

The Effect of City-County Consolidation in South Korea

by

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Abstract

In 1994, the South Korean central government initiated a massive merger of city and county governments, and during the next two years, a total of 40 consolidated cities were established. Following the city-county consolidations, there has been significant debate regarding whether the local mergers achieved the desired effect. This study seeks to determine whether the technical efficiency of the consolidated governments improved following the mergers, whether their financial status improved, and whether the disparities between the urban and rural areas were reduced.

The literature review in this study identifies the most significant literature and the most prominent theories pertaining governmental size and boundary. It also highlights local governmental consolidation studies previously conducted in both the U.S. and South Korea. Finally, it describes the South Korean local governmental structure, and discusses the process of the city-county consolidations that took place in South Korea from 1994 through 1995.

To facilitate the research and analysis related to the city-county consolidations in South Korea, this study has identified and tests the following three hypotheses:

- H1: The technical efficiency of consolidated governments improved following the city-county consolidations.

•H2: The financial status of consolidated governments improved following the city-county consolidations.

•H3: The disparity between urban and rural areas was reduced following the city-county consolidations.

Data Envelopment Analysis (DEA), pooled regression, and a mailed survey are employed to test the three hypotheses. SPSS version 21.0, DEA-Solver, and STATA are used as the analytical tools.

The research findings reveal that the South Korean city-county consolidations did not lead to an increase in the technical efficiency of consolidated government, they did not result in governmental savings or improved fiscal capacity, and they did not reduce the disparity between the urban and rural areas. Based on these findings, the study concludes that the city-county consolidations in South Korea seem to have been unsuccessful.

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Table of Contents

Abstract.....	ii
Acknowledgement.....	iv
List of Tables.....	x
List of Figures.....	xii
Chapter I Introduction: South Korean Decentralization and Consolidation.....	1
Overview of Significant.....	1
The South Korean Local Government Structure.....	5
City-County Consolidation in South Korea.....	9
Research Questions.....	17
Methodology.....	18
Summary.....	19
Chapter II Literature Review.....	21
Optimal Size of Government.....	25
Theories Favoring Small and Less Integrated Government.....	25
Theories Favoring Large Government.....	33
Benefit & Drawbacks of Large Government and Small Government.....	41
Discussion of Consolidation Pros & Cons.....	43
The U.S. Experience.....	44

The South Korean Experience.....	49
Impact of South Korea City-County Consolidation.....	53
Increasing Efficiency.....	53
Improving Financial Status.....	54
Reducing Disparity between Urban and Rural Areas.....	55
Summary.....	56
Chapter III Methodology and Approach.....	58
Research Design.....	58
Technical Efficiency.....	59
Financial Status.....	62
Reduction of Disparity Between Urban and Rural Areas.....	65
Methods of Analysis.....	70
Data Envelopment Analysis (DEA).....	70
Pooled Cross-Sectional Time-Series Regression.....	72
Survey.....	73
Chapter IV Findings and Analysis.....	76
Technical Efficiency.....	76
Population Growth.....	77
Change in the Number of Public Employees.....	82
Change in Total Expenditures per Capita.....	87
Change in the Amount of Local Taxes Collected.....	91
Change in Technical Efficiency.....	96
The Effect of City-County Consolidation on	

Technical Efficiency.....	106
Financial Status.....	107
Total Expenditures and General Administrative Expenditures.....	108
South Korean Central Government’s Financial Support for Consolidated Governments.....	110
Fiscal Self-Reliance Ratio.....	114
Reduction of Disparity Between Urban and Rural Areas.....	116
Characteristics of Respondents.....	116
Factor Analysis and Reliability.....	118
Reduction of Disparity Associated with Governmental Services.....	121
Reduction of Disparity Related to Education.....	123
Reduction of Disparity Related to Economic Development.....	125
Reduction of Disparity Related to the Provision of Public Facilities.....	128
Determinants of Disparity Between Cities and Counties.....	130
Summary.....	132
Chapter V Conclusion.....	135
Summary of Tests Hypotheses.....	136
<i>H1: The technical efficiency of consolidated governments improved following the city-county consolidations.....</i>	137
<i>H2: The financial status of consolidated governments improved following the city-county consolidations.....</i>	139
<i>H3: The disparity between urban and rural areas was reduced following the city-county consolidations.....</i>	139

Conclusions and Recommendations.....	140
Limitation and Future Directions.....	143
References.....	145
Appendix.....	156

List of Tables

Table 1	South Korean Local Governments (Types and Quantity).....	8
Table 2	1995 South Korean Consolidation Candidates.....	12
Table 3	Results of the 1994 Municipal Referendums.....	14
Table 4	City-County Consolidations Accomplished by 1995.....	16
Table 5	Optimal City Size Based on Urban Economics.....	35
Table 6	Input and Output Factors for Data Envelopment Analysis.....	60
Table 7	Summary of Variables Used.....	69
Table 8	Survey Questions.....	74
Table 9	Average of Population of 40 Consolidated Cities, 1996-2009.....	77
Table 10	Population Following City-County Consolidation.....	79
Table 11	Average Number of Public Employees (per 1,000 Population) for the 40 Consolidated Cities, 1996-2009.....	83
Table 12	Number of Public Employees (per 1,000 population) for the 40 Consolidated Cities, 1996-2009.....	84
Table 13	Average Total Expenditures per Capita for the 40 Consolidated Cities, 1996-2009.....	87
Table 14	Total Expenditures per Capita Following City-County Consolidations, 1996-2009.....	89
Table 15	Average Amount of Local Tax Collected per Capita for the 40 Consolidated Cities, 1996-2009.....	92

Table 16	Amount of Local Taxes Collected per Capita Following City-County Consolidations, 1996-2009.....	93
Table 17	Average Efficiency Score of 40 Consolidated Cities and the Number of Efficient Consolidated Cities, 1996-2009 (Based on the CRS DEA Model).....	98
Table 18	Efficiency Scores of 40 City-County Consolidated Cities, 1996-2009 (Based on the CRS DEA Model).....	100
Table 19	Change in the Average Efficiency Score for the 40 Consolidated Cities and the Number of Efficient Consolidated Cities, 1996-2009 (VRS DEA Model).....	102
Table 20	Efficiency Scores of the 40 Consolidated Cities, 1996-2009.....	104
Table 21	Effect of City-county Consolidation on Technical Efficiency.....	107
Table 22	Effect of City-County Consolidations on Total Expenditures and General Administrative Expenditures.....	109
Table 23	Effect of City-County Consolidation on the Central Government's Financial Support to Consolidated Governments.....	113
Table 24	Effect of City-County Consolidations on Fiscal Self-Reliance Ratio.....	115
Table 25	Characteristics of Survey Respondents.....	117
Table 26	Results of Factor Analysis and Reliability Analysis.....	120
Table 27	Survey Results Pertaining to Whether There Was a Reduction of Disparity Associated with Governmental Services Following City-county Consolidations.....	122
Table 28	Survey Results Pertaining to Whether Educational Disparity Was Reduced Following City-county Consolidations.....	124
Table 29	Survey Results Pertaining to Whether Economic Development Disparity Was Reduced Following City-county Consolidations.....	127
Table 30	Survey Results Pertaining to Whether the Disparity Related to Public Facilities Provision Was Reduced Following City-County Consolidations.....	129
Table 31	Determinants of Reducing Disparity Between Urban and Rural Areas.....	132

List of Figures

Figure 1	Current Local Government Systems in South Korea.....	7
Figure 2	Optimal city size.....	34
Figure 3	Cost-Benefit Approach for Optimal City Size.....	36
Figure 4	Minimum Efficient Scale.....	38
Figure 5	Analytic Frame for Analyzing the Effect of City-County Consolidation on Technical Efficiency of Consolidated Government.....	62
Figure 6	Analytic Frame for Analyzing the Effect of City-County Consolidation on Financial Status of Consolidated Government.....	64
Figure 7	Analytic Frame for Analyzing the Effect of City-County Consolidation for Reducing Disparity between Urban and Rural Areas.....	67
Figure 8	CRS and VRS Frontiers.....	71
Figure 9	Population Change Based on City-County Size, 1996-2009.....	81
Figure 10	Number of Public Employees (per 1,000 Population) Following City-County Consolidation, 1996-2009.....	86
Figure 11	Total Expenditures per Capita Following City-County Consolidation, 1996-2009.....	91
Figure 12	Amount of Local Tax Collected per Capita Following City-County Consolidation, 1996-2009.....	96

CHAPTER I
INTRODUCTION: SOUTH KOREAN
DECENTRALIZATION AND CONSOLIDATION

Overview of Significant

In South Korea, city-county consolidation was not an issue prior to 1994 since local governments were not autonomous. With the passage of Local Government Autonomy Act in 1994, the central government recommended the consolidation of many cities and counties. Since consolidation required the passage of a local referendum in both the city and county within the same jurisdiction, only 40 cities and counties were able to achieve consolidation by 1995. The failure to consolidate was primarily due to the opposition from the residents in counties. In most cases, they thought that the current system of government was adequate and that consolidation with a large city would serve to decrease the resources and services available to residents within the county.

Consolidated cities are typically different from traditional South Korean urban cities in terms of population size, land size, and population density. At the time of consolidation, the average population of cities and counties that were consolidated was 131,428 and 78,241 respectively. The average population of a consolidated city-county today is 207,717. This is smaller than that of traditional unconsolidated city whose average population is about 273,596. As of 1995, the average land size of a consolidated

city-county was 731 km². This is 6.5 times larger than that of traditional unconsolidated cities. As a result, population density is significantly higher in the more traditional unconsolidated cities.

Following the city-county consolidations in 1995, there has been significant controversy and debate regarding whether consolidation achieved the desired effect. When city-county consolidations were accomplished in 1994 and 1995, there were numerous problems and issues. The reform occurred so suddenly that residents were excluded from the consolidation process and were not always allowed to voice their opinions and concerns. The South Korean central government intervened in the process and applied pressure on local councils through various means such as threats of reduced financial support. At that time, the South Korean central government had three consolidation goals which included balancing growth between urban and rural areas, reestablishing local identities, and forcing efficiency by reducing administrative redundancies (Hong & Cho, 1997, p.18).

The topic of city-county consolidation has received renewed interest from both academics and practitioners in recent years as many nations throughout the world are undertaking city-county consolidation. The pros and cons on city-county consolidation generally reflect two different findings. Those who favor consolidation believe governmental efficiency can be immediately improved resulting from elimination of duplication, and those who object believe the monopolies that are created inherently foster inefficiency.

Consolidation proponents make a case that metropolitan areas are characterized by a fragmentation of governmental authority and responsibility. Jurisdictions that have

not been consolidated often have service duplication, lost economies of scale, and other problems that contribute to inefficiency. To overcome such inefficiency and other problems associated with fragmentation, several contemporary studies propose governmental consolidation or regional governance as a potential solution.

Those who favor consolidation also argue that consolidated government provides the capacity and authority to address economic growth problems at a regional level, and it enhances the professionalism of the development process. Furthermore, consolidated government provides the potential for regional approaches to economic development and planning that otherwise would not be possible. This is in part because fragmented smaller governments may not have legal powers or the tax base to promote economic development. As a result, city-county consolidation is often regarded as one of the most powerful options to achieve regional governance resulting from structural boundary changes.

Theoretically city-county consolidations involve comprehensive restructuring of two or more local governments, resulting in a single governmental organization. The anticipated benefits from the consolidations include reduced costs of service delivery, clearer lines of government authority, improved accountability of elected officials, and increased regional coordination with respect to economic development.

Those who typically object to consolidation include public choice theorists who argue that city-county consolidation fails to achieve any efficiency with regard to the use of scarce resources. Public choice theorists believe that consolidation creates inefficient monopolies. The monopolistic behavior of merged governments then causes inefficiencies in the public sector much as it often does in monopolistic businesses. These

theorists also insist that consolidated governments are more likely to reduce the quality of services while taxes rise.

In recent years, both academics and practitioners have engaged in considerable debate regarding the merits of consolidation and the negatives associated with governmental fragmentation. This study provides a comprehensive analysis and serves as an authoritative source to help practitioners determine which form of government is better. It also makes a significant contribution to the literature concerning the effects of governance structure consolidation with regard to efficiency and equity.

As a result of this study, practitioners in South Korea and throughout the world who are engaged in consolidation debates will have a more realistic perspective of what outcomes can be expected from local governmental consolidation. If the results of this study provide data that supports arguments promising increased efficiency and equity are successful following city-county consolidation, then those who favor governmental merger will have credible evidence to support their point of view and seize upon the results of this study as evidence to expand local government boundaries. Furthermore, if consolidation is determined to be a worthwhile endeavor, then this study will also provide important information related to structuring of appropriate governance forms. Conversely, if the results of this study indicate that governmental consolidations are typically inefficient and unsuccessful, then opponents of city-county consolidation can use the findings as evidence to cast doubts on the utopian promises.

As indicated above, this study provides significant insights regarding the city-county consolidations in South Korea, and it will also provide a comprehensive look at the literature that is available on this topic. Scholars who study the merits of fragmented

and consolidated governments can use this study as a basis for analyzing or conducting other studies throughout the world.

City-county consolidation is an emerging trend both in the United States and in many other nations as a result of several years of global economic challenges. As a last resort for dealing with significant governmental deficits, many legislative bodies have decreed the consolidation of large and small communities, and also of other municipal and county levels of government (Leland & Thurmaier, 2010, p.307).

In conclusion, this study provides the background related to city-county consolidations in South Korea, and it also examines the processes and analyzes the effects related to city-county consolidation. This study provides comprehensive information regarding city-county consolidation in South Korea, and can be used to influence future debates in that nation. At the same time, the results of this study are based on quantitative analysis that is easily transferable and can be used in comparative studies involving proposed city-county consolidations in other nations.

The South Korean Local Government Structure

Local autonomy was established as a constitutional principle in South Korea beginning with the enactment of the Local Autonomy Act (LAA) of 1949. This act created a provincial governmental structure between the central government and the local governments. This act distinguished the components into upper-level local governments (provinces) and lower-level local governments (cities, counties, and villages).

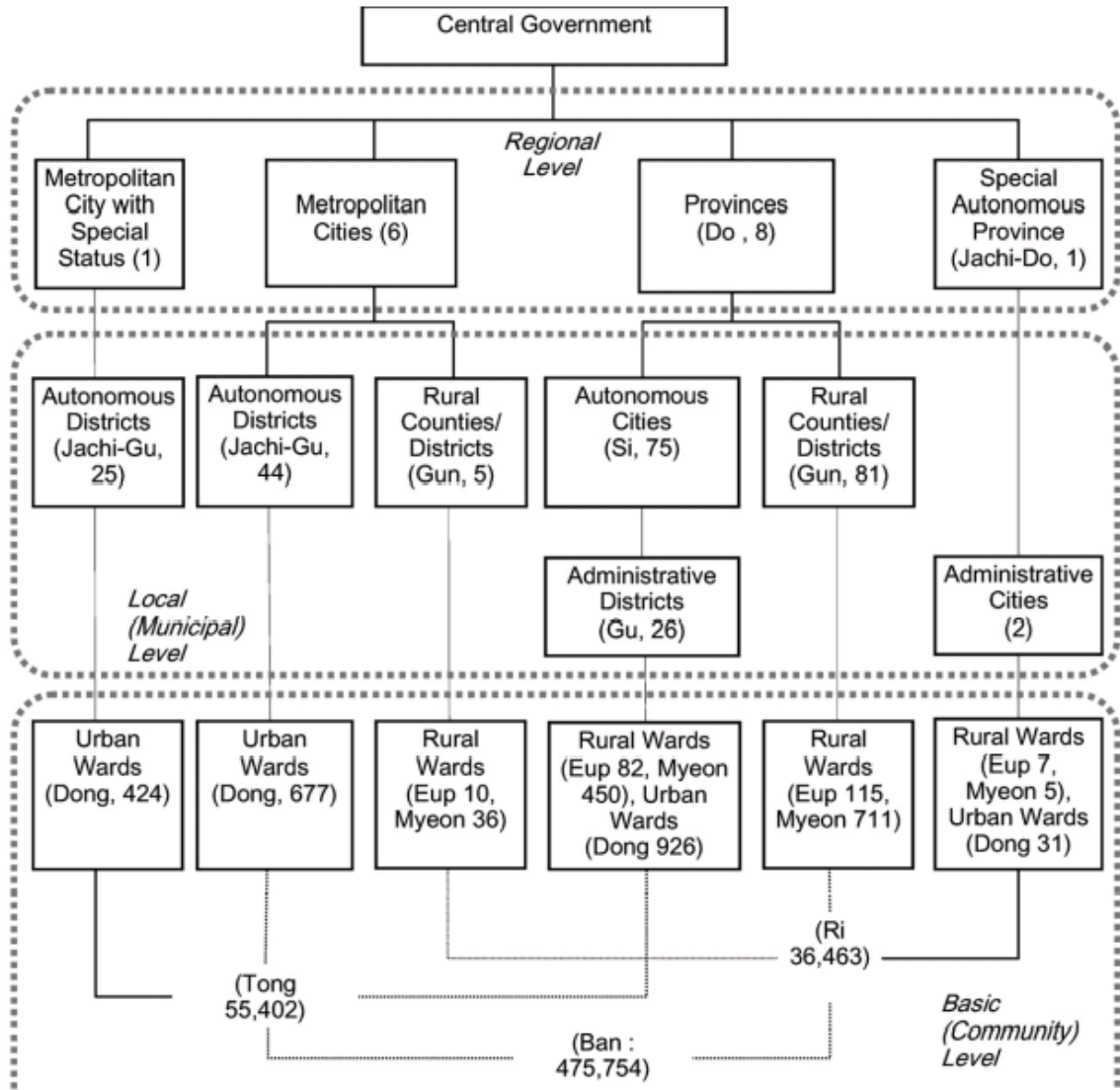
From 1965 to 1995, local governments were managed directly by provincial governments and this intermediate level was managed by the central government. The

local autonomy system in South Korea was suspended as a result of a military revolution in May 16, 1961. The Military Revolution Commission ordered modifications within the structure of the local government which included the appointment of the mayors for local governments and the mayors were selected from among the current national governmental officials. Following the city-county consolidation movement in the mid-1990s, mayors and local city council members were elected and a degree of local autonomy was restored. The current South Korean governmental structure which evolved is depicted in Figure 1.

