location where firms, non-profit enterprises, and governments economically competes for scarce sites, physical resources, and labor (Malizia & Feser, 1999). Second, a "vertical linkage" as a demand-creation linkage conditions the relation between firms in the same sector or product in the input-output chains of buyers and sellers in cities. Hoover (1971) also noted that "complementary linkages" constitute agglomeration economies together with external economies of scale.

interpretation of the 'association' of economic space with political space is what have not been theoretically built and empirically tested (Park, 2009b).

In addition to the insufficient, inefficient, and ineffective economic relations, Hirschman (1958) pointed to the limitation of less developed countries regarding political experience in the successful implementation of industrialization, modernization, and urbanization.   Many less developed countries such as Ghana and South Korea in the early 1960 fell in "the vicious circle of poverty" (Nurkse, 1953). In Korea, however, a 1962's coup d'état regime implemented a growth-pole and unbalanced growth strategy and succeeded in advancing the national economy to the position of the world's 11th-exporting country through an emphasis on 'strongly-unified' political networks (E. Kim, 1997; Park, 2009b).   The political space within which this occurred may have also included favorable trade relations with the United States in its pursuit of international objectives regarding China and North Korea.   The important point, however, is that the unification of political relationships with the building of growth poles and propulsive industries combined with strong central governments led to a substantial level of economic development.   All of the leaders of three military regimes that orchestrated this development were from Korea's southeast (Lee, 2003; Hwang, 1996; Choi, 1991; Cho, 1975).   Their political linkages were influential and sustained Korea's growth-pole regions' economic linkage in economic space (Park, 2009b).

**The Growth Pole of Nations:**
**The Policy Relevance of Growth Poles in a Nation's Space**


Perroux (1950)'s contention was that abstract space does not necessarily correspond to physical space delineated by geometric boundaries.    Therefore, in order to change the trade flow of commodities that are produced by physical capital (e.g., facilities, production machineries, factories, etc.), human capital, financial capital, and natural resources, a normative effort or strategy for changing economic and political relations may be needed.    Without changing these two relations, regional economic development in this political economy would not be plausible.    This idea is also the baseline of urban regime theory or growth machine theory (Dawkins, 2003).

It was a French economist, Boudeville (1966) who tried to expand and apply the concept of growth pole to geographic areas both in a theoretical sense and a policy sense.    Boudeville (1966) suggested a concept of "growth center" as a 'strategic' location where propulsive industries generate self-reinforced growth through inter-industry linkages.    The empirical evidence identified negative and positive impacts, as well as a level of trickling down of economic activity to other regiond are also found in advanced economies.    For instance, the regional economy of Paris as a growth-pole region has shown a clear spatial and economic manifestation with some negative aspects to retard the growth of other regions or cities.    In France, the literature named it the phenomena of "Paris and the French Desert" (Darwent, 1969).    In Asia, Seoul and Busan have been played a role as growth-pole regions in South Korea especially from the 1960s to the 1980s (Park, 2009b; Choi et al., 2007; Y. Kim et al., 2003; Douglass, 2000) (Figure 2-3).

**Figure 2-3. Present Industrial Concentrations and Development Patterns 1945-2007**
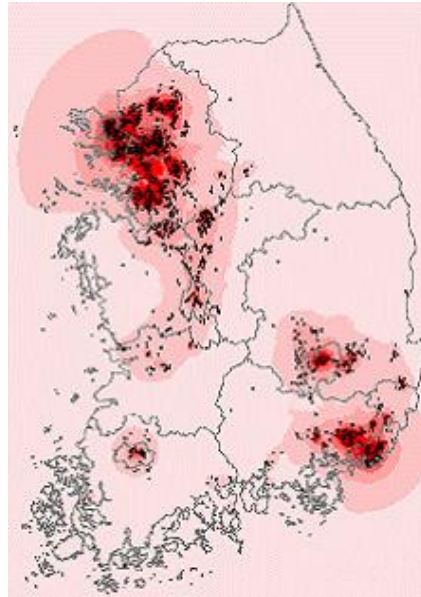


Notes: The larger and thicker agglomeration denotes the larger-scaled and intensive clustering of manufacturing firms in a region.   The SMA (northwestern) (수도권) and southeast (남동임해) industrial complexes still show manifest polarized (locally concentrated) patterns, although they have played a leading role in the Republic's economic growth.   The figure is a geographical information system (GIS) map of Kang's (2008) suggested 'nearest neighbor hierarchical clustering analysis' of 2006 factory establishment data, which are provided by Korea Industrial Complex Corporation's factory establishment management information system (FEMIS).   The past regional development patterns of Korea can be summarized as follows (Douglass, 2000; Park, 2009b):
● 1950s: Korean War (1950 – 1953), Baby Boom, and the Expansion of the SMA
● 1960s: Export-Oriented Urban-Industrial Growth (Policies)
● 1970s: Urban Industrial Corridor Moving from the SMA to Southeast Coast
● 1980s – before the IMF Crisis: Ascending Wages/Currency, Outsourcing, and Deindustrialization
● 1997 –: Decentralization or Anti-Disparity Policies and Interregional Competition and Conflict to
         Survive in a Globalizing Economy through Regions' 'Direct' Engagement in the System

Based on the French mathematician Fréchet's original conception, Perroux

(1950) compared two spaces – geometric and economic – to a "container."    "Concrete

contents" such as natural or built environments are filled or related in (points, lines, and

volumes of) Euclidean geometric space and "abstract contents" are filled or related in

(economic, political, or cultural relations of) economic space.    Perroux's (1950) three

types of abstract economic space – space as a field of forces, space as defined by an

economic plan, and a space as a homogenous aggregate – defines such abstract contents in terms of economic relations, not in terms of local relations within a geometric boundary.[20]   Perroux (1950) emphasized that economic units, activities, or relations can be localized in 'geonomic' (banal) space.   In 'economic' space, however, they 'cannot' be localized.

The above distinction is similar to the one by Ann Markusen's (1996) *Stick places in slippery space: A topology of industrial districts* (Table 2-II).   Markusen (1996, p. 309) viewed (the slippery space of) sticky places as "complex products of (the locally- and socially-embedded relations of) corporate strategies, industrial structures, profit cycles, state priorities, local and national politics" in a territory.   Regarding the conceptualization of space, the difference between Perroux (1950) and Markusen (1996) lies in their detailed 'relational' perspectives of their common spatial concept (Table 2-II).   Myrdal (1957) and Hirschman (1958) discussed (the policy of) the persistent gap in population and employment between the poles and other parts of a "nation" created a self-sustaining cycle (such as one in Figure 1-1 of Chapter One). Markusen (1996) discussed the institutional and organizational aspects of central and peripheral industries or firms, but she also did not explain local and national politics, which were mentioned in her article, to the full.

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[20]  Perroux (1950, p. 96) distinguished everyday space and everyday localization as follows: "… It is not an exaggeration to say that we are still obsessed by 'everyday space' and 'everyday localization.'   This obsession results in troublesome and even tragic consequences; it maintains and aggravates disputes of a territorial nature at a time when evolution itself demands that nations and classes should 'devaluate their frontiers' and, in so far as possible, harmonize those plans of employment of economic and human resources which 'delocalize' not only the progress of our technique, but also the progress of our scientific conceptions of the world.   The moment has arrived to provoke consciously a change of visual angle, to run systematically, knowing well what we do, counter to economic analysis which tries to determine the 'place' and the 'causes of the place' of an economic unit in everyday space. …"

**Table 2-II. Comparison of 'Relational' Perspectives on Space**

|  | Perroux (1950) | Myrdal (1957) | Hirschman (1958) | Markusen (1996) |
|---|---|---|---|---|
| Physical Space | Geonomic | - | - | (Sticky) Place |
| Abstract Space | Economic | - | - | Slippery Space |
| Center (Centripetal) | Centripetal into a Pole | Backwash | Polarization | Core, Hub, Platform |
| Periphery (Centrifugal) | Centrifugal from a Pole | Spread | Trickling-Down | Periphery, Spoke, Satellite |
| Relations | Relations | Relations (Cumulative Causation) | Linkages | Networks |

NOTE: Myrdal (1957, pp. 31-39) built his theory of interdependent (socioeconomic) relations and income convergence by developing the concepts of "spread effects," "counteracting changes," "welfare state" in the framework of his famous "circular and cumulative causation."   Markusen (1996) used the term 'sticky places' for certain locations that "are able to sustain their attractiveness to both capital and labor" in a physical space like a nation or a region.   In comparison 'slippery' space means "a world of dramatically improved communication systems and corporations that are increasingly mobile internationally" (p. 293).   This increasingly-mobile world is quite similar to Perroux (1950)'s abstract space although Perroux (1950) did not emphasize such a factor mobility in his present years.   However, it can be known from the expression "men and things in *one* space, conceiving them as *material* objects *contained* in a *container*" that Perroux (1950, p. 90) also conceived factor mobility in his mind.   Perroux's (1950) difference to Markusen (1996) lies in his emphasis on the "delocalization of economic units and relations" (p. 103), which he meant the illusion that physical (geonomic; banal) space does not necessarily coincide with abstract spaces such as economic space or political space in nations.   Markusen (1996) contributed to the literature by reflecting and adding the factor mobility in later years of the twentieth century in her theory building.   Markusen (1996) did not quote either Perroux (1950) or Perroux (1955).

Perroux (1950) stresses the ambiguous concept of "nation" (for his perception of nation or region and his definitions' difference to common definitions in social sciences, see the note for Table 2-II) has given rise to, and kept in being, the "illusion" that the various human and economic spaces are "superimposable (perfectly coincided)."   Perroux (1950) defines a nation or region along the same lines as political scientists.   Perroux's (1950) abstract economic (or political) space is defined not by "physical territories surrounded with (a nation's or a region's) political frontiers"

but by (1) space as defined by a plan, (2) space as a field of forces, and (3) space as a homogenous aggregate.

Although Perroux (1950) suggested three overlapped and partially-coincided (not superimposable or perfectly-coincidable) abstract spaces (e.g., economic, political, and cultural spaces), what has been frequently studied centering on the three 'relational properties' – interaction of transaction, a magnetic force, and homogenous aggregattion – are 'the economic relations of abstract space,' not 'political relations.'[21] Such abstract space can also be spatially manifested differently to (a nation's or a region's) "physical territories surrounded with political frontiers." Therefore polarized patterns, such as those in Figure 2-3, can be a spatial and geonomic manifestation of both economic space and political space as abstract spaces. These two spaces' intersection in Figure 2-1 can be formed either naturally (i.e., social phenomena) or intentionally (i.e., policy). The next part of this section will review and discuss the social network – which is the other name of the political relation of growth poles in abstract space – and their implications for (Korean) regional development policies.

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[21] Perroux's (1950, p. 92) original distinction between "the income in the nation" and "the income of the nation" also emphasized 'the relational property of economic space': "… Formulated with the sole resources of logic and ordinary language, it already greatly aids us to interpret the innumerable acts of delocalization of economic activity in the contemporary world. [new paragraph] This delocalization appears in relatively simple form in relation to the classical dispute on national income. Leaving aside all the difficulties of the definition of income, shall we calculate the income 'in' the nation, or the income 'of' the nation? The income 'in' the nation is the sum of net services obtained within the national territory by nationals and residents (not nationals). The national territory is, in this case, considered as a container; men and objects are contained therein. The observer determines for a period the flow of net services which issues from the whole. This brings us back to defining the space from which the national income is obtained and to confusing it with the territorial area surrounded by 'political' frontiers. …"

**Growth Pole and Social Network: Elite and Regime Theories and Policy**

**The Role of Elites' Social Networks in Developing Growth-Pole Regions**

An understanding of social networks and their contribution to elite-led economic growth poles in Korea is especially valuable since Korean elites inevitably and officially (if not explicitly) adopted growth-pole strategies to overcome poverty.[22] In the regional development policy process, Korean elites as policy makers adopted and implemented growth-pole (Perroux, 1950, 1955) and unbalanced growth strategies (Hirschman, 1958) to grow its economy (Park, 2009b; Choi et al., 2007; Y. Kim et al., 2003; Douglass, 2000).[23]  Since 1972 growth-pole strategies were 'officially' implemented and brought negative consequences associated with 'distribution,' despite its effectiveness in 'allocating' resources for national economic growth.[24]

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[22]  Perroux (1950) also began the original article by mentioning 'pathological complexes,' which could make a reasonable policy very difficult, had increased amongst elite and masses.

[23]  However, Perroux's (1950) concept of 'abstract space' had not been fully tested enough to give a rationale for past-regime policy makers' employment of his insightful concept (Darwent, 1969; Parr, 1999a, 1999b).   Aside from such theoretical vulnerability, growth-pole strategies, together with unbalanced growth strategies, in practice were very effective to grow the Korean economy (Table I and Figure 1 in Chapter One). Since 1960 and 1962, Japan also implemented growth-pole strategies from its first Comprehensive National Development Plan by the Ikeda cabinet's National Income-Doubling Plan (Kim et al., 2003).   The plan laid the groundwork for the Pacific Belt (e.g., Keihin, Nagoya, Hanshin, and Kitakyushu regions) (Takafusa, 2004).

[24]  The unbalanced growth strategies were inevitably adopted. After the Korean War (1950-53) Korea's lack of capital or resources and inexperience in economic success was increasingly calling for a nation's policy efforts through national economic planning and programming, as Rosenstein-Rodan (1943) and Nurkse (1953) observed in Eastern Europe.   However, it was such a less developed country's dilemma that the effectiveness of government interventions was not certain enough to remedy the inefficiency of the market failure (Krugman, 1995).   In addition, its socioeconomic conditions were much more desperate than the American South where New Deal and World War II public capital investments facilitated a 'big push' (Bateman et al., 2008).
    Without the 'critical mass of investments' (Nurkse, 1953) such as those in the American South (Bateman et al., 2008), simultaneous capital investment in complementary industries to spontaneously expand one another's market was not realistic.   Korea's 'cumulative causation'

As a result of the negative consequences of growth-pole strategies (as discussed in Chapter One) several previous administrations developed policies to counteract the excessive centralization in growth-pole regions. After the reestablishment of civil government in 1993 (for the tenure and government form of past administrations, see Table 1-III in Chapter One), some decentralization efforts (e.g., establishing local autonomous governments, relocating public institutions to local regions, etc.) have tried to counteract existing economic and political centralization trends (i.e. Seoul and Busan-southeast). Two recent national governments have instituted policies to spatially reorganize the (chaebols') industrial base and district with I-O linkages. These efforts to bring more balanced growth to other parts of the country have not been successful (Park, 2009b; Choi et al., 2007; Y. Kim et al., 2003).

Their lack of success may be related to social networks that continued to sustain existing economic linkages (Hwang, 1996; Park, 2009b). Discussing the "informal" politics of economic development in Korea, Hwang (1996) emphasized the

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(Myrdal, 1957) of economic 'resource deficiency' and economic 'policy inexperience' was a structural problem. Such a less developed country's increasing social costs due to diseconomies was a starting point for two emerging structural approaches in development economics. However, the approaches differed in strategies (Krugman, 1995).

Hirschman (1958) captured a core issue of the 'political economy' and criticized balanced growth strategies. His criticism of balanced growth strategies centers on their two limitations: one is economic and the other is political. First, the creation of effective demand by investments in complementary industries was not plausible in less developed countries because they often lacked the necessary critical mass of investment capital. Second, Hirschman (1958) also pointed to poorer countries' lack of decision-making and implementation experience in industrialization and urbanization.

Hirschman's (1958) unbalanced growth strategies emphasized the functional balance of 'economic policies' to realistically solve the 'resource deficiency' in structurally-embedded in less developed regions. In light of Japan's adoption of growth-pole and unbalanced growth strategies in the early 1960s, Korea's decision makers adopted and implemented similar strategies through economic development planning since the 1960s (Kim et al., 2003). Unbalanced growth strategies can be rationalized only when they are 'inevitably' adopted (Hirschman, 1958), as an effective policy means for economic goals. That is the reason Hirschman (1958) noted that policy efforts to offset the polarization effect could be needed if unbalanced growth strategies continue not to generate "net spillovers" (Richardson, 1976).

crucial role of "lines" in selecting (nine-rank) career bureaucrats and political

appointees in governments and its affiliated institutions (e.g., Ministry of Finance and

Economy, Economic Planning Board, Korea Development Institute).    Such "lines" as

social networks can define the structure of the administrative elite who participate in

the economic development (policy-making) process.    These elites have played a

decisive role in "planning" regional development (processes), through government

policies and plans.    Many of the elites were from two growth-pole regions.    They are

usually concerned with the enhancement of wealth levels in their home regions.    This

is why efforts to accelerate the development of the economy led to the concentration of

capital and activity into areas that resemble the unbalance growth pivoting around two

growth-pole regions described by Perroux (1950) and Hirschman (1958).[25]

Korea increasingly suffers from the seldom-narrowed gap of regional disparity

(Park, 2009b; Choi et al., 2007; Y. Kim et al., 2003; Douglass, 2000).    Disparities in

regional wealth as a result of unbalanced growth strategies and the resulting negative

consequences have increased (Park, 2009b; Choi et al., 2007).    Hirschman (1958) also

emphasized that policy interventions to minimize disparities' are needed if trickling-

down has not been realized and disparities persistent.    Growth-pole and unbalanced

growth strategies can be rationalized only when they are 'inevitably' adopted and

implemented (Hirschman, 1958), as an effective policy means for attaining economic

goals to produce efficiently "growth-pole (net) spillovers" (Richardson, 1976) of

[25]  It was natural that the local elites in growth-pole regions often led regional development policies
and plans to a formation of 'advantaged' economic networks tailored to the improvement of their
hometown regions' welfare.    In particular, this has led to the concentration of economic activity
and people in the Seoul Metropolitan Area (SMA).    More than 47.5 percent of the GDP, 90 percent
of the major headquarters, and 46 percent of the population is concentrated in 11.8 percent of the
Republic's land (in 2006). In addition, the Korean National Statistical Office (KNSO) (2006)
forecasted the increasing trend of SMA's increasing share in the future.

"backwash and spread" (Myrdal, 1957) or "polarization and trickling-down"

(Hirschman, 1958) (Figure 2-4).

**Figure 2-4. Richardson's (1976) Growth-Pole Spillovers as Positive Effects: 4-to-8-Year Schedule ($t_1$) of Maximum Polarization; 15-Year Schedule ($t_2$) of Crossover**
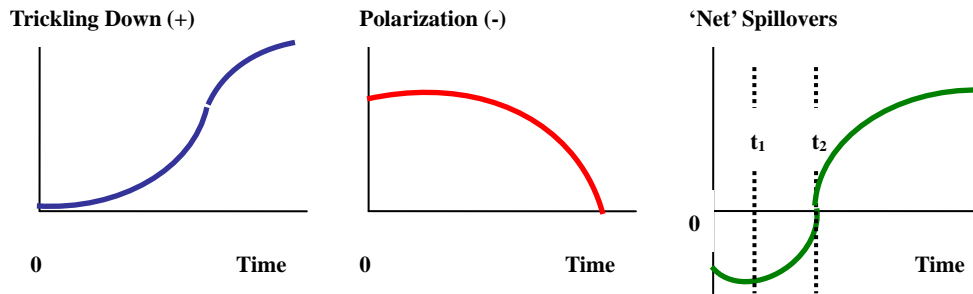


Source: Richardson (1976).   In Richardson (1976) at least 15 years after an initial implementation of growth-pole strategy was suggested as a point ($t_2$) when net spillovers occur.

Therefore 'economic' and 'political' rationales can be simultaneously

supported only when the net spillovers are realized at the intended time as scheduled, at

least 15 years[26]  (for reasons why this time period critical is, see footnote 26) after the

policy implementation (Park, 2009b; Y. Kim et al., 2003; Richardson, 1976).    The

strategies have been adopted to move the country as quickly as possible from its

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[26] In Growth pole spillovers: The dynamics of backwash and spread. *Regional Studies*, 10(1), Harry Richardson (1976) theoretically analyzed the possible schedule when "spread" (or trickling-down) exceeds the "backwash" (or polarization).   Richardson (1976) used the concept of "growth pole spillovers" as a net present value (NPV) of the future return was expected to be large enough to compensate for the negative effect of the present unbalanced regional and industrial development afterwards (see Figure 2-4).    Passing a "maximum polarization point" ($t_1$), the positive (+) effect of trickling down begins to outpace the negative (-) effect of polarization.   Passing a "crossover point" ($t_2$), the net 'spillover effect' of trickling-down and polarization turns into a positive effect. Richardson (1976) suggested the point $t_2$ would be more or less at least 15 years after the initial implementation of growth-pole strategies.    It was the logic to rationalize the policies of 'growth pole' and 'unbalanced' development.    In 2009, Gil-Hwan Park (2009b) contradicted his hypothesis, presenting the results of both inter-industry analysis (i.e., Input-Output [I-O] analysis) and network analysis of the Bank of Korea's "inter-regional" I-O tables for 2003.   The "inter-regional" I-O table was first made in Korea for 2003 in April, 2007.   Choi et al. (2007), Kim et al. (2003), and Douglass (2000) also supported the proposition that an insufficient amount of trickling down worsened interregional imbalance or disparity.

undeveloped state to a developed one; hence, the economic rationale for unbalanced

growth strategies is sufficient in terms of "polarization" (Hirschman, 1958).    The

intended net spillovers – at least from the primate growth-pole SMA to other parts of

the country and from local growth centers to its hinterlands – have not taken place

sufficiently (Park, 2009b; Choi et al., 2007; Y. Kim et al., 2003) although Richardson

(1976) suggested the time of net spillovers may not occur for at least 15 years.    The

strategies were implemented 'officially' by the first National Comprehensive Physical

Plan (NCP, 1972 - 1981).    If empirical data and socioeconomic indices (to be

presented in Chapter Four) do not support the net spillovers, unbalanced growth

strategies may not be rationalized in terms of "trickling-down" (Hirschman, 1958).

Since Myrdal's (1957) "backwash" was the negative potential of growth-poles

and unbalanced growth strategies, and those effects were expected to increase during

the initial stages of the implementation of growth-pole and unbalanced growth

strategies (Richardson, 1976), Korean economic development planning also considered

masses' increasing concern about inter-personal or inter-regional income disparity.

Together with Five-Year Economic Development Plans (EDP, 1962 – 1996), Park

Chung Hee's administration (1962 – 1972) adopted and implemented Korea's first NCP.

Five-Year Economic Development Plans have also included the following policy

orientations from its third period: growth, stability, balance (1972 – 1976); growth,

efficiency, equity (1977 – 1981); stability, efficiency, balance (1982 – 1986); efficiency,

equity, advancement, welfare (1987 – 1991); autonomy and competitiveness in the new

economy (1992 – 1996) (KHRIS, 1996).    While the growth-pole strategy may well

have helped advance Korea's economy, imbalances and inequities grew as other parts

of the country lagged in development more than decision-makers and scholars expected

(Park, 2009b; Choi et al., 2007).   By examining the social networks and growth

coalitions of elites, which have led regional development policies, it may be possible to

better understand the factors contributing to the persistence of disparities.

**Elite and Growth Coalitions**

The association between social linkages for economic gain has been analyzed

first in studies of elite behaviors (Mills, 1956; Useem, 1984; Domhoff, 1990) and then

by scholars interested in the operation and networks of coalitions of actors focused on

regional growth.   Elites and their growth coalitions had a decisive role in defining the

development patterns and processes of growth-pole and other regions (Park, 2009b;

Choi et al., 2007; Kim, 2005).   Elite groups can and do impact societal trends and

changes (Mills, 1956).   In particular, Mills (1956) defined the power elite as a 'group

of men, similar in interest and outlook, shaping events from invulnerable positions

behind the scenes.'   Mills (1956) argued that the power elite comprised of people who

control access to decision making that effects the distribution of resources.   Mills also

discussed the interaction between political, military, and economic elites who are at the

top of the three institutions that effect a society and its economy.[27]   He preferred the

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[27] Mills (1956), however, claimed that the phrase 'ruling class,' in its common political
connotations, does not allow enough autonomy to the political order and its agents, and it says
nothing about the military as such.   Instead accepting the simple view that high economic men
unilaterally make all decisions of national consequence, he held that such a simple view of
'economic determinism' must be elaborated by 'political determinism' and 'military determinism';
that the higher agents of each of these three domains now often have a noticeable degree of

term power elite to 'ruling class' because within his framework lied a theoretical

perspective that explained how economic classes are able to exert political control.

Regime theory, a more recent elaboration extends' Mills' view by looking at

the intersection of local economic development and politics (Dawkins, 2003).   Urban

regimes, in the view of some analysts, create growth coalitions of allied leaders from

various sectors of the economy to boost local growth.   The concept of growth

coalition was introduced by Molotch (1976) and Logan and Molotch (1987).   A

growth coalition refers to a political coalition through which regional firms or elite

groups influence urban economic development and, in the process, increase their own

wealth or the wealth of their corporations.   Both urban regime and growth coalition

theories focus on the interaction of urban economy and polity, synthesizing neoclassical

and structural views on the governing coalition and organizational arrangements of

economic development and welfare improvement.   This approach is similar to

political economy, which often assumes methodological individualism.   Thus, urban

regime and growth coalition theories can be viewed as theoretical or empirical

approaches to the macro-governing of urban economic development and welfare, using

theories, tools, or methods shared with political economy in urban context.

Regardless of whether regional firms and elites are informal or not elected,

their role in local economic development becomes more important.   Logan and

Molotch (1987) argued that many capitalist cities pursue sustained growth, and such

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autonomy; and that only in the often intricate ways of coalition they make up and carry through the
most important decisions.   Mills (1956) also argued that these elites in the 'prime three' institutions
and their orders can have an uneasy or unstable alliance based upon their 'community of interests'
driven by the military metaphysic, class identity, interchangeability, and socialization and
cooperation.

growth-oriented elites include developers, realtors, banks, regional press, universities

or colleges, sports teams, electricity or water providers, chambers of commerce, and so

on.    These groups share a view that their regional economy should sustain growth

because depression in the regional economy can bring about personal as well as

collective economic loss (Logan et al., 1999).    In many cases, elected officials in cities

are also included in growth coalition.    They are closely related to and conformable to

or responsive to the demand of 'growth-oriented land-based elites' even if they are not

included in growth coalitions, who strive for benefits from local economic development

behind the market stage (Wolman, 1996).


**The Political Economy of Economic and Social Networks**


        The behind-the-market linkages (or informal leakages) of 'growth-oriented'

land-based regional development creates benefits and liabilities.    A distortion of

'economic space,' a decrease in the provision of public service, and a relegation of

welfare policies to a lower priority have been noted by some analysts, but challenged

by others (Rosentraub, 2009).    Within South Korea there has been a high level of

polarized development.    Together with theories of growth-pole development and

unbalanced growth, this "place-based" theory can emphasize growth-oriented elites'

networks for "place-based" (or local) economic interest determines much of the urban

politics and economic development.    It is also possible that, through their social

networks, the growth coalition pursues policies that yield to it a disproportionate share

of benefits or that the coalition uses governmental subsidies and supports for its

favored programs displacing other options or policies that could advance other communities within a city or metropolitan region.[28]

Rosentraub and Helmke (1996) summarized the literature on a "general theory of urban political economy" into two perspectives. First, proponents of location theory emphasize the development of needed social institutions "around the nexus of cost efficiencies." Second, advocates for regime theory or growth coalitions emphasize "elite coordination" to explain growth and the distribution of resources. Rosentraub and Helmke (1996) noted that "growth coalitions develop but occur in response to favorable cost factors and other geographically and technologically 'defined networks.'"

In sum, urban regime (theory) can be regarded as a sub-field of political economy that focuses on local elite growth coalitions of economic and social networks for governing and developing a city or metropolitan region. It emphasizes the networks and autonomies of and cooperation between participants including regional economic engines or anchors, elites, community organizations, government officials, and so on (Stone, 1989).[29] Although regimes emerge as the problems which growth-

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[28] Originally, regime theory is derived from international political economy which claims international regimes influence the behavior of states or other international actors. It presupposes that cooperation is possible even under the anarchy of states, and regimes are by definition, examples of international cooperation in the liberalist view. However, it does not have to deal only with international cooperation as "institutions possessing norms, decision rules, and procedures which facilitate a convergence of expectations." On the other hand, Krasner (1983) defines regimes as "a set of explicit or implicit principles, norms, rules, and decision making procedures around which actor expectations converge in a given issue-area." It covers human interaction ranging from formal organizations to informal groups.

[29] Many of these debates are related to the urban growth machine (Molotch, 1976). Urban growth machine is the mechanism by which all (sub-)urban areas development institutions, political structures, relationships between business entities, and public sentiment which work in concert to guarantee that land purchased today can, and will, be sold tomorrow at a profit. Urban growth machine can be thought as a machine that produces risk-free land speculation

oriented economic development by place-based interests caused have worsened, they may be also different versions of political coalition unless they are free from growth-oriented elites' place-based economic interest.

Given growth coalitions develop but occur in response to favorable cost factors and other geographically and technologically defined networks (Rosentraub & Helmke, 1996), it is natural that such relations of growth-oriented elites' place-based economic interest can define or change networks. The same view may apply to Perroux's (1950) original definition of abstract space as a type of network (Dawkins, 2003), as Perroux's (1950) defined "abstract space" as a set or plan of agglomerated economic or political networks that are interacted by centrifugal and centripetal forces.

In South Korea, although there were efforts to decentralize population and employment out of two primate growth-pole regions, it was natural for regional elites – who were born and grown in the two growth-pole regions, to develop their hometown regions first. This made a self-sustaining cycle in the primate growth-pole regions (as described by Figure 1 in Chapter One). That was the reason the leaders had to more or less resist the "self-interested" rent-seeking actions of elites' – which can be compared to the elite-led "romantic" government action (in 'government as a collective institution and organization designed to undertake action for the wealth of the group' in Buchanan & Musgrave [1999]; Tollison [1982]; Buchanan et al. [1980]; Tullock [1967]) that would sustain the existing growth-pole regions. Despite such an explicit role of political networks, previous decentralization policies did not consider the elites' social networks to impact the policy of developing economic networks.

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opportunities. In that context, cities become just machines which manufacture profits in the future from land investments made in the present.

It should also be noted that in areas with weak coalitions there is often a political longing for a group that will organize a community for economic development. If regions, such as non-growth-pole regions in Korea, have continued to experience a negative cumulative causation of regional economy, such political longing is more likely to decrease social, political, and economic stability (Olson, 1982; Easterly & Levine, 1997; Nel, 2003; Park, 2009b). Hence the problem is to find or seek a coalition that can be 'public-regarding' as it advances a 'social and economic networks of local and regional economy,' generating benefits for itself as it does so.

To discuss the political economy of economic networks and social networks in Korean growth-pole regions and other parts of the country, Chapter Three will examine the existence of growth poles and the existence of disparities that are harmful to (and should be creatively destructed for) Korea's future. Efforts to use different policies and practices to balance development will also be assessed in Chapter Four. The methodology used to study social networks is explained in Chapter Four and the research questions and hypotheses will be specified. The data analysis is contained in Chapter Five and the final chapter will conclude with the summary and policy recommendations.

# CHAPTER III

## THE PRESENCE OF GROWTH-POLE REGIONS

One day the lion went hunting together with three other animals. They surrounded together and caught a deer.   With the consent of the others, the lion divided the prey into four equal shares.   However, just when each animal was about to take his portion, the lion stopped them.

"Wait," said the lion, "I am to receive one of these portions because I am a member of the hunting party.   Since I am considered to rank so high among the animals of the forest, I am to receive the second share.   I am to receive the third share because I am known for my courage and strength.   As for the fourth one, if you wish to argue with me about its ownership, let's begin, and we will see who will have it."

(The lion's share, a fable by Aesop)

The literature reviewed suggests that growth poles are comprised of (1) transactional relationships, (2) sets of industrial and/or corporate aggregations, and (3) magnetic forces (the centrifugal and centripetal forces that can lead to increasing concentrations of economic and social relations).   It was also observed that regional elites often form coalitions or regimes that become social networks, described as local

growth machines that capitalize upon existing economic networks.    One can speculate that economic and political spaces in growth-pole regions are unified by these networks. Such an association of economic and political spaces may lead to a reinforcing of interregional disparities as elites strive to expand their economic networks and enhance wealth levels, often in the home regions which are existing growth-pole regions.

The first section of this chapter examines whether such "macroconsequence" groupings (significant unintended consequences for a large group: Schelling, 1978), which can be caused by "micromotive" (individuals' intentional human action), occurred in South Korea.    Prior to investigating the existence of social networks and their association with economic linkages in growth-pole regions, this chapter will investigate the existence of economic networks in Korea's growth-pole regions.    The efforts made by the national government to diffuse economic activity will be analyzed in the second section of this chapter to illustrate the need for a different set of initiatives if new or more preferred patterns of economic activity are to emerge.    The third section discusses two recent governments' approaches to balancing regional development, in order to clarify the rationale of investigating social networks and their influence on economic networks.

### Korea's Growth-Pole Regions: Comparing 'Quantitative' Trickling Down Using Time-Series Data and an Index

If a certain region has sustained the largest share in industrial employment or valued added (growth) 'nationally,' it can be inferred that such a region is the location of a propulsive industry or a larger investment.    The first NCP adopted the strategies

to develop 6 'growth centers' with 2 primate growth-pole regions.   Those local growth centers and their hinterlands (designated in the 1970s) were expected to grow as 'metropolitan area-wide development' was targeted (in the 1990s).   The most important criterion of evaluating the success of growth-pole regions or growth centers is the reciprocal relationship between those strategic loci of growth poles and hinterlands (i.e., polarization followed by trickling down at least 15 years later).   To examine such patterns of growth poles in detail, first, the times-series data of yearly GRDP and employment will be used.

One of the goals of Korea's development policy has been that growth from its successful centers would trickle down first to suburban or adjacent areas and then to other parts of the country.   Standard theory might expect a trickling-down in response to increased factor costs in the loci of growth poles.   The data show, however, that businesses perceived the benefits of location in the primate growth-pole regions (especially the SMA) to be larger than the cost savings from a more distant location.

After fostering 8 growth centers in the 1970s, Korea's growth-pole strategy was then developed into a strategy of "decentralized concentration" (Y. Kim et al., 2003) to the hinterland of each growth center.   To compare trickled-down employment's quantitative difference across regions, an index developed from Bendavid-Val (1991) was used.[30]   To identify the "trickling-down" in growth-pole

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[30] In regional economic analysis, as an 'intraregional' variation of the 'intra-national' location quotient (LQ), the distribution quotient is defined as follows (Bendavid-Val, 1991, pp. 131-132):

*Distribution Quotient* (*DQ*) = ($Es_i$/$Es$)/($Er_i$/$Er$) = ($Es_i$/$Er_i$)/($Es$/$Er$) or

*The sub-region's fraction of a specific industry in the region /*
*The sub-region's fraction of the total industries in the region*

where $Es_i$ is the sub-region's employment of industry $i$, $Er_i$ is the region's employment of industry $i$,

regions, the degree to which the total industries (in addition to the shifting shares of specific industries) are dispersed within a growth-pole region (in comparison to other growth-pole regions) needs to be examined.    Korea's five hinterland areas are adjacent to each growth center, the distribution quotient's 'intraregional' comparison can be applied to the 'interregional' comparison of center-hinterland employment.    For the 'interregional' comparison of employment change with an emphasis on the growth center's trickling down of total (not specific) employment to the hinterland, the following index was constructed.