The South Korean government is organized hierarchically along three levels: central, regional, and local (municipal) government. The administrative strata usually consist of three levels: (1) Seoul metropolitan city/ metropolitan city/province; (2) city/county/autonomous district; and (3) Eup, Myeon and Dong. The local government consists of two tiers made up of 16 regional level and 228 local (municipal) level governments.

According to the Local Autonomy Act, all residents in Korea are under a jurisdiction of the local government, either the regional level governments or local level governments. The regional governments are grouped according to four categories: a Metropolitan City with special status (there is one: Seoul), Metropolitan Cities (there are six: Busan, Dageu, Incheon, Gwangju, Daejeon, Ulsan), Provinces (there are eight: Gyeonggi, Gangwon, Chungbuk, Chungnam, Jeonbuk, Jeonnam, Gyeongbuk, and Gyeongnam), and a Special Autonomous Province (there is one: Jeju). There is a local or municipal level that includes 72 cities (known in South Korea as Si), 87 counties (known in South Korea as Gun) and 69 autonomous districts (known in South Korea as Gu) (Kim, Cho, Keum, Joo, & Kim, 2010, pp.15-17).

Figure 1
Current Local Government Systems in South Korea



Source: Official statistics of MOPAS(Ministry of Public Administration and Security, 2010)

The current provincial jurisdictions were laid out 100 years ago, and there have been no major changes except for the independence achieved by the metropolitan cities from the provinces in 1995 (Shin, 2004, p.174). The local level governmental provinces are highlighted in Table 1 below. The provinces are divided into cities (Si) and counties (Gun). Cities (Si) are typically an urban area, and the counties (Gun) are rural. Cities and

counties are the basic autonomous unit at the local level, and they are equipped with the necessary administrative organization and budget to meet the demands of its citizens within its jurisdiction. Cities and counties are governed by political representatives who include mayors and council members. The community level below a city or county is known as Eup (township), Myeon (County villages), and Dong (district). All municipalities in South Korea have administrative sub-levels, Eup and Myeon in rural areas and Dong in urban areas. Eup, Myeon, and Dong are administrative units without any political functions (Kim, Kum, & Kwon, 1998, pp.39-40).

Table 1
South Korean Local Governments (Types and Quantity)

Names	Total	Regional level	Local (Municipal) level			
			Subtotal	City	County	Autonomous district
Total	246	16	228	72	87	69
<Metropolitan City>						
Seoul	26	1	25		-	25
Busan	17	1	16		1	15
Daegu	9	1	8		1	7
Incheon	11	1	10		2	8
Gwangju	6	1	5		-	5
Daejeon	6	1	5		-	5
Ulsan	6	1	5		1	4
<Province>		8				
Gyeonggi	32	1	31	25	6	-
Gangwon	19	1	18	7	11	-
Chungbuk	12	1	11	3	8	-
Chungnam	16	1	15	6	9	-
Jeonbuk	15	1	14	6	8	-
Jeonnam	23	1	22	5	17	-
Gyeongbuk	24	1	23	10	13	-
Gyeongnam	21	1	20	10	10	-
<Special Autonomous province>		1				
Jeju	1	1	-	-	-	-

Source: Official statistics of MOPAS(Ministry of Public Administration and Security, 2010)

There are seven metropolitan cities which have a status which is equivalent to that of the provinces. The municipal government under these metropolitan cities is an autonomous district (Gu). These autonomous districts are governed by an elected mayor and council members. The administrative unit below the autonomous districts is known as a *Dong*. A *Dong* has same status and is the equivalent of a *Eup* or *Myeon* which are located below cities and counties (Shin, 2004, p.175).

City-County Consolidation in South Korea

South Korean local governmental boundary changes occurred in the mid-1990s as a result of rapid economic growth and subsequent urbanization. This resulted in a variety of spillover effects and development of regional transportation systems. Rapid urbanization was one of the most significant factors which resulted in the transformation of social structure. Since 1970s, the Korean population has been increasingly concentrated in metropolitan areas and cities. Population growth between 1960 and 2000 in the seven largest metropolitan areas increased over three fold. Their proportion of the national population increased to 49.7% in 2000 from 21.8% in 1960 (Korean Ministry of Government Administration and Home Affairs, 2001, pp.10-13).

This rapid urbanization resulted in significant local government fragmentation. After 1960s, local government administrative boundaries were frequently altered by the creation and expansion of metropolitan cities (Shin, 2004, p.176). “Urban-rural separation policies were prevalent during that timeframe. There were 24 cities at the municipal level in 1960 and this number had increased to 74 by 2001 (Korean Ministry of Government Administration and Home Affairs, 2001, p. 39).

As specified in the Korean Local Autonomy, a township with more than 50,000 inhabitants had the option to become a municipality. An administrative unit with more than one million people was entitled to become a metropolitan city (Kim, Cho, Keum, Joo, & Kim, 2010, p.8).

Local government fragmentation and the policies of the various government entities resulted in a number of problems during the early 1990s. They included a variety of issues such as social disharmony, unfavorable fiscal conditions in the rural areas that remained, the irrationality of geographic and spatial structure in these rural areas, difficulties related to comprehensive development within the various regions, inequality between cities and counties with regard to the provision of public facilities and services, increases in administrative costs, lower investment efficiencies for regional development, and the subordination of county administration under city administration (Choi & Yoon, 1993, pp.88-89).

One of the most significant factors for changing local governmental boundaries is related to the establishment of autonomous local government systems. Since the initiation of the Sixth Republic following the collapse of the military government in 1987, there has been an increasing demand for democratization among the South Korean people. In response to a public outcry from its citizens, the South Korean central government began developing plans for governmental reform at the local level.

As local demands for democracy increased, the central government felt an urgent pressure to amend the Local Autonomy Law (LAL) again on March 16, 1994. In accordance with the new amendment, the election of the mayors and local councilmen for cities and counties was held in June 1995. In the same timeframe, many politicians and

bureaucrats were in agreement that the problems caused by fragmentation of local government had to be resolved through local government consolidation, and that municipal amalgamations would be more complicated following the election of the mayors and local councilmen. As a result, the Ministry of Home Affairs produced a plan for local government boundary reform in early 1994 (Hong & Cho, 1997, pp.18-21).

The municipalities to be consolidated were selected based on a several criteria including: common regional identity shared between residents of a city and its neighboring municipality, governance efficiency focused on reducing the costs of local government management, and the existence of balanced growth between an urban location and its surrounding rural areas. As a result of the consolidations, a total of 74 municipal boundary changes were accomplished during the period from 1995-2001.

The South Korean central government had several goals with regard to the city-county consolidation program. One of the most significant goals was to reduce the disparity between urban and rural areas. Another prominent goal was to promote democracy by improving citizen governmental participation and citizen accessibility to public administration. The final goal was to improve the efficiency of local governments (Choe, 2001, pp.60-61).

With regard to the South Korean city-county consolidations, it is significant to note that the central government unilaterally planned and implemented the reorganization of local governmental boundaries. The consolidation process consisted of four stages that included the selection of locations that would be good candidates for consolidation, outreach through public hearings, development of municipal referendums, and consideration of the local council's recommendations.

The first stage involved selection of locations as candidates for consolidation. The Ministry of Home Affairs selected 60 cities and 49 counties as potential consolidation candidates in March 1994. Since that time, the governors of provinces chose 49 cities and 43 counties as potential candidates for consolidation candidate based on the criteria provided by the central government. Some cities (e.g., Anyang, Gwacheon, Bucheon, Uiwang, Siheung, Gunpo, Goyang, and Gwangmyeong) without county rural areas were excluded from the process. For unknown political reasons, other viable cities (e.g., Suwon and Hwasung) were also excluded (Kim, 2006, p.267). Table 2 below depicts the consolidation candidates.

Table 2
1995 South Korean Consolidation Candidates

Province	City, County
Gyeonggi (5 cities, 3 counties)	<ul style="list-style-type: none"> • Dongduchun(city) + Yangju(county) • Guri(city) + Namyangju(county) • Migun(city) + Namyangju(county) • Songtan(city) + Pyeongtaek(county) • Pyeongtaek(city) + Pyeongtaek (county)
Gangwon (7 cities, 5 counties)	<ul style="list-style-type: none"> • Chuncheon(city) + Chuncheon (county) • Wonju(city) + Wonju(county) • Gangneung(city) + Myungju(county) • Donghae(city) + Myungju(county) • Sokcho(city) + Yangyang(county) • Samcheok(city) + Samcheok(county) • Taebaek(city) + Samcheok(county)
Chung cheong buk-Do (3 cities, 3 counties)	<ul style="list-style-type: none"> • Cheongju(city) + Cheongwon(county) • Chungju(city) + Jungwon(county) • Jecheon(city) + Jecheon(county)
Chungcheongnam-Do (5 cities, 5 counties)	<ul style="list-style-type: none"> • Cheonan(city) + Cheonan(county) • Onyang(city) + Asan(county) • Gongju(city) + Gongju(county) • Seosan(city) + Seosan(county) • Daecheon(city) + Boryeong(county)

Province	City, County
Jullabuk-Do (5 cities, 5 counties)	<ul style="list-style-type: none"> • Eri(city) + Iksan(county) • Gunsan(city) + Okgu(county) • Jungju(city) + Jeongeup(county) • Namwon(city) + Namwon(county) • Gimje(city) + Gimje(county)
Gyeongsangbuk-Do (10 cities, 10 counties)	<ul style="list-style-type: none"> • Pohang(city) + Youngil(county) • Gyeongju(city) + Gyeongju(county) • Andong(city) + Andong(county) • Yeongju(city) + Yeongpung(county) • Gimchun(city) + Gumryeong(county) • Gyeongsan(city) + Gyeongsan(county) • Sangju(city) + Sangju(county) • Yeongcheon(city) + Yeongcheon(county) • Jumchon(city) + Mungyeong(county) • Gumi(city) + Sunsan(county)
Gyeongsangnam-Do (8 cities, 7 counties)	<ul style="list-style-type: none"> • Changwon(city) + Changwon(county) • Masan(city) + Changwon(county) • Jinju(city) + Jinyang(county) • Gimhae(city) + Gimhae(county) • Chungmu(city) + Tongyeong(county) • Samcheonpo(city) + Sacheon(county) • Jangseongpo(city) + Geoje(county) • Miryang(city) + Miryang(county)

Source: Lee, S.J. & Seo, J.H. (2009). *The reform of local government system*. Seoul:Bupmunsa. pp.75-76.

The second stage involved public hearings that were to be jointly held by provinces and municipals not later than April 1994. This form of public outreach was specified so the residents could understand the background and logic for consolidation. The intent of the public hearings was to discuss in a local forum the pros and cons of consolidation, and so the residents could hear the perspective of the local officials and politicians.

The third stage involved municipal referendums that were pushed through by the

Ministry of Home Affairs on April 25, 1994. The municipal referendums were developed based on input from the local citizens. In the affected municipalities, each household's representative was asked for his or her opinion with regard to consolidation, and was allowed to vote either in favor or against the proposed consolidation. While most municipalities accomplished the referendum through community meetings, the municipalities in Gyeongnam and Chungnam Provinces voted through a mail survey (Shin, 2004, p.183). Table 3 provides the results of these referendums.

Table 3
Results of the 1994 Municipal Referendums

Province	Household	Valid			Invalid
		Total	Agreement	Disagreement	
Total	2,833,953	2,295,069	1,791,069 (78.0%)	505,555 (22.0%)	46,254
Gyeonggi (5 cities, 3 Counties)	253,330	191,470	125,379 (65.5%)	166,049 (34.5%)	6,153
Gangwon (7 cities, 5 counties)	255,537	228,689	190,184 (83.2%)	38,505 (16.8%)	4,118
Chungcheong buk-Do (3 cities, 3 counties)	277,844	242,098	177,489 (73.3%)	64,609 (65.6%)	3,416
Chungcheongnam-Do (5 cities, 5 counties)	249,190	227,700	181,469 (79.7%)	46,231 (20.3%)	2,970
Jullabuk-Do (5 cities, 5 counties)	280,842	240,497	190,712 (73.9%)	49,785 (20.7%)	8,657
Jullanam-Do (6 cities, 5 counties)	315,426	240,078	155,870 (64.9%)	84,208 (35.1%)	4,946
Gyeongsangbuk-Do (10 cities, 10 counties)	605,064	549,241	472,056 (85.9%)	77,185 (14.1%)	11,067
Gyeongsangnam-Do (8 cities, 7 counties)	596,720	375,851	297,913 (79.3%)	77,938 (20.7%)	5,197

Source: Kim, B.K., Kum, C.H., & Kwon, O.C. (1998). *An Alternative Approach to Local Autonomous Systems: Focused on Administrative Tiers and Areas*. Seoul: Korea Local Administration Research Institute. pp.20-21.

According to the Local Autonomy Law (LAL), the vote in favor of consolidation was required to exceed 50% in order to pass. The result of the municipal referendums was that 33 cities and 32 counties met the 50% requirement and were in favor of consolidation. In several cities, the residents were overwhelmingly in favor. For example, in Mokpo 98% voted in favor, in Songtan 96% were in favor, and in Sokcho 96% favored consolidation. It should be noted that Sokcho ultimately failed to meet the criteria for merger because the residents in the neighboring county of Yangyang voted against the consolidation (Kim, Kum, & Kwon, 1998, p.18).

The fourth stage from April 23, 1994 through May 31, 1994 involved solicitation of the recommendation from the local councils. Each council was allowed to take a vote of its members and decide whether the municipalities would be allowed to consolidate. If they voted in favor of city-county consolidation, they had the option of deciding the name of the new municipality which was to be created. When the votes were cast, a total of 57 of the 65 municipal councils supported consolidation (Kim, Kum, & Kwon, 1998, p.22).

While the local reform process was underway, the national assembly prepared the legal basis for consolidation. The Ministry of Home Affairs drafted the bills for the city-county consolidated cities, and these bills were approved in national assembly meetings in August 1994 and December 1994. As a result of the new legislation, 35 of the new city-county consolidated cities were officially sanctioned and created in January 1995 (Shin, 2004, p.183). The remaining 22 that were approved by the local councils would be addressed in the months that followed and ultimately approved later that same year.

Table 4
City-County Consolidations Accomplished by 1995

City	County	Consolidated city	Population	Area	Consolidated date
Migun	Namyangju	Namyangju	307,232	460.03	1-1-1995
Songtan	Pyeongtaek	Pyeongtaek	348,502	452.26	5-10-1995
Chuncheon	Chuncheon	Chuncheon	224,747	1,116.36	1-1-1995
Wonju	Wonju	Wonju	261,076	867.62	1-1-1995
Gangneung	Myungju	Gangneung	229,876	1,039.97	1-1-1995
Samcheok	Samcheok	Samcheok	85,918	1,185.70	1-1-1995
Chungju	Jungwon	Chungju	219,429	983.97	1-1-1995
Jecheon	Jecheon	Jecheon	148,243	882.21	1-1-1995
Cheonan	Cheonan	Cheonan	386,517	636.49	5-10-1995
Gongju	Gongju	Gongju	137,250	940.63	1-1-1995
Daecheon	Boryeong	Boryeong	122,356	567.92	1-1-1995
Onyang	Asan	Asan	180,224	542.48	1-1-1995
Seosan	Seosan	Seosan	150,820	739.21	1-1-1995
Gunsan	Okgu	Gunsan	281,431	379.37	1-1-1995
Eri	Iksan	Iksan	335,677	506.98	5-10-1995
Jungju	Jeongeup	Jeongeup	150,952	692.64	1-1-1995
Namwon	Namwon	Namwon	106,440	752.12	1-1-1995
Gimje	Gimje	Gimje	121,875	545.37	1-1-1995
Suncheon	Sungju	Suncheon	266,913	907.21	1-1-1995
Donggyeong	Gwangyang	Gwangyang	136,910	445.77	1-1-1995
Naju	Naju	Naju	112,052	603.74	1-1-1995
Pohang	Youngil	Pohang	513,110	1,127.24	1-1-1995
Gyeongju	Gyeongju	Gyeongju	292,143	1,323.75	1-1-1995
Gimchun	Gumryeong	Gimchun	150,565	1,009.48	1-1-1995
Andong	Andong	Andong	187,682	1,519.17	1-1-1995
Gumi	Sunsan	Gumi	331,486	617.17	1-1-1995
Yeongju	Yeongpung	Yeongju	134,897	668.50	1-1-1995
Yeongcheon	Yeongcheon	Yeongcheon	123,265	919.50	1-1-1995
Sangju	Sangju	Sangju	129,389	1,254.96	1-1-1995
Jumchon	Mungyeong	Mungyeong	91,229	912.01	1-1-1995
Gyeongsan	Gyeongsan	Gyeongsan	209,188	411.36	1-1-1995
Changwon	Changwon	Changwon	506,330	292.71	1-1-1995
Masan	Changwon	Masan	435,345	329.38	1-1-1995
Jinju	Jinyang	Jinju	341,757	712.89	1-1-1995
Chungmu	Tongyeong	Tongyeong	134,114	235.35	1-1-1995
Samcheonpo	Sacheon	Sacheon	120,257	396.05	5-10-1995
Gimhae	Gimhae	Gimhae	322,521	463.32	5-10-1995
Miryang	Miryang	Miryang	128,397	799.04	1-1-1995
Jangseongpo	Geoje	Geoje	171,210	399.84	1-1-1995

Source: Lee, S.J. & Seo, J.H. (2009). *The reform of local government system*. Seoul:Bupmunsa. pp.80-81.

After the initial round of city-county consolidations, the Korean central government's consolidation initiative continued. The Ministry of Home Affairs sought agreements from municipalities that had failed earlier but that still had good potential for consolidation. A total of five consolidated cities were added through the municipal referendums. By May 1995, five more city-county consolidations were approved and a total of 40 consolidated cities had been established (Hong & Cho, 1997, p.19). See Table 4 for the summary and statistical information related to the city-county consolidations accomplished by 1995.

Research Questions

During the past several years, city-county consolidation has been promoted as an excellent opportunity for governmental reform aimed at improving efficiency, equity, and accountability, and as a viable solution for reducing the growing disparities between urban cities and rural counties. This study provides analytical insights focusing on whether consolidation is really a good option or whether the status quo is preferable.

The research questions addressed in this study include:

1. Do city-county consolidations increase technical efficiency of local governments in South Korea?
2. Does a city-county consolidation improve the consolidated city-county's financial status?
3. Does city-county consolidation lead to reduce disparity between urban and rural areas?
4. What are the primary determinants that influence the reduction of disparity between urban and rural areas?

Methodology

This research analyzes whether city-county consolidation promotes the city's efficiency and equity, and the study uses both qualitative and quantitative research methods to achieve the research objectives.

This study reviews the existing body of theoretical discussion by focusing on both the consolidation and fragmentation of local governments. The theories supporting city-county consolidation are primarily represented by those related to economy of scale. The theories opposing city-county consolidation are typically by those related to public choice. Both are examined and discussed in detail.

In order to measure technical efficiency and the change in its ratio, data envelopment analysis (DEA) will be employed. This method will enable the author to measure the technical efficiency of decision-making units by using input factors, such as the number of employees, revenue and expenditures. Output factors such as quantity/amount of public services, per capita recreational facilities will also be used.

To capture the effects of consolidation on the level of total expenditures, general administration expenditures and the central government's financial aid for consolidated governments, the Fixed Effects Model of pooled regression will be utilized. In this study, the two-way Fixed Effects Model will be used to analyze the panel data. The city-county consolidation effect can be differentiated based on long-term effect and short-term effect. Short-term effect is measured by comparing the before and after financial conditions. The long term effect of city-county consolidation also includes a time lag after city-county consolidation. Accordingly, this study analyzes the long term effect of city-county governmental consolidations in South Korea and focuses on the 40 South Korean city-

county consolidations that occurred in 1995. The unit of analysis is cities and counties, and the sources of data also include annual South Korean governmental statistics and local governmental financial records.

This study uses a survey to analyze the equity effects related to city-county consolidation. The survey method for this research involves the use of a single mode mail questionnaire. The survey samples the Ri-Jang (i.e., the head of the village) in both the city and county because this individual has adequate insights and governmental information that is required for a study of this nature. The survey involves a mailed questionnaire to all of the 2,433 Ri-Jangs. A total of 1,843 questionnaires were returned, and this represents an excellent response rate of 75.8%. The survey focuses on governmental enhancements in the jurisdiction and economic disparities between the citizens in the more urban cities and the rural areas within the county. The data collected from survey will be analyzed using SPSS 21.0, and multiple regression will be used as the statistical method to focus on the primary determinants related to reducing disparity between urban and rural citizens.

Summary

In conclusion, this study provides comprehensive research and analysis related to the city-county consolidated governmental mergers that were accomplished after 1994 in South Korea. As indicated earlier, the pros and cons related to city-county consolidation can be grouped into two primary camps: those who favor consolidation and believe governmental efficiency can be immediately improved resulting from elimination of duplication, and the dissenters who believe that monopolies will be created and this will

only serve to foster inefficiency.

In summary, this chapter focuses on the South Korean local government structure and describes how the South Korean local government is organized hierarchically with a central government, provincial governments, and municipal governments. There are 72 cities, 87 counties and 69 autonomous districts at municipal level. The primary motivation for city-county consolidation in South Korea was to resolve the problems caused by local government fragmentation policy from 1950s to 1980s. The goals of consolidation were to reduce disparity between the urban and rural areas, to promote democracy through increased citizen participation, and to improve local government efficiency.

This chapter also examines the process of consolidation in South Korea and provides the criteria used in selecting city-county consolidation. It highlights the final outcomes of the reform and provides summary information regarding the new city-county governments that were created.

To develop the evidence needed to resolve the ongoing debate, this study uses primarily quantitative data, but qualitative data is also incorporated as appropriate. The study is designed to analyze the effects of consolidation in terms of technical efficiency, financial status, and the reduction of disparity between urban and rural citizens. Data envelopment analysis (DEA), two-fixed pooled regression, results of a mailed survey, and multiple regression are used to test hypotheses. Various analytical tools including SPSS 21.0, DEA-Solver, and STATA are used to accomplish the statistical analysis.

CHAPTER II

LITERATURE REVIEW

During the past several decades and increasingly in recent years, governmental and urban policy literature has involved significant debate pertaining to the consolidation versus fragmentation of local jurisdictions. Individuals with a regionalist perspective advocate governmental consolidation to reduce jurisdictional fragmentation and to take advantage of economies of scale. In an opposing view, public choice theorists argue that consolidation will fail to achieve any efficiency with regard to the use of scale resources. Public choice advocates often suggest that single-unit governments are more likely to behave as monopolies, reducing the quality of services, and at the same time, increasing taxes (Thurmaier & Leland, 2010, p.273).

This review examines the contemporary literature pertaining to governmental size and consolidation. The concepts related to governmental jurisdiction and boundaries are discussed first. Following this discussion, the author will address the most significant studies and theories, including Tiebouts' hypothesis pertaining to optimal local government size, public choice theory, Oates' decentralization theorem, urban economic theory, economies of scale theory, central place theory, and other political and administrative approaches to governmental consolidation. Finally, the author will review and highlight the results of the most significant studies which focus specifically on city-

county consolidations in both the United States and South Korea.

The local governments' role in deciding who gets what services from government has increased since the devolution era at the turn of the century. Although jurisdictional boundaries have become less and less clear or relevant as a result of urbanization, communities across the world continue to experiment with mergers and the structure of local governments (Swartz, 2010, p.58).

Boundaries define the limits of those spaces that are considered important, whether for social, cultural, political, or economic reasons or some combination of these elements. Boundaries are not drawn randomly on the map and their delimitation is normally defined by those spaces that have social meaning (Storey, 2001, p. 108). As Storey (2001) points out, “these boundaries indicate territorial control, and hence, power over prescribed space” (p.16).

At the local government level, boundaries play an important role as a catalyst in the process of nation building and the delivery of services (Ramutsindela, 1998, p.291). The administrative area of local governments is the area in which the influence of governing power of the local government is exercised. The specified boundaries determine which citizens are included within a jurisdiction, and it also defines local arrangements for service provision and production, patterns of economic development, and the exercise of political power. As a result, boundary revisions which include, exclude, or dilute populations can radically alter a variety of positive or negative impacts or easily change the distribution of benefits to different groups. The space inhabited by the citizens of a local government provides identity, and the boundaries around that space help define how the economic, political, cultural, and social lives of those citizens are

organized (Feiock & Carr, 2000, p.385). Local government boundaries also play an important role in the governance of metropolitan areas by defining local electorates and tax bases. Boundaries also define the scope of local regulatory powers and service responsibilities (Savitch & Vogel, 2004, p.761).

Boundary modifications can also serve as a mechanism for local actors to facilitate improvements in efficiency. Creation or extension of boundaries can enhance the ability of citizens or groups to undertake cooperative actions and provide desired services. Groups interested in redrawing government boundaries to minimize transaction costs or to achieve efficiency gains have the opportunity to minimize "free riders" since theoretically, all citizens would share both the costs and the benefits (Feiock, Park, & Kang, 2006, p.113).

A local government boundary is defined as "the limits of locally apportioned space, creating an inside and an outside, and the territorial arenas in which power bases are constituted and in which local rule and control can be exercised" (Paddison, 2004, p.25). The social constructivist explanation of boundaries is significant in the examination of local government boundaries because of the relative frequency with which local boundary changes occur. Boundaries are a fundamental element of "place-based identities." The intensity of local identity is normally contingent on the specific institutional, political, and social geographies that define the individuality of place (Paddison, 2004, p.25).

Political boundaries are geometrically precise in contrast to de facto territories whose limits are sometimes unclear or fuzzy. The paradox is that sometimes local political boundaries are redrawn and justified in terms of making them correspond with

the geographies created by de facto divisions such as the restructuring of suburban jurisdictions in a metropolitan area to the cartographies of class division, or an attempt to revise boundaries to correspond with existing labor and retail areas (Paddison, 2004, pp.23-24).

Local governmental boundaries are continually changing due to political or social pressure for reform. Changing the area within the jurisdiction of the most basic level of government appears to be an ongoing challenge faced by many nations. It appears that no nation is immune from local government boundary problems. Simply stated, local governments around the world must govern territories that are increasingly out of sync with the economic, environmental, social, and regional demands of an ever-urbanizing world (Meligrana, 2004, p.1).

Territorial realignments of local governments may be used to absorb revenue-producing industry, attract taxable property, and shift demographic balances. Changes in local boundaries also have great strategic significance by determining the construction of new roads, utility lines, schools, and other public institutions. Boundary changes can result in modifications with regard to planning and coordination. They have also been used to gain advantages in competing for intergovernmental aid, to obtain political benefits, and even to regulate social behavior by influencing control over crime (Fleischmann, 1986, pp.71-72).

In addition to the theories related to local government boundaries, there are as many if not more that address local government organization or consolidation in terms of optimal governmental size. Local government size theories will be addressed in the section that follows.

Optimal Size of Government

The study of optimal size of local government has been widely discussed in various studies and research. Some scholars argue that local government administrative district should be relatively large to gain efficiency. This camp includes theories such as urban economic theory, economies of scale, and central place theory, favoring consolidation, the creation of larger jurisdictions and expansion of jurisdictional boundaries. Other researchers insist that local government boundaries must be relatively small to increase responsiveness to inhabitants. Theories such as Tiebouts' hypothesis and public choice theory favor the smaller local governments.

Theories Favoring Small and Less Integrated Government

The Tiebout hypothesis suggests that the differences in service provision and tax rates across regions would motivate citizens to migrate to their preferred jurisdiction. Tiebout (1956) asserts that, in economic situations where it is optimal to have many jurisdictions offering competing packages of public goods, competition between jurisdictions and the movement of consumers to jurisdictions where their wants are best satisfied will lead to near-optimal, market-like outcomes. The "consumer-voter" will ultimately pick a community which best satisfies his or her preference pattern for public goods and services (Tiebout, 1969, pp.416-424).

If there are multiple jurisdictions, and if the public services provided by these jurisdictions are only available to those who reside in that jurisdiction, and if different jurisdictions attract people with different values for the same government supplied service, then it is possible for residents to get different quantities and qualities of public

service. In other words, if there are multiple jurisdictions providing the same type of local public good, but at different levels or in different qualities, then individuals will have the ability to express their preferences by moving to that jurisdiction whose service provision best matches their demand. This hypothesis establishes the possibility that an efficient supply of local public goods can be ensured by individuals who have the opportunity to "vote with their feet" (Tiebout, 1956, p.421).

In his later work, Tiebout (1957) reiterated and stressed that complete information must be available to consumers in order for the model to work properly. He insisted that the rational market is inoperable unless the majority of citizen-consumers possess sufficient information to function as comparison shoppers and preference optimizers (Tiebout, 1957, pp.75-77).

Tiebout's hypothesis is sometimes criticized for being both idealistic and unrealistic. In the real world, there are often limitations on resident's mobility based on employment opportunities. According to Margulis (2001), the Tiebout thesis is based on an unrealistic assumption that mobility is a consequence of consumer awareness of differentiated product mixes and perceived differences in tax and expenditure rates among communities. Inhabitants often have other reasons and incentives for migration, including selecting a residence based on a combination of fiscal, family, personal and other considerations (Margulis, 2001, p.663).

Teske et al. (1993) suggested that the incremental costs of gathering information on local service tax packages are relatively low once transaction costs are overcome. For a rational quasi-market system to operate, it is not necessary for all consumers to have complete information. Teske et al. (1993) also criticize Tiebout's hypothesis indicating

that it is unusual to have a large number of communities from which to choose, and Tiebout didn't consider the congestion cost in his model (Teske, Schneider, Mintrom, & Best, 1993, pp.702-705).

Samuelson (1954) argued that the economic concept of public goods should not be confused with the expression "the public good" which is usually an ethical notion related to the goodness associated with political decision-making. He suggests that the absence of a market mechanism for public goods results in inefficient allocation in comparison to the market for private goods (pp.387-389).

Public choice theory involves the same principles that economists use to analyze people's actions in the marketplace and applies them to people's actions in collective decision making. According to Mueller (2003), "Public choice can be defined as the economic study of non-market decision-making, or simply the application of economics to political science" (p.1). He further explained that "The subject matter of public choice is the same as that of political science.... The methodology of public choice is that of economics, however" (p.1).

The public choice model insists the same rational, self-interest seeking motives that promote or encourage human action in ordinary markets may be applied to decision making in the public sector as well. The assumption that all individuals, whether in or out of government, pursue their own self-interests is the fundamental tenet of public choice. Just as consumers want to maximize their utility and firms want to maximize their profits, public policy makers want to maximize their welfare (Shugart II, 1995, pp.7-8).

In the 1950's, public choice theory originated and evolved as a distinctive field of specialization in the works of Kenneth Arrow, Duncan Black, James Buchanan, Gordon

Tullock, Anthony Downs, William Niskanen, Mancur Olson, and William Riker. Public choice has revolutionized the study of democratic decision-making processes. The focus and concerns of public choice theorists often extend into many aspects of non-market decision making, and into their studies of the state, the constitutional and democratic model, collective and party behavior and the state bureaucratic model (Pardo & Schneider, 1996, p.3).

Kenneth Arrow's impossibility theorem suggests that there is no mechanism for making collective choices, other than dictatorship, that translates the preferences of diverse individuals into a well-behaved social utility function. Since Arrow's 1951 book, a large body of literature has grown and explores the properties of social welfare or social choice functions (Mueller, 2003, p.2).

One prominent public choice theory focuses on the lack of incentives for voters to monitor government effectively. Anthony Downs (1957) pointed out that the voter is largely ignorant of political issues and this ignorance is rational. Downs demonstrated that competition among parties to win votes could have the same desirable effects on the outcome of the political process. It is commonly believed that Down's book has had the greatest influence on political scientists (Mueller, 2003, p.4).

In 1962, Buchanan and Tullock shifted the public choice perspective from the environment of parliamentary democracy as envisioned by Downs in 1957, and they reflected instead on the institutions of constitutional republicanism. In 1965, Mancur Olson initiated the discussion of interest group behavior and rational choice analysis. In 1971, William A. Niskanen started the discussion of bureaucratic behavior as it relates to rational choice analysis (Rowley, & Schneider, 2004, pp.1-2).

Public choice theory attempts to look at governments from the perspective of the bureaucrats and politicians within the institution, and makes the assumption that they act based on a budget-maximizing model based on self-interest for the purpose of enhancing their own power and influence. This theory attempts to apply economic analysis to the political decision-making process in order to reveal certain systematic trends towards inefficient government policies (Shaw, 1993, p.1).

In the past, many economists have argued that the way to rein in market failures such as monopolies is to introduce government action. But public choice economists point out that there also is such a thing as government failure. There are many documented reasons why government intervention does not achieve the desired effect (Coradato, 1980, pp.393-397).

Public choice theorists have suggested a variety of methods for correcting governmental problems. For example, they argue that if government action is required, it should take place at the local level whenever possible. Because there are many local governments, and because people have the option to "vote with their feet," there will be a naturally occurring competition and experimentation among local governments (Gwartney & Richard, 1992, pp.4-30).

To streamline bureaucracies, Gordon Tullock and William Niskanen recommended that allowing different departments to supply the same service will result in enhanced competition and will serve to improve efficiency (Ott, 1981, pp.590-592).

Ostrom was recognized for his writings pertaining to rational choice theory and democratic administration as a means for understanding bureaucratic behavior and provision of public services (Frederickson & Smith, 2003, p.279). Ostrom (1971) argued

that the mainstream of public administration theory, from Wilson through at least Simon, has been too concerned with the efficiency of the administrative process. The result has been an intellectual crisis in American public administration in which theorists and practitioners lack a clear sense of identity and the confidence to deal with the increasingly difficult problems they now face (p.205). Ostrom seeks a solution to this contemporary crisis in the work of theorists of public choice (Denhardt, 2011, p.138). The individual decision maker is assumed to be self-interested, rational, and seeking to maximize his or her own utilities. By "self-interested," Ostrom means that each individual has distinct preference that may differ from the preferences of others. By "rational," Ostrom means that individuals can rank alternative choices in transitive manner. Finally, by "maximization," Ostrom assumes a strategy in which the individual seeks the highest net benefit in any decision situation (p.205).

Economist Randal O'Toole recommended that the Forest Service should charge hikers and backpackers more than token fees to use the nation's forests. He argued this would lead Forest Service personnel to pay more attention to recreation, and it would serve to reduce logging in areas that are attractive to nature lovers (O'Toole, 1988, pp.87-93).

John Baden and Rodney Fort (1980) suggested the creation of a "predatory bureau" whose mission would be to reduce the budgets of other agencies. To provide the appropriate motivation, the annual income of the predatory bureau's employees would depend on the organization's success (Baden & Fort, 1980, pp.69-82).

Public choice theory sees citizens as consumers who are concerned largely with qualitative issues. They seek out mixtures of services and taxes which correspond to

their preferences. Public choice theorists also tend to support local governmental structures which closely approximate economic markets, allowing individuals to make choices about services, taxes and other policies. Efficiency is seen as best promoted by competition, both among individuals and among service providing units (Keating, 1995, p.117).

Public choice proponents argue that an increased number of municipalities leads to more competition, and as a result, drives down the cost of public services (Tiebout, 1956, pp.421-422). Purcell (2001) believes that “a more fragmented metropolis promotes efficiency because residents, functioning as municipal consumers, choose from among different bundles of services and tax rates that the various municipalities offer” (p.616). Purcell also suggests, as do other public choice proponents, that consumer choice with a variety of services will result in informed citizens who will have the opportunity to “vote with their feet.”