*Trickling-Down Index* (*TDI*) =
*A hinterland's fraction of the total industries in all national hinterlands /*
*A growth center's fraction of the total industries in all national growth centers*

The TDI of employment reflects the following:

"The 'proportion' of one hinterland's total employment to the nation will be the same as the 'proportion' of another growth center's total employment to the nation, if the same 'rate' of trickling-down occurs across the nation over time (when the difference in the absolute amount of 'initial' employment is ruled out)."

Figure 3-1 shows the time-series change of the TDI for each growth center-hinterland.    The SMA is the only area whose hinterland's fraction increased.    The Busan-southeast region shows a sustained level of TDI.    Other regions' rate of trickling-down actually decreased.    To summarize, the 'intended' trickling-down of 'every' growth center to its hinterland has not occurred.

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*Es* is the sub-region's total employment, and *Er* is the region's total employment.    This formulation is the same as LQ, except using 'region' instead of 'nation.'    The DQ indicates the degree to which a specific industry is dispersed or concentrated within the region (i.e., a sub-region's relative dominance in that industry).

**Figure 3-1. A Comparison of the Trickling-Down Index of Employment**
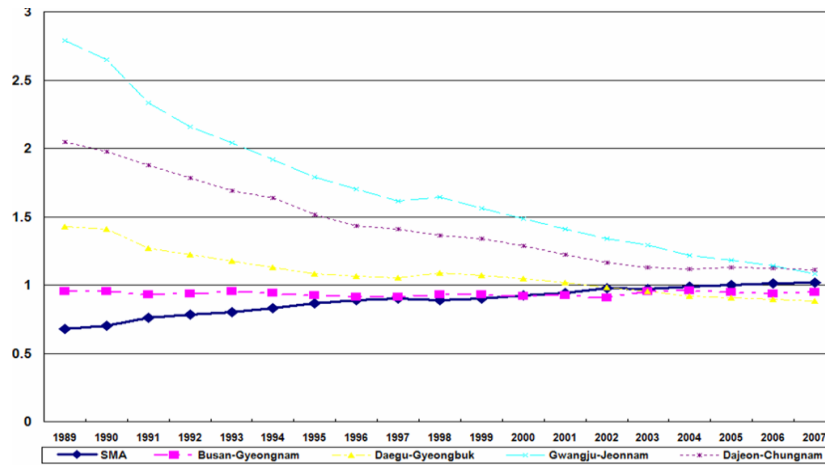


Notes: Every growth-pole region in Korea consists of one growth center and one surrounding hinterland area, except for the two primate growth-pole regions.    The SMA consists of Seoul, Gyeonggi, and Incheon.    The Busan-southeast region consists of Busan, Gyeongnam, and Ulsan.

**Figure 3 -2. The Increased Employment of Gyeonggi, 1989 – 2007 (in thousand persons)**
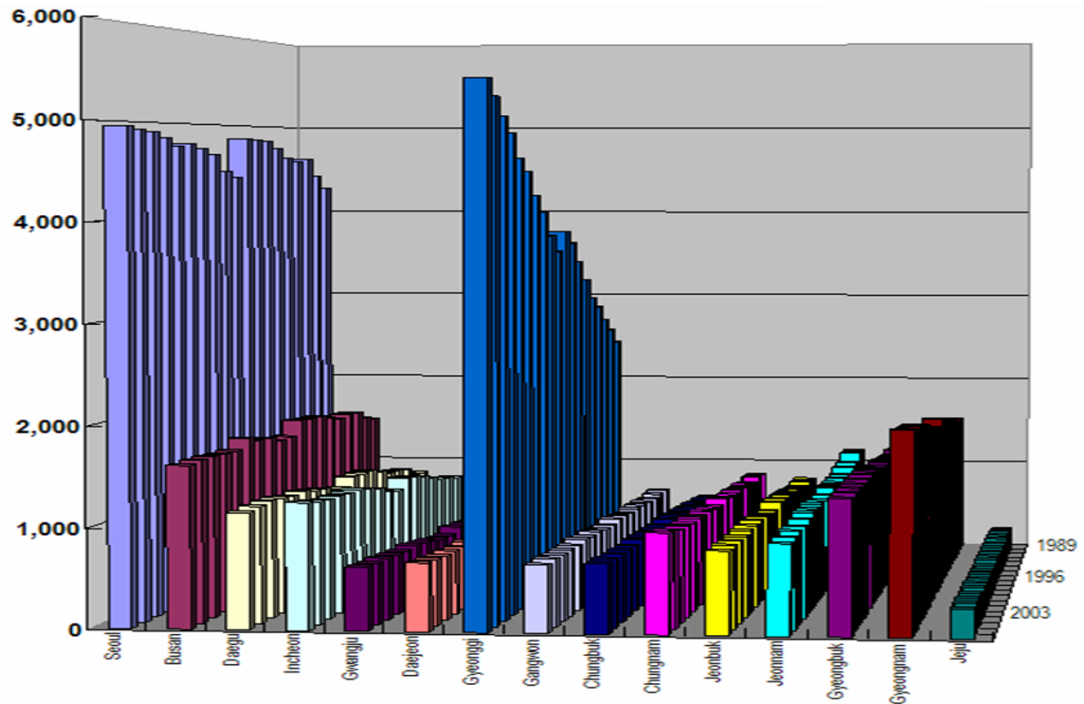


▌ 5 Major Growth Centers (except Incheon) ▌ 5 Major Growth Centers' Hinterlands and Others ▌

While the employment opportunities connected to Seoul (having the more service-oriented and high value-adding industries [Park, 2009b]) did trickle down, its GRDP share in the SMA or the nation did not decrease (Figures 3-2 and 3-3).

**Figure 3-3. The Increased GRDP of Seoul and Gyeonggi, 1989 – 1999 and 2000 – 2007**
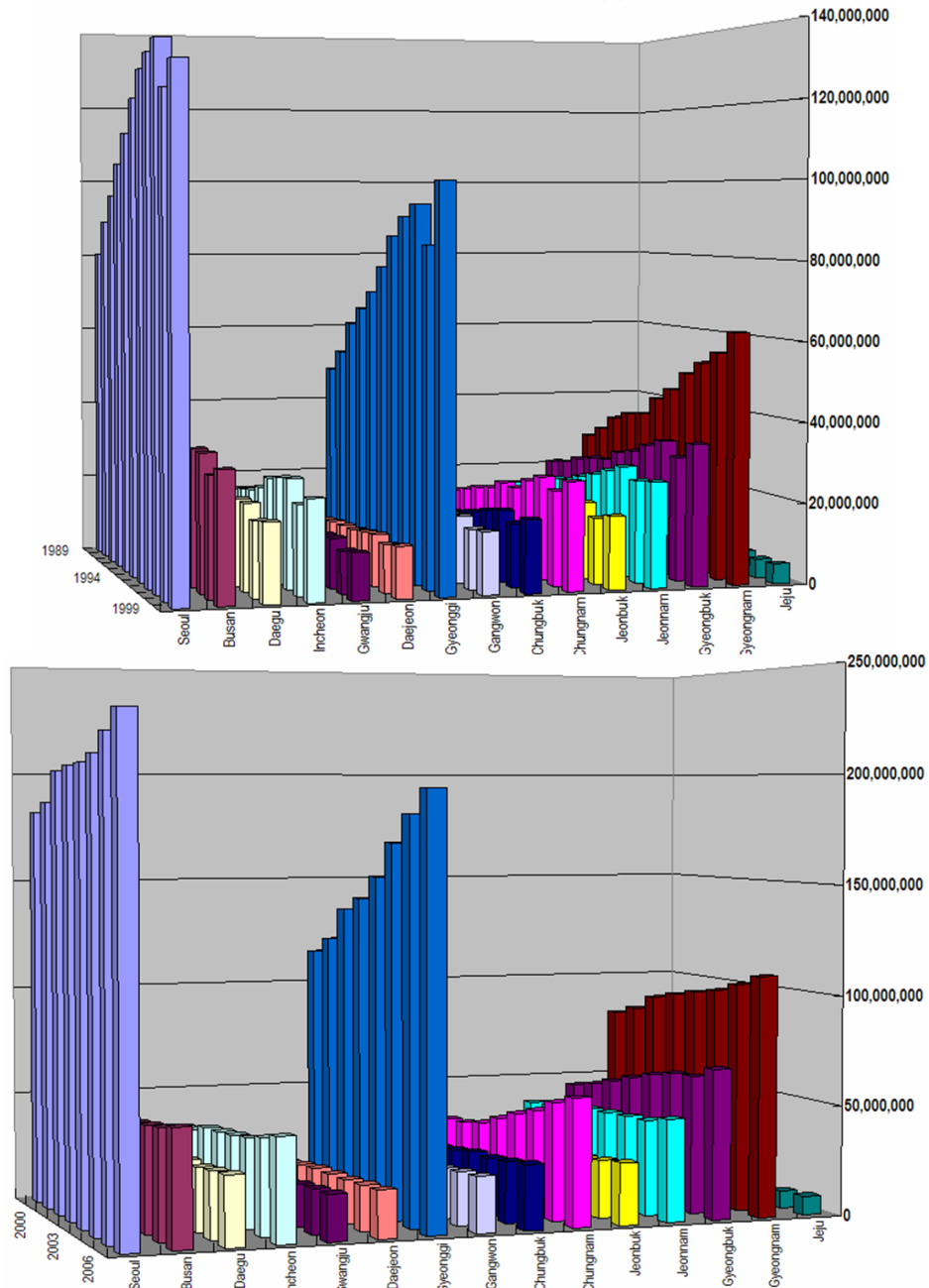


Notes: GRDP in one million (Korean) won.    The GRDP data of 1989 – 1999 was deflated for the reference year of 2000.    The GRDP data of 2000 – 2007 was deflated for 2005.
Source: Author's compilations of KOSIS data.

Regarding metropolitan Seoul's expansion, Figure 3-4 shows that in two

different construction periods first (1989 – 1995) and second (2001 – ) new towns were

created and there was increased employment opportunities especially in the first-period

new-town areas.

**Figure 3-4. Rising Employment Centers in the SMA 1st (1989 – 1995) New Town Areas**
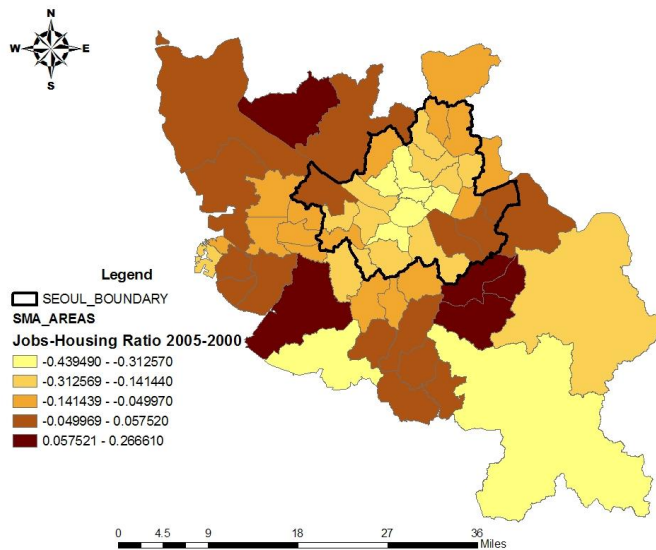


Notes: Jobs-housing ratio = The number of jobs to the number of houses.    The jobs-housing ratio
2005 – 2000 in the map refers to each sub-area's difference of that ratio between 2000 and 2005.
Since the number of built houses did not decrease at any sub-areas above between 2000 and 2005
(data obtainable period) and increased more outside Seoul (Ministry of Land and Ocean, 2009), the
thicker sub-areas represent the sub-areas with the more increased employment.    Source: Author's
compilations of KNSO data.

**Korea's Growth-Pole Regions:**
**Using Shift Share Model to Illustrate Their Presence**


The shift-share model enables researchers to analyze the quantitative change of

industries in terms of employment or value added (Davis, 1990). Esteban (2000),

Bartholomew et al. (2002), Grimes and Ray (1988), and Fuchs (1962) applied shift-

share analysis to the analysis of decentralization or distribution of industrial activity in

a cross-section of sub-regions in a metropolitan region or of cities. Although the

model is not a predictive tool, it does help identify changes in the structural

characteristics of industrial employment or value added, by using cross-sectional data

'in different points of time' (for a detailed description about its strengths and

weaknesses, see footnote 31)[31]. Since the model compares cross-sectional data

longitudinally, it can provide descriptions about the target-year change of region's each

industry 'per base year.'

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[31] In 1942 Daniel Creamer developed the shift-share model through his contribution, Shifts of manufacturing industries to *Industrial location and national resources*. The shift-share model assumes a city with a high proportion of nationally fast-growing industry will grow faster while a city with a high proportion of nationally slow-growing industry will grow slower.
　　　1. Shift-Share Analysis' Strengths: First, it has higher face validity in providing the detailed description about the changes in the structural characteristics of industrial growth though it has least validity as a predictive technique. Second, it has strong points in providing a 'detailed and clear-cut' descriptive explanation about the growth and structural changes of regional economies. Third, using the (employment or value-added) data in two points of time, it has strong points in providing both "longitudinal and horizontal" descriptions about the growth and structural changes of regional economies. Fourth, it is an understandable and plausible technique to both policy implementers and academics so that they can communicate with each other.
　　　2. Shift-Share Analysis' Weaknesses: First, it is hard to use for forecasting economic development impacts because it provides a retrospective view of causes of employment change and it uses the decomposition of 'absolute' change. Second, it is hard to operationalize and measure the inter-industrial interdependence in the region. Third, it has limitations in providing the causal explanation about the changes in the structural characteristics of industrial growth though it describes the industrial change in the regional level in comparison to the industrial change in the national level. Fourth, it has limitations in providing the causal explanation about the structural change in employment because it does not fully reflect labor productivity in its formulas.

The total growth effect is comprised of national growth, industrial mix, and regional share effects. Each represents the growth effect by the 'percent change' in nationwide total industries, nationwide specific industries (in comparison to nationwide total industries), or regional specific industries (in comparison to nationwide specific industries), respectively. The national growth effect for a region is its specific industry's (employment or value-added) growth that is impacted by the national average growth in total industries. In this sense, national growth effect can be interpreted as a regional growth relative to the national total growth of all industries at the national level. The national growth effect is expressed as follows:

$$E_{ij(0)} \times ((E_{(t)} - E_{(0)})/E_{(0)}),$$

where $E_{ij(0)}$ is the number of employment in the $i$ industry and $j$ region in the base year, $E_{(t)}$ refers to the number of total national employment in the target year, and $E_{(0)}$ refers to the number of total national employment in the base year.

The industrial mix effect for a region is its specific industry's (employment or value-added) growth that is impacted by the specific sector's national growth relative to the national total growth of all industries. In this sense, the industrial mix effect can be interpreted as a regional industry's growth relative to the same industry's national total growth per all industries' national total growth. The industrial mix effect is formulated as follows:

$$E_{ij(0)} \times ((E_{i(t)}/E_{i(0)}) - (E_{(t)}/E_{(0)})),$$

where $E_{ij(0)}$ is the number of employment in the $i$ industry and $j$ region in the base year, $E_{i(t)}$ is the number of national employment in the $i$ industry in the target year, $E_{i(0)}$ is the number of national employment in the $i$ industry in the base year, $E_{(t)}$ refers to the number of total national employment in the target year, and $E_{(0)}$ refers to the number of total national employment in the base year.

The regional share effect for a region is its specific industry's (employment or value-added) growth relative to the specific sector's regional growth per the national total growth in the specific industry. In this sense, regional share effect is often called the 'competitive component.' The regional share effect is formulated as follows:

$$E_{ij(0)} \times ((E_{ij(t)}/E_{ij(0)}) - (E_{i(t)}/E_{i(0)})),$$

where $E_{ij(0)}$ is the number of employment in the $i$ industry and $j$ region in the base year, $E_{ij(t)}$ is the number of employment in the $i$ industry and $j$ region in the target year, $E_{i(t)}$ is the number of national employment in the $i$ industry in the target year, and $E_{i(0)}$ refers to the number of national employment in the $i$ industry in the base year. The total growth of a specific industry in a region between periods (i.e., $E_{ij(t)} - E_{ij(0)}$) equals $E_{ij(0)} \times ((E_{ij(t)}/E_{ij(0)}) - (E_{(0)}/E_{(0)}))$ or $E_{ij(0)} \times ((E_{ij(t)}/E_{ij(0)}) - 1)$. In this sum of the three effects, the unity reflects a nation's 'common and stationary' total or industrial change.

**The Practicality of Shift-Share Analysis**

First, shift-share analysis makes it possible to analyze industrial development or changes between different cities or regions, between different points of time, and between different industries. Second, it provides a useful framework to assess needed or desired changes in a nation's policies towards the distribution of economic activity or to sustain growth. To summarize, in the shift-share model – which describes the target-year structural change of region's each industry 'per base year' – an industry with a largest share in the nation can be considered to be a propulsive or leading industry. In addition, a region with such a largest industrial share is indicative of a growth-pole region when it has sustained the largest share in employment or valued added (growth) for a certain period of time.

**The Shift-Share Analysis of South Korea's Regional Economy**


Employment data were available from the Korean Statistical Information Service (KOSIS) website (www.kosis.kr). Annual employment data from 1989 to 2007, rather than value-added data, were used to capture industrial growth. Employment data have strength in representing the economic dominance with regard to labor force attraction leading to industrial growth. Per capita value added could also be used. Since Figure 1-7 in Chapter One showed the differences in real GRDP growth rates between the SMA and others increased, such a growth-pole region's increasing labor (employment) as 'a production input' is also expected to represent the quantitative and detailed growth patterns of growth poles. If a growth-pole region has attracted labor and capital from both its hinterland and the rest of the country, it is then expected to trickle down to those non-growth-pole regions after a certain period (e.g., 15 years after the implementation of growth-pole strategies, as Richardson [1976, p. S33] suggested as the trickling-down-dominating "cross-over point" after four-or-five-year "maximum polarization point"). The local growth centers and their hinterlands, which were designated in the 1970s, have been expected to grow as 'metropolitan area-wide development' was targeted in the 1990s.

There are two reasons for using the data from 1989 to 2007. First, data for the entire country and every industrial sector is available only for these years. Second, South Korea's economic growth – which enjoyed an annual growth rate of 7.7 percent (GNP) was so dynamic that the effects of enlarged economy on industrial structures and its consequential effects on the regional shift-share of industries have continued to

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occur after 1989[32] (for annual growth rates, see Figure 3-5).  Figure 3-5 suggests the

time-series trend is not distinguishably non-stationary or stochastic with manifest

random walk patterns, except during the IMF crisis[33] period in the late 1990s.  Thus

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[32] The (real) GNP of South Korea was sustained at following growth rates: 8.94 percent (1963 – 1969), 7.67 percent (1970 – 1979), and 7.29 percent (1980 – 2000).  South Korean economy grew at about six-percent annual growth rates of per capita income from the early 1960s to the mid-1990s. Such an annual growth rate of per capita income, from 1960 to 1990, was even higher than other Newly Industrialized Countries (NICs) such as Taiwan (5.7), Singapore (5.3), and Hong Kong (5.7). From 1960 to 1990, the US grew with 1.4-percent annual growth rate and West Germany grew with 2.5-percent annual growth rate of per capita income.

[33] About the IMF crisis: Although giant chaebols like Samsung, Hyundai, and LG could stave off a great loss in headquarters' and larger mother plants' employment, they could not help but downsize. In particular, chaebols' offshoot plants' or subcontract factories' workers in growth-pole regions (and other parts of the country) were largely laid off or increasingly less paid off.   The sharp decrease of employment began from growth-pole regions and was expanded to the rest of the nation. Relatively smaller chaebols (or leading businesses) like Hanbo, Sammi, Jinro, Daenong, Hanshin, Hanla, Asia Motors, Ssangbangwul, Kia Motors, Haitai, New Core, Daewoo Motors, Ssangyong Motors, Hanil, Anam, Donga, Cheonggu, Nasan, Geopyoung, and many banks were also largely impacted than the larger chaebols was.   After the national government requested the IMF to provide financial aids in December 1997, the presidents of four largest chaebols in Korea (Samsung, Hyundai, LG, and SK) had a confidential meeting with the former IMF president, Michel Camdessus in February 1998.   Timothy Geithner, US ex-Under Secretary for the Treasury for International Affairs (currently, US Secretary of the Treasury) also visited Korea to demand very high interests (e.g., call money rate: 23-24%), downsizing and lay-off, and the mergers and acquisitions of merchant banks.   At the same time the national government concentrated on increasing foreign currency reserves and lowering the bankruptcy rate of promissory notes while it collaborated with chaebols and larger businesses to minimize the shock of the IMF crisis. However, the supply of public funds (150 trillion won; 0.15 trillion dollars) was concentrated on financial institutions and chaebols which promised to downsize and restructure themselves.   The critical problem also lay in many (leading) businesses' excessive capital investment and oversupply although their debt-ratio amounted to more than 400 percent.   Meanwhile many people were laid off in the restructuring process.   Despite such drawbacks these efforts led to the restructuring of the old system of governmental financing to provide preferential financing to larger businesses under politics-business collusion.   Such an old system was particularly problematic in reinforcing negative politics-business social networks to circulate money to run businesses.   Up to then debt financing and window-dressing settlement resorting on social networks were more prevalent than equity financing in South Korea's economy.   The IMF crisis was a threat and opportunity to clear such negative legacy, but South Korea could not help but accept the IMF's opinion, which recommended neoclassical financial systems.   The IMF crisis led to the collapse and sharp decrease of middle-income class in South Korea from 68.5 percent (1996) and 61.9 percent (2000) to 58.5 percent (2006) while the high-income class increased from 20.3 percent (1996) and 22.4 percent (2000) to 23.6 percent (2006) in terms of disposable income percent share (KDI, 2008). The low-income group increased from 11.3 percent (1996) and 15.7 percent (2000) to 17.9 percent (2006) (KDI, 2008).   While high-income group's income level showed 3.3 percent increase between 1996 and 2006, the income level of middle-income group decreased 6.6 percent between 1996 and 2006 (KDI, 2008).   These trends explicitly show the income polarization of the Korean economy and society.   Meanwhile speculative demand, in a Keynesian sense, has continued to increase after the IMF crisis (Park, 2009a).   To promote consumption the Kim Dae Jung

the 1989 – 2005 data can be used as a reasonable source for a shift-share analysis.

This study focuses on the regional share effect.   The national growth effect is an

indicator of the contribution of the overall national growth rate to regional industry-

specific growth.   Since the national growth rate is constant across the entire country,

estimating these effects and adding them together across all industries in a region, and

then comparing regions, adds no information above and beyond that contained the total

size of each region's employment base.   One might as well show 'persistent

concentrations across time' by simply showing that total employment remains higher in

the growth pole regions, relative to the other regions (as in Table 1-II in Chapter One).

For purposes of illustrating persistent concentrations across space, thus, the national

growth rate computations can be 'superfluous.'[34]   More practically the problem of not

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administration helped lower-credit people and middle-class people use credit cards, but such
promotion caused the Card Crisis in 2003.   Many lower-credit and temporarily-unemployed
middle-class people (especially in urban areas) repeatedly use different sets of cards to prevent
themselves from being bankrupted.   Meanwhile (high-income) people who still afforded
apartments and stocks – whose prices were abruptly decreased after December 1997 – became
richer when the prices began to be recovered one year later.   Recently the South Korean economy
has become rather vulnerable to excess liquidity, as speculative demand has increased in response to
a lower level of interest rates and increasing short-term money in the market (Park, 2009a).   It
reflects people's great expectations for a future rise in interest rates that could make the slope of the
liquidity preference-monetary supply (LM) curve steeper even when the (benchmark) interest rate
has continued to be 2.0 percent in recent years.   Such an anticipatory, pseudo demand could not
directly lead to a compatible increase in the GDP when the government and the central bank
implement expansionary monetary policies.   The restructuring of Korean socio-economy after the
IMF crisis reflects the negative shift of and the crystallization of the socio-economic polarization
problem by the redistribution of personal and regional income, rather than locational shifts by the
relocation of firms, in a relatively short period of time even after an economic shock.
[34] The industry mix effect indicates the influence of national growth within a specific industry upon
that specific industry within a specific region.   If industry mix effects are calculated for each
industry in each region and added together to create a region-specific summary indicator of the
industry mix effect, it would carry multiple possible interpretations, rather like a Rorschach test, all
of which would have something to do with the "composition" of the economy, but none of which
would indicate anything meaningful a researcher can discern about persistent "concentrations"
across time.   The analysis in this chapter intends to 'compare' all industries of every region
annually from 1989 to 2007.   Therefore, under the assumption of the "common and stationary"
exogenous shock from the national total industrial growth or the national total growth of a specific
industry and the "stationarity" of the region's own shift toward "equilibrium" or "balance," the
regional share effect sufficiently meets the objective of identifying growth poles.   Two

using the data before 1989 lies in the limitation of not reflecting the changes of

manufacturing industries, which were the main industries to propel the national and

regional economy through the 1990s.    Even after the late 1980s the two primary

growth-pole regions, the SMA and southeast growth-pole regions (Busan, Gyeongnam,

and Daegu) developed as a result of a concentration of manufacturing industries.

These areas sustained their share of population or employment, attracting capital or

labor from the rest of country.    The expansion of service-related companies and

infrastructure in these areas permitted further development.    Given the limited

availability of data before 1989 a post-1989 analysis is the only available strategy to

examine the economic relations between dominating areas with 'positive cumulative

causation' and lagging regions with 'negative cumulative causation.'

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fundamental assumptions on interregional stationary shifts could explain how this dissertation uses shift-share to identify dominant (or competitive) industries.    First, national growth and industrial mix effects are common effects to all regions' every industry since they are considered to come from a nation's growth.    Second, based on the first assumption, the regional share effect is often (not always) considered to be stationary over time.    If any 'non-stationarity' (threatening the existing equilibrium) occurs, it will be accounted by 'endogenous growth' or any variations in the residual of the growth models built on the assumption of final demand's 'fixed-rate multiplier' effects over time.    Therefore, if there is no change in technology or other socioeconomic circumstances, the traditional shift share model basically expects regional share (= total growth – national growth – industrial mix) stationary.    A non-stationary regional share effect will be the 'differential' effect, which accounts for the variations in the 'residual' of a 'national' regression of all (data-obtained) regions' every industry over at least two periods.    If this residual part is not stationary, an intended study should explain its variations (that can be associated with time lags). Theories or analytic results showed different interpretation (e.g., time lag or no time lag) or results; and they should be case by case.    In the case of this dissertation, the 'differential' effect to define economic concentrations was expected to be identified based on the above two assumptions. (These variations can be considered as what were created through economic concentrations and some regions can earn the more economic rent from such agglomeration economies.    Those concentrated outcomes, which have been created by either cooperation or collusion of public and private sectors [government and price mechanisms] in Korea, were promised to distribute to local people who showed the consensus and toleration of 'relative' slow growth under the condition of at least 15-year-later trickling-down.    Although the development outcomes and concentrations can still be 'efficient' in terms of Pareto optimality, those 40-year results lacking the fulfillment of compensatory promise do not mean 'improvements' in terms of Kaldor-Hicks efficiency criterion.) The results also indicated the increasing 'divergence' among regions.    Given these assumptions, the vector autoregressive (VAR) model of regional economic changes as in H. Park and Cho (1999) can also be useful when each region's analysis shows non-stationary trends but is not necessary.

**Figure 3-5. Real Growth Rates (%) of South Korea's GDP, 1978 - 2007**
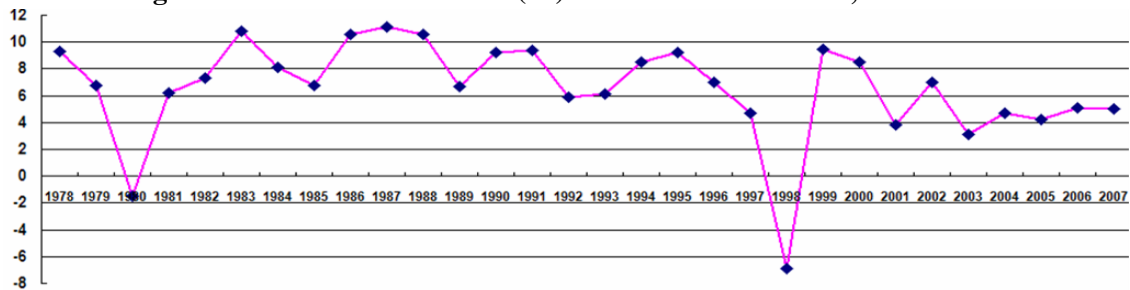


Notes: GDP = Gross Domestic Product.   In late 1997 Korea received financial aid from the International Monetary Fund (IMF) and the growth rate was recovered one year later.   In late 1979 there were the stagflation associated with the second oil crisis in the world and a coup d'état led by Jun Du-whan who commanded to clamp down and kill hundreds of (southwestern) people participating democratic protests in South Korea.
Source: Compiled from The Bank of Korea Economic Statistics System (http://ecos.bok.or.kr).

Decennial data describing aggregated regional employment for manufacturing industries is available since 1960.   The manufacturing employment data were presented in Chapter One (Table 1-I).   The descriptive statistics illustrate the polarization (as the local concentration of population and employment) in primate growth-pole regions between 1960 and 2000.   Busan-southeast's and Daegu-Gyeongbuk's population declined (national share decreased from 32.1 to 27.9 percent) while its manufacturing employment share was largely unchanged (36.3 percent to 34.8 percent of the national share).   Its manufacturing share was 40.4 percent in 1980 when the manufacturing industries in the southeast were at their zenith.   Despite the existence of large industrial districts the 'gradual' decline after 1980 occurred as a result of the outsourcing of labor-intensive industries to Southeast Asia (a process that began in the 1980s) (Douglass, 2000).   During the same period the population share of the SMA increased from 20.8 percent to 46.3 percent while its manufacturing employment share showed a small increase from 40.9 percent to 46.9 percent.   The SMA's population share grew to 48.6 percent in 2007 (48.9 percent in 2008). Experiencing dynamic growth – an average 10 percent annual growth rates of the GNP

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in the Park regime (1963 – 1979) – Seoul was a rather 'natural' magnet for people (needed as workers and consumers to expand the 'necessary' public and private services and infrastructure) as Korea's 'primate city,' while the southeast region benefited more from the 'artificial' (i.e., chartered by the central government) magnet of industrial complexes.   Meanwhile, the southwest region's national population share sharply decreased from 23.8 percent to 11.4 percent and its manufacturing employment share decreased from 11.5 percent to 7.1 percent.

Despite the limited availability of data before 1989 the information after 1989 is particularly useful as it pertains to the years after different policies were put forward to balance development.   Previous analyses of the Korean economy (Choi et al. 2007; Lee, 2000) also relied on shift-share analysis to study changes in levels of concentration.   Lee (2000) focused on the Gyeongbuk or Daegu regions and not the whole country.   For the 16 provinces in Korea, Choi et al. (2007) conducted a shift-share analysis of regional employment changes between 1997 and 2005.   An increasing pattern of interregional disparities was shown, but the analysis was not year-by-year but for the two points of time (1997 and 2005).   There were other previous studies on the shift-share analysis of some or all industries (Jang, 2006; Jang & Shin, 2007; Kim & Kim, 2001; Lee, 2000; T. Kim, 1989), but most studies were limited to one region or several periods.   To illustrate a trend in the shifting share of industries, a year-by-year analysis is more useful as it provides more detailed information about changes in the structural characteristics of employment or value added.   (Ulsan was detached from Gyeongnam in 1997, For this reason the employment of 16 regions is analyzed after 1998 [15 regions before 1998 by integrating Ulsan and Gyeongnam].)

The year-by-year analysis of this study is focused on changes in the regional share effect (competitive component). The analytical periods were divided into three time periods and the changes within each interval were based on the initial year of each period. The first interval, 1989 to 1992 was chosen because 1992 was the latest period of the Rho Tae Woo (military) regime. During and after military regimes there was a formal association of economic and social networks. The Park Chung Hee military regime (1963 – 1979) prepared and implemented growth-pole strategies focused on two primary growth-pole regions. In particular all three military regime leaders' home region, the southeast continued to be home to more than 40 percent of the high-ranking governmental officials from the early 1980s to the mid 1990s (for details, see Figure 1-10 in Chapter One). During the Park regime, many plants and complexes owned by important chaebols were built in the Busan-southeast region as the second growth-pole region (for this transitional phase, see Figure 2-3 in Chapter Two) while the further expansion of the congested Seoul was controlled by the greenbelt and containment regulations.

While the southwestern party led the executive and legislative branches (1998 – 2003), the percent share of the southeast's high-ranking governmental officials in the Kim Dae Jung administration declined to 25.6 percent. Kim Dae Jung, born in the 1920s, was one of the most influential politicians – referred to as one of the "Three Kims." He developed and used his consolidated southwestern networks before and during his presidency. The other Kims were Kim Young Sam (Kim Dae Jung's predecessor: the "YS" administration 1993 – 1997) from the southeast and the mid-nation's Kim Jong-Pil (the Park regime's prime minister and the chief of the Korean

CIA: "JP" 1963 – 1979).    During the Rho administration (2003 – 2007) high-ranking

governmental officials from the southwest were appointed or employed in almost

proportional count to the southwest's share of the nation's population.    Meanwhile, the

share of the southeast elites in high-rank positions rose to 36.8 percent in the Rho

Moohyun administration.    Rho Moohyun was from the southeast region, but he was

explicitly concerned with balanced development.    Despite his concern the

government's social networks and many related elites were also from the southeast, and

the southeast share (36.8 percent) was 4.5 percent higher than southeast's share of the

nation's population.    The SMA has recently shown an over 10-percent increase in the

portion of the high-rank government elites.    While the total percent share of Busan-

southeast and Daegu declined to 27 percent, the increase of SMA's share 20.8 to 33

percent reflects the rise of SMA elites.    This is considered as a manifest 'new' rise

(Figure 1-10), regardless of the political base issue.

    Second, 1992 – 2000 was selected since two civil governments were in control

and an analysis in this time period provides insight into the effects of the late-1997

International Monetary Fund's (IMF) loan.    The IMF's relief loan led to the

restructuring of South Korea's economy and the shock of consequential industrial

restructuring occurred at the regional level.    The shift-share analysis will illustrate if

such an economic shock affected the regional shift-share of industries.[35]    Third, 2000

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[35] Although nine years (1992 – 2000) could not be sufficient time for a financial shock like the IMF
crisis to affect firms' locational choices, such a relatively short period of time is reasonable to reflect
the changes in regional industries' employment since the shift-share of employment or value added
does not occur only by changes in locational choices or relocation in a nation.    The financial shock
like the fast withdrawal of money from East Asian regions led to the 'domino' bankruptcy of
chaebols and interdependent businesses in South Korea.    The national land of South Korea is 0.01
percent of the national land of U.S. while its GDP or amount of trade was eleventh in the world as
of the mid 2000s.    The limited land of South Korea allowed the impact of the IMF crisis to every
corner of the country.    The chaebols and their associated firms in primate growth-pole regions

– 2007 was chosen as a study period because two 'balance-oriented' (i.e., concerning about reducing interregional disparities between growth-pole regions and others: Y. Kim et al., 2003; Hong, 2005; Choi et al., 2007; Park, 2009b) governments, Kim Dae Jung's administration (during the second-half of his tenure) and the Rho Moohyun administration, needs to be considered together to determine whether their anti-disparity efforts had any effect on regional concentrations.