Stansel (2012) suggests that decentralized, competitive markets for local collective goods may possess higher levels of productivity and efficiency than less competitive markets for a variety of reasons, including:

- Decentralized provision of goods provides a procedure to make better use of information that is known but is dispersed across the minds of all the individuals in society.
- Competition in the market for goods and services creates stronger incentives for providers to utilize existing efficient methods of production.
- Competition also creates stronger incentives for providers to seek and discover new, more efficient methods of production (Stansel, 2012, p.247).

Accordingly, public choice theorists hold that small-scale, and fragmented local governments are more efficient than the larger consolidated governments.

Whether local public goods and services should be provided on a centralized or on a decentralized jurisdictional level is a question that has been discussed by politicians and economists for years (Hillesheim, 2010, p.29). Oates' Decentralization Theorem of 1972 is based on the fundamental assumption that a centralized or consolidated government is incapable to discriminate or provide the appropriate mix of public goods to those who live in that jurisdiction, and that a decentralized local government can better provide the opportunity to meet the requirements and local preferences. His theorem explains that the decentralization of policy provision is a trade-off between heterogeneous preferences, inter-jurisdictional spillovers, and economies of scale (Schakel, 2009, pp.2-4).

Alesina & Spolaore (2003) indicated that the decentralization theorem is centered around the idea that the optimal degree of decentralization is decided on the heterogeneity of preferences, and inter-jurisdictional spillovers (externalities) and economies of scale (p.12). According to Besley & Coate (2003), the two most important characteristics of public goods are externalities and scale effects (p.268). Schakel (2002) says the optimal jurisdictional size from a functional perspective is the one that internalizes externalities and reaps benefits of scale (p.333). According to Jeppesen (2002), perfect correspondence implies internalization of all costs and benefits (p.72).

Spillovers occur when a decision produces costs or benefits to people other than those making the decision. Scale effects arise when additional units of a good or service can be produced with relatively less input costs (Tullock, 1969, pp.191-193). The

externalities and scale effects of most policies provided by government are such that they require some degree of decentralization coupled with some centralized coordination. Hence, multilevel government should be very common and most efficient (Hooghe & Marks, 2003, pp.233-243).

The Oates' Decentralization Theorem also indicates that a central government should be responsible for stabilization and distribution problems and for providing efficient outputs to the public. When the benefits of a public good are limited to subdivisions of a specific region, a decentralized government may be superior option to a central government (Jeppesen, 2002, p.73).

The decentralization theorem suggests that a system of government with many layers of different geographical sizes is preferable to a large central government. Each local government is able to provide the public good consumed by the individuals in that region. Even though the decentralization theorem has some restrictive assumptions, it provides valuable insights into the economics of centralized or decentralized decision-making (Dollery & Crase, 2004, pp.292-294).

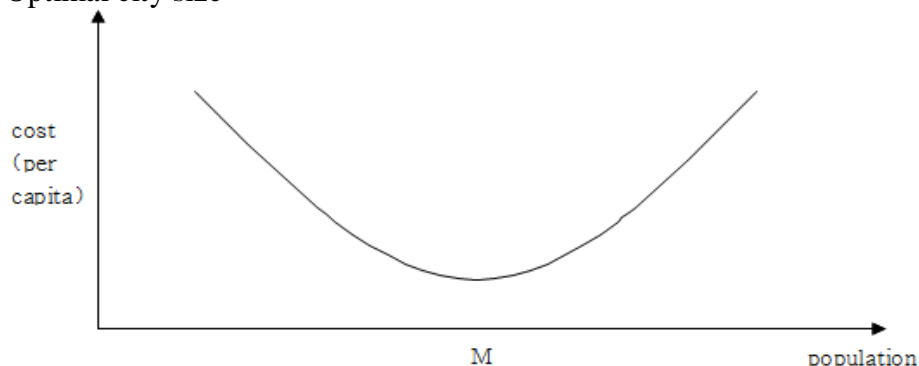
It is impossible to determine the local government size using the decentralization theorem because it is an ideal and restricted model that only exists in theory. Even so, Oates provided an insightful analysis of the various factors related to centralization and decentralization, and a point of departure for engaging in meaningful analysis and discussion.

Theories Favoring Large Government

The relationship between urban productivity and size has been studied extensively

through the years. Urban economics concentrates on the economic relationships and processes that contribute to the important spatial characteristics of urban and regional economies, especially with regard to their size, density of settlement, and structure and pattern of land use. It provides useful tools for investigating urban problems and identifying solutions. Spatial economic analysis began in earnest in 1965, and urban economics is rooted in the location theories developed by von Thunen, Alonso, Christaller, and Losch (Capello & Nijkamp, 2004, pp.3-4). Urban economic theory seeks to develop an economic scale in order to determine the lowest per capita cost in urban service. According to this theory, the optimal urban size is the population where the cost per capita to provide urban governmental services is at a minimum (see Figure 2).

Figure 2
Optimal city size



Source: Capello, R. & Camagni, R. (2000). Beyond Optimal City Size: An Evaluation of Alternative Urban Growth Patterns. *Urban Studies*, 37(9), p.1490.

Through the decades, numerous studies have been conducted based on the urban economic theory. According to Gibson (1977), the most significant and relevant studies reveal that the optimal local governmental structure can be developed to support populations that range from about 30,000 to 1,000,000 residents (p.170). Table 5

provides the name or the scholar or research center, the year the study was conducted, and the optimal population size suggested by the study.

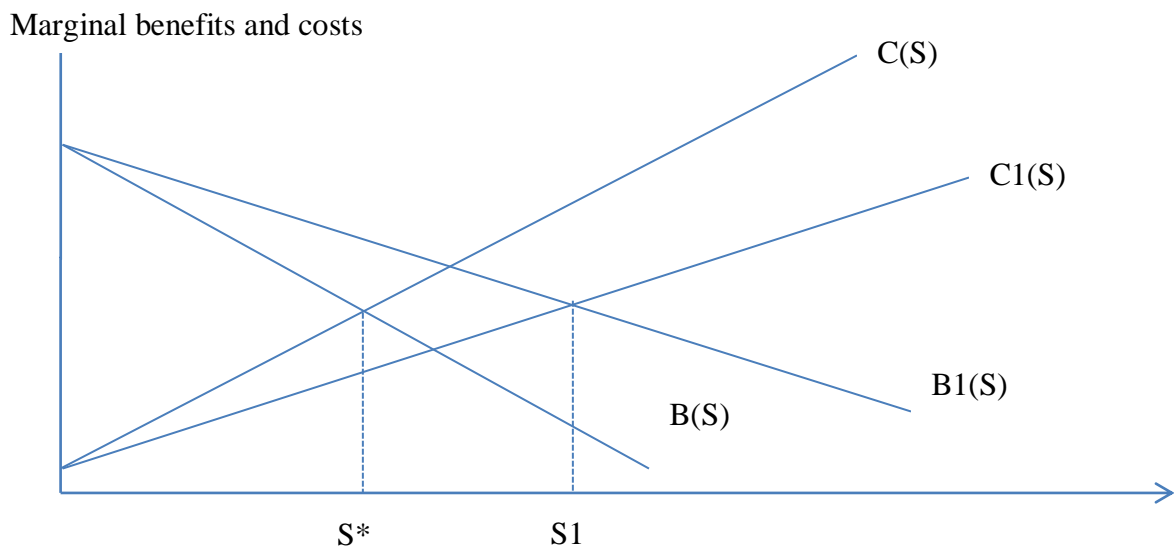
Table 5
The Optimal City Size Based on Urban Economics

Scholar or Research Center	Year	Optimal Size(Population)
Hirsch, W.Z.	1959	50,000–100,000
Lomax, K.S.	1943	100,000-150,000
Duncan, O.B.	1956	500,000-1,000,000
Clark, C.	1945	100,000-200,000
Svimez, S	1967	30,000-325,000
Royal Commission on Local Government in Greater London	1960	100,000-250,000
Redcliffe-Maud Commission	1969	250,000-1,000,000
Pinchmel, P.	1959	300,000
Driembowski, Z.	1976	100,000-200,000

Source: Gibson, J.E. (1977). *Designing the New York: A Systematic Approach*. New York: John Wiley & Sons, p.170.

Alonso (1975) developed a model showing that both benefits and costs increased with city size with the benefit curve increasing less and less and the cost curve increasing more and more. Based on this model, the optimal city size occurs when the difference between benefits and costs is maximal. The model reflects a downward sloping marginal benefit curve $[B(S)]$ and an upward sloping marginal cost curve $[C(S)]$. The point at which they intersect defines the optimal size $[S^*]$ of cities and is represented in Figure 3 (Prudhomme, 1997, p.6).

Figure 3
Cost-Benefit Approach for Optimal City Size



Source: Prudhomme, R. (1997). Urban Transport and Economic Development. *Revue Region & Development*, 5, p.6.

Several studies have been devoted to identifying the local governmental size necessary to maximize efficiency in the production and provision of local public goods. Studies have subsequently shown that phenomena such as the size and spatial dispersion of the population determine the formation of economies of scale and those of density at the local level (Bel, 2012, p.2).

The theories related to economies of scale involve the relationship between the scale of use of a properly chosen combination of all productive services and the rate of output (Sigler, 1958, p.54). In microeconomics, economies of scale are the cost advantages that enterprises obtain due to size with cost per unit of output generally decreasing with increasing scale as fixed costs are spread out over more units of output (Bel, 2012, p.5).

Baumol, Panzar and Willig (1988) indicate economies of scale can be expressed

as $S = \frac{C(q)}{q \frac{\partial C}{\partial q}}$ where S is returns to scale, C is cost, and q is output. Using this formula

and its logic, it follows that economies of scale exist as long as $S > 1$ (Baumol, Panzar and Willig, 1988, p.50).

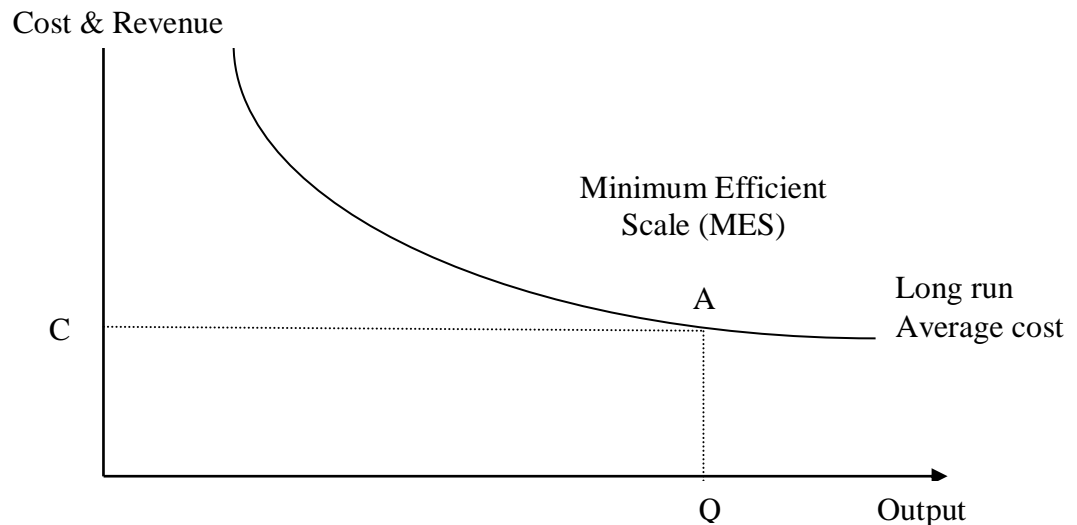
This methodology can help determine the optimal operating levels by comparing the average unit cost of different sized local governments. Economies of scale result when the local government makes the various elements of the production process operate more efficiently. This is because fixed production costs are spread over more units so the average cost of each unit is reduced.

Economies of scale can originate from either within or outside the firm. The economies of scale discussed above are all internal. Internal economies of scale reflect an increase in organizational efficiency, but external factors can cause significant disadvantages. For example, as more companies move into a geographic location, rents may rise, unemployment rates may drop, and workers may demand higher wages (Breunig & Rocaboy, 2008, pp.430-431).

Normally, there's a point at which average costs stop falling as production increases. There may also be the point at which costs start to rise as a result of this inefficiency. This point is referred to as the Minimum Efficient Scale (MES). In Figure 4, the bottom of the curve is the optimal point with the greatest efficiency. At production volumes higher than this, the firm's size is no longer an advantage. When minimum efficient scale is low, relative to the size of the whole industry, a large number of firms can operate efficiently. If minimum efficient scale can only be achieved at very high

levels of output relative to the whole industry, the number of firms in the industry will be small. This is case with natural monopolies (Lee & Seo, 2009, pp.27-29).

Figure 4
Minimum Efficient Scale



Source: Lee, S.J. & Seo, J.H. (2009). *The reform of local government system*. Seoul:Bupmunsa. p.29.

The existence of economies of scale almost seems to be taken for granted in many studies, and the assumption is often implicit in major reforms proposed for the reorganization of local services (Boyne, 1995, p.214). Economies of scale arise from the presence of fixed costs. These costs do not vary with the size of a municipality and will be higher in smaller communities. Proponents of local government consolidation argue that by consolidating units of government, fixed cost can be spread over a larger geographic area and larger population, therefore lowering the average cost of providing local government services (Faulk & Hicks, 2011, p.3).

The Central Place Theory developed by Christaller and Losch in 1933 is a

theoretical account of the size and distribution of settlements within an urban system.

Central Place Theory is based on two fundamental insights into the economics of location.

First, urban areas form an interdependent system. Second, the sizes of urban areas in an economic system depend on the interaction between scale economies and transportation costs.

In his initial 1933 study, Christaller's research question was: "are there laws which determine the number, sizes, and distribution of towns?" His study involved dividing the agricultural plain into non-competing, hexagonal, complementary regions, with a central place at the center of each. The largest central places offer all the goods that the population demands can afford and requires the collocation of facilities that sell different central goods. This in turn determines the size of the complementary region. Lower-order centers are nested within the regions of higher-order centers (Curtin & Church, 2007, p.169).

Christaller also defined the centrality of an urban center as the ratio between all services provided at that location and the services needed for its own residents. Every central place had its market area according to services provided at that location. *Central* places with lower order functions had a denser network and central places of a higher order offered services for the lower centers as well (Raagmaa & Kroon, 2005, p.205).

Based on this model and the resulting consumer preferences, a system of centers of various sizes will emerge. Each center will supply particular types of goods forming levels of hierarchy (Smith, 1986, pp.2-3). In functional hierarchies, generalizations can be made regarding the spacing, size and function of settlements. First, the larger the settlements are in size, the fewer in number they will be. This is because there are many

small villages, but only a few large cities. Second, the larger the settlements grow in size, the greater the distance between them. Villages are usually found close together, while cities are spaced much further apart. Third, as a settlement increases in size, the range and number of its functions will increase. Fourth, as a settlement increases in size, the number of higher-order services will also increase and a greater degree of specialization will occur in the services (Raagmaa & Kroon, 2005, p.208).

Using a different approach in 1954, Losch analyzed the market areas which involved firms under monopolistic competition, and he focused the location-related patterns of firms or cities. Losch compared the shapes of the various potential market areas and his analysis determined that the honeycomb is the most advantageous shape for economic regions. (Curtin & Church, 2007, p.174).

Although Christaller and Losch had different approaches to solve the same problem, a number of the findings and basic concepts that emerged from their analyses are similar. Christaller and Losch both concluded that the most efficient arrangement of market centers takes the form of a triangular lattice so that each center at the same hierarchical level has a hexagonal market area of equivalent size (South & Boots, 1999, p.158).

Central Place Theory can be used to rationalize the unusual way in which origin and destination populations enter the utility function. Larger places serve many of the same functions as smaller places and accommodate many of the higher-order functions not found in smaller locations. Therefore, the elasticity of utility with respect to trips from the smaller to the larger location might be greater than the elasticity with respect to trips from the larger smaller (Colwell, 1982, p.543).

There are at least four specific criticisms of central place theory, and since the model differs significantly from the real-world, some consider the model's assumptions unrealistic. First, the Christaller and Losch model assumes a homogeneous landscape and this is rarely the case in the real-world. Second, the model assumes a uniform geographical population distribution which is used to determine market areas for individual commodities. The third criticism is that inter-urban trade is unidirectional and this seems unrealistic in most cases. Fourth, the rigid spacing of the hierarchies is inconsistent with the uneven demand generated by different-sized urban areas (Puryear, 1975, p.308).

Benefits & Drawbacks of Large Government and Small Government

The biggest dispute related to local government size within the U.S. is between political reformers and public choice theorists. Political reformers argue that the larger local governments can increase efficiency in public service delivery, easily solve intergovernmental problems, and enhance political accountability. On the other hand, public choice theorists believe that fragmentation of local government promotes citizen participation, political efficacy, and administrative responsiveness. Neither camp will ever be 100% correct because the benefits of big government are drawbacks of small government, and conversely, the benefits of small government are drawbacks of big government.

Consolidation proponents indicated that combining local governments provides economies of scale. They advocate that larger metropolitan governments would be more efficient because they are in a better position to achieve the economies of scale and to

provide improved public services. Consolidated government is better able to compete economically by attracting high technology firms, high-quality work-force, and wealthy taxpayers (Laamanen & Haveri, 2003, p.4).

Those who favor city-county consolidation argue that fragmentation of local government makes it difficult to establish responsibility for public policy, it is difficult for small local governments to provide many specialized services, and there are duplication issues related to delivery public services such as sewage disposal and water plants. Consolidation has also been linked to social capital and civic participation (Leland & Thurmaier, 2010, p.3). Citizens are expected to have higher levels of political participation in consolidated governments. Lowery (2001) indicates that citizens will be more satisfied even when they must pay extra to receive the additional services that are provided by professional consolidated governments (p.131). Page and Goldsmith (1987) argue that one of the most important reasons why Northern European countries provide more specialized services than local governments in their fragmented Southern European counterparts is attributable to the large size of their local governments. Consolidation also seems to provide more space to interest groups representing a pluralist society (p.142). Goldsmith and Rose (2000) suggest that because larger municipalities are usually more liberal, it is easy to represent various minority groups in consolidated local governments.

On the other hand, those in favor of fragmentation of local government contend that the existence of many local governments helps increase citizen access to decision making. This in turn produces a greater sense of community and personal effectiveness in dealing with smaller units of government. Councilor and citizen contact is much closer, and politicians are more accountable to their local communities when serving in smaller

municipalities (pp.11-12). Denters (2002) argues that social trust is based on strong personal ties in small communities. Many countries are currently embracing decentralization and they are resizing local governments into a manageable size by adjusting existing boundaries (p.3). According to Shale (2005), the demarcation of local government boundaries is primarily done in order to develop areas in which people can contest local elections. It is also done so that local authorities can operate within a clearly and legally defined boundary for a better delivery of services (pp.1-12).

Proponents of small local governments favor a smaller administrative district that facilitates a collective decision making among the inhabitants with similar identities. This approach appears to have advantages since residents can receive public goods which fit their preferences. This in turn would lead to a more efficient allocation of resources. Scholars with this view insist that it is possible to realize a legitimate state of self-governance by dividing cities and counties, and also by separating districts in a city (Kim, 1999, p.328).

Discussion of Consolidation Pros & Cons

Consolidating local governments is a radical form of organizational change because it is so complete and is often difficult to reverse. Local governmental consolidation is also grounded in the progressive reform view indicating that the duplication of functions and services is inherently inefficient.

Consolidators believe metropolitan governments should be more efficient because they could achieve the economies of large-scale operations and provide improved public services. Supporters of city-county consolidation also believe that a governmental merger

fosters economic development, increases citizen satisfaction with consolidated government, and leads to equalize city and county services. However, many citizens and academics question whether consolidated local governments live up to the promises made by the politicians during consolidation campaigns.

In terms of efficiency, proponents of city-county consolidation argue that service delivery is improved by local government consolidation. Additionally, they believe that consolidation leads to greater economic development, stemming from clearer lines of communication with one single government instead of many fragmented governments. Stephens and Wikstrom (2000) indicate “the polycentric political metropolis provides the best guarantee for limiting the rise and effects of governmental monopolies, which tend to be marked by inefficiency, ineffectiveness, and a lack of responsiveness to citizens’ concerns and demands” (p.118).

The U.S. Experience

This review involves an examination of journal articles highlighting the U.S. experience with regard to local governmental consolidations between cities and counties. Blomquist & Parks (1995) reviewed the available evidence concerning Unigov’s effects on service delivery and performance, public finance, economic development, and voter participation. They argued that Unigov neither reduced the overall service provision, production, or taxing units in the county, nor did it improve central-city residents satisfaction with their local public service. The end result was that it effected a substantial redistribution of the financial base for those local services, but the consolidation failed to substantially improve services or their efficiency (Blomquist & Parks, 1995, pp.37-58).

In 1999, Carr and Feiock examined whether nine consolidated governments were successful at attracting new industrial and commercial development. Their analysis found no evidence of a link between city-county consolidation and improved local economic development. It should be noted that the study did not examine whether wages in the community improved or whether various establishments were affected differently by the consolidation (Carr & Feiock, 1999, pp.476-488).

Carr, Bae, and Lu (2006) compared economic development results in Lexington-Fayette County and Louisville-Jefferson County, Kentucky over the past half-century. They followed Carr and Feiock's studies in 1999 by examining changes in the size of the county's manufacturing, retail, and service sectors following consolidation. The findings of the study provide little support for the contention that the adoption of city-county government substantially altered the development patterns in Lexington-Fayette that existed prior to the merger of its city and county governments. They found no strong evidence of any positive economic development effect of city-county consolidation (Carr, Bae, and Lu, 2006, pp.131-141).

Feiock and Carr (1997) compared Jacksonville-Duval County, Florida with other Florida counties to examine the overall economic development effects of a city-county consolidation. They concluded that consolidation does not enhance private sector economic growth (Feiock & Carr, 1997, pp.166-171)

Benton and Gamble (1984) used time-series analysis in an attempt to determine if the consolidation of Jacksonville and Duval County, Florida led to any reduction in property taxes or a reduction in expenditures. They concluded that this city-county consolidation produced no measurable impact on the taxing and spending policies for the

consolidated municipality. They also determined that taxes and expenditures increased after consolidation (Benton & Gamble, 1984, pp.190-198).

Rosentraub (2000) reviewed the Indianapolis UniGov consolidation which transferred responsibilities for economic development to a countywide government without changing the delivery systems for most other services. He found that the extensive use of abatements and tax increment financing plans for development increased tax burdens for residents and businesses located in the old city of Indianapolis, but substantial image and economic benefits accrued within the region (Rosentraub, 2000, pp.180-191).

Selden and Campbell (2000) compared the consolidation between Athens and Clarke County, Georgia with three other comparable non-consolidated counties to examine changes in governmental expenditures after city-county consolidation. They concluded that city-county consolidation offers the potential for economies of scale or size, but governmental costs are contingent on the policy decisions of the elected commission, the management initiatives of key professional staff, and the constraints imposed on policy-makers and managers by provisions in the consolidated governments' charter (Selden & Campbell, 2000, pp.169-201)

Kristin (2006) challenged city-county consolidations on the grounds that they violated the federal Voting Rights Act by diluting minority political power. The author argued that consolidation must be undertaken with more exacting scrutiny in areas where there are stark racial and demographic differences between respective urban and suburban communities (Kristin, 2006, pp.621-699).

Condrey (1994) focused on the organizational and personnel effects of the Athens

and Clarke County, Georgia consolidation. He proposed possible strategies for building a framework to assess the potential viability of future consolidation efforts and to examine retrospectively the organizational and personnel aspects of consolidated governments. Condrey's analysis concluded that the extent to which money is saved in a merger depends on the design of the new government, as reflected both in its charter and the policy and management decisions of its elected and appointed officials. He argued that the act of consolidating will not guarantee more efficient operations despite what some of its advocates suggest (Condrey, 1994, pp.371-383).

Durning (1995) examined the impact of the consolidation of Athens and Clarke County, Georgia. This study carried out three surveys. One study was accomplished at the time of consolidation. The two others were conducted at 18 and 30 months following consolidation. The result of surveys revealed that most governmental employees believed consolidation to be inferior to the separate governments, and indicated the consolidated government was performing below their expectations (Durning, 1995, pp.272-298).

Lyons and Lowery (1989) used comparative survey data from Lexington-Fayette County, Kentucky (a consolidated municipality) and Louisville and Jefferson County, Kentucky (not consolidated) to check out five of the key individual level propositions found in the public-choice model. They said that the evidence did not support the public-choice contention that satisfaction with local services is more widely dispersed across local jurisdictions in more fragmented systems (Lyons & Lowery, 1989, pp.533-543).

DeHoog, Lowery, and Lyons (1990) analyzed the determinants of citizen satisfaction with local government by using surveys in Louisville-Jefferson County, Kentucky, and Lexington-Fayette County, Kentucky. The study found that citizens of

city-county consolidated governments had higher levels of satisfaction with government service following the consolidations (DeHoog, Lowery, & Lyons, 1990, pp.807-828).

Seamon and Feiock (1995) analyzed the political effects of consolidated government by examining the existing literature and assessing the political impacts of consolidated government in Jacksonville-Duval County. They examined voter turnout in the 15 years prior to consolidation and voter turnout during the 19 years after consolidation. They concluded that this consolidation resulted in reduced voter participation in local elections and that consolidation did not serve to increase a more active participation in government by its citizens (Seamon & Feiock, 1995, pp.1741-1752).

Martin and Schiff (2012) explored city-county consolidations, and the extent of alignment between the advantages promised by consolidation advocates and the performance of such government structures. In their article, they described how the performance of such consolidations can be evaluated on the following three dimensions: (1) efficiency in service delivery, (2) promotion of economic development, and (3) increased equity in terms of urban/suburban disparities and the impact on ethnic minority representation. The authors concluded that there is little empirical research suggesting that city-county consolidations actually increase efficiency, promote economic development, or increase equity (Martin & Schiff, 2012, pp.196-205).

As a result of the review of existing literature pertaining to U.S. city-county consolidations, several trends emerged, and it is possible to draw significant conclusions. First, based on the studies related to U.S. governmental mergers, it is unlikely that city-county consolidations achieve significant gains in efficiency. Second, significant gains in

economic development were not observed and are unlikely. Third, it is noteworthy that a majority of the studies reflected significant gains in service quality following city-county consolidations.

The South Korean Experience

Following the city-county consolidations in South Korea in 1995, the majority of academic literature has focused on whether the promises were kept, and whether the objectives were realized. The studies that were conducted have used various evaluation criteria and a wide variety of analytical methods. The results of the literature review focusing on the South Korean city-county consolidations are in the paragraphs that follow.

Hong and Cho (1997) argued that cost savings and improvement of public service provision by city-county consolidation fell short of expectations, but the benefits of consolidation on economic development and equity between urban and rural areas were realized (Hong & Cho, 1997, pp.183-186).

Boo (1998) set the following as his analysis criteria: inhabitant integration, administration, finance, and regional development. The analysis suggested that city-county consolidations contributed to a better cooperation of metropolitan administration, improved convenience for its citizens, and improved local government finance. The study also found that consolidation did improve harmony between the inhabitants nor did it result in a reduction of administrative organizations or the overall number of government personnel (Boo, 1998, pp.195-202).

Kim (1999) indicated that city-county consolidation does not promote productivity within the local government (Kim, 1999, pp.327-344). In a similar study in

a different location, Park (1999) argued that economies of scale in production were indeed achieved (Park, 1999, pp.134-152).

Park and Cho (2001) measured the efficiency of administration, responsiveness to civic needs, and the integration effect. According to their study, the cost saving effect by reducing the size of the organization and its personnel was insignificant, but the city-county consolidations had positive effects on citizen participation, local government responsiveness, and the reduction of regional disparity (Park & Cho, 2001, pp.55-77).

Kim (2000), and Lee and Min (2001) carried out Data Envelopment Analysis (DEA) studies to analyze the efficiency of city-county consolidations. Kim's research finding indicated that following city-county consolidations, the efficiency of consolidated local governments improved (Kim, 2000, pp.47-67). The following year, Lee and Min refuted Kim's finding in their comparison of consolidated local governments with non-consolidated local governments. They argued that consolidated governments did not have better efficiency than non-consolidated local governments (Lee & Min, 2001, pp.79-101).

Several of the South Korean researchers have specifically analyzed the effects of city-county consolidation in terms of finance. Kim and Jung (1996) concluded that the budget saving effect of merging between urban and rural was below expectations (Kim & Jung, 1996, pp.235-277). Bae, Lee, and Choi (2000) analyzed the difference between the revenue and expenditure structures of consolidated municipalities. They argued that the scale of local government budget and the cost of public service delivery did not decrease following city-county consolidation (Bae, Lee, & Choi, 2000, pp.139-161). Choi and Chung (2005) provided a different finding in their study. They indicated that city-county consolidation had a positive cost saving effect on public service delivery, but it doesn't

contribute to reducing regional disparity between citizens in the urban and rural areas (Choi & Chung, 2005, pp.145-173).

Park and Hong (2007) examined whether city-county consolidations had an effect on regional economic growth compared to non-consolidated regions. In the study, they examined the proportion of basic industry employment produced through economic base model. The findings suggested that the short-term economic growth effect of consolidation seems weak, while long-term effect is projected to be substantially higher. The study also concluded that economies of scale resulting from an increased population only effects short-term economic growth within the consolidated regions (Park & Hong, 2007, pp.167-197).

Yoo and Shon (2010) asserted that the best way to strengthen the effectiveness and competitiveness of local governments is to shape the policy baseline of local governments in such a way that they have a stronger policy preference for economic growth and production. They analyzed over 20 years of data using interrupted time series analysis. They concluded that the city-county consolidations were marginally successful only based on significant support from the central government and the "propaganda effect" resulting from its claims of success. They concluded that local government consolidation does not promote either efficiency or competition (Yoo & Shon, 2010, pp.285-306).

Jang and Mok (2010) analyzed effects of city-county consolidations, comparing cities that were consolidated with comparable cities that were not. They used a fixed effect model to examine the differences in the effects before and after the consolidation. The study found that the number of governmental officials and the amount of general

administration expenditures significantly decreased within consolidated cities. It also found that the number of manufacturing companies and the number of their employees significantly increased among most consolidated cities. Thus, they argued that the city-county consolidation had accomplished the intended effects (Jang & Mok, 2010, pp.363-387)

Chung and Lee (2010) analyzed the administrative cost savings effects, economies of scale effects, and regional economic development effects of the city-county consolidations. As a result of their analysis, they indicated there is evidence to support the claim of improved local economic development, but the effect of an administrative cost savings and economies of scale were not observed in the short-term (Chung & Lee, 2010, pp.57-89).

In contrast to the U.S. studies where several of the findings are consistent, the South Korean studies do not produce a similar consensus. The lack of a coherent result in the South Korean analysis of city-county consolidation effects is likely attributable to three primary factors. First, since most of studies analyzing the city-county consolidation effects are case studies, it is possible that the researcher's personal preference or bias could have been involved in selecting the case and analysis criteria. Second, most of the studies measured the effects in five to six years after or before city-county consolidation. As a result, this period was not sufficient for a longitudinal study, and there was not enough time to realize the effects or to determine whether the central government's reform goals had been achieved. Finally, it is this researcher's conclusion that some of studies used an inappropriate statistical method. For example, although the data used in several studies were panel data that have a cross-section variable and a time-series

variable, some of the researchers didn't apply fixed model or random effect model.

Impact of South Korean City-County Consolidations

South Korean local governmental boundaries were created at the end of Chosen Dynasty in 1896, and they have remained in place for approximately a century. During this timeframe, an important characteristic of the structure of South Korean government was the significant concentration of power within the central government (i.e., the federal government). As the South Korean population grew, the economical provision of services became unmanageable, and the cost of services increased and the overall quality of services decreased. High level central governmental officials determined that the centralization of services at the highest level was not an optimum model, and they initiated action to place more responsibility for governmental services at the local level. Using their existing power, central governmental officials unilaterally planned and implemented the reorganization of local government boundaries in 1994 and implementation began in 1995. The South Korean city-county consolidation initiatives had basically three goals: increasing efficiency, improving financial status, and balancing growth between urban and rural areas.

Increasing Efficiency

In South Korea, few local government boundary changes were made before 1960. After that time, many areas were classified as cities because of significant urban expansion. There were 24 cities at the municipal level in 1960, but this number had increased to 74 by 2001. Local governmental boundaries were frequently changed by the

creation and expansion of metropolitan cities. These frequent local government boundary changes resulted in significant problems with regard to managing urban and regional growth (Shin, 2004, p.176).

Although metropolitan areas are wealthier and more populated than the other rural areas, the metropolitan areas still experienced significant issues with regard to fragmentation. Fragmented local governments were inefficient because they could not take advantage of the decreased costs associated with economies of scale (Kim, Kum, & Kwon, 1998, pp.46-47). Following this study, a consensus began to emerge among the national political and planning circles, and many believed that a new local government boundary policy must be implemented in order to shift from a fragmented local governmental system to a consolidated municipal system.

This shift in opinion at the central level of government was also fostered by the notion that consolidation improves technical capacity to deliver services as the size of government increases and the increased demands require a more highly skilled work force. Consolidated governments should be able to achieve economies of scale in the delivery of services and at the same time, reduce unit costs of government services. An increase in production efficiency should be achieved through professionalization of management and administrative efficacies associated with eliminating waste and duplication (Archibald & Sleeper, 2008, pp.7-8).

Improving Financial Status

Another way to assess whether or not a local government is performing efficiently and economically is to look at financial status, including both tax collection and

expenditures. A low tax rate is a sign of government efficiency, and it sends a clear signal for attracting new businesses (Nowners & Houston, 2010, p.41).

Consolidation proponents argue that city-county consolidation leads to a savings in public service delivery costs through achieving the economies of scale and reducing general administrative expenditures. This is accomplished by removing duplicated organizations and manpower between cities and counties. The theoretical argument for consolidation is that merger can improve financial status and reduce fiscal inequalities, especially those perceived between urban central cities and their suburbs.

By 1995, although the amount of local government expenditures in South Korea had steadily grown, local public sector expenditures represented just 9.0% of the gross domestic product. Despite of the significant size of local government, the degree of local autonomy in South Korea was quite limited. The distinction of functions between the central and local governments was not clearly defined and many of the most significant policy decisions were made at the central level. The South Korea central government offered incentives and financial support gain acceptance with regard to merging cities with their host counties or with other cities. The central government announced financial incentives for the candidate localities to promote voluntarily amalgamation in 1994 (Kim & Jung, 1996, p.237). As a result, it was anticipated by many individuals at the local level that city-county consolidations would serve to improve the financial statues of the consolidated governments.

Reducing Disparity Between Urban and Rural Areas

Following the 1970s when economic development was propelled by

industrialization, the South Korean central government adapted an urban-rural separation policy. City-county separation resulted in a number of problems including social disharmony, difficulties for comprehensive development in the region, and inequality among local governments especially between urban and rural areas with regard to the provision of public facilities and services. Individuals at all levels of government and citizen in urban and rural areas generally believed that city-county consolidations would be a good option for solving these problems. Also, urban areas require more land to meet expansion requirements and this involves encroaching on nearby rural areas (Kim, 2006, p.254). The plan for government merger would also seem to solve this urban dilemma.

One of the most significant goals of city-county consolidation in South Korea was to reduce the disparity between urban and rural areas. Consolidation was viewed by many as a way to reduce inequality and income differentials in metropolitan areas (Lowery, 2001, p.131). Since central cities and suburbs are economically linked, then inter-jurisdictional inequalities can have negative consequences for the entire region. Clearly, social and environmental costs of growth are likely to cross jurisdictional lines (Savitch & Vogel, 2000, p.160). According to Rusk (1993), the problems with regard to sprawl and income redistribution are less severe when local governments are consolidated (Rusk, 1993, p.36).

Summary

This chapter has identified and addressed the most significant literature and the most prominent theories pertaining governmental consolidation. As mentioned earlier, the writings fall broadly into two major categories: local governmental boundary theory

and local governmental size theory. The most significant studies that were addressed include Tiebout's hypothesis pertaining to optimal local government size, public choice theory, Oates' decentralization theorem, urban economic theory, economies of scale, central place theory, and other political and administrative approaches to governmental consolidation. As a result of this review and the varied findings related to the optimal solutions involving fragmented or consolidated government, it is clear that consensus is lacking and additional research is required. The next chapter will highlight the governmental records and the data that are available for this research.