As recent previous studies, the interindustry (I-O) analysis of Choi (2007) and the growth regression analysis of 1985 – 2000 GRDP data in Choi et al. (2004) showed the distinguishable dichotomy between metropolitan Seoul and other regions. Their results also suggested the SMA becomes increasingly independent while, in all negative relationships except Busan-southeast's inducement of the SMA production (not the SMA's inducement of Busan-southeast), other local regions become interdependent to induce one another regions' production. Choi et al. (2009) showed the concentration of labor, capital, and knowledge as complementary production inputs in the SMA whereas other local regions did not, using spatio-temporal autoregressive models. Synthesizing previous studies, Park (2009b) integrated interindustry analysis and network analysis of 'interregional' I-O table. This research demonstrated the dominance of the Seoul as the primate and state-led growth-pole. Park (2009b) then attributed the trickling down limited on adjacent metropolitan area to the competitive advantage that continue to attract further (networks of) people and capital in increasingly improved purchasing power and amenities despite congestion costs.

The analysis in this chapter also illustrates a 'spatially limited' trickling-down

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could not evade from being downsized, and these impacts reached to other leading businesses or chaebols' subcontract firms in other parts of the country.

effect concentrated on the hinterland of Seoul (especially Gyeonggi and Incheon) and on the hinterland of Busan (Gyeongnam).   The results on regional shares show the growth of total industries and manufacturing in Seoul and Busan continued to decrease between 1989 and 2007.   Regarding the 'hinterland' of Seoul, it is notable that manufacturing, services (of business, personal, and public sectors), wholesale, retail trade, and hotels and restaurants increased overall during the study periods and electricity, transport, telecommunication and finance increased especially in 1993 – 2000.   Gyeongnam, as Busan's hinterland, experienced the rise of business, personal, and public service sectors after the decline of manufacturing in the first study period.

The social overhead capital (SOC: e.g., capital goods or infrastructures, which are available to any social members, such as roads, bridges, parks, public schools, universities) and related services had decreased or sustained before 2000 but increased after 2000 in the "largest growth center" (Seoul) of primate growth-pole regions. Since Hirschman (1958) and Nurkse (1953) agreed that SOC is important as part of the infrastructure needed to trigger further development in regions, the trend of SOC's increasing employment in the city of Seoul followed by (or trickled down onto) other industries' increasing employment in the SMA (as Seoul's hinterland area including Gyeonggi and Incheon) would support the persistent presence of growth poles. Although the growth-pole strategy was implemented to boost 'each' hinterland around 'each local growth centers' (e.g., Seoul [for the SMA], Busan [Busan-southeast], Daegu [upper southeast], Daejon and Cheongjoo [Chungnam and Chungbuk], Gwangju and Jeonju [southwest: Jeonnam and Jeonbuk], Chuncheon [northeast: Gangwon], and Jeju [Jeju Island]), only two "primate" growth-pole regions had sustained growth.

In terms of regional share effect, then, there was a clear dominance of two growth-pole regions with "trickle down" effects limited to immediately adjacent areas. Other regions continued to lag.   Disparities have not decreased and the net spillovers predicted to occur within fifteen years (Richardson, 1976), have not materialized.   If the spatial boundary of trickling-down is strictly limited to the local growth center's adjacent areas (e.g., provinces such as those illustrated when explaining each regional economy "local growth centers" above), the outcome is problematic since the "net spillovers" have mainly occurred in the two primate growth-pole regions.   This phenomenon is also contrasted with the development logic of "Growth First and Its Fair Distribution Later" (선성장, 후분배), since the two magnet regions continued to attract both naturally and intentionally (or by government efforts) from the rest of the country.   If it is a plus-sum game of disequilibrium development (external economies and creative destruction made through the accumulation of people's united efforts, diligence, human capital, and social capital that lead to endogenous growth with local concentration: Park, 2009c) for maximizing the national innovation capacity, not a zero-sum game, "what or who" prevented the net present value of the diligent people – contributed to the national 'growth' – from being compensated after at least 15 years?

**Graph Examination of Regional Share Effects (Competitive Component)**

Figures 3-6, 3-7, and 3-8 illustrate the regional share effects for the periods 1990 – 1992, 1993 – 2000, and 2001 – 2007.   The widening divergence between Seoul and Gyeonggi or Incheon (partly, between Busan and Gyeongnam) indicates that the "trickling-down effects" of the 'primate' growth center(s) are limited and

concentrated in the 'primate' "hinterlands."   Although these 'percent changes' do not

differentiate economies of scale, the scale of each local economy (measured by

employment) is not as small as its "competitive" 'growth effects' indicate.   The results

show the increasing share of Gyeonggi and Incheon (and Gyeongnam partly) in total

industries, SOC (and related services), wholesale, retail trade, hotels, and restaurants

while the growth of total industries, manufacturing, and SOC in two primate growth

centers (e.g., Seoul and Busan) continued to decrease between 1989 and 2007.

However, it is notable the share of Seoul in SOC (and related services) again increased

since 2000 (Figure 3-8).   The investment in the revitalization of 6-km Chunggaechun

stream (about 400 million dollars) and other development or SOC improvement

projects (e.g., central-city new town development or new systems of bus ridership,

transit, and management) are evaluated to have contributed to such an increase.

**Figure 3-6. Regional Share Effects of South Korean Regions 1990 – 1992 (Base: 1989)**
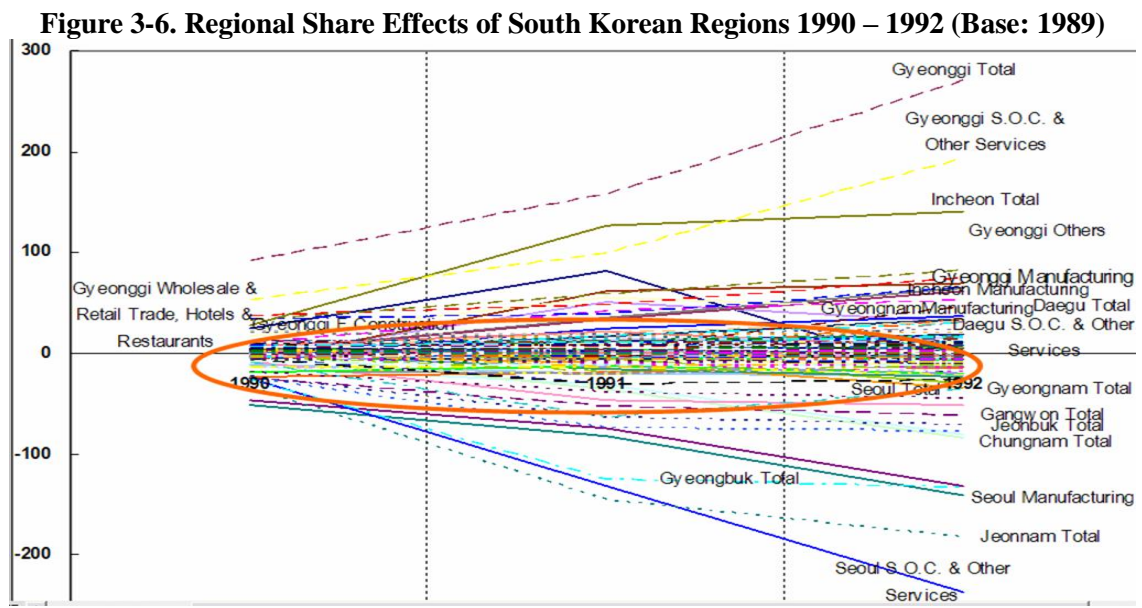


Notes: The unit is 1,000 workers (Y axis).   The industries in the circle denote the industries in lagging regions.

Although the growth-pole strategy in South Korea was implemented to boost

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"each" regional economy surrounding "each local growth center," only two "primate" growth-pole regions show sustained growth despite other local region's lagging trends in terms of the regional share effect.    In terms of national growth effects, the SMA and Busan-southeast showed the largest increase in 'total' industries.    In terms of industrial mix effects, the two growth-pole regions showed the larger increase in 'nationally-grown' industries.    (These 'calculated' increases are 'natural' in terms of the equation.    For the reason these two effects are not presented, see footnote 34.) The growth centers were designated in the 1970s were Seoul (for the SMA), Busan (Busan-southeast), Daegu (upper southeast), Daejon and Cheongjoo (midnational: Chungnam and Chungbuk), Gwangju and Jeonju (southwest: Jeonnam and Jeonbuk), Chuncheon (northeast: Gangwon), and Jeju (Jeju Island).    Excluding the SMA and southeast growth centers, other regional growth centers and their economies continued to lag (Figures 3-6, 3-7, and 3-8).

**Figure 3-7. Regional Share Effects of South Korean Regions 1993 – 2000 (Base: 1992)**
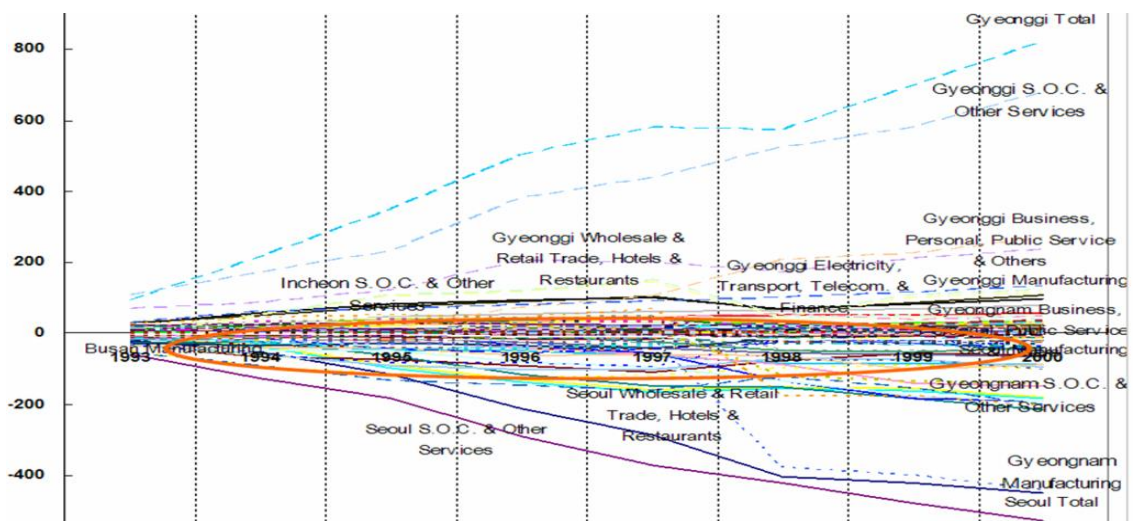


Notes: The unit is 1,000 workers (Y axis).    The encircled industries = industries in lagging regions. Gyeongnam's abrupt decrease in 'manufacturing' is due to the detachment of Ulsan in 1997.

The overall rise of Gyeonggi and Incheon (in the case of the SMA) and

Gyeongnam (in the case of Busan-southeast) in terms of the regional share effect as a

"competitive" growth effect support the observation that such dominance by two

primate growth-pole regions "trickled down" polarized economic outcomes to their

adjacent regions.    While these primate growth-pole regions have been prosperous,

other local regions have continued to lag than these two growth-pole regions (Figures

3-6, 3-7, and 3-8).    This developmental consequence of growth-pole strategy is

contrasted with the Park military regime's development policies.    The trickling down

from each local growth center was pursued and promised by the military regime in the

early 1970s.    The Park regime also laid the groundwork for 'the effective

implementation of the growth-pole strategy focusing on the SMA and southeast growth

centers' by having constructed the Seoul-Busan express highway as the national

development corridor in the late 1960s.

**Figure 3-8. Regional Share Effects of South Korean Regions 2001 – 2007 (Base: 2000)**
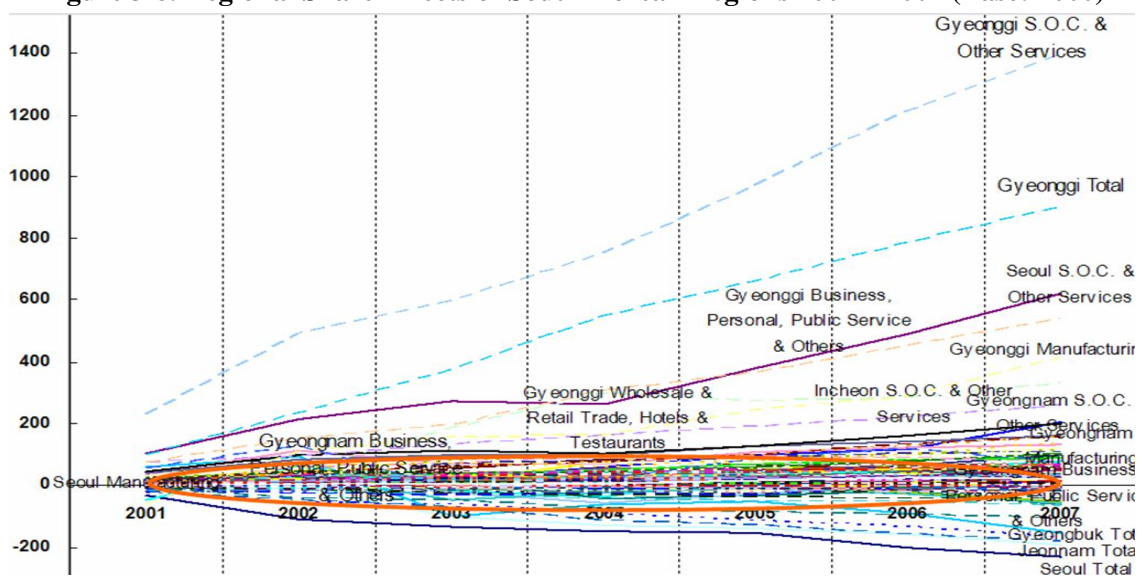


Notes: The unit is 1,000 workers (Y axis).    The encircled industries = industries in lagging regions.

The next chapter will discuss how a certain "protrusion" (Richardson, 1976) prevented the "net spillovers" from impacting the entire nation. Prior to discussing this "protrusion" the next section of this chapter will review and assess the regional development policies of the previous governments.

**The Regional Development Policies of Korean Governments**

Table 3-I enumerates the regional development contexts. The Park Chung Hee military regime (1963 – 1979: coup d'état in 1961) tried to find its political legitimacy by eliminating the nation's poverty level (which was similar to Ghana's before the mid 1960s). The Supreme Council introduced "national development planning," which began to be widely adopted across nations, as Rosenstein-Rodan (1943), Nurkse (1953), Myrdal (1957), and Hirschman (1958) emphasized the government's role in economic development.

The national development planning targeted boosting the national economy through "complementary investments" between industries (Nurkse, 1953) in the case of the "balanced growth strategy" and through "strategic investments" in propulsive industries with greater backward effects (Hirschman, 1958) in the case of the "unbalanced growth strategy." Despite the difference in strategic efforts to enlarge the national economy, these two theories shared a view that, by government intervention, an inter-industry demand could be effectively expanded with the further expansion of the market. This strategy needs not to be confused with that which Hirschman (1958) advocated through his perspective on "unbalanced growth." On the contrary

Hirschman emphasized that regional disparities should be abridged although "unbalanced growth strategy" needs to be employed temporarily.    Williamson (1965), Alonso (1968), Berry (1972), and Hansen (1981) also supported Hirschman's (1958) anti-disparity policy orientation through unbalanced growth strategy.    Hirschman (1958) stressed the role of government in minimizing disparities if the concentrated development outcomes are not decentralized in the later stage of disequilibrium development.

**Table 3-I. A Chronology of Korean Economic and Regional Development Contexts**

| Year | Development Contexts |
|---|---|
| – 1910 | Society based on Confucius feudalism with limited direct doors to western modernity; The rule of the late Chosun Dynasty called 'The Hermit Kingdom' (1636-1876), being confronted with increasing Western and modernized Japan's pressure to open diplomatic and economic doors, let alone doors to China |
| 1910 – 1945 | Japanese occupation period; The piecemeal introduction and acceptance of western culture, philosophy, technology, and ideology |
| 1945 | Liberation from Japanese occupation and totalitarianism |
| 1945 – 1950 | Hyperinflation and political turmoil of ideology |
| 1950 – 1953 | The Korean War |
| – 1961 | National poverty (GNP per capita less than US$ 100 before 1963); The implementation of land-to-the-tiller agrarian reform by Lee Seung Man's administration; 4•19 Democratic Revolution (1961) |
| 1961 – 1979 | Park Chung Hee's coup d'état (1961) and implementation of **Five-Year Economic Development Plans** (1962-) and **National Comprehensive Physical Plans** (1972-) under Cold War ideology<br>The rise of Chaebol regimes with governmentally fostered export-oriented industries, labor-intensive industries, capital-intensive industries, and heavy and chemical industries<br>Construction of the Seoul-Busan express highway (1968-1973)<br>Dispatching the Korean army and marine corps to the Vietnam War (1965-1975)<br>The assassination of Park Chung Hee (1979)<br>Persistent unbalanced regional growth<br>Inexperience in local autonomous government and political immaturity |
| 1979 – 1987 | Jun Du-whan's coup d'état (1979) and the attainment of highest annual economic growth rates next to ones in Park Chung Hee's administration; 5•18 Gwangju Democratic Revolution (1980) |
| 1988 | Seoul Olympics |
| 1993 | Reestablishing the reign of the civil government |
| 1995 | Beginning of the local autonomous government |
| 1997 | The Asian financial crisis and aid from the International Monetary Fund |
| 2002 | The Korea-Japan World Cup |
| 2007 | The attainment of GNI per capita over US$ 20,000 (population: about 4.8 million) |

Interregional disparities have been rarely abridged in South Korea although national development planning (e.g., the National Comprehensive Plan [NCP]) and Economic Development Plan [EDP]), which considered equity at least ostensibly, was implemented.   In particular the disparities between two primary growth-pole regions (e.g. Seoul and Busan) and others or the disparities in the southeast (Gyeongnam and Gyeongbuk) and southwest (Jeongnam and Jeonbuk) continued to be problematic since the Park Chung Hee military regime (1963 – 1979) implemented growth-pole and unbalanced growth strategies in the early 1970s.   The two other leaders of the next military regimes (1981 – 1987 and 1988 – 1992) were also from the southeast and more than forty percent of the elites serving in public positions were from the southeast. Although the policy orientation of the NCP was interregional equity as well as efficiency (Table 3-II), the development outcomes were concentrated in two primary growth-pole regions, and especially in the SMA.   Table 3-II below summarizes the policy orientation of the NCP by period.

**Table 3-II. The Policy Orientation of National Comprehensive Physical Plans by Period**

| Plan | Period | Main Orientation | Efficiency | Equity |
|---|---|---|---|---|
| 1st | 1972 – 1981 | Expanding the base from the SMA to southeast; Developing 6 centers with 2 growth-pole regions | ○ | |
| 2nd | 1982 – 1991 | 15 growth centers; managing 2 pole region growth Expanding 5 agglomerations and 15 local centers | ○ | ○ |
| 3rd | 1992 – 1996 | Expanding balanced polycentric development | ○ | ○ |
| 3rd (Amended) | 1997 – 2000 | Fostering local self-sufficiency and welfare rise | ○ | ○ |
| 4th | 2001 – 2020 | Building open, competitive, livable nation with efficient logistics-ICT balanced nat. development | ○ | ○ |

Notes: For the 10-Year National Comprehensive Physical Plan (NCP) an open circle denotes the emphasis on either efficiency or equity.   Source: Author's summarization based on Suh (1993), J. Choi (1995), KRHIS (1996), and Y. Kim et al. (2003).

Table 3-III summarizes the policy orientation of the EDPs from 1962 and 1996. The five-year national economic development planning was terminated at 1996 because South Korea achieved a high level of growth and its development plans became more diversified and geared toward the needs of segmented industrial or business sectors in the knowledge economy. The institutions such as the Economic Planning Board (EPB) and the Korea Development Institute (KDI) continued to made, propose, and evaluate the Korean economic development policies with the Economic Ministries. (Economic Ministries' name has been changed when the administration changed).

**Table 3-III. The Policy Orientation of Economic Development Plans by Period**

| Plan | Period | Main Orientation | Efficiency | Equity |
|------|--------|------------------|------------|--------|
| 1st | 1962 – 1966 | Toward being out of the vicious circle of poverty Building the economic base for self-sufficiency | ○ | |
| 2nd | 1967 – 1971 | Export-Oriented Industrialization (SMA-southeast) Modernizing the industrial base and structure | ○ | |
| 3rd | 1972 – 1976 | (Heavy and chemical) industrialization | ○ | |
| 4th | 1977 – 1981 | Capital- and labor-intensive industrialization | ○ | |
| 5th | 1982 – 1986 | Technology-intensive industrialization | ○ | ○ |
| 6th | 1987 – 1991 | Balance between: businesses; regional economies | ○ | ○ |
| 7th | 1992 – 1996 | R&D internationalization and competitiveness-oriented economic development | ○ | ○ |

Notes: For the 5-Year Economic Development Plan (EDP) an open circle denotes the emphasis on either efficiency or equity. Source: Author's summarization based on Suh (1993), J. Choi (1995), KRHIS (1996), and Y. Kim et al. (2003).

Tables 3-IV, 3-V, 3-VI, and 3-VII summarize major development projects in the 1960s, 1970s, 1980s, and 1990s, respectively. It is consistent with the literature's evaluation that the development projects were focused on laying the groundwork for

two primate (growth-pole) regions at the initial state of development (especially in the 1960s) although efforts to balance regional development have been gradually increased (Park, 2009b; Choi et al., 2007; J. Choi, 1995).   Considering the fact that the major development projects in the 1960s created the backbone for further development, it was natural that the strategic blue print of regional development in South Korea was made by southeast regional elites in government.   Their share of high-rank officials in the central government was more than 40 percent from 1982 and 1997.   During the Park military regime (1963 – 1979) the percent share of southeast elites were lower than the period above since elites who were born in North Korean regions shared 18.3 percent in high-rank officials.   It was also natural that these elites were concerned with their home regions first 'in response to' the need of regions.

**Table 3-IV. Major Development Projects in the 1960s**

| Year | Major Development Projects | SBS | Others |
|------|----------------------------|-----|--------|
| 1963 | Seoul and Incheon were designated as special zones. | ○ | |
| 1966 | Ulsan was designated as a special zone. | ○ | |
| 1967 | The Tabaek Mountain was designated as a special zone. | | ○ |
| | The Yeongsan River was designated as a special zone. | ○ | |
| | Asan-Seosan was designated as a special zone. | | ○ |
| | The Seoul-Incheon express highway began to be constructed. | ○ | |
| 1968 | The multi-purpose dam in the Soyang River began to be constructed. | | ○ |
| | The Seoul-Busan express highway began to be constructed (completion: 1973). | ○ | |
| 1969 – 1970 | Pohang Steel Industries (presently POSCO) began to be constructed. | ○ | |
| | Ulsan Petroleum Chemicals began to be constructed. | ○ | |
| 1969 | The Unyang-Ulsan express highway began to be constructed. | ○ | |

NOTE: SBS denotes SMA (수도권) and Busan-Southeast (남동임해).   An open circle denotes whether implemented policies were related to the SBS.   The SBS areas are comprised of three provinces.   There are 16 provinces or regions in Korea.   Source: Author's summarization based on J. Choi (1995), KRHIS (1996), and Y. Kim et al. (2003).   Tables 3-V to VII are also based on the same sources.

**Table 3-V. Major Development Projects in the 1970s**

| Year | Major Development Projects | SBS | Others |
|---|---|---|---|
| 1970 | The Honam express highway began to be constructed. | | O |
| 1971 | The Youngdong express highway began to be constructed. | | O |
| 1972 | The Namhae express highway began to be constructed. | O | |
| 1974 | The Donghae express highway began to be constructed. | | O |
| 1975 | The Busan Harbor began to be comprehensively developed. | O | |
| | The complex in Ulsan, Mipo, Pohang, Gumi, Changwon, Onsan, Okpo, and Yeocheon were designated as propulsive industrial districts. | O | |
| 1976 | The multi-purpose dam in Andong began to be constructed. | O | |
| 1977 | Banwol new town began to be constructed. | O | |
| 1978 | The multi-purpose in Daecheong began to be constructed. | | O |
| 1979 | The Daedeok research complex were designated and developed in Daejeon. | | O |
| | The multi-purpose in Chungjoo began to be constructed. | | O |

**Table 3-VI. Major Development Projects in the 1980s**

| Year | Major Development Projects | SBS | Others |
|---|---|---|---|
| 1980 | Gwacheon new town began to be constructed. | O | |
| | The Guma (presently Joongboo) express highway began to be constructed. | O | O |
| 1981 | The Gwangju-Daegu express highway began to be constructed. | O | |
| | Gwangyang was designated as the locus of the second steel industrial complex. | O | O |
| 1983 | The multi-purpose dam in Harpcheon began to be constructed. | O | |
| 1984 | The 88 Express express highway was completed. | O | |
| 1985 | The Joongboo express highway began to be constructed (by expanding Guma) | O | O |
| | The multi-purpose dam in Jooam began to be constructed. | | O |
| 1987 | The multi-purpose in Daecheong began to be constructed. | | O |
| 1987 | The Siehwa industrial district began to be constructed. | O | |
| 1988 | The Daebool industrial district began to be constructed. | | O |
| 1989 | The 2-million housing began to be constructed in five new towns in the SMA. | O | |

**Table 3-VII. Major Development Projects in the 1990s**

| Year | Major Development Projects | SBS | Others |
|---|---|---|---|
| 1990 – 1994 | Science-industrial districts began to be constructed in Busan and Daegu. | O | |
| | Science-industrial districts began to be constructed in Daejeon. | | O |
| 1990 | The Unification Park began to be constructed. | O | |
| | The Goonjang industrial district began to be constructed. | | O |
| | The Myungjie-Noksan industrial district began to be constructed. | O | |
| 1990 – 1998 | Seoul-Busan express railway began to be constructed. | O | |
| | The Incheon International Airport began to be constructed. | O | |
| 1991 | The Saemangeun reclamation project was implemented. | | O |
| 1993 | The Baejae historical area project was implemented. | | O |
| 1994 | Metropolitan wide development projects began to be formulated/implemented. | O | O |

## Recent Approaches to Balancing Regional Development and a Conclusion

Table 3-VIII compares the different orientations of two recent governments toward balancing regional development.   The Rho administration (2003 – 3007) tried to implement the Balanced National Development (BND), which aimed to balance the growth between the SMA and other local regions, by constructing regional innovation systems (RIS) in local regions.   The present Lee administration (2008 – ) also continues to implement balanced regional development policies following the Rho administration, but the policy consistency is not very high (Table 3-8).   As discussed in Chapter One, high-rank elites in the central government are still much from the SMA and the southeast.

**Table 3-VIII. Recent Governments' Approaches to Balancing Regional Development**

| Rho Administration (2003 – 2007) | Lee Administration (2008 – (2012)) |
|---|---|
| - Ideological and **Innovative** | - Practical and **Strategic** |
| - **Regional Innovation Systems** (**RIS**) | - **Economic Regions** (**ER**) |
| - Equity Emphasized in the Long Run | - Efficiency Emphasized (Equity-Considered) |
| - To Diffuse **Innovation** among Regions | - To Foster **Competitiveness** (in **Glocalization**) |
| | |
| ● Innovation-oriented development | ● Competitiveness-oriented development |
| ● To foster local regions' self-sufficiency | ● To maximize growth potential in the ERs |
| ● To pursue the SMA's qualitative change | ● To specialize regional growth engines |
| ● To develop networked national spatial structure | ● To facilitate decentralization and local regions' self-sufficiency in the ERs |
| ● The win-win strategy between the SMA and other local regions | ● Win-win strategies through cooperation and integration between the SMA and others |

Notes: The ER is a spatially-reformulated economic zone to cope with 'globalization' and 'localization' at the same time.   Five zones and two special zones, namely "5 + 2 ERs," were designated.   Five zones are 1) The SMA (northwest), 2) Chungchung (mid-nation), 3) Honam (southwest), 4) Daegu and Gyeongbuk (n. southeast), and 5) Busan, Ulsan and Gyeongnam (s. southeast) Zones.   Two special zones are Jeju and Gangwon Zones.

In particular the share of SMA elites increased most from 19.4 percent to 33

percent (for detailed figures, see Figure 1-9 and Figure 1-10 in Chapter One). Such a

trend is also natural because many local elites – regardless of the southeast or

southwest – spent their prime age in the SMA (especially in Seoul) and foster their

children in the 1960s. Many newly-selected elites were elites born in the 1950s and

spent their adolescent years in the SMA in the 1960s.

Recently regional conflicts associated with disparities have evolved into the

antipathy between the SMA and others (Hong, 2005), as the SMA experience a positive

cumulative causation (at least in terms of its quantitative growth and sustained

population). The problem recognition made many previous studies (T. Kim, 1989; Im,

1989; Kim, 1991; Suh, 1993; Kim, 1998; Hong, 2005; C. Kim, 2006; Choi et al., 2007)

deal with regional disparities or imbalance. Among these studies, only C. Kim (2006)

and Choi et al. (2007) pointed to the role of elites or their social networks in regional

development. C. Kim (2006) developed inequality indices of elites residing in a

specific region by complementarily using the GINI inequality index and location

quotients for the period 1994 – 2005. However, C. Kim (2006) discussed regional

imbalance without a detailed method to compare the patterns of elite distribution and

economic distribution. Together with the shift-share analysis of regional employment

change between 1997 and 2005, Choi et al. (2007) conducted a network analysis of

population change between South Korean regions for the period between 2000 and

2005. Their shift-share analysis and network analysis results supported that regional

disparities have increased, but their network analysis was about interregional migration

(population concentration), not regional economic outcomes or concentrations.

This chapter has analyzed and discussed whether the concentration of economic activity – which reinforces economic relations in economic space – occurred in primate growth-pole regions and whether a polarized pattern of economic concentrations was sustained over all the annual periods between 1989 and 2007. The shift-share analysis results support the observation of a substantial and persistent concentration of industrial employment in primate growth-pole regions, Seoul and its metropolitan region (Gyeonggi and Incheon) and the Busan-southeast growth-pole region. The gap between primate growth-pole regions (especially Gyeonggi and Incheon as Seoul's hinterland) and other lagging regions began to increase again one year later after the 1997 IMF crisis. Moreover, many industries' regional share effects in primate growth-pole regions did not greatly decrease even between 1997 and 1998.

In order to illustrate the need for a different set of policies or plans if new or more preferred patterns of economic activity are to emerge, the second section of this chapter reviewed the efforts made by the national government to diffuse economic activity, and their consequences. The review and evaluations of all the former governments since 1962 led to the conclusion that their regional development policies were not very successful in trickling down economic outcomes away from the growth-pole regions It is evident that the primate growth-pole regions 'as national magnets of labor and capital' (not to mention 'as regional magnets entitled growth centers': namely, Seoul for the SMA) have been sustained despite policy efforts to decentralize economic activity (Kim et al, 2003; Choi et al, 2007; Park, 2009b). The importance of examining social networks and their influence on the distribution of economic activities was highlighted by the review of two recent administrations' approaches to balancing

regional development in political space.

The present Lee administration shows a rather different view to the former Rho administration's approach to regional development.   By introducing national and regional innovation systems (and heavier tax plans) the Rho administration tried to remedy interregional and personal disparities, which could increase socioeconomic instability.   In contrast the present Lee administration has focused on increasing the efficiency of the market economy, but the global economic recession and socioeconomic instability associated with the inconsistency of economic policy and income polarization continued to frustrate its efforts.[36]   Reuters (2009) and New York Times (2008) used a satiric expression of "LeeMan Brothers," (not Lehman Brothers Holdings, Inc.) which means president Lee and one of his social networks, Mansu Kang as minister of the Ministry of Strategy and Finance (MSF).   New York Times (2008) criticized the present administration's "handling the recent market turmoil inconsistently," pointing out Minister Mansu Kang's appointment and the inconsistency of the MSF's policies continued to be political issues to the nation who still remembered him as vice-minister of the Ministry of Finance before and when the IMF crisis occurred.

In terms of regional development, these phenomena also provide the rationale for investigating whether "macroconsequence" (significant unintended consequences for a large group: Schelling, 1978), which can be caused by "micromotive"

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[36]  In the spring of 2008 the press in South Korea coined two satiric buzzwords for the present Lee administration and New York Times (2008) also satirized its economic policies and plans.   "Ko So-Young," which stands for elites from Korea University (president Lee's alma mater) alumni association and from Youngnam (literally 'southeast' in Korean) province, and "Kang Buja," which stands for elites from Kangnam (literally a central district in the south part of Seoul, 'below the Han River') and Buja (literally 'the rich people' in Korean).   Ko So-Young and Kang Buja are widely-recognized actresses in South Korea.

(individuals' intentional human action), occurred in South Korea's economic space and political space.   As discussed in Chapter Two, previous studies (Hwang, 1996; Choi, 1991; Cho, 1975) discussed the role of (elites') social networks in the policy process of economic development.   These efforts, however, did not address the intersection of economic networks and social networks or the intersection of economic space and political space.   Lee (2003) analyzed the selection and promotion of 1,714 governmental elites for the periods 1948 – 2000.   That study was representative of those that focus on elites and their role in policy development but it also lacked discussion on the economic development policy process and the role of elites.

Despite the literature's limited attention to the intersection of economic networks and social networks, the role of elites and their social networks in formulating and implementing regional development policies is apparent because they themselves are decision-makers of those policies and strategies.   Elite studies (Mills, 1956; Useem, 1984; Domhoff, 1990) and growth coalition or urban regime theory (Molotch, 1976; Logan & Molotch, 1987; Stone, 1989; Wolman, 1996; Rosentraub & Helmke, 1996; Logan et al., 1999) also support the rationale for researching such an intersection where the unification of (local) economic and political elite groups occurred, because their coalitions can impact a concentration of (local) economic activity.   Thus based on the literature review, the examination of 'economic' growth poles, and a review of regional development policies and projects so far, the methodology used to study social networks is explained and the research questions and hypotheses will be specified in the next chapter.   Then the data analysis is made in Chapter Five and the final chapter focuses on the conclusions and recommendations supported by the data analysis.

# CHAPTER IV

## METHODOLOGY: SOCIAL NETWORK ANALYSIS OF ELITE NETWORKS

The review and findings in the previous chapters suggest that regional elites form coalitions that become social networks in political space.    The relationship is dynamic.    Social networks formed in younger generations as a result of the actions of regional elites then reinforce the existing concentration in economic activity.    The coalition of elite group members is often described as local growth machines or urban regimes that capitalize upon existing economic networks in economic space.    It was also discussed that such coalitions facilitate economic concentrations of wealth and activity in their home regions.    Those actions lead to restricted levels of trickling down effects (or the spread of economic activity) to other peripheral or lagging regions. This occurs or takes place because many elites, born or grown in existing growth-pole regions, make strenuous effects designed to elevate their home region's wealth.

Regarding economic space, the shift-share analysis using industrial

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employment data illustrated the existence of growth-poles and economic concentrations in two regions. This chapter will examine the methodology for investigating the presence of elites' social networks in areas (in political space) that correspond to the growth-pole regions (economic space). What Perroux (1950, 1955) and Mills (1956) discussed – in terms of economic relations and social relations, respectively – is also observed in South Korea. This chapter introduces social network analysis (SNA) as a method to investigate the existence of social networks and the institutions or nodes where the networks form. SNA permits researchers to test whether different social networks are associated with the concentration of economic activity. At the end of this chapter the specific research questions and hypotheses for analysis are presented and linked to the empirical analysis in Chapter Five.

**Social Network Analysis:**
**A Method for Investigating the Properties and Forces of Networks**

**The Tradition and Approach of Social Network Analysis**

In the 1930s Jacob L. Moreno invented sociometric methods, which became a foundation for SNA (Figure 4-1). His concept of a 'sociogram' provides a method for representing the formal properties of social configurations. The social configurations can be mapped or drawn using similar diagrams in spatial geometry. Numerous social scientists (Gluckman, 1955; Warner & Lunt, 1941; Mayo, 1933) improved his methods. Barnes (1954), Bott (1957), Nadel (1957), and Mitchell (1969) contributed to the theoretical and technical application of group dynamics to network analysis and then

others added graph theory to permit network analysis to mathematically and scientifically visualize the structure, form, and patterns of social relational properties (Freeman, 2004; Scott, 2000).

**Figure 4-1. The Tradition of Social Network Analysis (SNA)**

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┌─────────────────────────────────────────────┐   ┌─────────────────────────┐
│ Classical German Sociology (Weber, Toennis,  │   │     Radcliffe-Brown     │
│ Simmel)                                       │   │                         │
└─────────────────────────────────────────────┘   └─────────────────────────┘
        │                                                      │
        ▼                                                      ▼
┌──────────────────────────────────────────┐    ┌──────────────────────────┐
│ Kohler's Gestalt Theory (Cognitive and    │    │    British Structural-   │
│ Social Psychology)                         │    │ Functionalist Anthropology│
└──────────────────────────────────────────┘    └──────────────────────────┘
   │              │                                  │              │
   ▼              ▼                                  ▼              ▼
┌──────────┐  ┌──────────────┐          ┌──────────────┐  ┌──────────────┐
│Field     │◄─│ Moreno (1934),│          │ Warner, Mayo │  │  Gluckman    │
│Theory    │  │ Lewin (MIT-   │          └──────────────┘  └──────────────┘
│Sociometry│  │ UMich)        │                 │                 │
└──────────┘  └──────────────┘                  ▼                 ▼
   │                              ┌──────────┐  ┌────────────────────────────┐
   ▼                              │ Homans   │  │ Barnes, Bott, Nadel (1957) │
┌──────────┐ ───────────────────►└──────────┘  └────────────────────────────┘
│ Group    │                                                     │
│ Dynamics │      ┌───────────────────────────────┐             │
└──────────┘ ────►│ Erdos & Renyi (Mathematicians) │──►┌──────────────┐
   │              └───────────────────────────────┘    │  Mitchell    │
   ▼                                                    └──────────────┘
┌──────────┐    ┌──────────────────────┐                      │
│Graph     │───►│ Harvard Structuralists│───►┌────────────────┐
│Theory    │    │ (Harrison White Group)│    │      SNA       │
└──────────┘    └──────────────────────┘    └────────────────┘
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Source: Scott (1991).   The tradition associated with Erdos and Renyi was added.   Yellow shading denotes a field of research that made major theoretical contributions.

A social scientific study's unit of observation can be either individuals or the interactions among them.   The unit of analysis can also be associated with the cross-sectional or temporal level of either behavioral/sociological attributes (Laumann, 1979; Laumann & Knoke, 1987; Knoke & Kuklinski, 1982) or relational properties (Burt, 1986).   Then what is the biggest difference between behavioral/sociological attributes and relational properties when analyzing social phenomena?   It lies in 'who' is a unit of observation or a unit of analysis.   Given the absence of operationalizable 'who's

data,' it was inevitable that previous studies in traditional political economy or economic development analyzed the 'macro' (aggregated) wealth and behavior of nations or regions, using 'macro' data of economic networks.

**Figure 4-2. Types of Data and Analysis**

| Style of Research | Source of Evidence | Type of Data | Type of Analysis |
|---|---|---|---|
| Survey Res. | Questionnaires | Attribute | Variable Analysis |
| Ethnographic | Interviews Observations | Ideational | Typological Analysis |
| Documentary | Texts | Relational | Network Analysis |
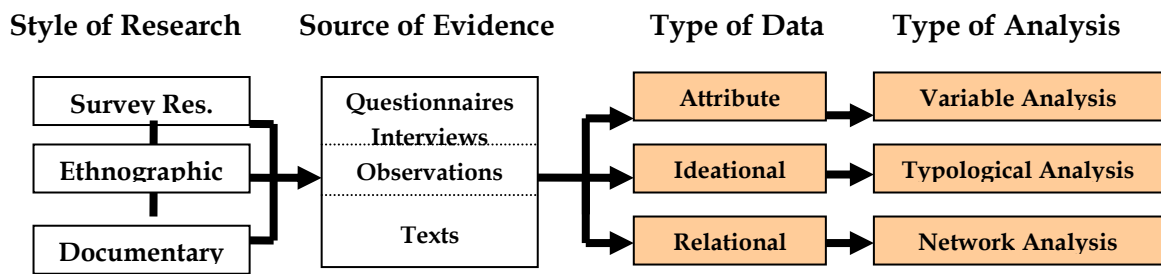
Source: Scott (1991).

SNA does not rely only on the concept of institutions since it can portray constellations of concrete interactions that constitute the foundation of social life (Mizruchi, 2007) (Figure 4-2).[37]    How can a researcher use SNA to understand the intersection of economic development, elites, and social networks?    Methodologically, the value comes from the perspective that studies using 'macro-level' analyses of relational properties in regional, national, or international economies do not necessarily observe what is in reality the 'macro-level' (Figure 4-2).    With enhanced "micro-level" tools of network analysis, a researcher can analyze both macro and micro aspects of regional economies or social phenomena.[38]

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[37]  In the same sense the tradition of social network analysis does not necessarily assume the economic equilibrium in free market and capitalism as a precondition for analysis.
[38]  Theoretically, the origin of intersection can be found in the formulation of classical political economy.

**Data-Setting of Social Network Analysis**

Most social network analysis uses matrices for operationalization. The following two types of matrices can be classified according to how rows and columns are constructed. The first type of matrix has an n (rows) × n (columns) structure, which means a matrix has the same number of cells in both rows and columns. This form is called '1-mode structure.' The second type of matrix has an m (rows) × n (columns) structure, which means rows and columns of a matrix has different numbers of cells. It is called '2-mode structure.'

The data to be coded in a matrix can have either dichotomous or weighted values. The dichotomous value usually represents whether a node in the row has a certain relationship with a node in the column. A node is the point through which connections intersect each other. A person, organization, or region is a representative example of nodes. In general the weighted value indicates 'how much' certain nodes are connected to one another in terms of (social) networks. Survey, secondary-data collecting, or interviews can be used for calculating the degree that two nodes are associated with each other. According to the objectives of study and availability of data, nominal, ordinal, interval, or ratio scale – indicating the relative amount of a trait, individual attribute, or relational property – is appropriately adopted.

When a researcher operationally defines the relationships among nodes the directional property of a network is set. A non-directed network represents the relationship in which certain nodes are associated with one another regardless of the

direction of causation or steering relationship.   A directed network is one in which

certain nodes are connected to one another and there is a clear direction of causation or

steering relationship between the centers of activity.

**Measures of Social Network Analysis**

   **Cohesion, equivalence, and clique.**   In addition to centrality (to be

introduced in the next subsection) there are other indicators that represent the

characteristics of the relations among nodes and nodes themselves: cohesion,

equivalence, and clique.   Cohesion describes how closely certain nodes are associated

with or connected to one another.   There are four representative indices: degree,

density, inclusiveness, and strength/duration.   Degree is the number of nodes to which

a node is directly connected.   Density is the number of relations through which a node

is directly connected to other nodes divided by the number of logically possible

relations.   Inclusiveness is defined as the number of all the nodes minus the number of

'isolates' (i.e., nodes without any link).   Strength is defined as how frequently a node

(e.g., person, organization, etc.) meet or is connected to other nodes, and duration is

defined as how long such relations last.

   Equivalence is the extent to which each node in a network has 'similar' types

of relations measured in Euclidean distances or by use of correlation coefficients or

(dis)similarity indices (Knoke and Yang, 2008; Scott, 2000).   Node $i$ and node $j$ are

connected respectively to node $k$, and have the same level of strength or duration, they

are considered to have the same level of 'structural' equivalence (for a representative Euclidean distance measure [Burt, 1978], see equation 4-1).

$$(4\text{-}1)\ d_{ij} = \left(\sum_k{}^n (Z_{ik} - Z_{jk})^2 + \sum_k{}^n (Z_{ki} - Z_{kj})^2\right)^{1/2},$$

where $Z_{ik}$ is the (weighted) distance on the 'row' where node $i$ is connected to node $k$, $Z_{jk}$ is the (weighted) distance on the 'column' where node $j$ is connected to node $k$, $Z_{ki}$ is the (weighted) distance on the 'row' where node $k$ is connected to node $i$, where $Z_{kj}$ is the (weighted) distance on the 'column' where node $k$ is connected to node $j$.

A 'structural hole' is a node that has the lowest level of constraint (or a lowest level of redundancy of relations). A node can be defined as a structural hole when it has the lowest level of redundancy that allows it most efficiently to be connected to other nodes. In comparison 'automorphic' equivalence is defined according to the objectives of the study through which a researcher intends to focus on a certain network property (e.g., the degree, density, inclusiveness, or the number of reachable nodes, etc.). According to the criteria of subgrouping of network members, a clique's definition is illustrated in Table 4-I.

**Table 4-I. A Classification of Subgrouping of Social Networks**

|  | Excluding Indirect Connections | Including Indirect Connections |
|---|---|---|
| **Bi-Directionally Reachable** | **Clique** (Most Cohesive) (Maximally Complete Subgraph) | Strong Component (No Redundancy) |
| **Uni-Directionally Reachable** | *n*-Clique | Weak Component |

Source: Kim (2007, p. 54).

**Centrality.**   Centrality indicates the extent to which a node is placed in the central position of a network structure.   Centrality can be defined in several ways. Freeman (1979) distinguished local and global centralities.   A node is considered to have a high extent of local centrality as much as it is 'directly' connected to other nodes. A node has high global centrality if it is in a 'strategically central' position of a network structure.   There are several indices that can be used to represent how directly or how strategically central a node in a network structure is connected to other nodes.   As a representative 'global' centrality index, closeness centrality indicates the total length of the shortest path between two nodes (geodesic distance).     Given the highest value of geodesic distances indicates the lowest closeness, closeness centrality is usually defined as the inverse of the sum of the geodesic distances between a node and other nodes ($n$; for normalization, $n - 1$).

For instance a 'reachable' matchmaker or broker usually has a high closeness centrality in marriage networks or markets.   "Betweenness" centrality refers to the degree to which a node is 'placed' in geodesic distance (the minimum distance or the length of the shortest path between two nodes).   It is generally defined as the proportion of geodesic paths connecting dyads (i.e., a pair of nodes) in which a particular node is involved.   Operationally, the summation across paths connecting all the dyads not including node $i$ measures the extent to which $i$ 'sits on' the geodesic paths of the other network members (Knoke & Yang, 2008).   A 'successful' matchmaker or broker usually has a high betweenness centrality in marriage networks or markets.   Prestige (centrality) reflects the extent in which a node is connected to

other 'popular' or prestigious node.   In a classroom a student that nominates many
others as his or her best friends is more likely to receive no best-friend nominations in
return.   Prestige (centrality) is defined as the number of directed ties (i.e., total
nominations received) that a node 'receives from' the other network node for a
specified relation in a network structure.   There exist different methods to measure
prestige, and one of the most popular is Wasserman and Faust's (1994, p. 202) 'actor
degree prestige,' which is defined as the in-degrees of a network structure 'whose
direct connections have directions opposite to connections of in-degree centrality.'

The degree (centrality) of a network structure is defined as the extent to which
a node connects directly to all other nodes.   According to whether a node is connected
to other nodes (i.e., when the node itself is an object of relationship by the other node)
or connects to other nodes, there are two kinds of degree centralities: in-degree
centrality and out-degree centrality.   They are operationally defined as follows:

(4-2) $in\text{-}degree_j = \sum_i^n x_{ij} / (n-1)$

Equation (4-2) measures the number or weight of direct connections from every node $i$
to each node $j$ in a matrix with $n$ rows and $n$ columns.

(4-3) $out\text{-}degree_i = \sum_j^n x_{ij} / (n-1)$

Equation (4-3) measures the number or weight of direct connections from each node $i$
to every node $j$ in a matrix with $n$ rows and $n$ columns.

**Centralization: How much the whole network is centralized.**

Centralization expresses how much the 'whole' network is centralized. In general it is operationally defined as the summation of the highest centrality value observed minus every other centrality in a network structure, divided by the maximum centrality logically possible (equation 4-4: the case of centralization of degree centrality).

$$(4\text{-}4)\ \sum_{j}^{n}(C_{dmax} - C_{d}p_{i})\ /\ (\sum_{i}^{n}(maxC_{d} - C_{d}p_{i})) = \sum_{j}^{n}(C_{dmax} - C_{d}p_{i})\ /\ (n-1)\ (n-2),$$

where $C_{dmax}$ the highest centrality value observed, $C_{d}p_{i}$ is every other centrality in a network structure, and $maxC_{d}$ is the maximum centrality logically possible.

Figure 4-3 shows a hypothetical network. It illustrates a 'centralized' network centering on node A. Then how much the network is centralized? The equation 4-4 does apply simply to the centralization index of this network. The number of networks directly connected to A is five. On the other side it is natural for the most peripheral nodes (e.g., G, H, I, J, K, L, M, N, O, P) to have the lowest 'degree' centralities. In this hypothetical graph the degree centrality value of each most peripheral node is one. The degree centrality of nodes (e.g., B, C, D, E, F) located between node A and nodes G, H, I, J, K, L, M, N, O, P is three. Thus for Figure 4-1 the numerator of equation 4-4 is calculated as follows: $(5\text{-}1) \times 10 + (5\text{-}3) \times 5 = 50$.

Likewise the denominator of the hypothetical network is $(15\text{ -}1) \times 15 = 210$. The number of the nodes in the network is 16, and 15 becomes the maximum centrality value a network can logically take. Therefore, according to equation 4-4, the

centralization of this hypothetical network is 50/210 = 0.238.    If the centralization

value of a system is close to unity (when each cell in a symmetric matrix takes a

dichotomous value), it can be compared to a black hole to attract people or things.

When each cell in a symmetric matrix has a weighted value, the centralization value

can take a value (much) larger than unity.

**Figure 4-3. A Hypothetical Network Structure Centering on (Star) Node A**
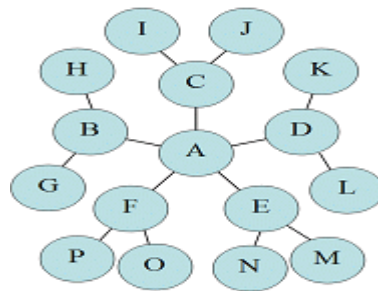


Notes: This hypothetical structure was built based on Kim (2007, p.57).    If node A is a person,
organization, or region and its direction of relations is 'in-degree,' the central node is regarded to
'attract' resources from other peripheral nodes (Kim, 2004, 2007; Park, 2009b).    Barabasi (2002)
classified this type of network into 'star network.'

**Utilizing SNA for the Analysis of Regions' Social Networks and
Their Association with Economic Outcomes and Concentrations**

As discussed in Chapter Two, social networks can polarize political and

economic space.    It was also discussed that the polarization in political and economic

spaces could have a certain intersection that corresponds to a geographical region

sustaining a growth pole and the concentration of wealth.    After a review of the SNA

of political economic networks in the literature, this section introduces SNA methods to

test whether different forms of social networks per region are associated with different

economic outcomes and concentrations per region.


**The SNA of Political Economic Networks in the Literature**


SNA may be a valuable tool empirically sustaining aspects of elite theory.

Without SNA and appropriate detailed data, elite theory could have continued to suffer

from an absence of quantification and an ecological fallacy of an 'obscure' group

named "elite."[39]    In respect to elites the emphasis of previous studies of advancing

SNA was on 1) the game of "'embedded' weak ties" (Granovetter, 1973, 1995) and

strong ties of business linkages or political power structure in national or regional

economies (Brandeis, 1914; Mills, 1956; Amsden, 1989; Evans, 1995, 1996; Okimotto,

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[39] Elite groups are primary institutions to drive societal changes (Mills, 1956).    In particular, he
defined power elite as a 'group of men, similar in interest and outlook, shaping events from
invulnerable positions behind the scenes.'    He argued that they are a group of people who
disproportion the amount of privilege, wealth, and control access to decision making of policies and
global consequence.    Pointing out that these people have similar interests or shared world view,
Mills (1956) discussed the interaction between political, military, and economic elites who are at the
top of the three institutions of politics, military, and economy.    He preferred the term power elite to
'ruling class' because he saw that it contains the theory which 'an economic class rules politically,'
in the sense that ruling is a political term whereas class is an economic term.    He admitted that the
short-cut theory may or may not at time be true.    Mills (1956), however, claimed that the phrase
'ruling class,' in its common political connotations, does not allow enough autonomy to the political
order and its agents, and it says nothing about the military as such. Instead accepting the simple
view that high economic men unilaterally make all decisions of national consequence, he held that
such a simple view of 'economic determinism' must be elaborated by 'political determinism' and
'military determinism'; that the higher agents of each of these three domains now often have a
noticeable degree of autonomy; and that only in the often intricate ways of coalition they make up
and carry through the most important decisions.    Mills (1956) also argued that these elites in the
'prime three' institutions and their orders can have an uneasy or unstable alliance based upon their
'community of interests' driven by the military metaphysic, class identity, interchangeability, and
socialization and cooperation.

1989; Wade, 1990); and 2) the "small world" (Milgram, 1967; Travers & Milgram, 1969) of cooperate elite networks and governance (Fligstein, 1985; Mezias, 1990; Edelman, 1992; Dobin et al., 1993; Useem, 1984, 1996; Davis, 1991; Davis & Greve, 1997; Davis & Mizruchi, 1999; Davis et al., 1994, 2003).   Most of this literature was built on the theoretical foundation by Mills' (1956) 'power elite' and Domhoff (1975)'s 'the elite as the ruling class.'

Some researchers interested in measuring either embedded weak ties or stronger ones have relied on the interpretation of descriptive statistics and regression analysis results.   Others have used social network analysis (SNA) (e.g., Knoke and Yang, 2008; Scott, 2000; Wasserman & Faust, 1994) and specially designed software (e.g., UCINET, NetMiner, etc.).   Useem's (1984) approach to data collection relied on access to the "inner circle" of corporate elites and compilations of their biographical data.   Mintz and Schwartz (1985) used a similar method, but they focused on the network of power relations among companies.   Drawing on the model of Strang and Tuma (1993) and Greve et al. (1995) and combining the literature on neo-institutionalism and diffusion of innovation, Davis and Greve (1997) used regression analyses to estimate the spread of two governance innovations (e.g., poison pills through a broad-to-board diffusion process; and golden parachutes through geographical proximity).   Davis and Greve (1997) used the secondary data from the Investor Responsibility Research Center, Standard & Poor's *Directory of Corporations, Executives*, *Directors*, *Spectrum Guides*, and the *CDE Stock Ownership Directory*.

Despite the advancement of SNA tools, data limitations often prevented previous studies from getting better results (Davis et al., 2003).   If these data problems

can be solved, more scientific analysis on economic networks and social networks will

be possible for the cross-sectional and temporal analysis of behavioral or sociological

attributes (Laumann, 1979; Laumann & Knoke, 1987; Knoke & Kuklinski, 1982) and

relational properties (Burt, 1986) in the wealth and governance of nations or

metropolitan regions.

To summarize, numerous researchers argued that there was or is spatial

manifestation of economic and political networks and their intersection created urban

regimes or local growth machines that concentrated the accumulation of wealth.

However their presence remained mostly 'abstract' as Perroux (1950, 1955)

conceptualized for economic space since there lacked appropriate data or scientific

methods available to quantify the existence of overlaps and of social networks.

Despite the advance of SNA, the data construction or availability problem prevented a

more convincing and detailed examination of the presence of polarization or growth

coalitions in political space.

**The SNA of Political Networks and Their Association with Economic Networks**

With regard to economic space the shift-share analysis results of sectoral

employment in Chapter Three supported the existence of growth-poles and economic

concentrations in two primate growth-pole regions in South Korea.   (The presence of

economic growth-poles will be discussed with additional empirical evidences in the

next chapter, together with the SNA results whose methodology is introduced in this

section.)    The remaining issue, however, is to verify empirically the presence of polarization in political space and its association with economic polarization.    In order to examine the existence of polarization in political space and its patterns that influenced the regional development policies and patterns, this subsection introduces SNA methods to analyze the regional percent share of Korean 'power elites.'    Then a method is introduced, to test whether different forms of social networks per region are associated with different economic outcomes and concentrations per region.    To make a bridge to the empirical analysis of the following chapter, the specific research questions and hypotheses for analysis are stated clearly in the next subsection.

In this study the 'primary' unit of analysis is both regional high school's (networks) and 15 regions in South Korea and the data analysis results will be discussed mainly in terms of regions (and in terms of individual high schools if necessary).    The data were obtained from Lee et al.'s (2006) social capital index of each region's high school networks.    In this dissertation the high school data refers to the percent share of the total Korean power elites (31,852) a high school in a specific region has.    (The selection criteria of 31,852 Korean power elite members are explained in Appendix A.)    This dissertation will use NetMiner to produce the SNA indices and network.    In particular, the analysis will utilize Kamada-Kawai's (1989) graphing method for visualizing networks.    The Kamada-Kawai uses the algorithm that minimizes the stress (the difference between observed/actual and estimated/ideal distances between a dyad) by computing the force-directed placement energy (Ingram et al., 2009; Network Workbench at Indiana University, 2009; Kamada & Kawai, 1989). This physical force-based algorithm (to be explained in detail in Chapter Five) is the

most optimized for calculating the numerical value of 'attractive or repulsive forces' between individual high-school-based networks and between regionally aggregated networks in growth-pole regions and other lagging regions.   Then these SNA indices will be compared and statistically tested with the values of regional gross output and the gross regional domestic product (GRDP) in the regional income and product account (IPA).   The specific methods for the comparison and statistical test will be discussed after introducing the structure and data-coding of the SNA matrix in the end of this subsection.

In addition two complementary network analyses will be conducted.   The first complementary network analysis is Lee et al.'s (2006) data about regarding other power elites and their connections.   Using descriptive statistics of the regional concentrations of these political leaders' social networks, this dissertation will compare the political polarization in political space and economic polarization in economic space.   The selection criterion of the link, connection, or network is whether these elites were born in the same birthplaces, belonged to the same year's class in the same school, attended the same colleges, universities, or graduate schools in the same year, and work(ed) for the same institutions or firms in the same year.   These original data include birthplaces, schools, and other institutions that are or were part of the lives of 31,852 elite group members.   The high school data were used to measure the percent share of social networks per regional high school, the senior congresspersons data measure the regional percent share of social networks per political leader as regional elite.   The second complementary network analysis is to use the author's self-collected autobiographical data about economic elites: 48 business leaders with the highest

degree centralities according to Lee, et al. (2006), 23 business leaders with the most

workplace-related networks, 23 business leaders with the most family-related networks,

and 29 business leaders with the most hometown-related networks.   From the

autobiographical data, the number of power elites can be calculated and the

relationships between elites can also be identified.   This study will compare these

economic elites' birthplaces, attended schools, and universities with economic

concentrations using descriptive statistics.

Lee et al. (2006) collected and constructed the biographical data of Korean

power elites.   The results of that sociological study clearly identified the existence of

social networks among power elites in South Korea, and such networks showed

regionally skewed patterns.   This dissertation will investigate both the existence of

social networks and their association with economic networks.   The data in Lee et al.

(2006) contain the autobiographical data of 31,852 power elites in South Korea, and

this study will use to the extent possible the original data the 2006 study.   The reason

some data will not be used is that Lee et al. (2006) focused on the nation's 100 premier

high schools.

Table 4-II illustrates the structure of the matrix that will be used for the SNA of

regional social networks in South Korea.   This matrix structure allows the SNA

software to calculate indices such as centrality, centralization, or density.   In the

matrix structure of Table 4-II such SNA index values are calculated based on the

premise schools, which belong together to the same region, have "co-membership" and

shared their 'regional' networks.   In terms of SNA methodology, the shaded (not

dotted) part of the matrix is called "the proximity matrix of co-membership."   In this

matching type measurement of inter-node similarity, a school in a row is given one

('1') if it belongs to the same region (i.e., co-membership; the dichotomous value of

proximity) as a school in a column.   In the un-shaded part of the left under corner of

table 4-II R1,S1 denotes the percent share of the total Korean power elites (31,852)

high school 1 in region 1 has.   "The proximity matrix of co-membership" helps the

SNA software calculate the Euclidean distance between a pair of high schools

according to their percent share of the national social networks 'within a specific

region' (in the un-shaded parts) only.   These two un-shaded parts that define their cells

in percent (%) are called "bipartite matrices."   A value in column in the bipartite

matrix of the right upper corner in Table 4-II has the same value as a value in row in the

bipartite matrix of the left under corner (e.g., S1,R1 = R1,S1), and this is

methodologically required to calculate the indices of originally-asymmetric[40] relations

between nodes.

**Table 4-II. The Structure of the SNA Matrix in the Study: Applied One-Mode Structure**

| | School 1 | School 2 | School 3 | ... | School 99 | School 100 | Region 1 | ... | Region 15 |
|---|---|---|---|---|---|---|---|---|---|
| School 1 | | | 1 | ... | | | S1,R1 | ... | S1,R15 |
| School 2 | | 1 | | ... | | | S2,R1 | ... | S2,R15 |
| School 3 | 1 | | 1 | ... | | | S3,R1 | ... | S3,R15 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| School 99 | | | | ... | 1 | | S99,R1 | ... | S99,R15 |
| School 100 | | | | ... | | 1 | S100,R1 | ... | S100,R15 |
| Region 1 | R1,S1 | R1,S2 | R1,S3 | ... | R1,S99 | R1,S100 | | ... | |
| ... | ... | ... | ... | ... | ... | ... | | ... | |
| Region 15 | R15,S1 | R15,S2 | R15,S3 | ... | R15,S99 | R15,S100 | | ... | |



| | |
|---|---|
| Proximity Matrix Among Main Nodes (Co-membership) | Bipartite Matrix Between Main Nodes and Sub Nodes |
| Bipartite Matrix Between Sub Nodes and Main Nodes | Proximity Matrix Among Sub Nodes (Overlap) |

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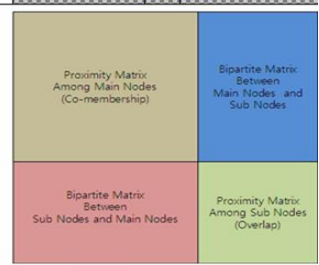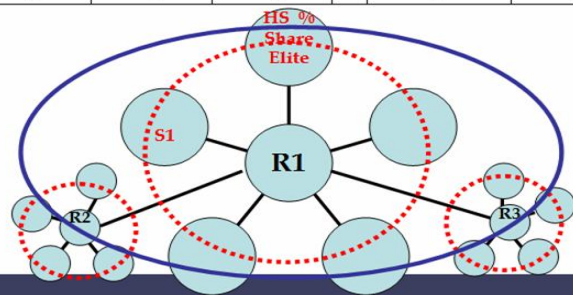
[40]  The unit of observations is both individual high-school-based network and regional network.

Notes: In the exemplified table above, school 1 and school 3 belong to the same region (i.e., co-membership).   In the complementary figure below the table, the individual 'networks' (links) between schools were not drawn for purposes of simplicity of illustration.   Since each cell of the proximity matrix of co-membership is given a dichotomous value and each cell of the matrix of overlapping is given a weighted value for each year between 1989 and 2005, this matrix structure permits the SNA software not to disregard the diagonal cell's value.   This type of SNA matrix formulation is analogous to the input-output (I-O) model (e.g., Isard's [1972] model) (Park, 2009b; Burt & Carlton, 1989).   The column sum means in-degree centrality while the row sum (divided by the number of cells minus one) in the SNA matrix means out-degree centrality.   In the matrix structure of Table 4, the major difference to the I-O model lies in: 1) bipartite matrices' cell values as the percent of a regional high school's 'potentially' accessible/distributive elite share (not like 'exogenous' final demand in the I-O model) and 2) binary values in the shaded 'within-region' part. In this dissertation the weighted value, however, is coded as each high school's percent share of 31,852 elites (in the un-shaded/un-dotted parts) so that each region's (row [for Ri,Sj] or column [for Sj,Ri] cell) summation of its high schools' percent share equals the region's percent share of 31,852 elites.   The interrelationship between each region's summed percent share (%) is then defined by the cell values in the dotted part.   In this type of partitioned SNA matrix formulation, therefore, the calculation of in-degree (out-degree) centralities is made for both shaded and un-shaded/un-dotted parts vertically (horizontally) from n = 1 to 100.   This defines the centrality among 'within-region' networks.   For n = 101st and above, the calculation of in-degree (out-degree) centralities is made for both un-shaded/un-dotted and dotted parts vertically (horizontally).   It defines the centrality of 'between-region' networks.   The 'between-region' networks have different values according to the directions of attraction or repulsion (e.g., indegree and outdegree) in the dotted part, since the 'surveyed' emotional distance of a row region for a column region differs from the emotional distance of a column region for a row region in the dotted part.   In the asymmetric matrix structure of the dotted part, each column cell is the respondents' original hometown and each row cell is the region to which the respondents were asked to select Likert-scaled (0 – 5) social distance about each of other regions.   The other part of the SNA matrix is symmetric.   In sum, there are two levels of networks in the structure.   First, within-region network is the sum of "co-membership" links (1st-100th) + percent elite share of each school in a particular cell in the bipartite matrix.   In the case of out-degree, this defines the "out-flowing (distributive)" potential elite percent share from a school to the other schools.   This is the row sum.   In-degree (in-flowing) is column sum and it defines a regional high school's "attraction."   Second, between-region network is a region's total percent elite share in a particular cell (for n = 101st and above) + between-region "directed" social distances. Among the 16 regions, Ulsan, an 'enterprise city' (Park, 2009c) was detached from Gyeongnam in 1997.   Thus it needs to be appropriately adjusted to Gyeongnam in the matrices.   To test any distinguishable change when it is included or excluded, this study preliminary conducted SNA for 15 × 15 [excluding Ulsan] and 16 × 16 matrix [including Ulsan], and the results showed cross-regionally similar rates of piecemeal decrease in other region's centralities because it has only one high school [Hakseong] whose elite percent share belongs to top 100 schools.   Moreover, the young school's elites belong to the cohort in the 1960s or 1970s only.   It is because the city has grown based on industrial complexes since the 1960s by national planning in cooperation with major firms like Hyundai.   Although its percent share of 31,852 elites does not greatly surpass the larger cities for the 1960s (0.44) and 1970s (1.06) cohorts, these elite shares were included in the matrices since the school originally defines one row or column.   Thus it would be appropriate for any graph to reflect the "local" social networks via the local node (school).   After centrality calculation, however, the centrality of this younger 'enterprise city' may not be necessarily considered in the statistical association with regional income, since its development was made by the older generations (born before 1950 or in the 1950s) on the 'newer' entrepreneurial foundations chartered through national planning and the larger firms' industrial networks rather than just by the younger elites' one-school networks.

The dotted part of the matrix in Table 4-II is called "the proximity matrix of overlapping." The value in each cell in this part indicates the numerical value of proximity. The proximity matrix of overlapping is to represent the social networks 'across regions.' Some 'cross-regionally-intersecting' ('between-region' not 'within-region') networks will be unavailable; as a result the next best strategy would be to use survey results regarding the 'proximity' among people with same or different regional background. The implicit assumption of using such surveyed data together with the aggregate biographical data will be that the interregional relationships are formed and changed not only by the number of institutions or organizations (social networks) shared during their socializing processes, but also by their mental attitude about or mutual interaction (trust or norms) with people having same or different regional background. In the literature social networks, trust, and norms are considered as three constituents of social capital (Coleman, 1988; Putnam, 1995; Portes, 1998).

As a numerical value of proximity 'across regions,' a value indicating the extent of association can be coded in the "the proximity matrix of overlapping," according to survey and interview results or any appropriate secondary data about the relationships between regions as macro nodes. This dissertation uses survey data from the Korean Sociological Association (KSA) (1988) and the Sungkyunkwan University's Survey Research Center (SUSRC) (2003). Both studies used the same 'probability proportionate to size sample method.' Despite the difference in their number of 'fully answered' respondents (2,011 [KSA], 833 [SUSRC]), such a large number itself is sufficient to make statistical estimations through the method. The respondents' origin region was divided according to their or their parents' birthplace.

The two surveys involved younger respondents (over 20 [KSA] and for people over 18 [SUSRC], respectively). The SUSRC expanded the respondents' age to age under 20, since sociologists considered many young people mature at an age earlier in the 2000s than the old generation in the late 1900s. The two surveys calculated each region's central tendency and dispersion using the Likert-scale values measuring the degree of residents' (dis)like between each region. These values were interpreted as 'an indicator of regionalism or the social distance between regions' in the original study or relevant studies like Na (1990) and Chung (2003). The mean value can be used for this dissertation, since social network as a kind of social capital is formed by active interactions with social trust and norms as other kinds of social capital and as cultural, structural, functional, or psychological properties (Coleman, 1988; Putnam, 1995; Portes, 1998). Together with those "underinvested" (Coleman, 1988) factors or "under- or over-socialized" (Granovetter, 1985) actions, social network can impact (and be impacted by) economic outcomes (Portes, 1998). This dissertation will put more emphasis on social networks under the postulation that the autobiographical data in Lee et al. (2006) well represent the numerical values of regional elites' 'high school-based' social networks. In addition to the complementary data of congresspersons' regional social networks and chaebol people's social networks, the values will be operationalized and interpreted as regional elites' social capital (asset). Based on Lee et al. (2006) these social networks are assumed to mostly pivot around each region's high schools as a hub-institution of forming social networks in their socializing processes.[41]

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[41] About the importance of high-school-based networks in South Korea: In the table to be presented in the next chapter Pusan shares the second largest portion of both school-related networks and

A comparison of these two surveys also uncovers 'a cumulative causation of economic polarization and political polarization.'   It needs to be noted that the two respective surveys in 1988 and 2003, which used the same sampling method and scale, reported 'different but consistent' results of respondents' selecting the cause of and remedy for the social distance between regions.   Reducing interregional income disparities is evaluated as the most possible remedy in 1988 and 2003.   In both surveys, people also chose the regionally-allocative selection of elites as the second possible remedy.   In 1988 regional disparities were recognized as the primary cause of potentially increasing social distance, since people thought they became persistent mainly due to the former military regimes' unbalanced regional development policies. In 2003 people thought the social distance between regions was made up especially by politicians, who wanted to earn more vote by perverting such interregional antipathy originated from the 'persistent' regional disparities.[42]

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workplace-related networks.   In particular, its portion of school-related networks is almost equivalent to Seoul's portion.   It is coherent with the widely known fact that many power elites born before 1950 in Pusan or Gyeongnam and graduated from Gyeongnam High School in Pusan have become senior congresspersons or politicians by the help of Kim Young Sam, one of the 'Three Kims.'   Such alumnus relation has been the one of the best 'links' to be promoted in the political arena in Korea.   Kim Young Sam, who was from Geoje Island near Pusan and was elected as the youngest congressperson in Korean history, played an influential role in Korean politics as former party presidents and the seventh president of South Korea.   These alumni includes Kim Hyungoh (present Chairman of the Korean National Assembly), Park Heetae (present president of the National Grand Party, the ruling party), Kim Kichoon (fourteenth Minister of Justice), and many highest-ranked governmental officials and politicians of the former ruling parties especially in Kim Young Sam government (1993 – 1997).   Many Pusan High School graduates, whose hometowns are near Pusan, also became influential congresspersons.