This chapter also reviews previous studies in U.S and South Korea that analyze the effect of city-county consolidations. Based on the U.S experience, it seems that city-county consolidation did not lead to improved technical efficiency and economic growth. In South Korea, the results are mixed. There are no consistent results in the previous research regarding whether the goals of city-county consolidation have been achieved.

In summary, this chapter describes the impact of city-county consolidation in South Korean. There were three basic goals for city-county consolidation in 1995. The first goal was to increase the technical efficiency of the consolidated governments, the second goal was to improve the financial status of the consolidated governments, and the third goal was to reduce the disparity between urban and rural areas.

CHAPTER III

METHODOLOGY AND APPROACH

The effects of city-county consolidation include technical efficiency, financial status, and equity between urban and rural areas. This analysis uses a more comprehensive research design than the other studies that have previously analyzed the South Korea city-county consolidations. The majority of the previous studies were focused on only one aspect of city-county consolidation effects and involved single case studies (Leland & Thurmaier, 2010, p.7). However, this study is more comprehensive, examining whether consolidation produces improves technical efficiency and financial status, and whether it reduces the disparity between the urban and rural populations. This study involves 40 South Korean city-counties, and as a result, considers a significantly larger number of consolidated local governments than the other existing studies. Additionally, this analysis is based on 14 years of data and will represent the first legitimate longitudinal study of the South Korean city-county consolidations.

Research Design

City-county consolidation is often considered as a good government reform that provides opportunities to promote efficiency, equity, and accountability. It can also be used to reduce growing disparities between central cities and suburbs. Promises such as

these have been made in governmental consolidation campaigns, but have these promises been kept? This study will help answer that question. The purpose of this study is to examine whether the technical efficiency of the consolidated governments is improved, to ascertain whether the city-county consolidation has improved financial status of the consolidated governments, and to determine whether the disparities between urban and rural areas are reduced. This study uses three hypotheses in order to answer the research questions.

Technical Efficiency

This study analyzes the technical efficiency of city-county consolidation that was realized in South Korea in 1994 and 1995. According to the proponents of consolidation, the main objective of the city-county consolidations was to improve the technical efficiency of local government. Therefore, the first substantive hypothesis is:

- H1: The technical efficiency of consolidated governments improved following the city-county consolidations.

In order to determine if this objective was achieved, this study analyzes the technical efficiency of 40 consolidated governments for the 14 year period from 1996 to 2009 using DEA-Solver as the primary analytical tool. This study sets multiple inputs and outputs to measure the consolidated local government's technical efficiency by Data Envelopment Analysis (DEA) as reflected in Table 6. The inputs are the "number of public employees per 1,000 population" and the "total expenditure per capita." The outputs include the "geographic size of administrative area", "water supply ratio", "percentage of population receiving welfare" (normally referred to in South Korea as

basic living security), “percentage of paved roads” (paved versus non-paved comparison), and the “amount of local taxes collected per capita.”

Table 6
Input and Output Factors for Data Envelopment Analysis

Input Factors	Output Factors
<ul style="list-style-type: none"> • The number of public employees per 1,000 population • Total expenditure per capita 	<ul style="list-style-type: none"> • Geographic size of administrative area • Water supply ratio • Percentage of population receiving welfare • Percentage of paved roads • Amount of local taxes collected per capita

Budget and manpower are two of the most important factors with regard to operating an organization. Therefore, the “number of public employees per 1,000 population” and “total expenditures per capita” are selected the as input factors.

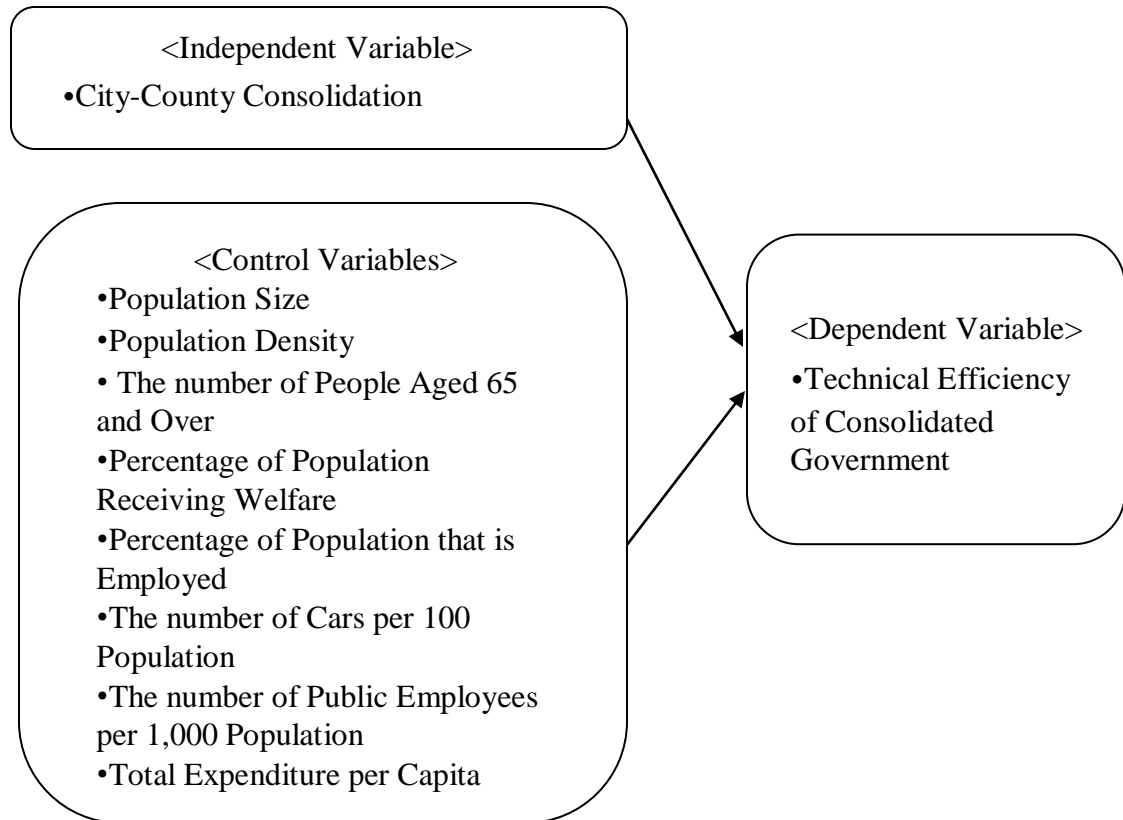
“Geographic size of administrative area” is included as an output, because the boundaries influence the magnitude of the geographic area and population, and as a result, helps determine the magnitude of local government service provision. “Water supply ratio” is employed to calculate the level of provision of a local amenity, and “percentage of paved roads” is the factor to estimate adequate social overhead capital (SOC) infrastructure. “Percentage of population receiving welfare” is employed as one of the outputs to help focus on social welfare services provided to the residents. The “amount of local taxes collected per capita” is widely used as output in DEA to measure the

economic situation in governments.

This study will help determine the city-county consolidation effects with regard to the technical efficiency of consolidated governments in the long term. It is necessary to employ control variables to calculate the pure effect as reflected in Figure 5. The control variables are “population size”, “population density”, “the number of people aged 65 and over”, and “percentage of population receiving welfare” are selected as control variables to measure the size and needs of public service delivery. “Percentage of population that is employed” and “the number of cars per 100 population” are used to control the demands of development of local government. The “number of public employees per 1,000 population”, and “total expenditure per capita” have been widely used as a measure of local government size and ability to provide services.

STATA is an excellent analytical software tool when used with panel data, and as a result, is used in this study to consider hypotheses H1 and H2. It is used to analyze the effect of city-county consolidations on the efficiency of consolidated local government. The data are collected for the period from 1996 to 2009 from the “Financial Yearbook of Local Government of Korea”, the “Municipal Yearbook of Korea”, and the “Korean Regional Statistics Annual.” The “Financial Yearbook of Local Government of Korea” contains all the financial governmental statistics and is published annually. The “Municipal Yearbook of Korea” contains census related data and is also compiled annually. The “Korean Regional Statistics Annual” is also an annual publication containing the primary statistics associated with local governments.

Figure 5
 Analytic Frame for Analyzing the Effect of City-County Consolidation on Technical Efficiency of Consolidated Government



Financial Status

This study analyzes three elements related to financial condition in order to test the following hypothesis:

- H2: The financial status of consolidated governments improved following the city-county consolidations.

The first element to be considered involves how much the local government budget has increased or decreased. Since consolidation merging multiple local governments is used to avoid duplication of administrative organizations and manpower,

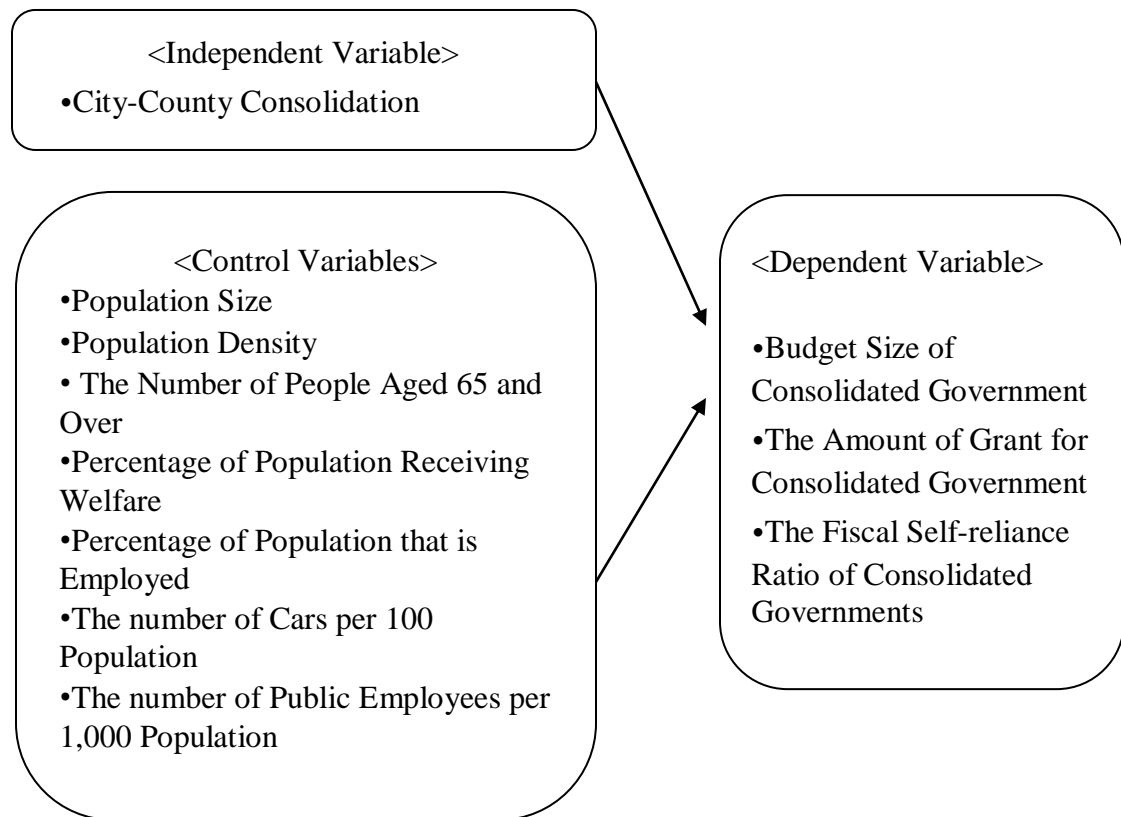
city-county consolidation is expected to provide savings with regard to the administration costs. This study analyzes the changes of expenditures of general administration and total expenditures per capita to test whether this expectation is realized.

The second element to be analyzed is whether the South Korean central government's financial support has increased after city-county consolidation. The South Korean central government suggested several areas of support and consolidation in policy to assist with the transition and improve the opportunity for success. Financial assistance was the most important incentive provided by the central government. The central government provides various types of grants for local governments, including a local shared tax (LST) to achieve horizontal equity and national minimum for public services. In addition to the local shared tax, the South Korean central government administers the national treasury subsidy (NTS), and the local transfer fund (LTF) for the efficient allocation of resources and the integration of national policies. These grants are provided for specified projects such as construction, sewage disposal facilities, and social welfare programs. This study measures whether these three types of grants for local governments (LST, NTS, and LTF) have increased or decreased following the city-county consolidations. This portion of the analysis is important in order to determine how much financial advantages are provided by the central government to the consolidated local governments as a result of conformity to central government's policy.

The third element to be analyzed involves how much city-county consolidation effects the fiscal self-reliance ratio of consolidated governments. Just prior to the city-county consolidations in South Korea in 1995, many counties had a large budget deficit. This study identifies whether city-county consolidations have created a synergy effect as

a result of merging financially sound cities and financially troubled counties.

Figure 6
Analytic Frame for Analyzing the Effect of City-County Consolidation on Financial Status of Consolidated Government



The data used to analyze the financial status of 40 consolidated governments are from the period 1995 to 2009. Pooled regression is used to analyze the consolidation effect to financial status of consolidated governments because the data are panel data. The long term effect of consolidation is analyzed by two-fixed effect model. The control variables are “population size”, “population density”, “number of people aged 65 and over”, “percentage of population receiving welfare”, “percentage of population that is

employed”, “number of cars per 100 population”, and “number of public employees per 1,000 population” as reflected in Figure 6. These control variables were selected in order to measure the pure consolidation effect in a similar fashion to the analysis of technical efficiency of city-county consolidation.

STATA, the statistical software package, is also used to analyze hypothesis H2 in this study to apply the pooled regression. The local government financial data from 1996 to 2009 was collected from the “Financial Yearbook of Local Government of Korea.”

Reduction of Disparity Between Urban and Rural Areas

Proponents of the South Korean city-county consolidations argued that governmental mergers would equalize city and county services. Thus, this study also test the following hypothesis:

- H3: The disparity between urban and rural areas was reduced following the city-county consolidations

To test this hypothesis, this study examines the disparity with regard to development between urban and rural areas and tests the hypothesis against survey data gathered from 37 consolidated local governments.

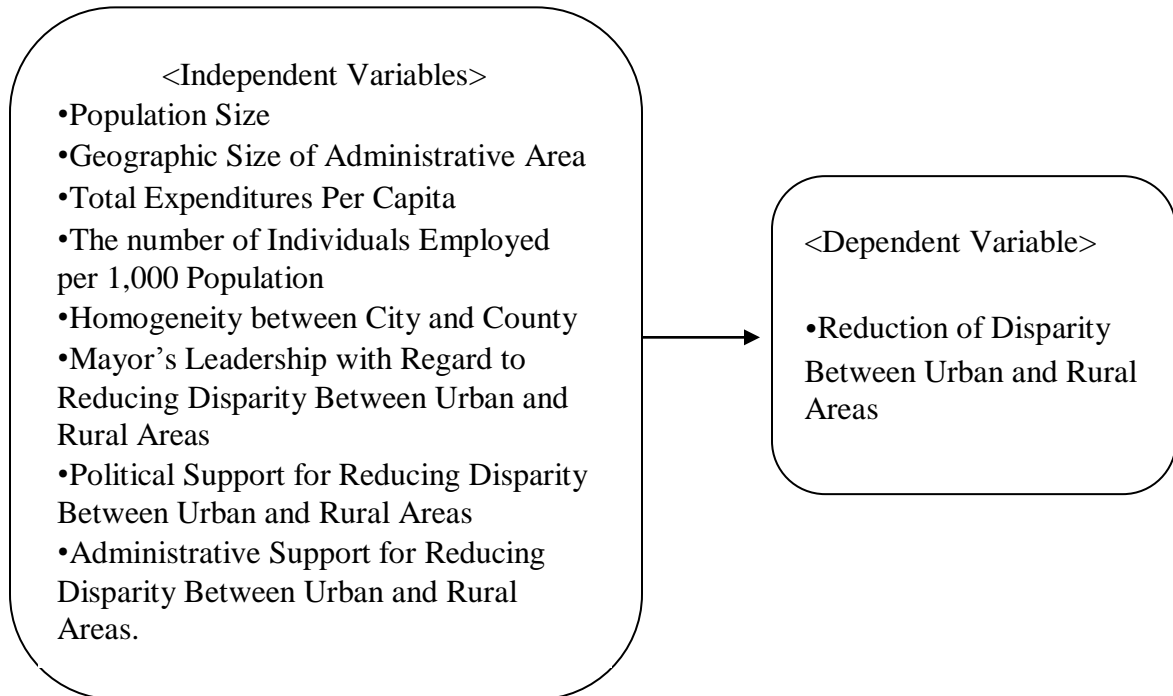
The study also seeks to find the determinants related to the effects on reducing disparity between urban and rural areas. The analytical frame is provided in Figure 7 below. In this analytical frame, the independent variables are defined as “population size”, “geographic size of administrative area”, “total expenditures per capita”, “the number of individuals employed per 1,000 population”, “homogeneity between city and county”, “mayor’s leadership with regard to reducing disparity between urban and rural areas”,

“political support for reducing disparity between urban and rural areas”, and “administrative support for reducing disparity between urban and rural areas.” “Population size” is an important factor in order to focus on the size for public service delivery of local government. “Geographic size of administrative area” is geographical range of the local government and is used as a determinant of citizen’s administrative and financial demand to local government. “Geographic size of administrative area” is the geographic area or the boundaries in which the influence of autonomous power and governing power of the local government is exercised. “Total expenditures per capita” is employed as an independent variable to represent the local government’s financial standing. The “number of individuals that are employed per 1,000 population” is selected as independent variable in order to measure the local government’s economic condition. “Mayor’s leadership with regard to reducing disparity between urban and rural areas” is employed to measure the mayor’s organizational skills to keep the political promises related to the city-county consolidations. “Homogeneity between city and county” is an independent variable used to identify the level of social capital. It refers to the institutions, relationships, and norms shaping the quality and quantity of a society’s social interactions.