[42] One of the primary objectives of the two surveys was to find the regional pattern of persistent regional conflicts – which were considered to be from previous military regimes' unbalanced regional development and political leaders' perversion of regionalism – by examining the scaled-value of (the social distance defined by) emotional distance as well as the geographical distance between regions.   To address polarized economic concentrations in South Korea an appropriate understanding of these regional conflicts is needed, since these conflicts and people's emotional distance (as well as geographical distance) between regions, as a source of making the relationships between 'regional' people, have been considered to be influential on economic concentrations (Chung, 2005; Park, 2009b).   Going through the Korean War (1950 – 1953), 4.19 Democratic

Another reason this dissertation adopted the two surveys is their specific point of time coincides with the life-course schedule of elites born before 1950, in the 1950s, in the 1960s, and in the 1970s.   The interval between years, which the two surveys 1988 and 2003 were conducted, is almost matched with this dissertation's study periods 1989 and 2005.   Thus it will become more useful if any appropriate method to find a rational measure of the year-by-year change of social distance between regions from 1989 to 2005 (as a proxy for defining interregional social distance).[43]   The method (explained in footnote 43) allows this study to test whether the change in political polarization has been associated with the change in economic polarization.   The numerical value of "the bipartite matrix of regionally aggregated high-school-based networks," which is calculated according to "the proximity matrix of (dichotomous) co-

Protest (1960), 5.16 Military Revolution (coup d'état: 1961), 12.12 coup d'état (1979), 5.18 Gwangju Democratic Protest (1980), June Democratic Protest (1987), and the IMF crisis (1997), Korean power elites were grown and have become influential leaders in the fields of governmental, political, business, and military organizations.   Relating the historical events above to the change in the scaled index of regionalism and the social distance between regions, Chung (2005) compared the KSA (1988) data and the SUSRC 2003 data and made a conclusion.   Drawing on the previous studies Chung (2005) concluded that the people from the southwest region – especially from southern southwest where hundreds of people were massacred by Jun Du-whan in 5.18 Gwangju Democratic Protest (1980) against his 12.12 coup d'état (1979) – showed the greatest antipathy to people from the southeast region.   As discussed in the third chapter, the three leaders of the past military regimes (1962 – 1992) were all from the southeast region and their regional development policies were concentrated on their hometown regions than other regions.   Despite such a regretful massacre in 1980, the respondents' (1988) most-selected cause of the social distance between regions was still former governments' regional development centering on primary growth-pole regions (Chung, 2005).   In the 2003 survey, respondents selected political leaders' perversion of interregional antipathy for maximizing the support from their hometown regions in the 1987 presidential election, as the foremost cause of the social distance between regions.

[43]   A method calculating the 'average' of the changes between 1988 and 2003 can be used. Considering there was no detrimental accident to dramatically worsen regional conflicts and under the postulation that social distance between regions gradually changes in such circumstance, this dissertation suggests the following method.   First, the 15 (regions) × 15 (regions) matrix of the 1988 data will be subtracted by the 15 (regions) × 15 (regions) matrix of the 2003 data.   Second, the matrix newly constructed by subtraction is divided by the 15 × 15 matrix whose every cell has the identical value of 15 (= 2003 minus 1988).   Each cell in the matrix constructed by division represents the 'average' value of year-by-year change in social distance between regions from 1988 to 2003.   For the two remaining years (e.g., 2004 and 2005), this average value can also apply.

membership," represents the quantity of 'within-region' social networks.    The

numerical value of "the proximity matrix of overlapping" in Table 4-II's SNA matrix

represents the criterion value (interregional social distance) of 'between-region' social

networks.

By using the method suggested in footnote 43 both 'between-region' and

'within-region' social networks can be coded in the SNA matrix such as those in Table

4-II year-by-year.    The SNA matrix will be constructed respectively for four cohorts:

elites born in 1950, elites born in the 1950s, elites born in the 1960s, and elites born in

the 1970s.    Then the SNA indices for the matrix data four respective cohorts will be

compared and statistically tested with the values of year-by-year regional output and

the GRDP in the regional IPA 1989 – 2005.    For instance the centrality index for each

cohort will be compared with regional output or the GRDP as an index of regional

economic outcomes (concentrated in particular regions) through correlation analysis.

The detailed techniques for manipulating the data for the correlation analysis will be

explained when the data is analyzed in the next chapter.


**Correlation Analysis as a First-Step Empirical Analysis of Two Networks**


There are three important 'interrelated' reasons to use correlation (rather than

regression) for identifying the statistical association (or relationship) between regional

economic outcomes and social networks' centralities: 1) probability assumption; 2)

scaling and the direction of causation; and 3) limitations in controlling for unobserved

effects.    As discussed in the section of The SNA of Political Economic Networks in the Literature, previous studies dealing with social networks and their relationship to economic networks have largely relied upon qualitative data.   Some studies like Davis & Greve (1997) and Davis & Mizruchi (1999) applied maximum likelihood estimation to the analysis of corporate networks and governance structures.    However, the logistic regression of 'binary' or 'multi-nominal' network structures or types in the field of economic sociology or organizational behavior is harder to apply to an analysis of regional economic outcomes.   Since social networks' exponential distributions (following the power law at the 'macro' level) often differ much from the other variables' distributions, an incorporation of those different distributions into a model is hard.

Even if centrality values (rather than any nominal figures like the number of linked social entities) can be used for defining a variable of social network, the different scales to compose this study's centrality values need to be appropriately controlled regarding GRDP (dollar) because they are constructed by integrating the percent share of national elites in the 'bipartite' matrix and Likert-scaled social distance in the 'between-region' proximity matrix.   (For correlation analyses of 'regional' centralities and economic outcomes for four each cohort, each high school's summated dichotomous values of co-membership in the 'one-mode' structure will not be used [for the reason, see Table 4-II].)    The application of the Pearson correlation coefficient can solve the simultaneity problem (regarding the direction of causation) and the scaling problem since it is symmetric (e.g., $corr(X, Y) = corr(Y, X)$) and invariant to scaling and location transformation of the values (e.g., $corr(X, Y) = corr(X^*, Y^*)$ when $X^*_i = aX_i +$

*b* and $Y^*_i = cY_i + d$, where *a*, *b*, *c*, and *d* are constants and *a* > 0, *c* > 0). In the

correlation analysis in this study, $X_i$ will be a centrality value for a region and $Y_i$ will be

a GRDP value. Since GRDP ($Y_i$) is just one of the measures of a region's wealth ($Y^*_i$)

in terms of yearly "flow" (not "stock"), which does not account for "variant" household

labor, black market transactions (that are estimated to be over 30 percents of the

'official' GRDP in the income and product account region by region), or any un-

measurable components of wealth, *c* and *d* can/need to be estimated by inferential

statistics techniques (e.g., regression). Likewise, centrality ($X_i$) is also just one of the

measures of the amount of social networks concentrated to a region ($X^*_i$), *a* and *b*

can/need to be estimated by inferential statistics as well.

Given that those parameters and unobserved effects can be estimated or

controlled by the more advanced and well-constrained statistics using the more

appropriate data in future research, this study focuses on a statistical association of

GRDP and social networks to discuss the associative impact of two networks on

regional economic outcomes and concentrations. As a result, this dissertation is a

necessary first step in the process of expanding an understanding of the relationship

between the two networks through an effort to quantify that relationship. As a "first"

step what this dissertation proposes to do is to determine if indeed there is any

correlation that could be quantified. If this dissertation finds there is a correlation,

then the final chapter will also include a discussion of other 'control' variables that

should be quantified and included in future research especially regarding multivariate

regression or panel data analysis.

**Research Questions and Hypotheses**

The specific research questions and hypotheses for the analysis are as follows.

**Research Questions**

● What are the patterns and properties of Korean elites' hometown-centered social networks?
● What is the relationship of economic networks and social networks in defining regional economic outcomes and concentrations?
● What are the implications of the relationship of social and economic networks for policies designed to balance the regional economic outcomes that are now locally concentrated?

**Null Hypotheses**

● Economic networks and Korean elites' social networks are not concentrated in the SMA and Busan-southeast regions, showing less locally concentrated patterns over time.
● Across the past several decades, an association between regional economic outcomes and (the network indices of) regional power elites' social networks has not occurred.

The association is to be investigated by statistically testing the presence of high correlation between regional economic outcomes and SNA indices (for each respective cohort among four cohorts and for annual periods between 1989 and 2005). By using every region's GRDP data (which incorporate economic outcomes and concentrations), how this statistical association is to be discussed in terms of economic and social networks' associative impacts on 'path-dependent' economic patterns.

# CHAPTER V
## ANALYSIS AND DISCUSSION

This chapter begins with tests for the presence of elites' social networks utilizing SNA and some of the indices defined in Chapter Four.   Once those networks are identified their characteristics are explored and discussed.   That analysis is followed by an assessment of the association between regional economic outcomes and the observed social networks.   The specific objective of the research is to understand the extent to which a region that is economically dominant also enjoys high social elite scores.   In Chapter Three the extent of economic polarization of industries between the regions was demonstrated using shift-share analysis.   In this chapter the focus of analysis is on the presence and characteristics of and polarized pattern of social networks, and on the association between the concentration or polarization of those networks and the concentration of economic activity as measured by the income and product account (IPA).

The underlying assumption formulated and discussed in the preceding chapters was that there is a linkage between regional economic (IPA data) and social networks (SNA data). A correlation analysis will be used to measure the association between the SNA indices and the IPA data. In correlation analysis, the index for the concentration of social networks will be the 'centrality per region' (not per individual high school).[44] The data for 'regional economic outcomes' in the correlation analysis will be directly adapted from the Korean Statistical Information Service (KOSIS).

The review and discussion in the previous chapters established that the presence or existence of social networks is often done only with qualitative research tools. SNA advances the study of social networks by creating numerical or statistical measures of the extent to which elite networks exist. Those statistical measures can then be compared and contrasted with economic development patterns to determine if indeed there is an association between social networks and patterns of economic concentration (Figure 5–1). The data which incorporate economic outcomes and concentrations will be appropriate for the statistical testing of economic and social networks' associative impacts on 'path-dependent' economic patterns.

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[44] There are two levels of nodes in this study: individual high school in the region and region itself. Since there are two levels of nodes in this study, centrality can be calculated in either individual high school level or regional level. For "correlation analysis," 'centrality index at the regional level' will be used. In the "exploration and description" of social networks prior to the correlation analysis, centrality can be also used as a suitable index for 'describing the individual characteristic' of regional elites' social networks, which were aggregated to the regional high school as the elite's alma mater (while centralization can be used as an index for 'describing an overall characteristic' of elites' social networks in a region). For distinction between centrality and centralization, refer to note 2 in this chapter and Chapter Four.

**Figure 5–1. A Ballentine View of the Association of Regional Economic and Social Networks in Defining Regional Economic Outcomes**

GRDPs as Regional Economic Outcomes Made through Input-Output Networks (minus Costs)

The Centralities of Regional Social Networks Formed and Developed Based on the Locality
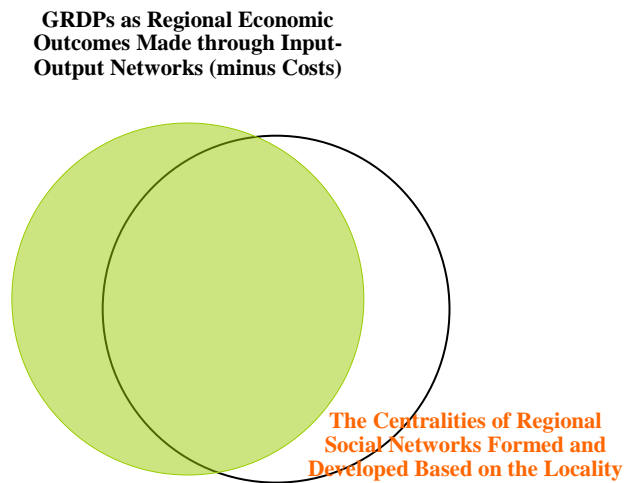
The correlation analysis – regarding the association between the 'shift-share' of each industry of all 15 regions in South Korea (in Chapter Three) and those regions' social networks – will not be performed. The shift-share analysis was conducted in order to verify the 'presence of growth-pole regions'. Given the verification, a next step would be the test of the 'impact' of the 'regionally-associated' social networks and economic networks on regional economic outcomes/concentrations (that are usually

measured by gross regional domestic product [GRDP]).   The impact, however, is hard

to 'directly' measure with currently-available data and methodological tools, although

the most accurate procedure would consist of the 'respective tests' of the 'association'

between economic and social networks and the 'impact' of such association on

economic outcomes and concentrations.

In this dissertation the 'association' of social networks with economic networks

and its 'impact' on economic outcomes/concentrations will be tested in a simultaneous

framework, by conducting a correlation analysis of social networks and, the most

appropriate measure for economic outcomes, GRDP.   The GRDP data for the (data-

available) years from 1989 – 2005 will be used, because the data well incorporate the

'outcomes' that are produced by 'economic networks.'   In the correlation analysis the

data will also reflect regional economic 'concentrations' as they are constructed into the

cross-section of regions in the span of 17 years.   Thus by testing the correlation of

GRDP and social networks, the association and impact will be not separately but

simultaneously analyzed.   An alternative measure for economic concentrations was

Park's (2009b) centrality and centralization index of 'interregional' I-O tables for the

year of 2003.   The merits of 'concentration' indices in Park (2009b), however, were

not found useful for this dissertation, since the 'interregional' (not regional) I-O table

by BOK (2007a) was available only for the year of 2003.

**Table 5-I. The Description of the Data**

| Category | Description | Source |
|---|---|---|
| **Economic Network** | 1) The total yearly output in regional income and product account (IPA) 1989 – 2005 [deflated per the price of the year 2000]<br>2) The total yearly gross regional domestic product (GRDP) estimated by the total of the gross value added (GVA) using the 'income approach' in the IPA 1989 – 2005 [deflated per the price of the year 2000] | KOSIS (2009) |
| **Social Network** | The biographical data of 31,852 power elites in Lee et al. (2006) (Not all the 31,852 elites are not analyzed; refer to the note below.)<br><br>The 31,852 power elites were selected from four cohorts: born before 1950; in the 1950s; in the 1960s; and in the 1970s<br><br>1) (The regional percent share of) 31,852 power elites a high school in each region has<br>2) (The regional percent share and number of senior congresspersons' social networks) the total number of power elites who attended the same high schools, universities, or graduate schools, and workplaces during the same periods as the region's senior congresspersons<br>3) (The number of) major chaebol leaders' hometown-related, family-related, and work-related networks | Lee et al. (2006) Author-collected data (2007) |
| | Survey data of 2,011 (KSA, 1988) adults;<br>833 adults (SUSRC, 2003)<br>for defining the changes in interregional social distances | KSA (1988) SUSRC (2003) |

Notes: KOSIS = Korean Statistical Information Service.    KSA = Korean Sociological Association. SUSRC = Sungkyunkwan University's Survey Research Center.    For the selection criteria of power elites, refer to Appendix A.
        The top 100 high schools (in 16 regions) were ranked according to the share of elites as their graduates, not every individual elite's linked number of elites.    The number of high schools in South Korea has increased from 701 (in the year of 1965), to 1,152 (in the year of 1975), to 1,602 (in the year of 1985), and to 1,830 (in the year of 1995).    Although the 'number' of high schools in the nation increased, the top 100 schools of each elite cohort in this study continued to comprise the big 'portion' of the national total elites in each cohort.    Thus the elite data in Lee et al. (2006) provides useful measures representing each cohort.    (Note that the top 100 schools' share of the 31,852 national total elites was 'natural to decrease,' as the number of schools increased.)    The elites – who graduated from top 100 high schools in born before 1950 – are 84.50 percent of the total elites who were born before 1950.    The top 100 high schools' share peaked, for the cohort born in the 1950s (87.51 percent), even though the number of high schools continued to increase. (This suggests the most centralized pattern of the 1960s-born elite cohort social networks centering on top 'reputed' high schools.)    The share decreased to 63.98 percent for the elite cohort born in

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the 1960s, and it then decreased to 51.44 percent for the cohort born in the 1970s.   There were two reasons for the decrease: the continual increase in the number of high schools and the introduction of the high school equalization system in 1974.   The effect of this new system on elite distribution across the nation will be discussed in the later section of this chapter.

The senior congresspersons were classified into a region's elites according to their attended high schools, not the electoral districts where they were elected.   As South Korea developed after the Korean War, senior elites' high-school networks were very important as these schools were the country's higher education institutions (for further background explanation, see footnotes 46 and 53).   In addition the social networks formed in adolescent years were stronger but less professional than the social networks formed in universities or workplaces.   The 107 senior congresspersons were selected according to the criteria of whether they were born before 1950. The author-collected data were constructed through the web pages of major newspaper agencies and the Internet portals' data base of elites' information.   The information was double-checked by comparing data in the websites of JoongAng Ilbo and Chosun Ilbo (newspaper agencies), together with naver.com, empas.com, and nate.com (Internet portals) in April 2007.

Table 5-I describes the sources and properties of the data used for the analysis

of social networks.   The unit of observation is the aggregate of each regional high

school's percent share of 31,852 identified members of power elites in South Korea and

their social networks (including school, political, and business networks) (for the

definition of the 'percent share,' see the note below Table 5-I).   The first step in the

analysis then is to determine the number of elites that are tied to each high school and

the resulting sets of networks that become associated with that school.   The unit of

analysis is the 15 regions in South Korea.   Whereas the 16 administrative regions are

most frequently used for economic and social analysis, this dissertation uses the data

for 15 regions.   For the analytical years 1989 through 2005 Ulsan is included as part

of Gyeongbuk since it was originally part of the larger region (detached in 1998).

South Korea's high school corresponds to the American K-12 system's senior high

school.

**The Presence and Characteristics of Social Networks Locally Concentrated**

The main objectives and hypotheses of this study are focused on 'which region' presents a polarized pattern. (Polarized here means that one region would have a far higher concentration of social networks as compared to other regions). The region with the highest degree of polarization can then be studied in terms of its dominance of economic and political space. To detect the polarization of regional elites' social networks, four different sets of elites (those born before 1950; elites born in the 1950s; elites born in the 1960s; elites born in the 1970s) were studied. In Figure 5-2 a hypothetical network explains why 'degree' centrality[45] and its index are most suitable for this study. Prior to conducting the analyses, a comparative explanation with other centrality indices will make it clear why 'degree' centrality is most appropriate for the research issues central to this study. As an index of the extent to which a node is in the central position of a network structure, centrality could be either 'global' (as much as the node is 'strategically central' position of a network structure) or 'local' (as much as the node is 'directly' connected to other nodes).

Centrality – which could be either global or local – is a measure of a certain node's relational property in the social network structure (not a measure of economic network structure in this study). "Closeness centrality" (see Figure 5-2) is a representative 'global' centrality index. It is calculated as the inverse of the total length of the shortest paths (or geodesic distance) between a node and each of the other nodes. Given the geodesic distance is a measure of closeness between a dyad (a pair

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[45] Centrality measures how a 'node' has a central position of a given network, while centralization measures how a 'total network' is centralized. Note that centralization index can be defined 'based on any given calculated centrality index' (for a more thorough explanation, refer to Chapter Four).

of interacting nodes), one node can be regarded 'close' to the other node. Since closeness centrality is calculated as the 'inverse' of the sum (not the mere sum) of the geodesic distance, a node with highest closeness centrality is regarded as central in the network structure, in terms of that index. "Betweenness" (see Figure 5-2) centrality measures the extent to which a node is 'placed' in the geodesic path. The summation across paths connecting all the dyads not including node $i$ measures the extent to which $i$ 'sits on' the geodesic paths of the other network members (Knoke & Yang, 2008). If node $i$ (the aggregate of regional elites; elite alumni of certain high schools in this study) has certain high closeness and between centralities to the other nodes ($j$, $k$, $l$, …) in the networks of 'social (or economic) transaction,' it is regarded that the influence of node $i$ is high as indicated by the numerical value of centrality indices.

On other hand, degree centrality is the most representative 'local' index since it measures the extent to which a node connects directly to all other nodes. This is best illustrated by the 'local' centrality index. This dissertation focuses on 'which region' has more social networks. In this study in-degree centrality and out-degree centrality will be used to understand if a particular node connects to/attracts or is connected to/is attracted by other nodes. Although the 'un-weighted' relations in the network structure of Figure 5-2 does not distinguish 'how much' two specific nodes are interrelated. There are two kinds of weights in this dissertation's SNA. First, the weights given in the cells of "bipartite matrices" will represent the numerical value of 'how much' two particular nodes are interrelated 'within a region.' The weights given in the cells of "the proximity matrix of overlapping" from the survey data from KSA

(1988) and SUSRC (2003) will permit this dissertation to measure 'how much' two

particular nodes are interrelated 'between regions.'


**Figure 5-2. A Hypothetical Network for Comparing Different Centralities (Un-Weighted)**
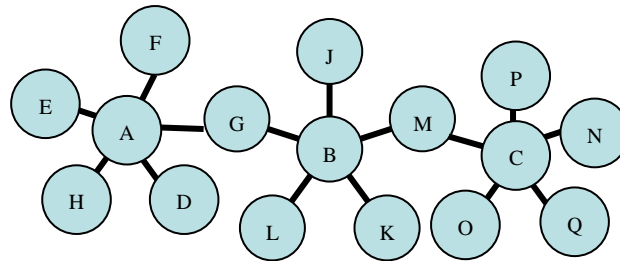


| Cent. Node | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Degree | 5 | 5 | 5 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |
| Closeness | 43 | 33 | 43 | 57 | 57 | 57 | 37 | 57 | 47 | 47 | 47 | 47 | 37 | 57 | 57 | 57 | 57 |
| Betweenness | 50 | 75 | 50 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 |

Notes: This hypothetical network structure is adapted from Lee (2007, p. 41).    Note that when
"closeness centrality" is the mere summation of the shortest paths between a node and other nodes,
the smallest value denotes the largest centrality.    (It is the reason closeness is calculated as the
'inverse' of the summation of the geodesic distances between dyads.)    In this study there will be
difference between the centralities of A, B, C because it will use 'weights' to indicate the extent of
proximity between two nodes according to KSA (1988) and SUSRC (2003).    This study will use
in-degree and out-degree centralities (weighted by the proximity matrix of overlapping and bipartite
matrices, in conjunction with the proximity matrix of co-membership), instead of closeness
centrality and betweenness centrality.


Table 5-II shows the descriptive statistics of elites' social networks for four

cohorts, regardless of whether they belong to a specific region.    The in-degree and

out-degree centralities were calculated for every cohort.    In Table 5-II the

centralization (i.e., a global measure of the whole network) of in-degree centrality and

out-degree centrality (i.e., local measures of regional networks) is an index comparing

how much the network structure is centralized.    The power elite group, born before

1950, shows the most centralized pattern of its associated social networks. The social networks of the elites born in the 1950s show the second highest centralization. This cohort is part of the baby boom generation in South Korea (post Korean War). The elites born in the 1970s had the third highest level of centralization. The elites born, who first experienced the 'high school equalization system' in the 1960s show the lowest levels of centralization.

**Table 5-II. Descriptive Statistics of the Data (Degree Centrality and Centralization)**

| Cohort | Index | In-Degree | Out-Degree |
|---|---|---|---|
| PRE1950 | Mean | 0.166 | 0.166 |
| | Standard Deviation | 0.140 | 0.140 |
| | Minimum | 0.005 | 0.005 |
| | Maximum | 0.691 | 0.693 |
| | **Centralization (%)** | **52.968** | **53.090** |
| 1950S | Mean | 0.240 | 0.240 |
| | Standard Deviation | 0.184 | 0.184 |
| | Minimum | 0.010 | 0.010 |
| | Maximum | 0.752 | 0.753 |
| | **Centralization (%)** | **51.592** | **51.722** |
| 1960S | Mean | 0.218 | 0.218 |
| | Standard Deviation | 0.156 | 0.156 |
| | Minimum | 0.005 | 0.005 |
| | Maximum | 0.672 | 0.673 |
| | **Centralization (%)** | **45.732** | **45.862** |
| 1970S | Mean | 0.229 | 0.229 |
| | Standard Deviation | 0.165 | 0.165 |
| | Minimum | 0.008 | 0.008 |
| | Maximum | 0.709 | 0.710 |
| | **Centralization (%)** | **48.442** | **48.572** |

Notes: The data was analyzed for the year of 1988.   Only very small changes were found in results for the other years (1990 – 2005), since the dataset for the every year was constructed by integrating the 'common' data matrix (the proximity matrix of co-membership and the proximity matrix of overlapping with the 'different' data matrix (containing the piecemeal changes about surveyed results between 1988 and 2003 for every year).   The description of each cohort is as follows:
● PRE1950 = cohort born before 1950 (Korean War), parents of the elites born in the 1950s and 1960s
● 1950s = cohort born in the 1950s, baby boomers, parents of the elites born in the 1970s migrating to Seoul
● 1960s = cohort born in the 1960s, the cohort first experienced the high school equalization system
● 1970s = cohort born in the 1970s, junior elites of the baby boomers born in the 1950s settled down in Seoul

The reason that 1970s-born elites' networks are more centralized than those for the elites born in the 1960s is related to changes in South Korea's educational policies (Lee et al., 2006).   In February 1973 the South Korean government announced a new system of admission to high schools, abolishing the former entrance exams.   In the following year it implemented the "high school equalization system" (for reducing the excessive competition to enter reputed high schools [especially in urban areas]).   The new system of 'allocating students by random selection to nearby high schools' was applied to Seoul and Busan for the spring 1974 semester, and to Incheon, Daegu, and Gwangju in 1975.   The program was then extended to other regions.

The elite group born in the 1960s, in regions excluding Seoul and Busan, benefited the most from the new education system.   Kyunggi High School shares 8.6 percent of the elites born before 1950.   This Seoul-based high school, as the top school in the percent share of elites who were born before 1950, was the hub institution of elites during Korea's less-industrialized periods.   For the cohort born in the 1950s, the top school was also Kyunggi High School, which shares 8.8 percent of the elites. Kyunggi High School, however, became the fourth (1.4 percent) in the share of the elites born in the 1960s.   For the cohort born in the 1960s, Jeonju High School in

Jeonbuk shared the most (1.9 percent of the elites).   For the cohort born in the 1970s

Sooncheon High School in Jeonnam shared the most (1.6 percent of the elites) (Figure

5-3).   In Figure 5-3, (A) shows the increasingly equalized trend of the elite

distribution across the country 'at the high school level,' after the new system applied.

**Figure 5-3. Percent Share (Y) of Elites by Attended High School** (Power Law [80-20 Rule])

**(A) Individual 100 High Schools' Percent Share of 31,852 Elites (1 = Top School)**
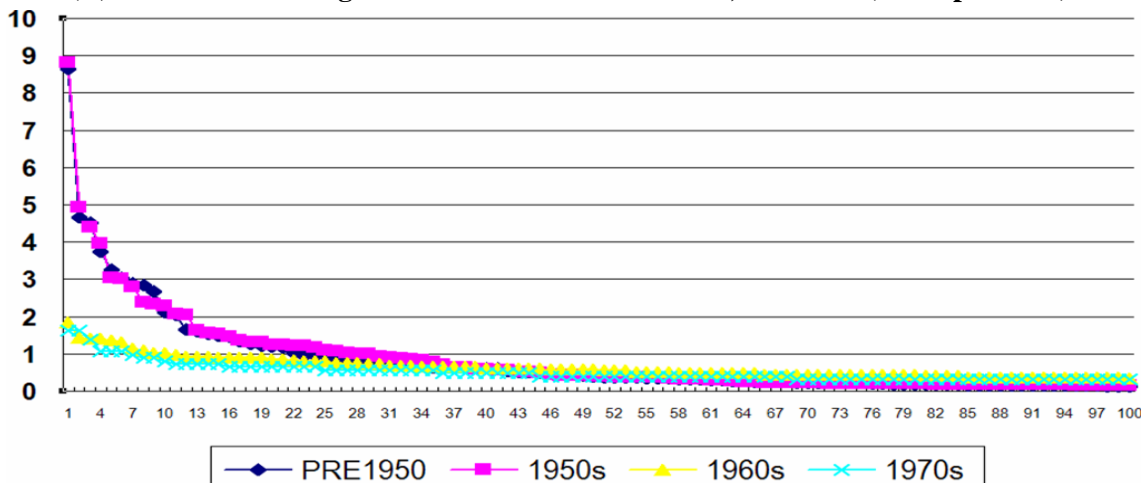


Notes: PRE1950 refers to the elite group born before 1950.   For PRE1950, 1 = Kyunggi High School (in Seoul), 2 = Seoul High School (in Seoul), 3 = Gyeongbuk High School (in Daegu), 4 = Gyeongbok High School (in Seoul), 5 = Busan High School (in Busan), 6 = Gyeongnam High School (in Busan).   In spite of PRE1950 and 1950 'power' elites' dominant percent share at the individual school level in Graph (A), all cohorts in Graph (B) explicitly show similar distributions according to the power law ('20 percent accounts for 80 percent': Pareto's observation of 80 percent of Italia's land was owned by 20 percent of the national population in 1906) at the regional level. Despite the dramatic change in high schools' percent share of elites, Graph (B) shows relatively smaller change in 'regional' percent share of elites across the four generations.

**(B) Regional Percent Share of 31,852 Elites by Attended High School**
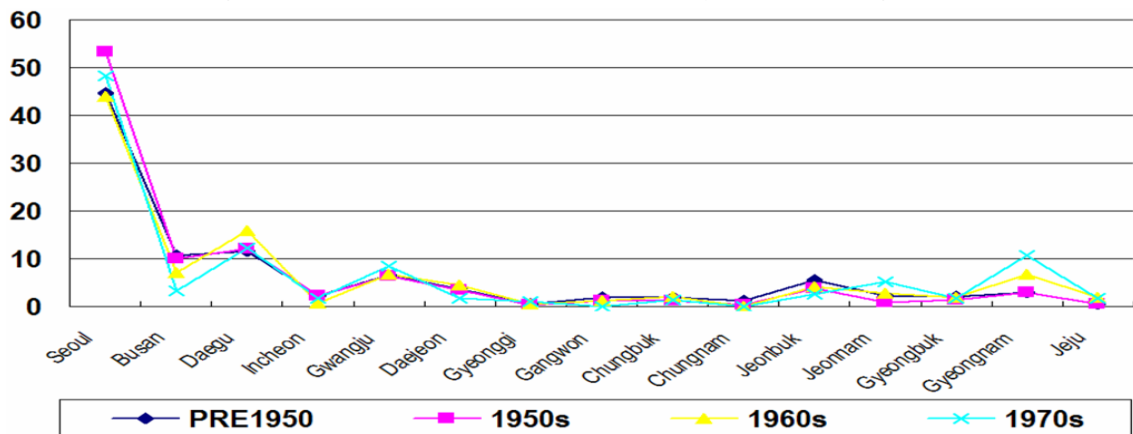
Notes: The overall gap of dominance or centrality between the famous networks of Kyeonggi High School-SNU [KS], Seoul High School-SNU [SS], and Busan-Gyeongnam [PK] in two primate growth-pole regions (and Daegu and Gyeongbuk [TK] as the influential region) became "relatively lowest" for the elites who were born in the 1960s and first experienced the high school equalization system after the mid-1970s.    At the regional level, however, both growth pole regions and TK regions still dominated because the "regional aggregate of elite shares" were not substantially changed.    In the concentric graphs of centrality (as to be shown in Figure 5-5), the level of centrality at which most lagging regions placed is also relatively quite low throughout generations. The strong influence of elites in the Park Chung Hee regime (circa 1962 – 1979) and two subsequent military-related regimes (1981 – 1992) could counteract the equalization policy, by sustaining the central position of high-school-based networks for a political base of the TK region. Park Chung Hee himself was from a region near Daegu, but the charismatic leader implemented the equalization system to Seoul, Busan, and Daegu.    It was not very clear why he implemented the new system, although his son entered a high school in Seoul by the new system in 1974.    In Lee et al. (2006) the elite percent share of Gyeongbuk and Gyeongnam (including Busan and Daegu) in the central government was 28.2 percent in the Park regime.    In this period the percent share of elites who were born in North Korea was 18.3 percent.    In Lee (2003), the elite study of 487 high-rank officials in Park's central government (1,714 elites from the Lee Seung Man to Kim Dae Jung administrations, 1948 – 2000), reported that the percent share of Gyeongbuk was 12 percent and the one of Gyeongnam was 16 percent from 1962 to 1971 while the percent share of elites from North Korea was 26.9 percent.    Lee (2003) supported the increasing dominance of Gyeongbuk elites, reporting that in the second period of the Park regime (1972 – 1979) the percent share of Gyeongbuk increased to 20 percent and the one of Gyeongnam decreased to 12.4 percent from 1962 to 1971 while the percent share of elites from North Korea reduced to 15.2 percent.    The elite percent share of Gyeongbuk and Gyeongnam (including Busan and Daegu) in the central government increased to more than forty percent: 43 percent (the Jun Du-whan regime), 42.5 percent (the Rho Tae Woo administration), and 42.6 percent (Kim Young Sam's civil administration).

For the cohort born in the 1960s, elites who attended high schools 'in local regions' after the mid-1970s, could enter the elite society; the new system, which applied first to Seoul and Busan in 1974, took years to be extended to high schools 'in local regions.'    Accordingly, the 'high school equalization system' brought about a more uniform (or equalized) distribution of each regional high school's elite share across the country 'at the high school level.'    It is noticeable, however, that the distribution of elite share continued to be skewed across regions.    That is, growth-pole region's 'aggregate' of each high school's elite continued to be the largest share 'at the

regional level' throughout generations (Figure 5-3, (B)).    In Figure 5-3 (B), Seoul and

Daegu showed the largest shares of elites throughout generations.    Although Busan's

share, the second growth-pole, decreased, Gyeongnam and its hinterland increased its

share.    In the case of Seoul, its "lion's share of elites" was sustained across

generations, and even increased for the elite group born in the 1950s and in the 1970s.