“Political support for reducing disparity between urban and rural areas” and “administrative support for reducing disparity between urban and rural areas” focus on the policy implementation process of city-county consolidations. “Political support for reducing disparity between urban and rural areas” is selected an independent variable in order to examine the actions taken by the central government, congressmen, and local councils with regard to the implementation of city-county consolidation policy in order to reduce disparity between citizens in cities and counties. “Administrative support for

reducing disparity between urban and rural areas” focuses on the actions taken by the consolidated government in order to reduce disparity between urban and rural areas.

Figure 7
Analytic Frame for Analyzing the Determinants of Reducing Disparity between Urban and Rural Areas



As shown in Figure 7, the dependent variable is defined as “reduction of disparity between urban and rural areas.” In this study, disparity between urban and rural areas is related to four dimensions which include the following: governmental services, education, economic development, and public facilities provision.

The study set for hypothesis H3 includes eight independent variables to analyze the determinants of reducing urban-suburban inequalities. The data for these variables are collected from secondary sources and from a survey of residents. For four of the independent variables (i.e., “population size”, “geographic size of administrative area”,

“total expenditures per capita” and “the number of public employees per 1,000 population”), the data are from 1996 to 2009 and are collected from the “Financial Yearbook of Local Government of Korea”, and the “Municipal Yearbook of Korea” published by the Ministry of Public Administration and Security of South Korea. The remaining five (i.e., “homogeneity between city and county”, “mayor’s leadership with regard to reducing disparity between urban and rural areas”, “political support for reducing disparity between urban and rural areas”, “administrative support for reducing disparity between urban and rural areas”, and “reducing disparity between urban and rural areas”) are measured using the data derived from the survey.

The Statistical Package for the Social Science (SPSS 21.0) is used to analyze the data derived from the survey. Frequencies, multiple regression, factor analysis, and reliability tests are applied as the statistical method in this study. Using sophisticated statistical methods such as multiple regression, the researcher can use survey data to test the hypotheses and study causal relationships between variables (Czaja & Blair, 2005, pp.3-4). This study employs multiple regression to analyze the determinants of reducing disparity between urban and rural areas.

Table 7 summaries the variables used in this study. In order to analyze the effect of city-county consolidation with regard to the technical efficiency of consolidated government, this study uses two dependent variables, one independent variable, and eight control variables. To focus on the consolidation effect related to the financial status of consolidated government, this study uses one independent variable and eight control variables. Finally, to analyze the determinants of reducing disparity between urban and rural areas, this study employs one independent variable and eight independent variables.

Table 7
Summary of Variables Used

Variable	Indicator	Indicator Coding	Source of Indicator	Mean	S.D
Dependent Variable					
Technical efficiency score (CRS Model)	Technical efficiency	Ratio	Data Envelopment Analysis	90.17	10.50
Technical efficiency score (VRS Model)	Technical efficiency	Ratio	Data Envelopment Analysis	92.71	9.61
Total expenditure per capita	Budget size	Ratio	Financial Yearbook of Local Government	1,281.98	451.09
General administrative expenditure per capita	Budget size	Ratio	Financial Yearbook of Local Government	378.80	125.23
Local shared tax per capita	The amount of grant	Ratio	Financial Yearbook of Local Government	3.45	3.16
National treasury subsidy per capita	The amount of grant	Ratio	Financial Yearbook of Local Government	5.18	8.64
Local transfer fund per capita	The amount of grant	Ratio	Financial Yearbook of Local Government	0.86	0.75
Fiscal self-reliance ratio	Financial condition	Ratio	Financial Yearbook of Local Government	27.95	12.42
Reducing disparity between urban and rural areas	Equity	Ratio	Survey		
Independent Variable					
City-county consolidation	City-county consolidation	Nominal			
Homogeneity between city and county	Homogeneity	Ratio	Survey	3.47	0.29
Mayor's leadership with regard to reducing disparity between urban and rural areas	Mayor's leadership	Ratio	Survey	3.39	0.20
Political support for reducing disparity between urban and rural areas	Political support	Ratio	Survey	3.05	0.21
Administrative support for reducing disparity between urban and rural areas	Administrative support	Ratio	Survey	3.37	0.16
Control Variable					
Population size	The magnitude of service provision	Ratio	Municipal Yearbook of Korea	237.15	139.98
Population density	The magnitude of service provision	Ratio	Municipal Yearbook of Korea	423.00	371.10
The number of people aged 65 and over	Social welfare services	Ratio	Municipal Yearbook of Korea	26.76	8.81
Percentage of population receiving welfare	Social welfare services	Ratio	Municipal Yearbook of Korea	4.39	1.92
Percentage of population that is employed	Economic condition	Ratio	Municipal Yearbook of Korea	30.60	5.73
The number of cars per 100 population	Economic condition	Ratio	Municipal Yearbook of Korea	36.80	3.47
The number of public employee per 1,000 population	The ability of service provision	Ratio	Municipal Yearbook of Korea	6.04	2.60

Methods of Analysis

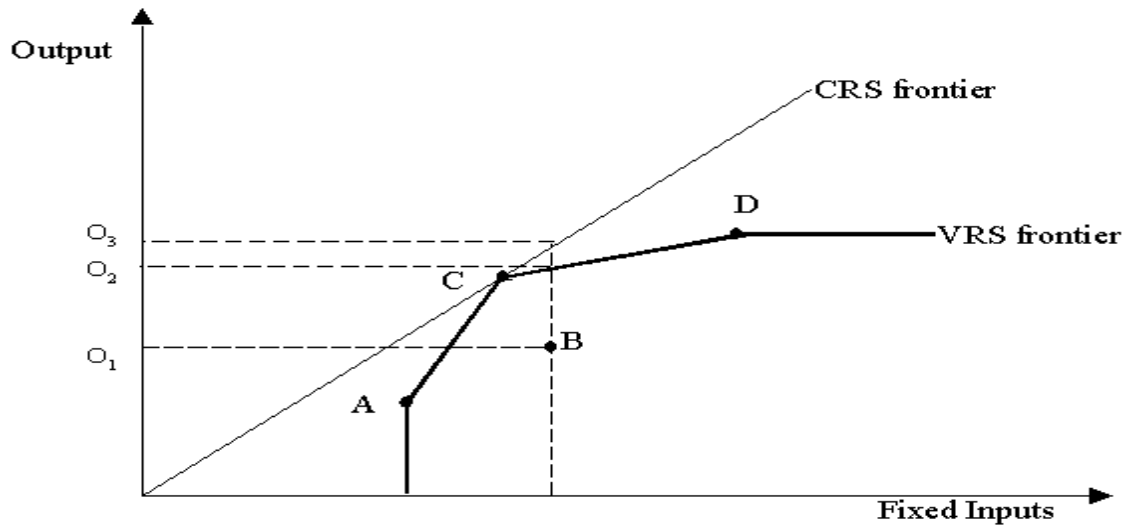
In this study, the technical efficiency of consolidated cities is measured by Data Envelopment Analysis (DEA), and the determinants of technical efficiency and fiscal statuses of consolidated governments are analyzed by pooled regression. The survey is employed to examine the effect of reduction in disparity between urban and rural area.

Data Envelopment Analysis (DEA)

This study employs Data Envelopment Analysis (DEA) to measure technical efficiency of 40 consolidated cities. DEA is a mathematical programming technique for estimating technical efficiency and capacity utilization. It is similar to stochastic production frontiers (SPF) in that it estimates a frontier level of production and measures inefficiency and capacity utilization as deviations from the frontier. Unlike SPF, however, it does not require imposing any particular functional form of the production frontier on the data (Cooper, Seiford, & Tone, 2000, p.5)

DEA is a performance measurement technique which can be used for evaluating the relative efficiency of decision-making units (DMU) in organizations. DEA has been used successively in banks, police departments, hospitals, schools, and local governments. It is difficult to evaluate an organization's performance when there are multiple inputs and multiple outputs to the system. The difficulties are compounded when the relationships between the inputs and the outputs are complex and involve unknown tradeoffs. The significant advantage with regard to DEA is that it is structured to handle multiple inputs and outputs. See Figure 8 below.

Figure 8
CRS and VRS Frontiers



Source: Cooper, W., Seiford, L.M. & Tone, K. (2000). *Data envelopment analysis: a comprehensive text with models, applications, reference and DEA-Solver software*. The Netherlands, Kluwer Academic Publishers, p.5

In the DEA methodology developed by Charnes, Cooper and Rhodes (1978), efficiency is defined as a ratio of weighted sum of outputs to a weighted sum of inputs, where the weights structure is calculated by means of mathematical programming and constant returns to scale (CRS) are assumed. In 1984, Banker, Charnes and Cooper developed a model with variable returns to scale (VRS). Variable returns means that we might get different levels of scale. CRS reflects the fact that output will change by the same proportion as inputs are changed, but VRS reflects the fact that production technology may exhibit increasing, constant and decreasing returns to scale (Pascoe, Kirkley, Greboval, Morrison-Paul, 2003, p.130). The effect of the scale assumption on the measure of capacity utilization is demonstrated in Figure 8. Both CRS and VRS models are applied to the efficiency measurement of consolidated local governments in this study.

Pooled Cross-Sectional Time-Series Regression

Pooled cross-sectional time-series regression analysis (normally referred to as pooled regression) is employed in this study to determine whether the technical efficiency was gained through the merger of urban and rural, and city-county consolidation is determinant of financial status of consolidated city. It is used because the technique captures variations across both time and space and has the advantage of increasing the number of available observations (Baltagi, 1995, p.37). Pooled regression is a good analysis tool to find how the social, economic, and institutional dimensions are effected with regard to policy outcomes. The data used in this study is a typical panel data that contains observations on multiple phenomena observed over multiple time periods for the same local government.

There are two statistical models for pooled regression, the Fixed Effect Model and the Random Effects Model. The Fixed Effects Model measures differences in intercepts for each group. The Random Effects Model leverages the differences in the variance of the error term to model groups together, assuming constant intercept and slopes. The primary difference between fixed and random effect models lies in the role of the dummy variables. If the dummies are considered as a part of the intercept, this is a fixed effect model. In a random effect model, the dummies act as an error term (Park, 2009, p.4).

Using the Fixed Effect Model, the researcher assumes that there is one true effect size in analysis, and that all differences in observed effect are due to sampling error. By contrast, using the Random Effects Model the researcher allows the true effect sizes to differ. For example, the effect size might be higher (or lower) in studies where the participants are older, or more educated, or healthier than in other studies, or when a more intensive variant of an intervention is used (Borenstein, Hedges, Higgins, &

Rothstein, 2010, pp.97-98). The Hausman specification test compares fixed effect and random effect models. If the null hypothesis that the individual effects are uncorrelated with the other regressors in the model is not rejected, a random effect model is better than its fixed counterpart (Hausman, 1978, pp.1251-1271).

In this study, the fixed effect model is employed, because the null hypothesis is rejected in all pooled regression models in this study. Also, the two-way fixed effects model of the pooled regression employed in this study is expected to control for both unit-specific (city) and time-specific (year) effects in terms of the deviation by applying a fixed effects estimator.

Survey

This study uses a survey to examine whether city-county consolidation leads to reduction in disparity between urban and rural populations. The survey method for this research involves the use of a single mode mail questionnaire sent to 2,433 Ri-jangs in the 37 consolidated cities. Three of the 40 consolidated cities (Changwon, Masan, and Jinhae) were excluded because these three cities reverted to their original governmental structure in 2010. As a result, survey data is available for only 37 cities but governmental data is available and will be used in this study for all 40 of the consolidations. The survey was conducted from the first week of August 2010, and closed on October 8, 2010, and the researcher collected survey responses from 1,843 Ri-Jangs. The response rate of 75.78% is noteworthy, and the data provide an excellent sample for analysis. A Ri-Jang is leader of a vaillabe and these individuals were selected as the sample because they have significant governmental records and insight related to policy and consolidation.

Table 8
Survey Questions

Variable	Survey Questions
Homogeneity between cities and counties following consolidation	Was there a culture of homogeneity between city and county before consolidation?
	Was your life zone (i.e., the primary area where a person lives and works) between city and county the same following consolidation as it was before consolidation?
	Was there a same historic consciousness between your city and county before consolidation?
	Was there a same economic base between city and county before consolidation?
Mayor's leadership with regard to reducing disparity between urban and rural areas	Has the Mayor made every effort to reduce disparity between urban and rural areas?
	Has the Mayor tried to resolve conflicts between urban and rural residents?
	Has the Mayor encouraged the public employee to do their best to reduce disparity between urban and rural areas?
	Has the Mayor provided an institutional strategy to reduce disparity between urban and rural areas?
Political support for reducing disparity between urban and rural areas	Has the central government kept the promises to offer incentives to reduce disparity between urban and rural areas?
	Have the national assemblymen made an effort to reduce disparity between urban and rural areas?
	Have the provincial councilmen attempted to reduce disparity between urban and rural areas?
	Have the city councilmen attempted to reduce disparity between urban and rural areas?
Administrative support for reducing disparity between urban and rural areas	Has the consolidated government implemented policies to reduce disparity between urban and rural areas?
	Has the consolidated government offered diverse events to reduce disparity between urban and rural areas?
	Has the consolidated government proposed ordinances to reduce disparity between urban and rural areas?
	Has the consolidated government provided public services to reduce disparity between urban and rural areas?
Reduction of disparity between urban and rural areas	Has the city-county consolidation reduced disparity related to governmental services between urban and rural areas?
	Has the city-county consolidation reduced disparity related to education between urban and rural areas?
	Has the city-county consolidation reduced disparity related to economic development between urban and rural areas?
	Has the city-county consolidation reduced disparity related to public facilities provision between urban and rural areas?

The questionnaire used in this study to analyze hypothesis H3 contains closed format questions. The survey consists of 24 questions relating to the four independent variables, the one dependent variable, and the respondent's background information. The independent and dependent variables are measured by four questions which are constructed as a typical Likert 5 point scale (i.e., strongly agree, agree, neutral, disagree, strongly disagree). Additionally, the survey asked citizens to provide background information including gender, age, education, and residential district before consolidation. The survey questions are provided in Table 8 above.

CHAPTER IV

FINDINGS AND ANALYSIS

This chapter analyzes the research data and provides findings pertaining to the effects and effectiveness of city-county consolidations in South Korea. The findings and analysis in this research are framed within three primary areas. They include the effects of the city-county consolidations with regard to the technical efficiency, the financial status or fiscal wellbeing of the new municipalities following the merger, and the disparity between urban and rural areas following the consolidations.

Technical Efficiency

The efficiency hypothesis H1 is based on the long-standing argument by consolidation proponents that consolidation will reduce the overall cost of government, and provide more efficient services. During and Sanford (2010) indicate that the cost of a fixed amount of services would be less if provided by a unified government than it would be if provided by separately by cities and counties (p.222). Their study examined several indicators for evidence of consolidation promises kept in the areas of efficiency. With regard to efficiency improvements, the study examined (1) population growth, (2) change in the number of public employees, (3) change of total expenditures, (4) change in the amount of local taxes collected, and (5) change of efficiency score as measured by Data

Envelopment Analysis (DEA). The efficiency improvement related to population growth is discussed in the section that follows.

Population Growth

The change in population of a consolidated city provides the scale for focusing on how much the consolidated city-county has grown or gotten smaller. If the consolidated city-county has changed significantly and is now recognized as a good place to live, the population should increase. This study analyzed the population growth of the consolidated city-county governments from 1996 to 2009. The data reveals that the total population of 40 consolidated city-county governments increased from 8,466,246 in 1996 by 875,725 to 9,485,996 in 2009 as reflected in Table 9.

Table 9
Average of Population of 40 Consolidated Cities, 1996-2009

(Unit: person)							
Year	1996	1997	1998	1999	2000	2001	2002
Population	8,266,245	8,598,246	8,745,804	8,993,438	9,079,984	9,141,881	9,176,844
Annual Change	-	132,001	147,558	247,634	86,546	61,897	34,963
Year	2003	2004	2005	2006	2007	2008	2009
Population	9,166,834	9,202,711	9,235,468	9,337,140	9,357,409	9,449,432	9,485,996
Annual Change	-10,010	35,877	32,757	101,672	20,269	92,023	36,564

Source: Municipal Yearbook of Korea

Although the total population of 40 consolidated cities has increased (see Table 10 below), the number of consolidated cities with an increased population was less than the number of consolidated cities with a decreased population. A total of 26 cities

experienced a population loss over time, and only 14 cities increased in population following the city-county consolidation. The significant gains in overall population are as a result of a sharp population increase in only a few major cities.

Pyeongtaek, Namyangju, Wonju, Cheonan, Asan, Seosan, Suncheon, Gwangyang, Pohang, Gumi, Gyeongsan, Changwon, Gimhae, Geoje are the cities where the population has increased after city-county consolidations. The primary characteristic of the cities that experienced a population increase is that the cities involved are satellite cities of the Seoul and Busan metropolitan areas. These two cities have a large-scale industrial complex, and the population increases seem to be due to this factor.

With regard to the percentage of population increase, the city that shows the highest percentage of population increase among the 40 consolidated cities is Namyangju. It experienced a 112.8% increase. This city-county is a satellite city on the outskirts of Seoul. Gimhae experienced the second highest increase at 84.9%, and it is a satellite city of Busan. The remaining cities with the highest percentage of population increases are Cheonan (63.6%), Asan (56.4%), and Geoje (44.5%). All three have large national industrial complexes nearby.

Table 10 reveals that Namwon (-41.1%), Sangju (-20.8%), Samcheok(-20.7%), and Mungyeong (-20.7%) experienced a significant loss of population exceeding 20%. These four cities are typical rural areas where agriculture is the primary economic activity. The majority of the workforce is employed in subsistence farming and fishing. As a result, there is no expectation that there would be a positive change in population following the city-county consolidations, and in fact, the opposite is true.