For the elites born in the 1970s and who attended high schools after the mid-1980s,

many 'equalized' high schools – but 'still in Seoul' – emerged as renowned schools for

entering prestigious universities 'in Seoul.'[46]

Jun Du-whan led the military regime after Park Chung Hee and he tried to

minimize the expansion of private education.    In particular his regime tried to

minimize or curtail the after-school firms and one-on-one tutoring by college students

or in-field (high school) teachers.    The private small- and medium-size 'after-school'

firms and one-on-one tutoring provide systemized tutorials and provide students with

skills related to performance on entrance exams.    They became concentrated in Jongro

(the old CBD of Seoul), Gangnam-gu (the richest region in Korea) in Seoul,

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[46] The importance of 'in Seoul' and 'high school' needs to be noted; likewise, 'high schools in Seoul' is natural to be preferred by most Korean people.    For most Koreans 'something in Seoul' is often regarded as 'something modernized, superior, big, or dynamic.    Education and schools in Seoul are not exceptions.    (That is one of the reasons they use the expression of 'going up' to Seoul even when people in the north of Seoul 'go down' to the capital city.)    The capital city of Korea is the primate city regarding almost all the aspects of society such as education, economy, politics, and culture.    Meanwhile South Korea's Eaton School (in Seoul), Kyunggi High School's entrance rate to reputed universities abruptly fell after the new education system applied (Lee et al., 2006). Before the application of the new education system in 1974, over 300 graduates from Kyunggi High School entered Seoul National University, Korea's top university.    These number was more than three fifth of Kyunggi High School's graduates.    Most of other graduates from the school entered Korea University, Yonsei University, or Korea Military Academy, and became Korea's leaders (Lee et al., 2006).    However, the number of its graduates entered Seoul National University fell year by year.    Excepting the qualification examination for low-income people's college entrance (not the yearly entrance exam to colleges), before these schools were not able to send students to the reputed universities.    That is the reason 'high schools in Seoul' were the most preferred institutions to 'develop human capital and social capital at the same time' (Coleman, 1988) during Korea's less-industrialized and urbanized periods (until the 1970s).

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Yangcheon-gu in Seoul (located in the greater Gangnam reigon), and Nowon-gu in

Seoul.    The social networks formed in high schools after the mid-1980s were more

centralized in Seoul than in any other period.    Since 1980, adult elites, born in local

regions before 1970 and who migrated into Seoul or the SMA, began to educate their

children as 'junior' elites.    Coleman (1988, p. S110) noted (Korean) immigrants'

aspiration for educational attainment to nurture the human capital of their children in

the US (He referred them to "Asian immigrants in one public school district in the

US").    Regarding Coleman's (1988) case, Kim (2007) extended to the discussion that

Koreans often tried to advance their (children's) socioeconomic status, despite the

limited access to (the inner circle of) the elite society.[47]

Family background was still important in terms of admission to prestigious

colleges.    Before the high school equalization system was instituted in 1974,

renowned (public/private) high schools in Seoul were the 'public' hub institutions for

the inner circle and the gateway to the country's reputed universities.    After the

(gradual) 'abolishment of the old policy,' private educational institutions emerged as

'strategic' after-school firms to provide students with more systemized assistance for

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[47] Coleman (1988) pointed out that this group of Asian immigrants' expectations for children's education helped the intellectual development of their children in the US.    Coleman (1988) explained that this group of immigrants purchased two textbooks per one course, in order to study by themselves and then to teach their children after school again.    Coleman (1988, p. S110) emphasized the complementarity of "social capital (some combination of measures such as two parents in the home, number of siblings, and parents' expectations for child's education) in the creation of human capital (parents' education)."    In Korea, besides the after-school firms the systemized tutorials and skills to improve performance on entrance exams have often provided and handed over by college students and in-field high school teachers.    At times college professors participated in such one-to-one tutoring.    The cost of attending reputed after-school firms is much larger than attending public schools.    The cost of one-to-one tutoring is usually much larger than the cost of attending reputed after-school firms.    Moreover, the reputed schools in the richest region in Seoul (school district eight), which delivered the systemized and effective teaching for college entrance were also preferred by students and parents, also emerged as newly-reputed schools per college entrance rate.

college entrance.    These after-school firms and one-on-one tutoring services were expensive, and quickly became the domain of the affluent.    In addition, reputed high schools in the Seoul's sub-regions below the Han River (e.g., in school district eight, corresponding to the richest regions in Korea) became renowned for entrance into the most preferred universities.    Some diligent adolescents entered reputed colleges through the special qualification exam, but such special advancement was quite limited. The success of after-school firms and one-on-one tutoring increased in popularity as a vehicle for admission to the most elite universities.    One-on-one tutoring was officially prohibited during the 1980s, but it continued to be unofficially done.    These abnormal situations became worsened by Koreans' "diploma disease" (the placement of extraordinary value and prestige on degrees from the prestigious universities) and the growth of strategic private institutions quickly adapting to the (expected) change in the old policy.

Although the elites born in the 1970s were not leaders of South Korea's growth, their historical background explains why the social networks of the elites born in the 1970s had a more centralized pattern than the networks of the elites born in the 1960s. This provides a caveat for testing the detailed hypothesis of whether the social networks of the elites born in the 1970s can be matched with interregional economic concentration patterns. The agglomerated pattern of their social networks formed in high school years is one of the results that older generations brought about in industrialization and urbanization processes in South Korea.    Thus, although they were not the 'cause' of economic concentrations, those junior elites' agglomerated social networks can be an index to test the hypothesis by correlation analysis in the

next section.

Figure 5-4 shows the network structure of the SNA matrix, which consists of the proximity matrix of co-membership, the proximity matrix of overlapping, the bipartite matrix. As suggested in the previous chapter, it was drawn by the Kamada-Kawai (K-K) method.[48] The "force-directed or spring-embedded" K-K graphing method uses the most optimized algorithm to visualize the network structure according to "the (total) balance of attractive or repulsive forces between a dyad," by minimizing stress (a lack-of-fit measure for the difference of the actual and estimated distances between a dyad) through a similar technique to multidimensional scaling (Ingram et al., 2009; Network Workbench at Indiana University, 2009; Kim, 2007; Kamada & Kawai, 1989). The largest, most cohesive, and dense networks in the lower parts of all graphs are the social networks of the elites who attended high schools 'in Seoul.' The node is basically each of the top 100 high schools. The regions themselves are also nodes, since their values about people's evaluation of closeness between regions in two surveys – as 'between-region' indicator – were also coded in the proximity matrix of overlapping of the SNA matrix. The SNA matrix illustrates how each region's high schools are related to each other in their local regions and to other high schools in other regions.

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[48] The spring K-K method visualizes the network, proportionate to the geodesic distance (i.e., minimum Euclidean distance of paths) of each dyad (i.e., a pair of nodes) in two-dimensional space. There is little difference between graphs for each year during 1989 – 2005, since the SNA matrix was constructed using the conjunction of the same proximity matrix of co-membership and bipartite matrix for 'within-region' network measurement, together with the conjunction of year-by-year gradually-differentiated values in symmetric cells of the proximity matrix of overlapping and bipartite matrix for 'between-region' network measurement based on the surveys in 1988 and 2003. Given the gradually-differentiated value in the proximity matrix of overlapping, Figures 5-3 and 5-4 visualize the network structure of each cohort for the year of 1997 as a mid point between 1989 and 2005.

The data depicted in Figure 5-4 illustrates the polarization of regional elites' networks for each of the four cohorts. The polarization locus of regional elites' social networks corresponds to the growth centers in the Park Chung Hee regime's development strategies. Such polarization of social networks is due to the fact that many regional elites in the hinterlands of each growth center (e.g., Seoul, Busan, Daegu, Gwangju, Daejeon, and Chuncheon) were attracted to renowned high schools in the urban centers of each province. Those hinterlands, mostly agricultural before 1970, developed around each growth center. As discussed in Chapter Three, however, the southeast ('Youngnam' in Korean) province benefited from political leaders and their associated elites 'from the region.' This observation is also supported by the growth of high-school networks in Gyeongnam that coincided with the growth of Gyeongnam as the hinterland of Busan (see Figure 5-4). The most distinguished pattern regarding the 'total balance' is the increasing distance between Seoul and other regions, and the local growth centers' (except Busan) increasing networks or their centralities (Table 5-III) and the increasing distance between these local growth centers' networks. Considering people usually tend to prefer hometown people, ceteris paribus, because of their associated and shared historical, cultural, or trust-related values, the increasing distance could indicate an increasing 'potential' of interregional social distance. The average social distance (measured by the Likert scale) in KSA (1988) and SUSRC (2003) also indicated there was hardly any distinguishable improvement in the overall distance between regions. (If this measure is understood as a measure of interregional trust levels, a discussion of those structures can also be extended to the 'efficiency-trust' dimensions of network governance in Park and Park [2009] or to voting patterns.)

**Figure 5-4. Network Structures of South Korea's Power Elites: 'Spring' K-K Graphs**



(A) PRE1950
Daegu, Busan, Gwangju

(B) 1950s
Daegu, Busan, Gwangju

(C) 1960s
Daegu, Gwangju, Busan, Gyeongnam

(D) 1970s
Daegu, Gyeongnam, Gwangju, Busan
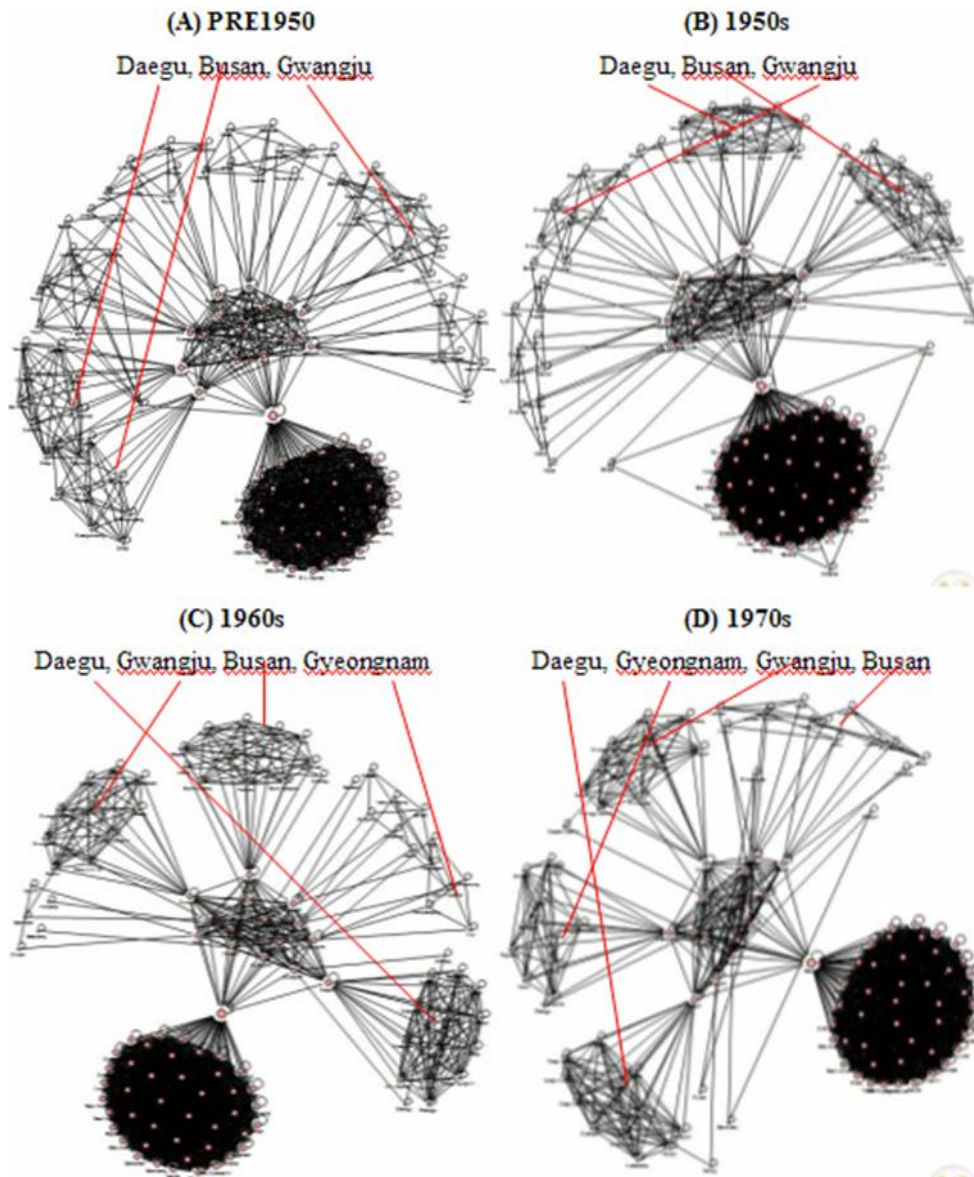
Notes: The social network of Seoul is at the bottom of each graph.    Gyeongnam is the 'growing' hinterland of Busan, the second primate growth-pole region.    The graphs were drawn for the year of 1997 as the mid point between 1989 and 2005 for defining 'between-region' social distances (see footnote 43).    The spring Kamada-Kawai method visualizes the network in proportion to the geodesic distance (i.e., minimum Euclidean distance of paths) of each dyad (i.e., a pair of nodes) in two- or three-dimensional space.    (Tomihisa Kamada and Satoru Kawai are two of the scholars contributed much to the development of the modern graph theory.)    The spring K-K graph is drawn after calculating the geodesic distance of every dyads in the network and could take more time according to the software or computing performance, but the precision of such a calculating process is accurate similar to multi-dimensional scaling regarding minimizing stress (a lack-of-fit measure for the disparity between observed/actual and estimated/ideal distances between a dyad)

(Ingram et al., 2009; Kim, 2007).   Thus a close dyad in the graph above suggests that two interacting nodes have the minimum distance, compared to the other dyads in the whole network. The node is primarily each of the top 100 high schools for each of the four cohorts.   The geodesic distance 'between certain two high schools' was calculated based on the degree of association (not correlation) according to the number of 'co-membership' networks, each high school's elite share (in the bipartite matrices), and 'between-region' social distance.   As explained in Chapter Four and the earlier part of this chapter, this elite share was coded in the 'bipartite matrices.'   In addition, the regions themselves are nodes, because their values about people's evaluation of closeness between regions in two surveys by the KSA (1988) and SUSRC (2003) – as 'between-region' indicator – were coded in the proximity matrix of overlapping of the SNA matrix. Accordingly, this matrix manipulation and graphing method allows the SNA matrix in this study to illustrate how each region's high schools are related to each other in their local regions and to other high schools in other regions.

   When the graph is interpreted, however, it should be noted that such a figure visualizes the network structure through the one of the advanced or best methods, rather than through the absolutely best method.   Thus the graph of each cohort will be interpreted more appropriately when it is focused on and compared to each other, 'as a whole network structure,' rather than being focused on the specific distance between two high schools or regions.   Such a specific distance was visualized in proportion to the geodesic distance, but it is not perfectly precise.   This technical problem is due to the difficulties in visualizing one-to-one "All-Pair-Shortest-Path" computation and comparisons of more than 100,000 (= 100 × 100 high schools plus geodesic distances between each region as a node) geodesic distances.   The spring K-K method is also an optimized method for minimizing the overlapping of links and preventing the overlapping of links on nodes.   The spring K-K method emphasizes that the 'total balance' of the graph – which is related to the individual characteristics of the graph – is just as important as the reduction of links crossings in the graph given a particular scenario.   The spring K-K method calculates the 'total balance' of the graph, as the square summation of the differences between the ideal distance and the actual distance for all nodes by calculating using the Newton-Raphson iteration for optimization with respect to a single network in a stress-minimizing process:

$$Stress = \sum_{i<j} w_{ij}(\| X_i - X_j \| - l_{ij})^2,$$

where $l_{ij}$ (the 'ideal' Euclidean distance between nodes corresponding to the 'geodesic distance' [$d_{ij}$] between those nodes for a certain pair of nodes $i$ and $j$), $X$ (the set of two-dimensional coordinates), $w_{ij} = l_{ij}^{-\alpha}$ for $\alpha = 2$, $\| X_i - X_j \| = ((X_i - X_j)^2)^{1/2}$ (actual distance).

The above function is the simplification of the spring K-K algorithm in terms of the MDS-style stress function.   In Kamada and Kawaii (1989) the spring K-K algorithm is drawn from that the strength of the spring, $k_{ij}$, between a dyad, which is defined as:

$$k_{ij} = K/d^2_{ij},$$

where $d_{ij}$ (geodesic distance), $K$ (constant for the spring force).

Then the overall energy function is defined as follows:

$$Energy = \sum_{i=1}^{n-1} \sum_{j=i+1}^{n} ((k_{ij}(\| X_i - X_j \| - l_{ij})^2)/2),$$

where $l_{ij} = L \times d_{ij}$ ($L$ is the desirable length of a single network in the graph), localizing $\| X_i - X_j \| = n$ particles $X_1, ..., X_n$ in two-dimensional Euclidean space.

In the total balance of the spring K-K method the repulsive force is analogous to magnetic or electric force while the attractive force is analogous to spring force (Network Workbench at Indiana University, 2009).   Regarding the strong point in localizing particles according to optimized balance, the K-K algorithm is even used for visualizing molecular mechanics.   Its force-directed and constraint-based object layout system helps the links place where their geometric distance can be equal to their graph-theoretic distance (Kamada & Kawai, 1989).

| Force ($F$) Model | Formula | Example of Usage |
|---|---|---|
| Magnetic and Electric Force [Repulsive] | $F = qB$ $B$ = magnetic field strength $F = eE$ $E$ = electric field strength | Changing nodes distribution along a direction (extended to three dimensions in the late 1990s) |
| Gravity Force | $F = g/r^2$, $g$ = associated with mass of node, usually equals 1 | Applying gravity force between node pairs to prevent node overlapping. |
| Spring Force [Attractive] | $F = k(1 - a)$, $k$ = stiffness of spring $a$ = natural length of spring | Assigning different $k$ and $a$ to different links to separate nodes by different distances. |

Source: Network Workbench at Indiana University (2009) (http://nwb.slis.indiana.edu/community). In the gravity model, $r$ is distance. In the force model, $q$ and $e$ denotes a constant, respectively.

'In each graph as a whole network structure with a certain level of total balance,' the largest, dense, and most cohesive network in the lower part visualizes the aggregate social network of the elites who attended high schools 'in Seoul.'   Each of the four graphs shows the different distance between the aggregate network of Seoul and each regionally-aggregate network of other parts of the country.   It would be helpful to compare the 'balance' in the graph to the 'balance' in a parachute (or playing with rubber bands).   The aggregate network of Seoul can be compared to a 'falling' ('chute' in French) object, whereas other regions' respective aggregate network can be compared to the canopy 'against' ('para' in Ancient Greek) falling.   The space capsule of Seoul's networks – falling into the water – needs to be counteracted by the upward force of the canopy against the downward force of the capsule as an accelerated mass.   By snowballing effect Seoul's networks could gather more networks at an accelerated pace.   In this comparison, the 'total balance' of force of trickling-down (upward) and polarization (downward) permits the capsule of Seoul's networks (based on high school alumnus links) to safely land, unless its mass and acceleration are much greater enough to break the balance.   In the middle of the parachute, the region 'as a node' mediates the balance of force.   The numerical value of this mediation was determined by the value in the cell of 'the proximity matrix of overlapping.'

As discussed, the 'unbalanced growth strategy' was targeted to eventually 'balance' the development of national economy by fostering trickling-down after maximizing the efficiency of production and consumption polarized in certain primate growth centers.   It needs to be considered that the expanded economic networks (the expansion of economic space) polarized in such primate growth centers were more likely to be associated with the expansion of social networks (the expansion of political space) centering on those particular regions.   Note that the balance of development can be eventually sustained when the trickling-down effect into the hinterland gradually counteracts the polarization effect into the (primate) growth center.   Although the direction of the trickling-down effect is opposite to the polarization effect, these two forces interact each other 'counteractively,' not just 'in conflict.'   Therefore the total balance between Seoul (the accelerated mass of social networks of elites as policy makers in the space capsule) as the primate growth pole and other local regions (the counteracting force of social networks of local elites onto the canopies) is needed for the soft landing of the nation's total economy, not for the hard touchdown of the Seoul's own economy.   As the mass of space capsule increases, the downward force of national total economy is accelerated unless 'trickling-down' (upward force) – which was intended in unbalanced growth strategies as a promise – occurred or secured.   After such a hard touchdown, Seoul's enlarged economy could lose its trickling-down capacity due to some structural

problems (e.g., the asset bubble associated with the speculative demand for high-rise apartments in the highly-dense land [Park, 2009a]).   Hirschman's (1958) vision of political 'strategic' efforts should have been empowered by communities' collective "social energy" (interpreted into a pre-concept of social capital in Woolcock [1998]), but the 'balance' of such interregional social forces is hard to find due to the persistence of disparities in Korea (Park, 2009b).   Although the visualized distances between regions were not calibrated at the 'absolute' scale, the graph-theory-driven and 'force-directed' structure effectively show Korean (power-elite-led) society has the 'potential' of 'increasing distance of interregional social distance between regions' agglomerated networks and between the Seoul's and others' networks in the nation's 'increasing total imbalance.'

For PRE1950 there were many canopies (regional aggregate social networks) counteracting the polarizing force of Seoul's networks.   The number of canopies decreased as time passed.   Considering that the 'between-region' values were determined by the two survey results in the KSA (1988) and SUSRC (2003) such a change of the distance between any two regions (as nodes) reflects the local people's perceived social distance and trust about the other region's people, a decreasing number of canopies appears to increase their own 'minor' inner circles (rather than the upward force) by expanding their networks.   Meanwhile the overall distance between Seoul's networks and other local regions Seoul's networks increases over generations and Seoul's 'major' inner circle continues to increase (except for the cohort born in the 1960s when the high school equalization system first applied).

In Figure 5-5 Seoul is at the center of the concentric graph of centrality illustrating that it has the highest level of any city.   Given its importance, it can be argued that Seoul is at the center of each social network.   For the elites born before 1950 (PRE1950) the elite group in Daegu and Busan show the second highest level of centrality.   It is noticeable that the social networks of Kyunggi High School (in Seoul), graduates who were born before 1950, is similar to the centrality of Daegu or Busan as the second primate growth-pole region.   Since Kyunggi High School is located in Seoul, the social network of its alumni is more likely to be associated with the expansion of economic and political space in Seoul.   Moreover few of the graduates willingly give up the advantage of Seoul as the primate city in Korea (Lee et al., 2006). The powerful networks of Kyunggi High School were at the zenith for the cohort born in the 1950s, while the social networks of Daegu or Busan belong to the concentric of centrality at the third level.   Most high schools in Seoul are also located at the second level whereas local high schools are located in relatively-peripheral concentric lines.

**Figure 5-5. Network Structures of South Korea's Power Elites:**
**Concentric Graphs of Degree Centrality**
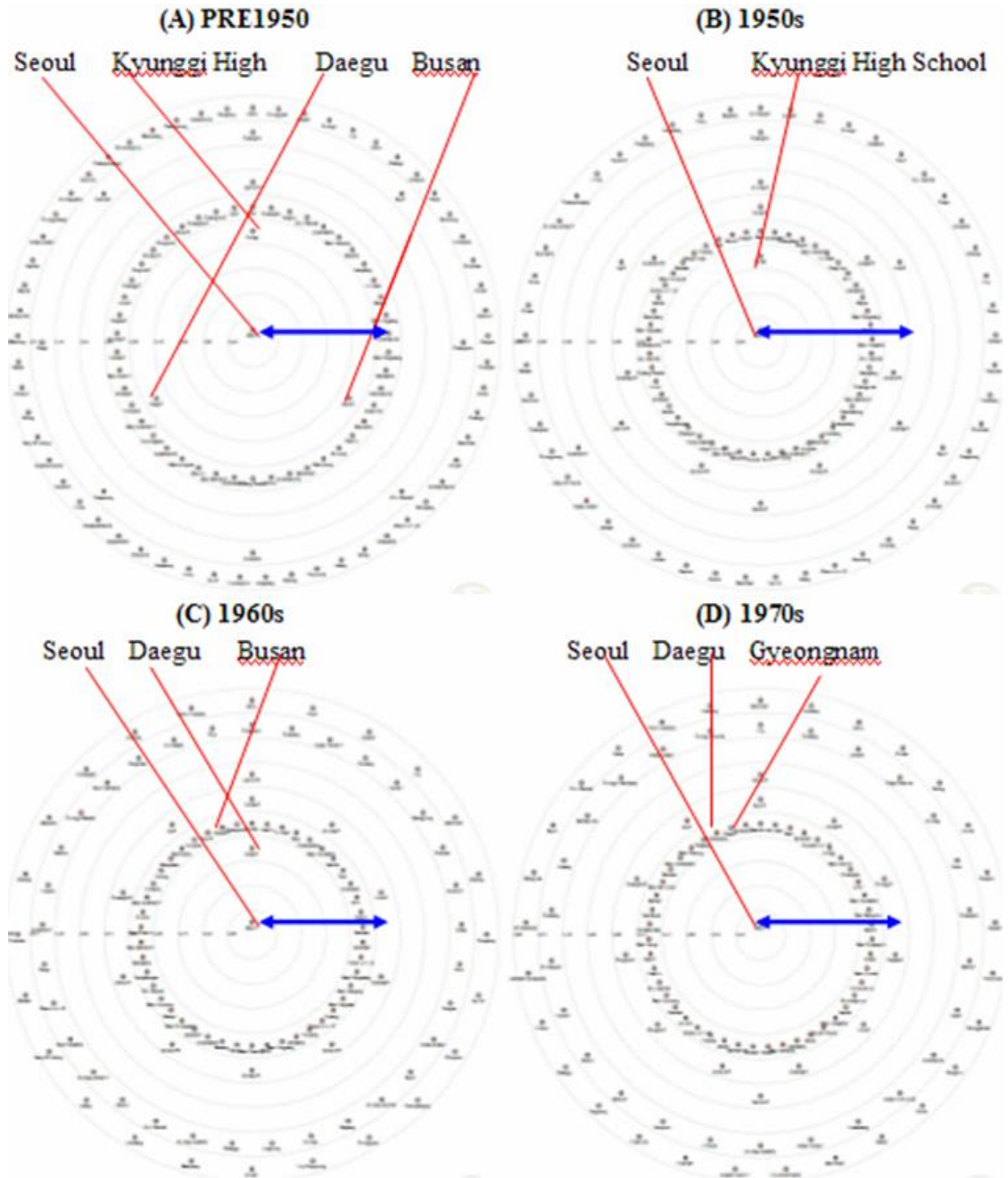


Notes: The length of (author's drawn) thick bi-directional arrow denotes the gap between the Seoul's centrality and the level of centrality at which most lagging regions are placed. The wider the blue circle is, the more gap in centrality between primate growth-pole regions and lagging regions is expected. In each graph, most high schools form the first circle from Seoul at the center with (some [1950s, 1960s, 1970s] or all [PRE1950 except Jeonnam]) other regions. The graphs are visualized for the year of 1997 as the mid point of the study period (see footnote 43).

Because of the agglomerated social networks of high schools in Seoul, the centrality for the Seoul region is the highest for the elites born in the 1950s (Table 5-III). Regarding Seoul, the 1950s cohort is the most centralized of any generation. (This centralized pattern began to be reinforced again for the 'junior' elites born and grown in the 1970s in Seoul.) Comparing the graphs of other cohorts, the concentric graph for PRE1950 shows the more centralized pattern for Seoul, Kyunggi High School, Daegu, and Busan. Regarding the second primate growth-pole region, it needs to be considered that Daegu is the hometown or political base for the leaders of the former three military regimes 1962 – 1992 (Park Chung Hee, Jun Du-whan, and Rho Tae Woo). The Busan area is also the center of the second primate growth-pole region, and is the hometown and political base for Kim Young Sam.

For the elites born in the 1960s, Daegu's centrality was second to that observed for Seoul. After the mid-1970s the regional elites in local provinces could take an opportunity to enter the elite group, since the new high-school entrance system that became available to them. Due to the introduction of the random-selection system in 1974, traditionally-renowned schools in Seoul and Busan could not help but lose their leadership in having their graduate secure admission to the most elite colleges.[49]

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[49] The random-selection system – which was implemented first for Seoul and Busan in 1974 and was then extended to other parts of the country gradually – allocated students to the high school nearby their residence, so renowned schools in Seoul and Busan could not help but 'be allocated randomly and normally,' rather than 'selecting students specially through hard entrance exams.' Many of those students who entered such formerly renowned schools also entered reputed colleges or succeeded in businesses or politics through their human and social capital acquitted during the prestigious socializing institutions.

**Table 5-III. Regional Degree Centrality and Centralization by Cohort**

| Centrality / Region | Cohort | | | |
|---|---|---|---|---|
| | **PRE1950** | **1950s** | **1960s** | **1970s** |
| **Seoul** | **0.696** | **0.756** | **0.676** | **0.713** |
| **Busan** | **0.392** | **0.386** | **0.361** | **0.328** |
| **Daegu** | **0.402** | **0.406** | **0.440** | **0.408** |
| Incheon | 0.316 | 0.315 | 0.303 | 0.312 |
| Gwangju | 0.302 | 0.299 | 0.303 | 0.318 |
| Daejeon | 0.340 | 0.339 | 0.348 | 0.324 |
| Gyeonggi | 0.301 | 0.300 | 0.302 | 0.305 |
| Gangwon | 0.317 | 0.309 | 0.309 | 0.299 |
| Chungbuk | 0.325 | 0.319 | 0.326 | 0.320 |
| Chungnam | 0.319 | 0.312 | 0.309 | 0.309 |
| Jeonbuk | 0.301 | 0.286 | 0.288 | 0.275 |
| Jeonnam | 0.264 | 0.251 | 0.267 | 0.289 |
| Gyeongbuk | 0.319 | 0.314 | 0.318 | 0.316 |
| **Gyeongnam** | **0.324** | **0.324** | **0.351** | **0.374** |
| Jeju | 0.299 | 0.299 | 0.310 | 0.309 |
| Central-ization — In-Degree | 53.345 | 51.969 | 46.108 | 48.818 |
| Central-ization — Out-Degree | 52.969 | 51.594 | 45.733 | 48.443 |
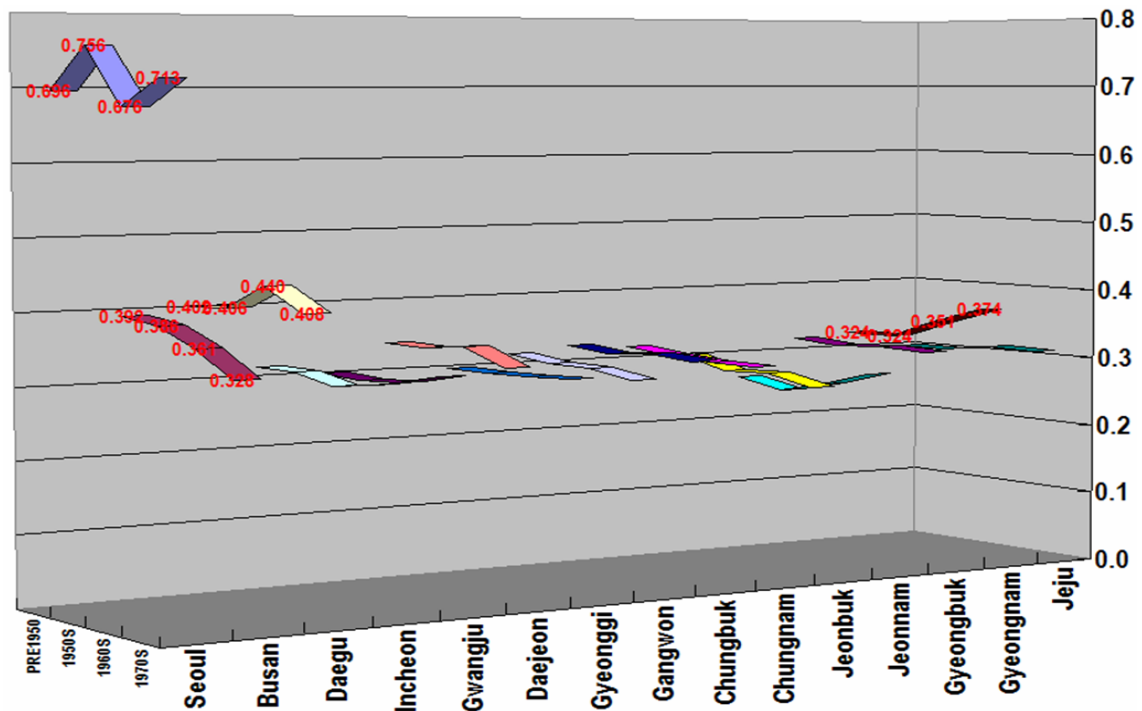


Notes: In table, the bolded region denotes the primate growth-pole area in South Korea.    In the complementary graph, the value on the vertical axis denotes the in-degree centrality.    All centrality values are presented as in-degree centralities for the year of 1997 as the mid point of the study period (see footnote 43).    Although the degree centrality was derived from the combination of ratio (each regional high school's elite percent share), Likert (between-region social distance), and categorical (co-membership of high schools in a region) scales, it conceptually and operationally

captures in-flowing (in-degree) and out-flowing (out-degree) 'within-region' and 'between-region' networks.   Since the index used the binary value (1, 0) for defining the co-membership of the high schools that belong to a particular region, it tends to dichotomize 'direct' and 'indirect' networks from other regions' schools to that region's specific school.   The access from a region's specific school to the other region's specific school was defined by 'between-region' social distance. Given these limitations, all in-degree centralities of other regions were higher than out-degree centrality except for southwestern regions (Jeonbuk, Jeonnam, and Gwangju).   Since the (degree centrality) network index of this analysis simultaneously reflects the index of the social distance surveyed by KSA (1988) and SUSRC (2003) to define 'between-region' relationships in the proximity matrix of overlapping and the social network index in Lee et al. (2006) for each region in the bipartite matrices, the southwest regions' comparative disadvantage (or comparative advantage) on the network structure is in in-degree centrality (or out-degree centrality).   On the complementary graph, Gyeongnam (as the hinterland of Busan) shows the fastest increasing trend. Daegu is the hometown and political base for leaders of the former three military regimes.   Daegu and Busan are not directly associated with each other in economic or political space as much as their relationships with their respective hinterland, but they have formed certain commonalities as the southeast region (literally, 'Youngnam' in Korean) over the Korean history.

Although the new system applied to Daegu in 1975, the strong influence of leaders in the Park regime (1962 – 1979) could sustain the central position of its high-school networks for the cohort born in the 1960s (when the local elites in Daegu attended high schools after the mid-1970s) (Lee, 2003).   As discussed earlier, for the elites born in the 1970s (not attending high schools in the 1970s) the social networks of the 'junior' elites who attended high schools in Seoul show the second highest centrality (as the local measure of a region's network) over all four cohorts (Table 5-III).

Since the blue circle denotes the level of centrality at which most lagging regions are placed (Figure 5-5), it was expected that the wider the blue circle, the larger the gap in centrality between primate growth-pole regions and lagging regions.   Such a gap[50] became the lowest for the elites who were born in the 1960s and first

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[50] The new system most benefited the local regions' elite cohort born in the 1960s, and this cohort showed the smallest difference between regions' centralities.   In Table 5-2 the descriptive statistics

experienced the high school equalization system after the mid-1970s. The gap then

increased again for the elite cohort born in the 1970s and became 'junior' elites,

adapting themselves for the change with the help of 'senior' elites settled down in

Seoul. This gives some rationale for statistically testing whether an association of

economic space and political space in South Korea, which has centered on primate

growth-pole region as shown in the exploratory and descriptive analysis through SNA

so far. The proper method for testing such an association will be correlation analysis

between regional economic outcomes and the property of elites' social networks.


### Associative Impacts of Economic and Social Network Networks on Regional Economic Outcomes and Concentrations

To test whether any significant relationship between regional economic

outcomes and the network property of elites' social networks exists, a correlation

analysis was used.[51]    This study adopted the bivariate correlation analysis of the

relationship between the appropriate index in the regional income and product account

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of the centralities support the smallest difference between maximum and minimum for this cohort.
[51] The possible limitations of not using a more causal model or approach are due to the difficulties in appropriately controlling the unobserved effects or the mediating and confounding influences of the other variables in a model.   Given the difficulties in controlling such influences in a causal model, the causal relationship between economic networks and social networks – which is regarded to be bi-directional – becomes harder to detect and distinguish precisely.   Although Davis and Greve (1997) showed the presence of business-political relationships between corporate elites using maximum likelihood estimation (MLE), they were able to constrain and specify the analytical model since their model measures the marginal effects of ownership concentration and interlock similarity on innovation diffusion processes.   Another reason is that there are hardly any previous empirical studies to articulate the similar problem using appropriate causal models.

(IPA) from the Korean Statistical Information Service (KOSIS, 2009) and the in-/out-degree centrality calculated by SNA in the previous section.    The number of observations was 255 (15 regions × 17 years).    The amount of gross regional domestic product (GRDP) is expected to better reflect the extent in which the aggregate product of a region enjoyed the total yearly value added 'within the region,' compared to regional economic output as a measure inclusive of (the cost of) intermediate input consumption (see equations 5-1).

The yearly GRDP was estimated in 2000 prices by the total of the regional gross value added (GVA) using the 'income approach.'    Since GRDP is calculated by subtracting the total intermediate 'cost' (to be paid 'through linkages' inside and outside the region) from the regional output as 'benefit and cost,' GRDP measures the yearly aggregate income/value added 'within the region.'    Thus if a region earns more GRDP (as a GDP fraction) compared to gross output (as a fraction of the nation's gross output), it means that region is more compensated than the other part of the country.    Although gross regional product (GRP) – which measures net factor earnings from the rest regions of the country plus GRDP – is more appropriate, the yearly GRP is not available for the study period; thus GRDP is used to compare with gross output. Yearly regional gross output and GRDP in each year (that was summed for 15 regions across the span of 17 years: $n = 255$) from 1989 – 2005 was chosen since in the regional IPA, yearly gross output and GRDP are calculated as in equation 5-1:

(5-1) GRDP = Gross Output − Intermediate Input Consumption (Cost).

As for social networks, in addition, in-degree centrality is also expected to reflect the extent in which a region (as a node) measures the total weights of the 'in-flowing' social links from (the schools of) the inside and outside of that region.    On the other hand, out-degree centrality of social links reflects the extent in which a region (as a node) measures the total weights of the 'out-flowing' social networks to (the schools of) the inside and outside of that region.    Since this study has postulated and empirically verified the existence of the "polarization" of economic factors (shown by the shift-share analysis in Chapter Three) and social factors (shown by SNA in the previous section), in-degree centrality is expected to show a higher correlation with the factor associated with regional economic outcomes.

In comparison with gross output, the gross regional domestic product (GRDP) of a prosperous region well represents that region's economic outcomes as 'benefits' that are produced 'within the region.'    Thus given GRDP measures the region's yearly aggregate income, exclusive of the region's cost for consuming intermediates from inside and outside regions, the correlation is expected to show a higher value especially with GRDP (rather than with gross output; see equations 5-1 and 5-2).    The benefits defined by GRDP well formulates the region's aggregate value added as the yearly 'flow' (not 'stock' such as real estate, whose interregional disparity data was presented in Chapter One) of income that is reaped by the (industries in) region, through the contribution of regional elites and mass public.    The underlying premise is that if a higher level of association between economic and social networks exists for a region, such a region with a larger in-degree centrality is more likely to be 'benefited' by not only more (social capital through) social linkages but also more (economic capital

through) economic linkages from the rest of the regions in the country.   This

formulates the assumption that 'in-degree' centrality – which measures the total

weights of the 'in-flowing' links from (the schools of) the rest of the regions – will be

associated more with the GRDP than gross output.   Thus the hypothesis for examining

the difference in the association between regional economic outcomes and social

networks (regarding convergent and discriminant validities) can be stated as follows:

"The higher in-degree centrality for a region is, the more GRDP exists for the region."


The results in Tables 5-IV and 5-V explicitly support the hypothesis.   A high

correlation (coefficients up to 0.7) between GRDP and in-degree centrality showed a

coherent pattern of consistent difference to the lower correlation between gross output

and out-degree centrality.   In addition, the change in correlation coefficients supports

the observation that the gap in centrality between the primary growth-pole region and

lagging regions became the lowest for the '1960s' (elite cohort born in the 1960s [the

first group to experience the high school 'equalization' system after the mid-1970s]).

The local regions' 1960s elites benefited from the new system, and for this cohort there

is the smallest difference between each region's centrality.   The descriptive statistics

for the centralities (Table 5-II) also supported the observation that the smallest

difference between maximum and minimum was for the 1960s elites.   As discussed in

the previous section, the gap then increased again for the 1970s elites and became

'junior' elites (adapting themselves for the change with the help of 'senior' elites settled

down in Seoul).

**Table 5-IV. Correlation Analysis Results for the Years 1989 – 2005**

|                  | PRE1950 | 1950s | 1960s | 1970s |
|------------------|---------|-------|-------|-------|
| Indegree-GRDP    | 0.668   | 0.680 | 0.652 | 0.702 |
| Indegree-Output  | 0.495   | 0.508 | 0.491 | 0.554 |
| Outdegree-GRDP   | 0.642   | 0.660 | 0.627 | 0.670 |
| Outdegree-Output | 0.462   | 0.482 | 0.458 | 0.518 |

All Pearson correlation coefficients: significant at the 0.01 level (one-tailed).
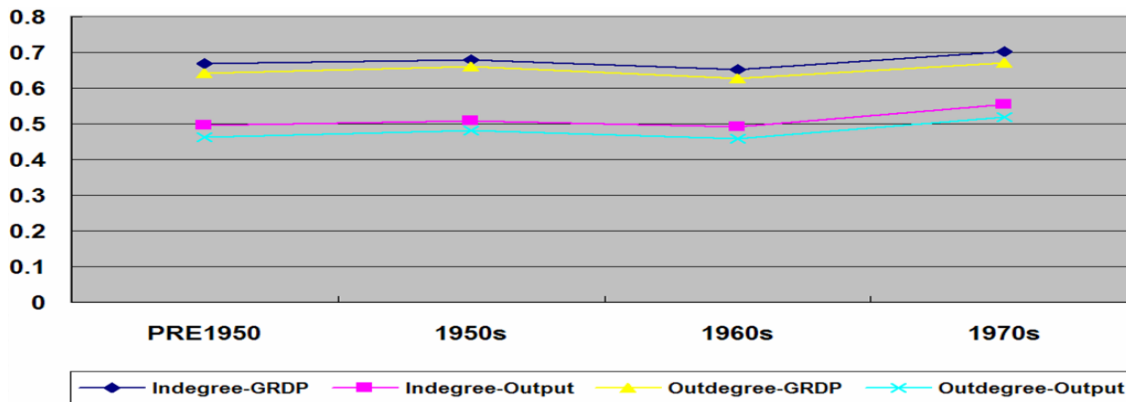


Notes: N = 255 (15 regions × 17 years).   Output refers to regional gross output in the regional IPA.
Indegree-GRDP = (Correlation between) In-degree and GRDP.   Indegree-Output = (Correlation between) In-degree and Output.   Outdegree-GRDP = (Correlation between) Out-degree and GRDP. Outdegree-Output = (Correlation between) Out-degree and GRDP.   The correlation showed coefficient values up to 0.9 when Gyeonggi was excluded (N = 238 [14 regions × 17 years]). Gyeonggi is a main hinterland of Seoul, but it has recently become a 'metropolitan-wide' development planning area in which the common and complementary 'near-Seoul' networks of production factors, industrial linkages, and infrastructures develop faster.   However, many older elites from Gyeonggi attended Seoul's high schools.   Although Gyeonggi's high schools have recently had many graduates that entered reputed colleges (Park, 2009a), those 'future' elites were not so influential and many of them were not counted in the 1970s elite (born in the 'early' 1970s). Considering such socioeconomic circumstances, it was natural that the correlation without Gyeonggi showed the higher coefficient values.   Despite the observed consistent patterns of correlation across cohorts, the highest centralities and highest GRDPs observed for Seoul (in Table 5-III) over the span of 17 years and the pooling of those panel data were also natural to increase the correlation values.   Given these limitations, the correlation analysis is far more meaningful for the hypothesis (i.e., The higher in-degree centrality for a region is, the more GRDP exists for the region) and the central thesis of the dissertation, since the focus of the empirical analysis was on the 'dominating' role of 'associated' economic and social networks in the SMA and the association of 'relatively' decreasing centralities and decreasing GRDPs.   Panel data analysis or simultaneous equations modeling of the same data can also help capture the 'unique contribution' (rather than 'impact in association with economic networks') of (concentrated) social networks on (concentrated) regional economic outcomes if appropriate control techniques for other observed and unobserved effects are developed.   The graph above visualizes the figures in Table 5-IV (Y axis = Pearson correlation coefficient; All values are significant at the 0.01 level [one-tailed]).

On the other hand, as expected, gross output shows a rather lower level of correlation with all four cohorts compared to regional GRDP.    Since GRDP measures the region's yearly aggregate income, exclusive of that region's cost for consuming intermediates from inside and outside that region, the correlation was assumed to show a higher value especially with GRDP.    It was suggested that a region with a higher 'in-degree' centrality – which measures the total weights of the 'in-flowing' links from (the schools of) the rest of the regions – will have a higher association with GRDP (which also included net factor income from the rest of the country).    The reason for this is the assumption that a higher level of association between economic networks and social networks exists for a region.    In addition, the region with the more highly-centralized networks is more likely to attract not just more social capital and linkages but more economic capital.    Since the centrality of such in-flowing networks is usually measured by 'in-degree' centrality and GRDP incorporates the region's yearly aggregate income as regional benefits, the results in Tables 5-IV explicitly support the hypothesis of the correlation analysis regarding an association between regional economic outcomes and social networks.

**Examining Political and Business Leaders' Social Networks Locally Concentrated**

Table 5-V presents the regional percent share of power elites having attended the top 100 high schools.    These top 100 schools continued to comprise the great portion of the national total elites in each cohort though the nominal number of high schools in the nation increased (for specific figures, see the note for Table 5-I).    Table 5-V illustrates each regions' percent share.    Seoul's share is the largest and Daegu in

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Gyeongbuk and Busan in Gyeongnam, as two primate cities of the southeast growth-pole region, had the second largest percent shares.   It is also notable that Busan's percent share decreases across the generations while Daegu's share increases.   In contrast, Gwangju's share gradually increases across generations.   Gwangju, as the primate city of the Southwestern province, follows next in the share of power elites; many power elites whose hometowns were in Gwangju migrated to the SMA, and many of them progressed to professional occupations in diverse fields while fewer were promoted to upper echelon positions in either the military or chaebol regimes.   In comparison, power elites from in the southeast growth-pole region were more likely to have and formed strong social networks (Lee et al., 2006).

Seoul, Busan, and Daegu each comprise less than 1 percent of the nation's land area but account for 69 percent of the percent share of the power elites (Table 5-V). This suggests 'the snowballing effect'[52] as the network effect of the social capital of people who were born and grew in the same hometowns or attended the same schools and workplaces in those largest cities.   The snowballing effect can be a result of rational behavior by individuals' who try to capitalize on social acquaintances.   It can also be negative or inefficient to both individuals and economies if they prefer to employ or admit an individual 'just' because they know the person was from a particular sub-region or school in a certain region.   These elites dominated several different military regimes and chaebol that formulated and implemented economic development policies that emphasized growth-pole strategies.

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[52] The logic of snowballing effects is similar to one of the snowballing sampling method. Snowballing sampling is used when it will be effective that a person who have most direct or influential networks pointed to other person(s) in the interviewing process.   In social capital research, likewise, it is often postulated that a person (a snowball) with higher centrality is more likely to attract more snow (networks).

**Table 5-V. The Regional Distribution (%) of South Korean Power Elites**

| Region | PRE1950 | 1950s | 1960s | 1970s | All Cohorts |
|---|---|---|---|---|---|
| **Seoul** | **44.72** | **53.26** | **44.02** | **48.30** | **47.58** |
| **Daegu** | **11.58** | **12.07** | **15.92** | **12.28** | **12.96** |
| **Busan** | **10.69** | **9.95** | **7.12** | **3.26** | **7.76** |
| **Gwangju** | **6.62** | **6.33** | **6.78** | **8.45** | **7.04** |
| **Gyeongnam** | **2.89** | **2.87** | **6.67** | **10.71** | **5.79** |
| Jeonbuk | 5.59 | 3.77 | 4.11 | 2.50 | 3.99 |
| Daejeon | 3.58 | 3.50 | 4.48 | 1.73 | 3.32 |
| Jeonnam | 2.30 | 0.83 | 2.67 | 5.19 | 2.75 |
| Gyeongbuk | 2.05 | 1.45 | 1.90 | 1.73 | 1.78 |
| Incheon | 2.21 | 2.17 | 0.75 | 1.73 | 1.71 |
| Chungbuk | 1.95 | 1.25 | 2.01 | 1.39 | 1.65 |
| Jeju | 0.52 | 0.57 | 1.81 | 1.73 | 1.15 |
| Gangwon | 1.83 | 1.16 | 1.12 | 0 | 1.03 |
| Gyeonggi | 0.46 | 0.41 | 0.57 | 0.95 | 0.60 |
| Chungnam | 1.19 | 0.35 | 0 | 0 | 0.38 |
| Total (%) | 100 | 100 | 100 | 100 | 100 |

Notes: Ordered according to the percent in the column of all cohorts.   This data is based on the top 100 high schools' shares of elites as their graduates.   Jeju is an island in the Southern Sea with subtropical oceanic climate.   Its regional economy is relatively smaller in any other regions in the Korean Peninsula in South Korea.   However, it is the largest island in Korea and is one of the 'fifteen' statistical regions configuring South Korea (when the data Ulsan is integrated with Gyeongnam).

## The Distribution of Political Networks across the Republic

To further examine who made the blueprint of the regional development policy for whom the cohort born before 1950 deserves particular attention.   The military regimes reigned from 1962 through 1992.   During this period, the power elite cohort born before 1950 was dominated by the generation whose prime age was reached in the 1960s, 1970s, and 1980s.   During these periods South Korea's regional (growth-pole) development policies were formulated and implemented.   Therefore this dissertation focused on the regional share of congresspersons as policy and decision makers.

Table 5-VI illustrates the percentage of social networks from each region for senior members of Congress in the 17th national session.   These senior members were classified into a region's elites according to the high schools they attended, not their election districts (for a background explanation, refer to the note of Table 5-I).   All these members of Congress were born before 1950.   The indices were calculated by numbering the power elites who have attended the same high schools, universities, or the same workplaces with an individual congressperson.

Busan shares the second largest portion of both school-related and workplace-related networks (see Table 5-VI).   In particular, its portion of school-related networks is almost equivalent to Seoul's portion.   Many power elite members born before 1950 in Busan or Gyeongnam graduated from Gyeongnam High School in Busan and became members of Congress with the help of Kim Young Sam (one of the 'Three Kims)'[53]   Such alumni relations have been essential for political advancement.   Kim Young Sam, who was from Geoje Island (next to Busan) and was elected as the youngest congressperson in Korean history, has played an influential role in Korean politics.[54].   The central position of Daegu is related to that all three leaders of the past military regimes were born and grew to adulthood in and around Daegu.   In Table 5-VI Incheon (the harbor city west to Seoul) follows Daegu; the total sum of school-related network and workplace-related networks of the five congresspersons from

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[53]  These Gyeongnam High School alumni includes Kim Hyungoh (present Chairman of the Korean National Assembly), Park Heetae (present president of the National Grand Party, the ruling party), Kim Kichoon (fourteenth Minister of Justice), and many highest-rank governmental officials and politicians of the former ruling parties especially in the Kim Young Sam administration (1993-1997). Many Busan High School graduates, whose hometowns are near Busan, also became influential congresspersons.

[54]  He served as party presidents and became the seventh president of the Republic of Korea (1993 – 1997).

Incheon shares the fourth largest portion.   It is notable that four of the five members of Congress from Incheon graduated from the reputed Jemulpo High School.   Comparing the 'average link' in Table 5-VI, these five members of Congress had the largest individual networks.

**Table 5-VI. The Regional Distribution of 107 Senior Congresspersons' Social Networks**

| Region | School-Link [A] | School-Link (%) | Work-Link [B] | School- and Work-Link[C] | Congress-People [D] | Average Link [C/D] | Average Link (%) |
|---|---|---|---|---|---|---|---|
| **Seoul** | **3032** | **27.18** | **20810** | **23842** | **36** | **662.27** | **6.58** |
| **Busan** | **2942** | **26.37** | **13950** | **16892** | **16** | **1055.75** | **10.49** |
| **Daegu** | **1334** | **11.96** | **8005** | **9339** | **10** | **933.90** | **9.28** |
| **Incheon** | **1560** | **13.98** | **4559** | **6119** | **5** | **1223.80** | **12.16** |
| Daejeon | 93 | 0.83 | 4412 | 4505 | 6 | 750.83 | 7.46 |
| Gyeongnam | 605 | 5.42 | 3805 | 4410 | 7 | 1021.66 | 10.15 |
| Jeonbuk | 188 | 1.68 | 3531 | 3719 | 3 | 1239.66 | 12.32 |
| Gwangju | 287 | 2.57 | 2966 | 3253 | 4 | 813.25 | 8.08 |
| Gyeongbuk | 292 | 2.61 | 2290 | 2582 | 4 | 645.50 | 6.41 |
| Chungnam | 514 | 4.60 | 1405 | 1919 | 3 | 639.66 | 6.35 |
| Chungbuk | 197 | 1.76 | 1380 | 1577 | 4 | 394.25 | 3.91 |
| Jeonnam | 59 | 0.52 | 1064 | 1123 | 2 | 561.50 | 5.58 |
| Gyeonggi | 0 | 0 | 342 | 342 | 4 | 85.50 | 0.84 |
| Gangwon | 50 | 0.44 | 46 | 96 | 3 | 32.00 | 0.31 |
| Jeju | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 11153 | 100 | 68565 | 79718 | 107 | 10059.56 | 100 |

Notes: Ordered by the respective sum of regional high-school and work-related networks (C).   The link is numbered according to the number of elites who attended the same school, college, graduate school, and workplace in the same year with a particular elite.   For a more clear presentation, school-related networks and work-related networks were calculated both respectively and conjointly.

**The Distribution of Chaebol Networks across the Nation**

The next phase of the analysis focused on the CEOs of chaebols as they started from their hometown regions and their firms grew to be among the largest employers in those regions.   Jung Ju-young, the founder of Hyundai is part of Gyeongnam since

most of Hyundai's largest industrial complexes were built in Gyeongnam.    (He was

born in what is now North Korea).[55]    This study selected 23 (20 + 3), 23 (20 + 3), and

29 (30 − 1) CEOs with the highest degree centralities, respectively in terms of direct

family network, work-related network, and hometown-based network.    These CEOs

were business elites listed in the top in terms of the degree centrality index provided in

Lee et al.'s (2006).    As for direct-family network and work-related network, the three

'influential' business leaders were added to the original list of 20 people in Lee et al.

(2006).    Although these three business leaders were not included the original list of

Lee et al. (2006) in terms of their number of associated networks, the three leaders as

the founder or CEO of largest chaebols still need to be included.    These newly-added

business leaders are Jung Ju-young (the founder of Hyundai Group), Kim Woojung (the

founder of Daewoo Group), Gu Bonmoo (the chairperson of LG Group).    Lee Gunhee,

the ex-chairperson of Samsung Group, was not newly added because he was in the

original top-20 list of Lee et al. (2006).    In the case of hometown-based networks the

list in this study (Table 5-VII (A)) followed the list of 30 (not 20) CEOs in Lee et al.

(2006), and it was constructed the list of 29 CEOs, excluding one CEO – whose

information could not be attained through double-checking three Internet portals and

two major newspaper agencies.    Although Lee et al.'s (2006) original research

calculated the network centralities of 205 CEOs from the 33 largest chaebols with the

help of (the constructed elite database from) JoongAng Ilbo and Seoul National

University, the available data forced this study to focus on a limited number (23 to 29)

of 'influential' business elites in terms of the highest degree centrality.

      Table 5-VII was developed using the data collected from South Korea's major

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[55]  Hyundai's headquarters has been in Seoul, but most of industrial activity occurred in Gyeongnam.

Internet portal database (naver.com, empas.com, and nate.com) and newspapers

(JoongAng Ilbo and Chosun Ilbo), in April 2007.    The selection criteria for the

business leaders followed Lee et al.'s (2006) top 20 business leaders, ranked with the

number of power elites a particular business leader has the family-related or work-

related relationship with.    Table 5-VII shows the numbers of the birthplace of CEOs of

major chaebols in Korea during the respective periods of 1910 – 1919, 1920 – 1929,

1930 – 1939, 1940 – 1949, and after 1950.[56]    (The school-related networks were

intentionally excluded since most of these CEOs have attended different schools.)

Seoul and 'Youngnam' region (Gyeongnam and Gyeongbuk: the hinterlands of the

southeast growth-pole region) have most of the major CEOs.

**Table 5-VII. The Regional Distribution of Chaebol Leaders' Social Networks**

| (A) 29 CEOs with Hometown-Based Network | | [CEOs Connected to the Largest Number of Elites] | | |
| --- | --- | --- | --- | --- |
| Birth Year / Birth Place | 1910 -19 | 1920 -29 | 1930 -39 | 1940 -49 | 1950 - |
| **Seoul** | **0** | **1** | **1** | **2** | **0** |
| **Busan** | **0** | **1** | **0** | **0** | **0** |
| **Daegu** | **0** | **0** | **1** | **0** | **0** |
| Incheon | 0 | 0 | 0 | 0 | 0 |
| Gwangju | 0 | 0 | 0 | 0 | 0 |
| Daejeon | 0 | 0 | 0 | 0 | 0 |
| **Gyeonggi** | **0** | **0** | **0** | **1** | **2** |
| Gangwon | 0 | 0 | 0 | 0 | 0 |
| Chungbuk | 0 | 0 | 0 | 0 | 0 |
| Chungnam | 0 | 0 | 0 | 1 | 1 |
| Jeonbuk | 0 | 0 | 0 | 0 | 0 |
| Jeonnam | 0 | 0 | 0 | 1 | 1 |
| **Gyeongbuk** | **0** | **0** | **0** | **4** | **2** |
| **Gyeongnam** | **1** | **3** | **4** | **2** | **0** |
| Jeju | 0 | 0 | 0 | 0 | 0 |

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[56] Apart from the list of major chaebols in this study, direct father-and-son or successor
relationships were also found in 47 CEOs of such family-run chaebol companies (Lee et al., 2006).

| (B) 23 CEOs with Direct Family Network | | | [CEOs Connected to the Largest Number of Elites] | | |
|---|---|---|---|---|---|
| **Birth Year**<br>**Birth Place** | 1910<br>-19 | 1920<br>-29 | 1930<br>-39 | 1940<br>-49 | 1950<br>- |
| **Seoul** | 1 | 2 | 2 | 1 | 4 |
| **Busan** | 0 | 0 | 0 | 0 | 0 |
| **Daegu** | 0 | 0 | 1 | 0 | 0 |
| Incheon | 0 | 0 | 0 | 0 | 0 |
| Gwangju | 0 | 0 | 0 | 0 | 0 |
| Daejeon | 0 | 0 | 0 | 0 | 0 |
| **Gyeonggi** | 0 | 0 | 1 | 0 | 0 |
| Gangwon | 0 | 0 | 0 | 0 | 0 |
| Chungbuk | 0 | 0 | 0 | 0 | 0 |
| Chungnam | 0 | 0 | 1 | 0 | 0 |
| Jeonbuk | 0 | 0 | 0 | 0 | 0 |
| Jeonnam | 0 | 0 | 0 | 0 | 0 |
| **Gyeongbuk** | 0 | 1 | 0 | 0 | 1 |
| **Gyeongnam** | 2 | 1 | 3 | 2 | 0 |
| Jeju | 0 | 0 | 0 | 0 | 0 |

| (C) 23 CEOs with Work-Related Network | | | [CEOs Connected to the Largest Number of Elites] | | |
|---|---|---|---|---|---|
| **Birth Year**<br>**Birth Place** | 1910<br>-19 | 1920<br>-29 | 1930<br>-39 | 1940<br>-49 | 1950<br>- |
| **Seoul** | 0 | 0 | 0 | 2 | 2 |
| **Busan** | 0 | 1 | 1 | 1 | 0 |
| **Daegu** | 0 | 0 | 1 | 1 | 0 |
| Incheon | 0 | 0 | 0 | 1 | 0 |
| Gwangju | 0 | 0 | 0 | 0 | 0 |
| Daejeon | 0 | 0 | 0 | 0 | 0 |
| **Gyeonggi** | 0 | 0 | 1 | 1 | 0 |
| Gangwon | 0 | 0 | 0 | 0 | 1 |
| Chungbuk | 0 | 0 | 1 | 0 | 0 |
| Chungnam | 0 | 0 | 0 | 3 | 0 |
| Jeonbuk | 0 | 0 | 0 | 0 | 0 |
| Jeonnam | 0 | 0 | 0 | 0 | 0 |
| **Gyeongbuk** | 0 | 0 | 0 | 0 | 0 |
| **Gyeongnam** | 1 | 0 | 3 | 1 | 0 |
| Jeju | 0 | 0 | 0 | 1 | 0 |

Most of the CEOs attended renowned high schools in Daegu, Busan, or Seoul, which have been three major 'cities' in Korea's growth pole development. It is also noticeable that the number of elites born in Seoul increased as the generation got

younger.    As discussed in the previous section, this pattern is considered to be associated with the rise of 'junior' elites born in Seoul, after their parents settled down in Seoul.    Among four CEOs born after 1950, one was born in the 1950s, two were born in the 1960s, and one was born in the 1970s.

Regarding Table 5-VII it should be noted that the social relations of (top 20 plus 3) chaebol leaders, which have most work-related networks, show different patterns from hometown-based or direct family networks.    Although the number of observations is limited, chaebol leaders were drawn from relatively many parts of the country 'especially when' they were ranked top in terms of 'work-related' networks. It supports the observation that 'family-run' or 'family-owned' business governance of chaebols was developed through family-related and hometown-based networks (for the background information about chaebol, see footnote 9 in Chapter One).    Lee et al. (2006) also pointed out the work-related networks of major CEOs could not help but limit the business leaders themselves, because they were trained and promoted 'within the business group.'    The 'within-chaebol' networks is the concrete example of South Korea's "inner circle" (Useem, 1984) in the field of business.    Moreover many chaebol leaders – especially older leaders – participated in national economic development process under the patron of the central government.    Such business-politics collusion had a positive effect on regional development by polarizing/concentrating national development capacity into particular regions (primate growth-pole regions).    The economic outcomes of polarized development, however, have been rarely enjoyed by the rest of the county, while chaebols developed themselves through the family-related and hometown-based networks, in cooperation

with the central government of the past military regimes (1962 – 1992) and political

leaders representing the interest of their hometown regions.

**Concluding Notes**

The data presented analyzed and discussed the characteristics and network

property of elites' social networks.    The correlation analysis identifies the existence of

an association between regional economic outcomes and the network property of

regional elites' social networks.    The descriptive statistics used to describe the social

networks of political and business leaders in also helped identify interregional

polarization of social networks.

To summarize, after verifying the existence of growth-pole regions this

dissertation focused on testing the correlation of 'regional' social networks and

economic (not 'industrial') outcomes, through the correlation analysis of the SNA

centrality indices and the yearly cross-sections of GRDP data for the years from 1989

to 2005.    Since the regional economic outcomes are closely related to each region's

total industrial indices such as employment or value added in regional shift-share, each

region's social networks were used as the counterpart index for the correlation analysis

with each region's GRDP in the span of 17 years.    Theoretically Myrdal (1957),

Hirschman (1958), Markusen (1996), and Sorenson (2005) also supported the 'causal'

or 'self-reinforcing' relationship between economic and social networks, which can

'conjointly' impact a region's wealth (levels).    The limitations of not utilizing a more

causal model are due to the methodological difficulties in controlling the unobserved

effects or the influences of the other variables appropriately in a model.    Unless those

influences are adequately controlled in a causal model, the causal relationship between

economic networks and social networks (which was considered to be bi-directional in

this study) become more difficult to be statistically detected and distinguished, ruling

out the effects of other variables or conditions.    A more advanced method and

technique, which are optimized for the integration of network analysis and other

statistical analysis, still need to be developed for future research.

It can be concluded that during the 1960s' and 1970s' rapid industrialization

and urbanization process of South Korea the 'practical' regional development was

formulated and implemented, according to the 'theory' of growth-pole development

strategies and national development planning.    Such planning strategies were

'effective' in growing the national economy, but the gaps of interregional disparity have

rarely been abridged (although over thirty years has passed since the first

implementation of growth-pole strategies).    The growth-pole and unbalanced growth

strategies have laid the "path-dependent" economic networks, as examined by the shift-

share analysis in Chapter Three.    In the rapid industrialization and urbanization

process to develop the nation quickly after the Korean War, however, social networks

have also been planted and grown especially centering on the 'planned' primate

growth-pole regions.

Such endogenous growth of social networks, associated with economic factors

grew in the 'planned' growth-pole regions, have not been properly articulated by other

theoretical or empirical studies.    The reason is that traditional economic studies did

not conceptually or operationally define and measure social capital, using a sufficient number of observations.   Sociological or political studies did not find appropriate measures to test the association between economic relations and social relations, although they have shown continued interest in the topic (Lee et al., 2006; Chang, 1999; Burt & Carlton, 1989; Burt, 1982).   Regarding regional development, the association between economic space and political space in South Korea has been theoretically and empirically examined through this dissertation.   In the following chapter the reflections on the theoretical and empirical findings will be made, together with policy recommendations for the regional development of South Korea and other developing countries.

# CHAPTER VI

## CONCLUSION

In the years after the Korean War, the Republic's political leadership

established economic development as the country's highest priority (Park, 2009b; Lee,

2003).   Policies and practices led to the establishment of growth poles and the

concentration of wealth in two regions.   Across several decades this development

pattern led to substantial differences in earnings between residents of the growth-pole

regions and those that lived elsewhere.   Reducing these disparities has now emerged

as a policy priority for the Korean government.   The research performed here was

designed to illustrate the changes in social networks that may be required to facilitate

any shift in economic development patterns.   The research was designed to answer the

following research questions.

● What are the patterns and properties of elite's hometown-based social networks?
● What is the relationship of economic and social networks in defining regional
economic outcomes and concentrations?

● What are the implications of the relationship of social and economic networks for policies designed to balance the regional economic outcomes that are now locally concentrated?

These questions produced the following set of 'null' hypotheses that were tested and discussed through a literature review, a shift-share analysis, and a social network analysis:

● Economic networks and Korean elites' social networks are not concentrated in the SMA and Busan-southeast regions, showing less locally concentrated patterns over time.
● Across the past several decades, an association between regional economic outcomes and (the network indices of) regional power elites' social networks has not occurred.

After summarizing and reviewing the findings from the shift-share analysis of economic concentrations and the SNA of social concentrations, this chapter then discusses policy implications for governments and researchers.   While the most immediate benefit from the research produced is for the leadership of the Republic of Korea, the findings offer insight and guidance for other countries and regions where (1) growth poles have concentrated wealth and (2) their existence has led to wide variances in wealth and earnings between regions.

## The Presence of 'Economic' Concentrations

The analysis began with an identification of the existence and patterns of growth poles.   Since the strategies to develop 6 'growth centers' together with 2 primate growth-pole regions, such local growth centers and their hinterlands were expected to grow more as 'metropolitan area-wide development' was targeted in the 1990s.   The most important criterion of evaluating the success of growth-pole regions

or growth centers was the "'intended' trickling down at least 15 years later after the first implementation of growth pole strategies" as a reciprocal relationship between those strategic loci of growth poles and hinterlands. The descriptive data, trickling-down index, and shift-share analysis results illustrated a substantial concentration of industrial employment in the SMA – Seoul, Gyeonggi, and Incheon (and the Busan-southeast growth-pole region, partly). As the analysis showed, these two areas are two 'primate' growth-pole regions. The employment data for 28 industries in 15 regions were used to further illustrate the existence of growth poles. This part of the analysis illustrated that the two primate growth-pole regions (the SMA and Busan-southeast region) continued to grow faster than other parts of the country from 1989 to 2007 except during the IMF crisis (1997 – 1998). Wholesale and retail trade, hotels and restaurants, (business, personal, and public) services, and SOC (and related services) overall increased in the 'hinterland' areas (Gyeonggi and Incheon) from 1989 to 2007. The 'foundational' SOC and related services even had increased again in Seoul as the central city of the SMA since 2000. The analysis of regional share effects did identify some decline in the growth of 'total' industries and 'manufacturing' in Seoul and Busan, from 1989 to 2007. This amounted to a "trickling-down" effect through industrial filtration but it was spatially-limited and concentrated in Gyeonggi and Incheon, two areas in close proximity to Seoul and the growth pole region of Busan and Gyeongnam. Growth and development in other regions continued to lag, a clear indication of dominance of two growth-pole regions. Trickle down effects were limited to immediately adjacent areas further underscoring the continued dominance of the primate growth poles.

## The Presence of 'Social' Concentrations

The "net spillovers" anticipated or predicted, to occur within 15 years after the initial establishment of growth poles (Richardson, 1976), have not materialized (Park, 2009b). The shift-share analysis supports rejection of the first null hypothesis, i.e., the non-existence of economic growth-pole (regions) in Korea. In regard to social concentrations, the elite who have their interests in particular regions, especially in hometown regions (e.g., congresspersons, businesspersons, or government officials), may be reluctant to sustain or support changes of two locally-concentrated networks if their social networks are also deeply intertwined, spatially, with existing economic networks or outcomes.

The centralization of social relationships in the SNA was largest for the cohort born in the 1950s (referred as 1950 elites). This group had the highest 'centralization' (as a global measure of 'the whole network structure,' not a local measure of particular region or institution as a node). The second highest centralization level was observed for the cohort born before 1950s (PRE1950 elites). The cohort born in the 1970s (1970 elites) and the cohort born in the 1960s (1960 elites) followed in terms of 'centralization.' These outcomes indicated there was a change in the social network structure for the 1960s elites. Across generations the 'centrality difference' between the two primate growth-pole regions and other lagging regions was larger for the 1950s elites and then narrowed slightly for the 1960s elites. That group was the first to experience the new policies designed to reform the public education system through a more random assignment of students to high schools. The 1960s cohort also showed

the lowest 'centrality' in the measurement of regional networks. The introduction of the high school equalization system in 1974 led to a less-skewed elite distribution at the level of the 'individual' (locally prestigious) high school, but not at the level of 'regional' aggregates. Thus the impact of the equalization system on a balance of 'regional' elite distribution was limited.

From 1981 to 1997 more than 40 percent of the administrative elite in the central government were also from the second largest growth-pole region, Busan-southeast, and Daegu-Gyeongbuk. For all respective cohorts, the locally-concentrated distribution of influential leaders in regional development – total power elites, senior congresspersons, and chaebol leaders – were also found in the growth-pole regions. The observation of social concentrations – that were assumed to self-reinforce economic concentrations, in light of elite and regime theories – suggested the need for testing whether there was an association between economic and political space.

## Associative Impacts of 'Economic' and 'Social' Networks on Regional Economic Outcomes and Concentrations

The correlation analysis of economic and social concentrations examined the degree centrality for a region. 'In-degree' centrality is the most appropriate measure of the total weights of the 'in-flowing' links from (the schools of) the rest regions in the country. It was argued that it would be highly correlated with the GRDP, which formalizes the region's yearly aggregate income while regional gross output includes the cost of intermediate consumption payable to sectors inside and outside the region. A high correlation (coefficients up to 0.7) between GRDP and SNA 'in-degree

centrality' indicated a coherence of the consistent difference (especially regarding convergent and discriminant validities) to the lower correlation between gross output and out-degree centrality. As a result, the second null hypothesis was also rejected (for each respective cohort among four cohorts and for annual periods between 1989 and 2005). Such a high correlation indicated that the region with more incoming networks mostly corresponds to the region with more 'GRDP' as the region's benefit which excludes the 'cost' of intermediate consumption payable to the inside and outside of that region. This benefit well represents a region's aggregate value added as the yearly 'flow' (not 'stock') of income that is reaped by the (industries in) region, through the contribution of regional elites (and the mass public).

However, it should be noted that the proven 'correlation' itself does not ensure any causal relationship between regional economic outcomes and social networks. This dissertation has discussed three important 'interrelated' reasons to utilize correlation (rather than regression) for discussing the associative impact of economic and social networks on regional economic outcomes: 1) probability assumption; 2) scaling and the direction of causation; and 3) limitations in controlling for unobserved effects. Even when all relevant (and unobserved) variables are controlled and all the observed variables satisfy classical (e.g., independent and identical distribution or independence from irrelevant alternatives) or Bayesian assumptions with appropriate specification and diagnostic tests, such 'statistically significant' relationships become valid through the provision of the sufficient theoretical and background explanation of 'conditions and exceptions' so that the results can be generalized to the population. In this study, the 'representative' data and other theoretical and historical discussion of 30

thousand 'leading' elites also help overcome the limitation in internal and external

validity of the 'decision-making' story about South Korea's regional development.

Recently Park (2009b) also analyzed the amount of "polarization" and "trickling down"

through the SNA of 2003 interregional I-O tables of every economic region (ER) in

South Korea.   He found economic concentrations in the primate growth-pole regions

and attributed those consequences to elite coalitions in labor- and capital-intensive

industrial development.

     Given the proven correlation, there are other endogenous and exogenous

variables that should be quantified or controlled in future research (especially regarding

multivariate regression or panel data analysis).   For this, the more scientific

understanding of total factor productivity (TFP) is needed.   The TFP accounts for the

Solow residual in the standard (neoclassical) growth model ($Y = F(K, AL)$ or $Y/AL =$

$F(K/AL, 1)$, where $Y$ is aggregate income or output [usually measured in terms of

'flow,' not 'stock'], $K$ is capital stock, and $AL$ is the efficiency unit of labor) should be

measured or estimated by the appropriate data and statistical methods for the intensive

form, $y = f(x) = F(k, 1)$.   Besides the incorporated ('proxy') variables of accumulated

human capital in Mankiw-Romer-Weil's (1992) augmented Solow model (e.g., $\dot{k} =$

$s_k f(k) - (n + g + \delta)k$ and $\dot{h} = s_h f(h) - (n + g + \delta)h$, where $\dot{h}$ is the time derivative of the

stock of human capital per efficiency unit of labor, $s$ is the rate of saving as a 'constant'

fraction of output, $n$ is the 'constant' rate of population growth, $g$ is the 'constant' rate

of growth in technology, and $\delta$ is the 'constant' rate of capital depreciation [This type of

approach takes $s$, $n$, $g$, and $\delta$ as 'exogenous']), other endogenous or exogenous

variables need to be considered and modeled for explaining the variation of the usual

dependent, $y$ (Park, 2009c).    In this dissertation, an examination of the social network (reflecting social distance), as an important constituent of social capital, was a first step to lay a foundation for understanding the role of the social (endogenous) factor in economic development, although it still requires the further rigorous empirical testing and modeling.

However, as this dissertation's analyses still reveal some limitations, neoclassical models also still need the explanation of scale effects, political, cultural, historical, environmental, or governmental (e.g., 'public spending' in Barro [1990]) differences and changes as well as spatial dependence and heterogeneity or spatiotemporal autocorrelation.    Any existing empirical or theoretical models, including 'illuminating' endogenous growth models, have not yet provided the sufficient answer to those (presently) un-measurable or unobserved effects.    Moreover, are $s$, $n$, $g$, and $\delta$ really exogenous to capital and labor changes and constant?

An economic model is not necessarily to be realistic, but a realistic model is better, 'ceteris paribus.'    In many neoclassical growth models, ceteris paribus, $y$ tends to become larger in a lagging region where the mobile (younger and single) people are more likely to leave.    Is an increasingly deserted region's per capita income level (as an indicator of regional wealth [or productivity in many studies]) really similar to that of increasingly attracting region?    In addition, the dynamic changes and endogenous relationships among variables need to be more scientifically modeled and controlled. Advanced methods like panel data analysis and simultaneous equations modeling may help the statistical estimation of the parameters.    Even when a study applies those statistical merits to an analysis, the more (not necessarily) realistic assumptions would

still be helpful to solve the real-world problem as much as the useful assumption of 'ceteris paribus.'

As the second limitation, it remains possible that the empirical explanation for increasing regional economic inequality in Korea would be that the upper strata of the class structure (elite rather than the mass public) in Korea (which just happens to be located in the two growth-pole regions), are receiving a greater proportion of total earnings, which are themselves increasing; not that a zero-sum situation is occurring in which economic and/or social concentrations in these two regions are increasing at the expense of those outside them.    If this explanation is correct, it would not in any way invalidate this dissertation's claim to have demonstrated that economic concentrations and social concentrations are co-located, and persistent, but it would tend to undermine the rationale upon which the following inferences in terms of policy prescriptions for change can be made.

However, it should be noted that Korea's growth-pole and unbalanced growth strategies were "selection-and-concentration" strategies by past military regimes during its fast industrialization and urbanization period.    This dissertation discussed that economic (or industrial) and social networks were formed and developed through each region's local socializing institutions like schools or workplaces in such a dynamic society with the densely-allocated population and networks in the limited land.    If these institutions are the places only for nine-to-five learning and teaching or receiving wages/salaries, it might be hard to argue that economic and social networks are "co-related."    However, people invested not just financial capital but also hourly-measured (quantitative) time and (qualitative) effort/devotion to make socioeconomic "outcomes

and networks" in those socializing institutions, based on particular localities. Hirschman (1977) called such 'socioeconomic' motives "passions" rather than "interests" (for economic outcomes or relations).   This dissertation has analyzed and discussed those socioeconomic outcomes and concentrations by Korean people's "united passions," which were expected to be efficiently allocated or re-distributed through "social energy" (communities' collective or group-focused efforts as a pre-concept of social capital: Hirschman, 1958; Woolcock, 1998).

In contrary to past military regimes' expectations, this dissertation's SNA analysis showed the increasing interregional division (not unification) of social energy after more than twice those regimes' promised (at least 'expected') period of trickling-down.   Evidences on 'regional' economic concentrations were also sufficiently provided.   Many 'economic' assumptions often rule out the co-relation (or statistically, correlation) between passions and interests.   However, the growth-pole regions' (especially Seoul) "lion's share," which represents the snowballing effect of two kinds of networks embedded in each locality, persistently increases in terms of the observed correlation of concentrated economic outcomes and social networks' centralities.

Economic and social networks' concentrations on the two growth-pole regions "can or cannot" approximately equal the number predictable by the Pareto principle ('80 percent of effects come from 20 percent of causes' [Vilfredo Pareto's observation of 80 percent of Italia's land was owned by 20 percent of the national population in 1906]: e.g., Zipf's law for word usage frequency) or power law (as in Figure 3-5).   In South Korea 1 percent of people own 56.7 percent of the Republic's land, as of 2007 (as in Figure 1-4).   The SMA (Seoul, Gyeonggi, and Incheon) accounts for 62.6

percent of South Korea's total land price, as of 2005.   Almost 70 percent of 31,852

elites in this study are from Seoul, Busan, or Daegu.   Each of these primate growth-

pole regions comprises less than 1 percent of the nation's land area.   Appropriate

criterion may be needed for evaluating the optimality of such concentrations.

It should also be noted that Korea's economic "efficient" growth (effort) was

motivated and rationalized by the "social" need of maximizing the "national" wealth.

Considering this 'manifest' income-maximization policy goal (e.g., 'dollar' [10-billion-

dollars in yearly exports before 1980]) and people's consensus, Kaldor-Hicks efficiency

criterion (e.g., 'efficient' if the general compensation will be made by the beneficiaries

within a foreseeable period when an individual suffers more but an 'effective'

redistribution compensation can be made as a means of wealth maximization) can

apply to evaluating regional economic outcomes and concentrations in Korea even if

equity controversies are ruled out.   If Korea's growth was a purely economic

phenomenon, Pareto efficiency (i.e., superior when at least one entity is made better off

while no one is made worse off; an entity's one unit of opportunity cost equals one unit

of opportunity for the other in a 'no-externality' world) can account for the face value

of the shifting share (as an observed pattern or result of regions' efficient economic

activity to take some portions of the zero-sum of growth outcomes).   However, the

government "intervention" in the 'perfect' market needs to be considered; that is, the

plot for the real story of Korea's regional development was prepared by "the decision-

making of growth-oriented elites' placed-based economic interest."

The hidden protagonist, the mass public (in/from increasingly lagging regions)

still remembers "Growth First and Its Distribution Later!"   It needs to be compensated

even when Kaldor-Hicks efficiency criterion applies to the real story of "100 ('pure'

increase without government intervention [no selection and concentration]) + 100

('targeted' maximized increase [with selection and concentration] associated with

'planned' agglomeration economies) + 15 ('excess' increase)" plus-sum game: for

instance, 115 ( = 100 + 15) 'additional' national benefits are regarded to have been

created by the selection and concentration of 1 'most successful' winning region (as a

nexus of 'intended' and 'unintended' economies of scale and networks), given the

social consensus of 15-year-later re-distribution and other 15 regions' 15-year toleration

of diminished 15 marginal opportunities.    Many (lagging regions') people have long

waited the fulfillment of the promise for people across regions and social classes, after

the "selection and concentration" of industrial complexes in two 'primate' growth-pole

regions were made by the 'decision-making' of political and economic elites in the past

military (political) regimes and chaebols (economic regimes).    These two (or three)

kinds of "power elite" (Mills, 1956) regimes' cooperation and collusion chartered the

Republic's planned economic structures of "dense networks," and such density helps

the primate growth-pole regions "self-reinforce" the co-location of production factors

and socioeconomic outcomes in proximity within their geographical boundaries.

     The military regimes have gone 20 years ago.    However, the accumulation of

interregional social conflict (or instability) is still likely to increase more, as long as the

interregional (and inter-class) disparity of accumulated income increases.    Moreover,

this dissertation's analysis results do not indicate any distinguishable convergence or

fulfillment of promised 'Distribution Later!' for many local regions' tolerant people.

How can Korean people achieve improvements in terms of Kaldor-Hicks criterion in

the society with the "densely-interrelated" economic and social networks that are more

likely to further attract socioeconomic opportunities into particular areas and people?

How can a society like Korea change these social linkages to balance regional

economic outcomes, mitigating potential social instability?    The answer may lie in the

'cross-regional and within-region' associations developed within different

socioeconomic networks, rather than the de-centralization of "self-reinforcing" (Park,

2009b) social and economic networks that were settled down and integrally bound to

old growth-pole regions.


## Policy Implications and Suggestions:
## A Simultaneous Change of Economic and Social Networks


The analysis of four cohorts of (potential) leaders illustrated an increasing

concentration of social networks in the SMA.    Other regions had similar or declining

centralities during the same period.    Experiencing the transition to the service-oriented

society, the development of the 'self-sufficient and attractive' SMA was much ahead of

others, while most local regions increasingly lost their competitiveness in economy.

The prosperity of the SMA has been due to the massive 'inflow' of people and the

resulting abundant labor pool and its rich and extensive 'social' networks.    People

migrated, received an education, worked, and then raised their families 'in Seoul,' and
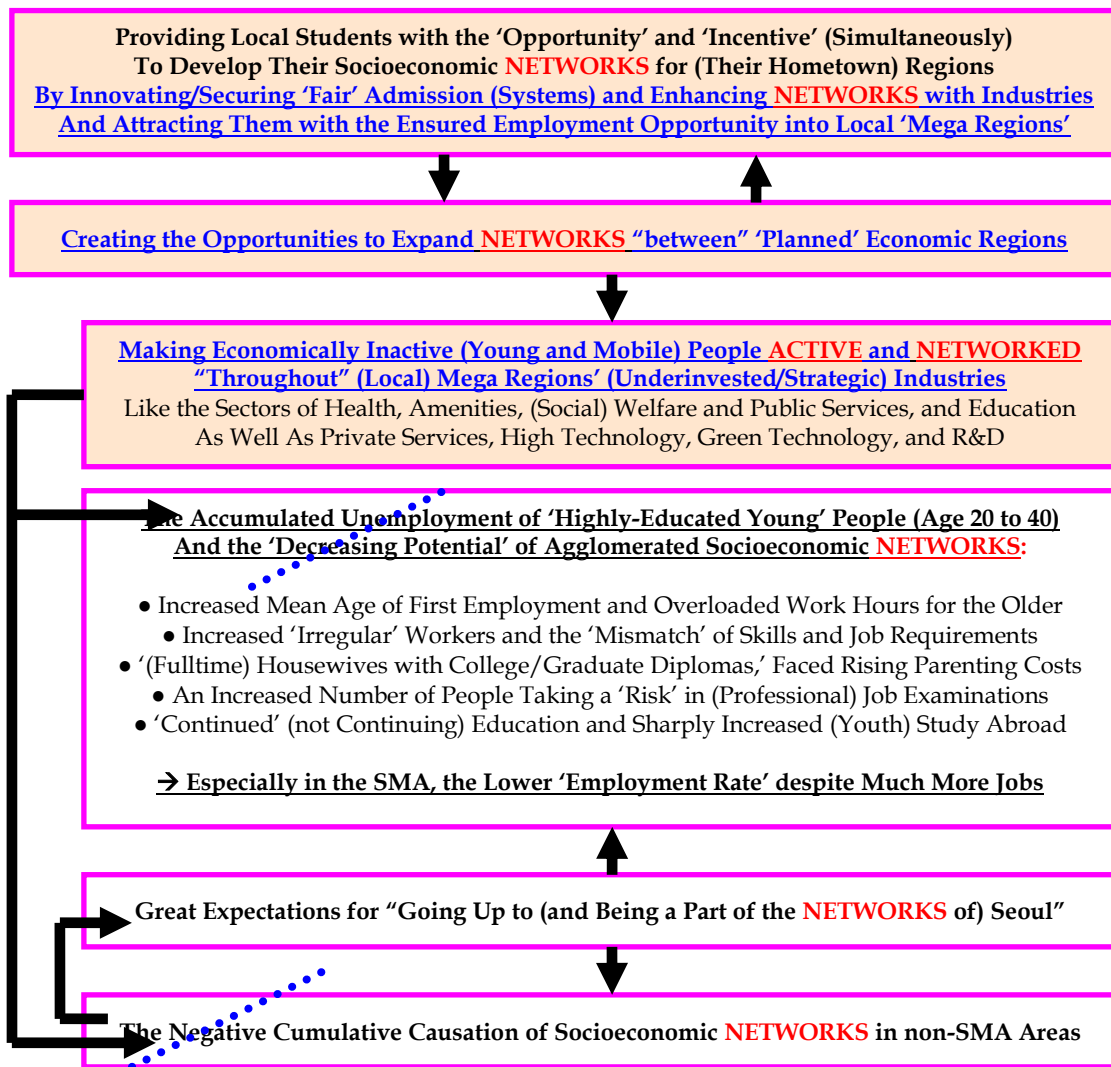
thus expanded the dominance of the growth-pole region.

The social networks developed by the residents of Greater Seoul create a sort

of personal competitive advantage, and the agglomeration of these networks expanded

the dominance of the SMA.    The competitiveness of the 'increasingly-attractive' SMA

is important for Korea, expanding the need for investments and incentives to both 'overcome' (the local) and 'sustain' (the SMA) the competitive advantages that continue to concentrate in the SMA.   Substantial changes are needed if the government is to fulfill its 'promise' of compensation ("Growth First, and Its Distribution Later!") to the nation after enlarging economy by the growth-pole strategy. The traditional conflict between southeast and southwest (영호남갈등) now increasingly turns into the conflict between the SMA and others (수도권 대 비수도권 갈등), as Hong (2005) also argued.

        The social networks within the SMA, having increasing centrality and correlation with economic outcomes (as a consequence of economic network) across time in SNA, illustrate the path dependency or self-reinforcement of those networks' and the resulting concentration of economic prosperity.   Korea needs to explore and implement appropriate policies to enhance economic decentralization and balance opportunities for wealth accumulation.   Those policies need to be rooted in balancing (not equalizing) socioeconomic 'opportunities.'   Korean high schools constitute the fundamental launching point for the socioeconomic prosperity as they continue to serve as bridges to the country's elite colleges.   South Korea's spending in private education per GDP is the highest among OECD countries in 2006 (education spending per GDP is the fourth).   That spending has to be skewed towards creating unique and special high schools in regions outside Seoul that attract or retain people seeking special educational experiences for their children.   The "diploma disease" that is an engine of economic and social life in Korea has to be used to as the incentives behind relocation.   Creating unique and extraordinary educational experiences in other regions may well be the only

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path to economic balance.    Without those incentives it may well be impossible to

creatively destruct the 'path-dependent' competitive advantage of the social networks

in Greater Seoul.      Innovative reform of the education system needs to become the

highest priority if economic balance is to be achieved.    Figure 6-1 summarizes the

recommended policy directions, which are discussed in this concluding section.

**Figure 6-1. A System for a Simultaneous Change of Economic and Social Networks**

**Providing Local Students with the 'Opportunity' and 'Incentive' (Simultaneously)**
**To Develop Their Socioeconomic NETWORKS for (Their Hometown) Regions**
**By Innovating/Securing 'Fair' Admission (Systems) and Enhancing NETWORKS with Industries**
**And Attracting Them with the Ensured Employment Opportunity into Local 'Mega Regions'**

**Creating the Opportunities to Expand NETWORKS "between" 'Planned' Economic Regions**

**Making Economically Inactive (Young and Mobile) People ACTIVE and NETWORKED**
**"Throughout" (Local) Mega Regions' (Underinvested/Strategic) Industries**
Like the Sectors of Health, Amenities, (Social) Welfare and Public Services, and Education
As Well As Private Services, High Technology, Green Technology, and R&D

**The Accumulated Unemployment of 'Highly-Educated Young' People (Age 20 to 40)**
**And the 'Decreasing Potential' of Agglomerated Socioeconomic NETWORKS:**

● Increased Mean Age of First Employment and Overloaded Work Hours for the Older
● Increased 'Irregular' Workers and the 'Mismatch' of Skills and Job Requirements
● '(Fulltime) Housewives with College/Graduate Diplomas,' Faced Rising Parenting Costs
● An Increased Number of People Taking a 'Risk' in (Professional) Job Examinations
● 'Continued' (not Continuing) Education and Sharply Increased (Youth) Study Abroad

**→ Especially in the SMA, the Lower 'Employment Rate' despite Much More Jobs**

**Great Expectations for "Going Up to (and Being a Part of the NETWORKS of) Seoul"**

**The Negative Cumulative Causation of Socioeconomic NETWORKS in non-SMA Areas**

Notes: The specific policy recommendations are in the shaded boxes.    The arrows denote (the
(directions of) steering relationships.    The dotted lines express the elimination of the negatives.

It is hard to prevent people from being attracted to the SMA.   In many cases, 'self-interested' people do not wait and see (but 'see and act' as they have responded to the high school equalization system and entrance exam changes) until the intended 'public' policy ends are effectively achieved through the announced means for (implementing) institutional changes.   The only tool available to offset the perceived self-interest is the extraordinary educational opportunities for students to provide an incentive for fair competition toward (their) socioeconomic advances.   The "diploma mania" that drives Korean society can be used as an incentive to expand geographical choice.   In addition, the colleges in the SMA need to not only (legally) 'affirm the entrance opportunity' to local students but also (systematically) 'support admissions from local regions.'   It will be the role of government to make these admitted students develop their potential of economic and social networks for their original regions and the Republic.   This can be enhanced in two additional ways.

The current affirmative policy of special admission of students from rural area and from other regions to universities in the Greater Seoul region needs to be appropriately expanded.   The national government needs to pay attention to the 'path-creating linkage' (i.e., the linkage to creatively destruct the negative path dependency) between its 'planned' economic regions (ERs) and increasing 'future' (employment) opportunity in local regions.   Students have a strong motivation to develop socioeconomic networks in Seoul.   That has to be altered and those from other regions need to make a commitment to return to their home regions.   Special economic incentives regarding the cost of attending college and the reduction of those expenses

or those who do return could change development patterns.

SMA college graduates have usually developed social networks tied to the region.　Why would they then leave to work and live elsewhere?　For this local governments and the central government should simultaneously induce local 'emigrant' (to the SMA) students to settle down as five-year-later labor and capital resources in their hometowns, by ensuring them 'future' employment in 'promising enterprises,' and convince 'future' enterprises, by emphasizing a slightly lower salary or wage (associated with the lower living expenses in local regions) despite the 'highly-educated and un-flight' labor resources.　There was a successful example regarding the contribution to the university and firms by a similar type of ensured employment. In South Korea it is widely recognized that Ajou University in Suwon – whose financial supporter is Daewoo (Business Group) – benefited by its provision of 'incentives' to promise high-scored entrants future employment in any affiliated firms in the business group, as well as four-year and two-year tuition exemption.　In addition, the local students are not 'inherently' inferior.　In the presidential consortium of private universities 2007, a ten-year analysis of rural students at Handong Global University in Pohang showed that they achieved compatible grade point average (GPA) to non-rural students and that firms favors the diligence of those rural students, although their college scholastic ability test (CSAT) score was lower by 10 points in the four-hundred-point exam (Hankyoreh, 2007).

The second step is the realistic and detailed policy formulation to help 'benefited' local students re-settle down in their 'original' region.　For this financial and other incentives are needed.　Students do not want lose their social and economic

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networks.    As a result, the central and local governments need to 'realistically' provide these local students' entrance opportunity to SMA colleges and employment coupled to employment in their home regions.    A differentiated provision of financial incentives to SMA colleges from the BND special accounting or the similar accounting for the SMA colleges to the NURI (New University for Regional Innovation: the Rho administration's project for regional colleges), according to the admission rate of local students will be a more realistic policy measure.    This policy measure will be useful because the central government now tries to induce SMA colleges to admit more local students (through regionally-allocative selection of high school students from 2011 in the integration with the introduction of the college admissions officer [CAO] program), who are supposed to be educated in the SMA and induced to find jobs in planned or developing institutions and enterprises in their original region.

By other "detailed and legally-supported" strategies and plans in cooperation with the central government, competitive or differentiated firms, and local/SMA colleges that well fit the region's need and advantage for developing economic and social networks, each local region should ensure both high school students (parents) and enterprises.    The national project of ER (as a mega-region strategy), that is in the process of policy formulation, and the former administration's innovative cities and enterprises cities for balanced national development (BND) is the 'opportunity' to local regions and the Republic of Korea, because both pursue the efficient and effective 'networking' of regional economic institutions, firms, infrastructures, and innovation capacities.    Since the motivation for 'capital earnings in hand' is usually stronger than the motivation for 'expanding social or economic networks to increase the possibility to

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accumulate capital,' this opportunity would be attractive since the unemployment rate of Korean young people (age 16 to 26 [or to 29 in consideration of three-year military serving period]) has been mostly more than 10 percent (or twice than the rate of age 16 to 64) since the IMF crisis.   The national employment rate, which excludes 'economically inactive population,' is much lower than its labor force participation rate. The settling down then would contribute to the gradual expansion of economic and social networks.   The negative 'accumulation' of such "highly-educated" unemployment – e.g., about 80 percent of high school students enter colleges every year – could be an opportunity to accumulate the economic and social networks of local regions.   A strategy to pursue to simultaneously increase the employment of such potential labor force and government expenditure in 'public' services, health, and welfare (or education) sectors, which are the lowest among 30 OECD countries, will also help boost national and local economies as well as services and manufacturing sectors do.   For instance, the 'employment coefficient' in the Bank of Korea's (2007b) interindustry tables for 2003 showed much higher values for social services (30.8) and (public and private) education and health (21.7) than the average of total industries (16.9).   As of 2007, in the presence of the low employment (rate) of the younger people (especially in the SMA), the labor productivity (GDP per hour worked in current US dollars) of South Korea is ranked 27th among OECD countries.

Last but not least, it may need to recall the nation-wide needed change in educational systems began to be tried in the 1970s and people subverted its effects (private after-school firms and tutors) and the universities still chose candidates that underscored the existing economic and elite networks.   Thus, if that path is not

available, the government needs to consider what other 'tactics' or approaches could be considered. The following is a recommended tactic and approach that this dissertation would make for future research underscoring the limited success of any efforts at social engineering and the obvious impact of social engineering on individual freedoms.

First, a supervisory system to prevent the possible formation of the 'informal' business linkages between university CAOs and (private) after-school firms, tutors, or parents is needed. Although the CAO program has a good purpose, it can be misused as a useful means for getting involved in a 'self-reinforcing' (rather than 'innovative') inner circle of future young leaders. Those linkages are undesirable since they can distort and decrease an incentive for the "fair" competition to facilitate individuals' socioeconomic advancement and contribution to society.

The necessity of such tactics as above can also be found in other countries' experience. In the United States, for instance, the experimentation with affirmative action has had some effects on who is in power but no real effect on the institutions that become the conduits to power (President Obama is a graduate of Harvard University, for example). America's efforts might not have greatly changed social networks, as there has been the less real change in the universities judged to be the apex of economic networks. The listings of the leading public and private universities in the United States today (e.g., almost corresponding to the doctoral/research universities according to the Carnegie classifications) could illustrate the difficulty in changing social networks as that list has not changed appreciably across the past several decades despite numerous investments and programs that would appear to have included a level of social engineering.

Second, each region is recommended to develop their own "sticky" (Markusen, 1996) programs and systems to attract economic and social networks in increasingly "slippery space" where "individual" capital and labor become increasingly mobile. Although social networks are integrally bound into the primate growth-pole regions (especially into the SMA), a critical mass of each local region's efforts to explore, develop, and enhance their own or inherited social and cultural capital is needed so that (young) people can (re-)settle down in (or at least not leave) their hometowns. For instance, in order to make a cultural inheritance embedded in the locality and foster the community's engagement in improving pedestrian-oriented amenities, Sangju City in Gyeongbuk opened the Museum of Bicycle in 2002. This "bicycle" city is developing and promoting a cultural and social capital based on its natural advantage of a 'flat' and 'environment-friendly' landscape. Such an un-measurable effect of cultural and social capital is an invaluable component for assisting or facilitating local economic development. As the role of urbanization economies – which emphasize the external effects from co-locating diverse industries, production factors, and (socioeconomic) networks "in a city" – increases, the distribution of economic and social networks over space would be "rough and uneven" (Feiock et al., 2008) rather than "flat" (Friedman, 2005) or "spiky" (Florida, 2005). The literature has focused on the social capital (or network) as a means for economic development. However, the detailed practices – which can facilitate the 'positive' cumulative causation of economic and social networks based on the existing natural or cultural advantage in a "locality" of (networked mega-region) urbanized areas – are needed. Such an enlarged scope of agglomeration economies would be firmly built up based on each region's educational

and cultural efforts programs to enhance intra- and inter-community (or bonding or bridging) capital.

The recommendations above are not the efforts to "unpack" Seoul as a growth-pole region and to diminish its status as one of the world cities of Asia. Some can fear that an outcome of that seemingly "unpacking" nature would tarnish the country's economic image. The recommended orientations and strategies aim at "efficiently and effectively networking" economic and social capital across the nation, not "equally unpacking" of Seoul's existing advantages. Balancing that, of course, is also the reviewed literature which focuses on the long run consequences for any country of income disparities between regions. Hence the policy issue may well be to balance the maintenance of a world-class city with the need to insure social stability through policies that reduce regional economic disparities. The political tension that exists in the United States between its coasts where its world class cities lie and the interior of the country (e.g., the so-called Blue/Red state divide, the divide between private and public schools, etc.) is also one such consequence of "disuniting."

Utilizing the cohort-residual method, the KNSO (2009) forecasted that the median age of South Korea will be 56.7 in 2050 while the average of OECD countries will be 45.6 (Asia: 40.2; World: 38.4) and its population will decrease from more than 48 to about 42 millions (from 73 to 67 in the Korean peninsular). The net migration in local regions is mostly negative as in Figure 1-3, and the (brain) drain of local youth has increased: especially, the twenties are the 65 percent (Jeolla) of and the 57 percent (Gyeongsang) of out-migration between 1997 and 2006. While political leadership focuses on consolidating the (local) political base, these phenomena will increasingly

threat Korea's socioeconomic future "nationwide." The suggested policies and programs in this dissertation might initiate the changes needed to help provide greater balance and (long-run) prosperity in economic development. Without changes of this magnitude, the data in this dissertation suggests the Republic of Korea's primate growth-pole region will continue to dominate and the potential for instability associated with regional imbalances in income will persist.

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APPENDIX A. The Selection Criteria of South Korea's 31,852 Elites in the Study

## 1. Top-Class People

| Category | Profession/Occupation | Top-Class People |
|---|---|---|
| Politics | Party Member | Party President, Representative, Vice-President, Secretary General, Executive Secretary, Policy Committee Chair |
| | Congressperson | Congresspersons in the Seventeenth Regular Session (2004-2008) |
| Public Affairs | Government Leader | President, Prime Minister, Minister, Vice-Minister |
| | Executive Official | Chief Director in the Fourth Rank or above |
| | Head of Larger Regions | Head of Six Largest Cities (except Seoul) and Nine Provinces |
| | Head of Smaller Regions | Head of Local Regions in Nine Provinces |
| | Legislative Official | Chief Director in the Fourth Rank or Above |
| | Judicial Official | Chief Director in the Fourth Rank or Above |
| | Foreign Affairs Official | Chief Director in the Fourth Rank or Above |
| | Police Official | Chief Director in the Third Rank or Above |
| Professional Judicial Affairs | Judge | Superintendent Judge or Above in the Supreme Court and in the High Courts of Justice; Head or Above of District Courts and Family Courts |
| | Public Prosecutor | Chief Prosecutor or Above in the Supreme Public Prosecutor's Office |
| | Lawyer | CEO of Law Firms |
| Military | Army, Navy, and Air Force | One-Star Officer or Above |
| Journalism or Communication | Newsperson | Senior Reporter or Above of Nationwide Daily Newspaper Agencies; Chief Director or Above of Nationwide Daily Newspaper Agencies |
| | Broadcasting/Mass Media | Member of the Board of Directors or Above of Nationwide Broadcasting Companies and the Associated Press; Cable TV Chief Director or Above |
| | Publisher | Chief Director or Above of Larger Publishing Companies in Seoul |
| Business | Private Businessperson | CEO, CFO, CTO or Above |
| | Public Businessperson | CEO, CFO, CTO or Above |
| Finance | Financial Agency | CEO, CFO, CTO or Above |
| Education | President | Chairperson of the Board of Trustees; President of Universities or Colleges |
| Medicine | Medical Doctor | Head of General Hospitals |
| Arts | Artist | Excluded from the Top Class |
| Entertainment | Entertainer | Excluded from the Top Class |
| Sports | Sportsperson | Excluded from the Top Class |
| Religion | Religionist | Head of Religious Organizations |
| Academy/ Research | Academy | Head of Academic Institutes |
| | Researcher | Head of Research Institutes |
| Consulting | Professional Consultant | Head of the Organizations of Business Consultants, Certified Public Accountants, Tax Offices, and Law Consulting |
| Social/Welfare/ International Affairs | Social | Head of Social Organizations |
| | Welfare | Head of Welfare Organizations |
| | International | Head of International Organizations |

Note: The selection criteria follow Lee et al.'s (2006) original definitions as they were.

## 2. Second-Class People

| Category | Profession/Occupation | Second-Class People |
|---|---|---|
| Politics | Party Member | Chairperson of District Party Chapters (District Leader) |
| | Congressperson | Former Congressperson |
| Public Affairs | Government Leader | Former President, Prime Minister, Minister, or Vice-Minister |
| | Executive Official | Chief Officer in the Fourth Rank or above |
| | Legislative Official | Chief Officer in the Fourth Rank or Above |
| | Judicial Official | Chief Officer in the Fourth Rank or Above |
| | Foreign Affairs Official | Chief Officer in the Fourth Rank or Above |
| | Police Official | Chief Officer in the Third Rank or Above |
| Professional Judicial Affairs | Judge | Judge in the Supreme Court and in the High Courts of Justice; Head or Above of District Courts and Family Courts |
| | Public Prosecutor | Prosecutor in Public Prosecutor's Offices |
| | Lawyer | Lawyer |
| Military | Army, Navy, and Air Force | Field-Grade Officer |
| Journalism or Communication | Newsperson | Director or Above of Nationwide Daily Newspaper Agencies |
| | Broadcasting/Mass Media | Executive Director or Above of Nationwide Broadcasting Companies, the Associated Press, or Cable TV Companies |
| | Publisher | Executive Director or Above of Larger Publishing Companies in Seoul |
| Business | Private Businessperson | Executive Director or Above |
| | Public Businessperson | Executive Director or Above |
| Finance | Financial Agency | Executive Director or Above |
| Education | Professor | Assistant Professor or Above of Universities or Associate Professor or Above of Two-Year Colleges |
| Medicine | Medical Doctor | Department Chair of General Hospitals |
| Arts | Artist | Artist with Prizes or Representative Works |
| Entertainment | Entertainer | Entertainer with High Popularity or Representative Works |
| Sports | Sportsperson | Head of Sports Organizations, Sportsperson with Prizes in Big Games |
| Religion | Religionist | Chief Officer or Above of Religious Organizations |
| Academy/ Research | Academy | Chief Officer of Academic Institutes |
| | Researcher | Chief Officer of Research Institutes |
| Consulting | Professional Consultant | Business Consultants, Certified Public Accountants, Tax Offices, and Law Consultants |
| Social/Welfare/ International Affairs | Social | Chief Officer of Social Organizations |
| | Welfare | Chief Officer of Welfare Organizations |
| | International | Chief Officer of International Organizations |