Table 10
Population Following City-County Consolidation

(Unit: Number of Individual Residents)

City	1996	1997	1998	1999	2000	2001	2002	2003
Pyeongtaek	322,637	337,437	348,012	348,502	354,270	359,073	361,992	362,507
Namyangju	237,761	254,688	279,681	307,232	335,271	359,388	376,231	394,202
Chuncheon	233,016	236,303	240,883	244,747	249,075	251,991	252,019	253,532
Wonju	238,027	245,398	255,259	261,076	265,833	270,891	275,217	277,987
Gangneung	223,775	224,513	226,014	229,876	232,575	233,812	232,664	230,714
Samcheok	90,043	87,370	86,103	85,918	84,606	82,255	79,862	77,555
Chungju	213,353	215,728	218,457	219,429	219,378	218,098	216,036	212,875
Jecheon	146,324	147,396	148,259	148,243	148,453	148,308	145,317	143,655
Cheonan	334,800	352,294	373,392	386,517	406,052	425,135	436,708	445,485
Gongju	138,202	137,906	136,877	137,250	137,104	135,931	134,383	133,012
Boryeong	123,023	122,089	121,917	122,356	120,889	118,721	116,546	113,671
Asan	158,737	167,286	176,781	180,224	181,786	185,847	188,372	193,188
Seosan	142,331	146,187	149,785	150,820	151,021	150,329	150,504	148,697
Gunsan	276,263	278,626	281,437	281,431	280,400	278,577	277,680	273,086
Iksan	328,490	330,010	332,493	335,677	337,436	336,651	337,240	331,462
Jeongeup	150,777	150,777	150,822	150,952	151,665	152,574	152,452	153,325
Namwon	151,353	108,368	107,323	106,440	104,704	103,783	104,198	109,876
Gimje	109,224	125,755	122,985	121,875	118,811	116,211	115,683	100,677
YeoSu	329,722	326,942	324,217	324,123	323,584	322,875	320,507	316,142
Suncheon	251,316	257,847	264,706	266,913	268,204	270,698	272,124	271,636
Naju	116,322	115,072	112,735	112,052	110,501	108,962	106,431	103,452
Gwangyang	129,177	131,306	132,444	136,910	138,267	138,097	138,468	138,162
Pohang	510,867	512,299	512,953	513,110	514,523	517,250	516,576	513,424
Gyeongju	284,230	288,999	292,173	292,143	292,480	291,409	288,915	285,900
Gimchun	151,807	151,109	150,876	150,565	151,969	150,684	151,764	147,760
Andong	192,684	191,332	188,679	187,682	186,346	184,108	182,082	179,587
Gumi	304,217	314,496	325,482	331,486	338,504	341,034	348,489	354,746
Yeongju	138,727	137,064	135,381	134,897	133,664	131,351	128,924	126,303
Yeongcheon	123,406	122,027	121,720	123,265	122,751	120,758	119,077	116,523
Sangju	133,944	132,454	130,722	129,389	127,266	124,884	122,277	119,283
Mungyeong	95,815	93,634	91,883	91,229	90,216	90,000	89,234	83,955
Gyeongsan	165,571	186,310	200,223	209,188	214,424	216,399	218,638	221,196
Changwon	480,099	497,089	508,148	506,330	518,091	523,142	528,152	517,577
Masan	431,984	430,684	428,179	435,343	435,900	434,085	434,912	434,996
Jinju	334,649	336,515	339,799	341,757	341,776	342,536	340,669	340,816
Tongyeong	142,759	141,828	140,927	140,507	139,248	137,115	135,845	134,581
Sacheon	122,894	122,536	121,112	120,257	119,745	119,543	119,555	117,427
Gimhae	264,965	288,931	307,254	322,521	328,564	347,070	357,149	393,936
Miryang	131,390	129,744	129,483	128,397	126,983	124,936	123,393	120,808
Geoje	155,590	161,600	165,887	171,210	174,291	176,028	180,496	183,897

Source: Municipal Yearbook of Korea

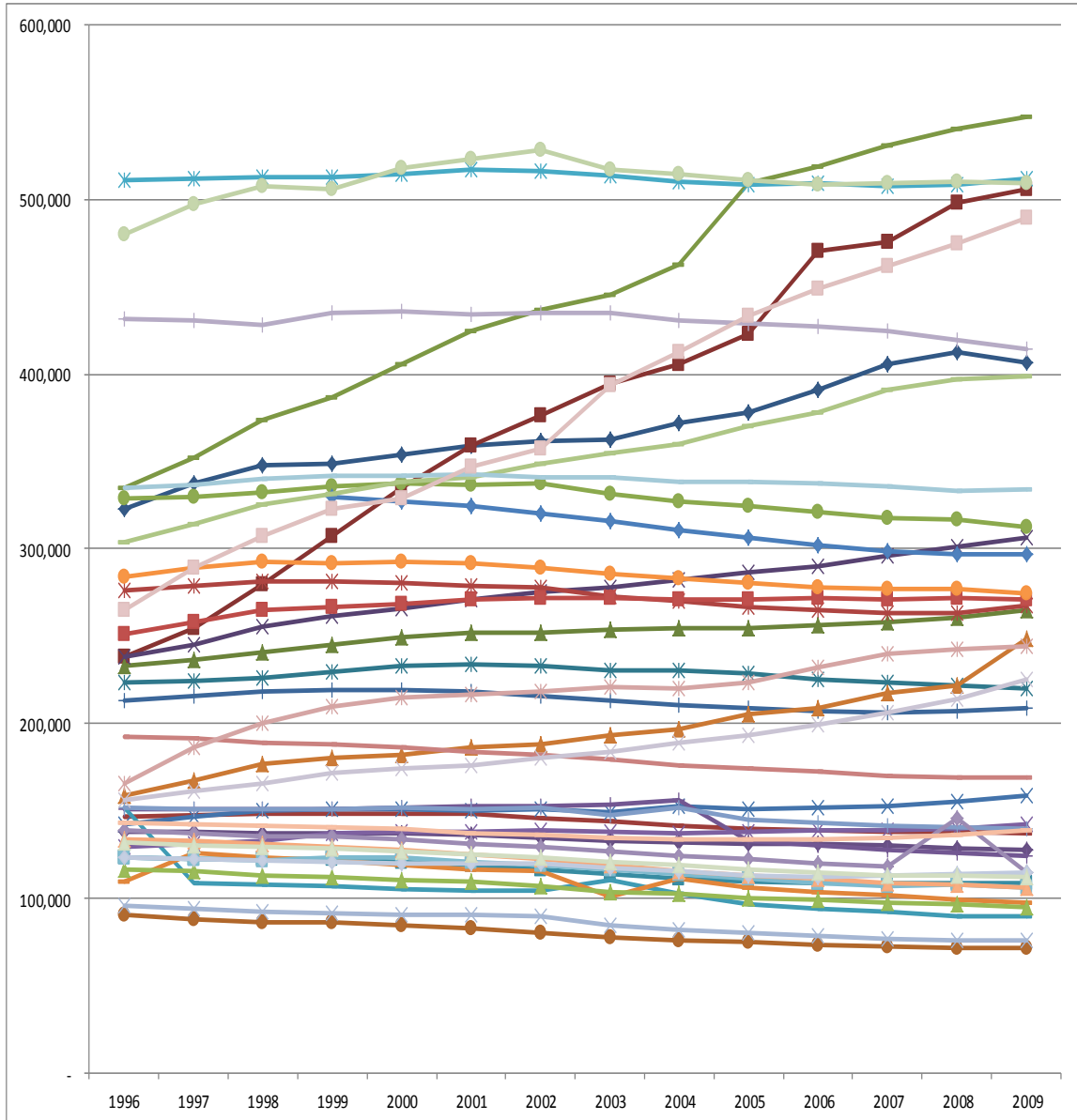
Table 10 (continued)
Population Following City-County Consolidation

(Unit: Number of Individual Residents)

City	2004	2005	2006	2007	2008	2009	2009-1996	% change (2009-1996)
Pyeongtaek	371,679	378,073	391,468	406,052	412,757	406,721	84,084	26.1
Namyangju	405,733	423,073	470,617	475,733	497,941	505,867	268,106	112.8
Chuncheon	254,366	254,323	256,455	258,068	260,439	264,557	31,541	13.5
Wonju	282,025	286,136	290,073	296,251	301,101	306,350	68,323	28.7
Gangneung	230,080	228,325	225,595	223,499	222,100	220,097	-3,678	-1.6
Samcheok	75,941	74,577	73,434	72,187	71,256	71,431	-18,612	-20.7
Chungju	210,169	208,557	207,173	206,236	207,036	208,808	-4,545	-2.1
Jecheon	141,215	139,403	138,920	137,605	137,545	137,229	-9,095	-6.2
Cheonan	462,714	509,744	518,818	531,193	540,742	547,662	212,862	63.6
Gongju	131,769	131,140	130,595	129,862	128,573	127,391	-10,811	-7.8
Boryeong	110,880	109,401	108,639	108,526	108,783	108,182	-14,841	-12.1
Asan	196,860	205,057	208,448	217,112	221,490	248,329	89,592	56.4
Seosan	152,494	150,890	151,283	152,279	155,185	158,880	16,549	11.6
Gunsan	269,865	266,541	264,750	263,194	263,213	267,146	-9,117	-3.3
Iksan	327,536	324,533	320,780	317,889	316,911	312,837	-15,653	-4.8
Jeongeup	156,043	133,018	129,868	127,387	125,524	124,196	-26,581	-17.6
Namwon	102,279	96,603	94,095	91,886	89,898	89,123	-62,230	-41.1
Gimje	111,339	105,900	103,446	101,252	98,740	97,012	-12,212	-11.2
YeoSu	311,051	306,115	302,391	298,825	297,196	297,178	-32,544	-9.8
Suncheon	270,574	270,833	271,961	271,164	271,781	271,035	19,719	7.8
Naju	102,377	100,054	98,770	97,475	96,670	94,246	-22,076	-19.0
Gwangyang	136,753	137,601	138,730	139,020	139,735	142,399	13,222	10.2
Pohang	510,414	508,937	509,148	507,674	508,684	511,805	938	0.2
Gyeongju	282,955	280,092	277,764	277,185	276,877	274,295	-9,935	-3.5
Gimchun	151,336	144,587	142,688	140,922	140,564	139,871	-11,936	-7.9
Andong	176,094	174,596	172,029	169,719	169,239	168,718	-23,966	-12.4
Gumi	360,221	370,088	378,560	391,368	396,884	398,949	94,732	31.1
Yeongju	124,084	121,908	119,668	117,734	146,062	114,909	-23,818	-17.2
Yeongcheon	113,807	110,891	108,745	106,785	107,701	105,924	-17,482	-14.2
Sangju	115,693	112,943	110,892	108,839	107,266	106,141	-27,803	-20.8
Mungyeong	81,525	79,820	78,357	76,497	75,223	75,973	-19,842	-20.7
Gyeongsan	219,591	223,357	231,677	239,966	242,744	243,863	78,292	47.3
Changwon	514,463	511,280	508,499	509,535	510,120	509,801	29,702	6.2
Masan	431,248	428,980	427,119	424,727	419,251	414,771	-17,213	-4.0
Jinju	338,364	338,556	337,727	335,637	333,256	334,237	-412	-0.1
Tongyeong	133,939	133,613	133,429	134,301	136,047	138,791	-3,968	-2.8
Sacheon	115,060	113,217	111,930	113,232	113,716	114,482	-8,412	-6.8
Gimhae	412,894	433,076	448,796	461,925	475,093	490,025	225,060	84.9
Miryang	118,431	116,196	114,320	112,847	112,451	111,910	-19,480	-14.8
Geoje	188,850	193,434	199,483	205,821	213,638	224,855	69,265	44.5

Source: Municipal Yearbook of Korea

Figure 9
Population Change Based on City-County Size, 1996-2009



Source: Municipal Yearbook of Korea

Figure 9 above graphically depicts the population change from 1996 to 2009 following the city-county consolidations based on city-county population size. Although seven cities (Namyangju, Gimhae, Cheonan, Asan, Geoje, Gyeongsan, and Gumi) experienced population increases of over 30% after consolidation, the majority of

consolidated cities only had minor changes with regard to population. It is noteworthy that the population had little or no change or actually decreased in the smaller cities. The data reveal that 12 of the 14 cities with populations of below 150,000 in 1996 experienced a decrease population in the years following consolidation. Therefore, it seems apparent that the city-county consolidations in South Korea did not provide the population increases that might have been expected.

Change in the Number of Public Employees

Consolidation supporters argue that because consolidation would eliminate the duplication of services and reduce the number of government employees, it provides opportunity for a more efficient government. This study analyzes changes in the number of public employees per 1000 population from 1996 to 2009. Table 11 below indicates a significant change in the number of public employees following the governmental consolidations.

The average of the number of public employees (per 1000 population) for the 40 consolidated cities decreased from 8.59 in 1996 to 5.55 in 2002, but it increased steadily to 6.38 by 2007. These numbers reveal that in the short term, the number of public employees declined because the duplication between city and county governments were eliminated. However, in long term this effect ended, and the number of public employees has steadily increased.

Table 11
Average Number of Public Employees (per 1,000 Population) for the 40 Consolidated
Cities, 1996-2009

(Unit: Number of Individual Residents)

Year	1996	1997	1998	1999	2000	2001	2002
Average of the number of local full-time employees per 1000 population	8.59	8.20	7.34	6.66	5.75	5.73	5.55
Annual % of change	-	-0.39	-0.86	-0.68	-0.91	-0.02	-0.18
Year	2003	2004	2005	2006	2007	2008	2009
Average of the number of local full-time employees per 1000 population	5.80	5.91	6.12	6.33	6.38	6.22	6.04
Annual % of change	0.25	0.11	0.21	0.21	0.05	-0.16	-0.18

Source: Municipal Yearbook of Korea

Table 12 reveals there are two cities (Boryeong and Namwon) in which the number of public employees per 1000 population has increased. After the city-county consolidations, the number of public employees (per 1000 of population) fell sharply in 40 cities to an average of 31.77%. There were five cities (Namyangju, Asan, Masan, Gimhae, and Geoje) where the number of public employees per 1000 population decreased over 50%. In all cities except Masan, the population increased significantly following city-county consolidation. As a result of these population increases, the number of public employees per 1,000 population accordingly decreased.

Table 12
 Number of Public Employees (per 1,000 population) for the 40 Consolidated Cities,
 1996-2009

(Unit: Number of Individual Residents)

City	1996	1997	1998	1999	2000	2001	2002	2003
Pyeongtaek	6.63	6.44	5.36	4.68	3.97	3.87	3.79	3.85
Namyangju	5.96	5.69	4.28	3.41	2.86	2.64	2.51	2.44
Chuncheon	7.54	6.83	7.28	6.27	5.54	5.32	5.08	5.21
Wonju	7.92	7.84	6.14	5.26	4.53	4.41	4.13	4.19
Gangneung	6.34	8.46	8.41	6.01	5.26	5.10	4.88	5.00
Samcheok	14.70	15.05	12.75	11.12	9.80	9.86	9.74	9.87
Chungju	6.69	6.56	7.13	6.08	5.38	5.31	5.27	5.37
Jecheon	10.00	10.10	8.44	7.49	6.24	6.25	6.17	6.36
Cheonan	6.34	6.19	4.74	4.05	3.36	3.13	3.06	3.04
Gongju	10.00	9.96	7.77	7.99	6.76	6.63	6.73	6.80
Boryeong	8.06	10.76	8.13	7.94	7.00	7.73	6.92	7.35
Asan	8.86	9.08	6.52	5.72	5.00	4.71	4.57	4.51
Seosan	9.99	9.80	7.46	6.68	5.77	5.67	5.60	5.74
Gunsan	8.34	7.71	6.52	5.62	4.87	5.85	4.63	4.78
Iksan	6.76	6.73	5.86	4.95	4.30	4.39	4.11	4.33
Jeongeup	10.99	10.27	9.43	8.21	6.97	6.78	6.57	7.40
Namwon	9.99	13.44	12.07	10.55	9.10	8.91	8.60	8.52
Gimje	13.40	11.08	6.58	9.05	8.20	8.25	7.96	9.36
YeoSu	6.39	5.35	5.45	5.55	5.63	5.84	5.36	6.12
Suncheon	6.00	5.84	5.70	5.40	4.71	4.63	4.48	4.56
Naju	14.91	13.50	11.69	10.30	9.24	9.17	9.01	9.83
Gwangyang	7.69	7.57	8.31	7.06	5.95	5.79	5.63	5.70
Pohang	6.66	6.14	4.78	4.14	3.72	3.65	3.61	3.67
Gyeongju	8.18	5.93	5.85	5.73	5.04	4.81	4.68	4.83
Gimchun	11.83	8.23	8.30	7.88	7.03	6.85	6.58	6.83
Andong	10.19	10.30	8.62	7.57	7.20	6.69	6.72	6.91
Gumi	7.01	6.85	5.70	4.65	4.04	3.87	3.78	3.34
Yeongju	10.29	10.47	10.72	8.16	7.20	7.13	7.07	7.32
Yeongcheon	11.01	8.51	8.77	8.81	7.70	7.30	7.27	7.44
Sangju	12.14	12.32	10.71	9.51	8.65	8.51	8.46	8.84
Mungyeong	13.33	13.08	10.96	10.91	7.15	9.30	9.36	9.93
Gyeongsan	7.96	5.38	5.13	5.07	4.33	4.02	3.97	4.62
Changwon	3.12	2.73	3.04	2.76	2.38	2.32	2.25	2.43
Masan	5.86	4.73	5.54	4.84	3.95	3.81	3.48	3.56
Jinju	5.90	5.12	5.59	4.71	4.23	4.09	3.94	3.98
Tongyeong	8.10	7.30	7.32	7.22	6.23	6.14	6.01	6.17
Sacheon	9.36	7.88	9.21	8.02	7.01	6.83	6.78	6.86
Gimhae	4.57	5.25	4.03	3.42	2.97	2.80	2.72	3.22
Miryang	8.22	7.60	8.19	7.27	6.43	6.36	6.32	7.24
Geoje	6.83	6.01	5.85	5.51	4.77	4.59	4.35	4.32

Table 12 (Continued)

Number of Public Employees (per 1,000 Population) Following City-County Consolidation

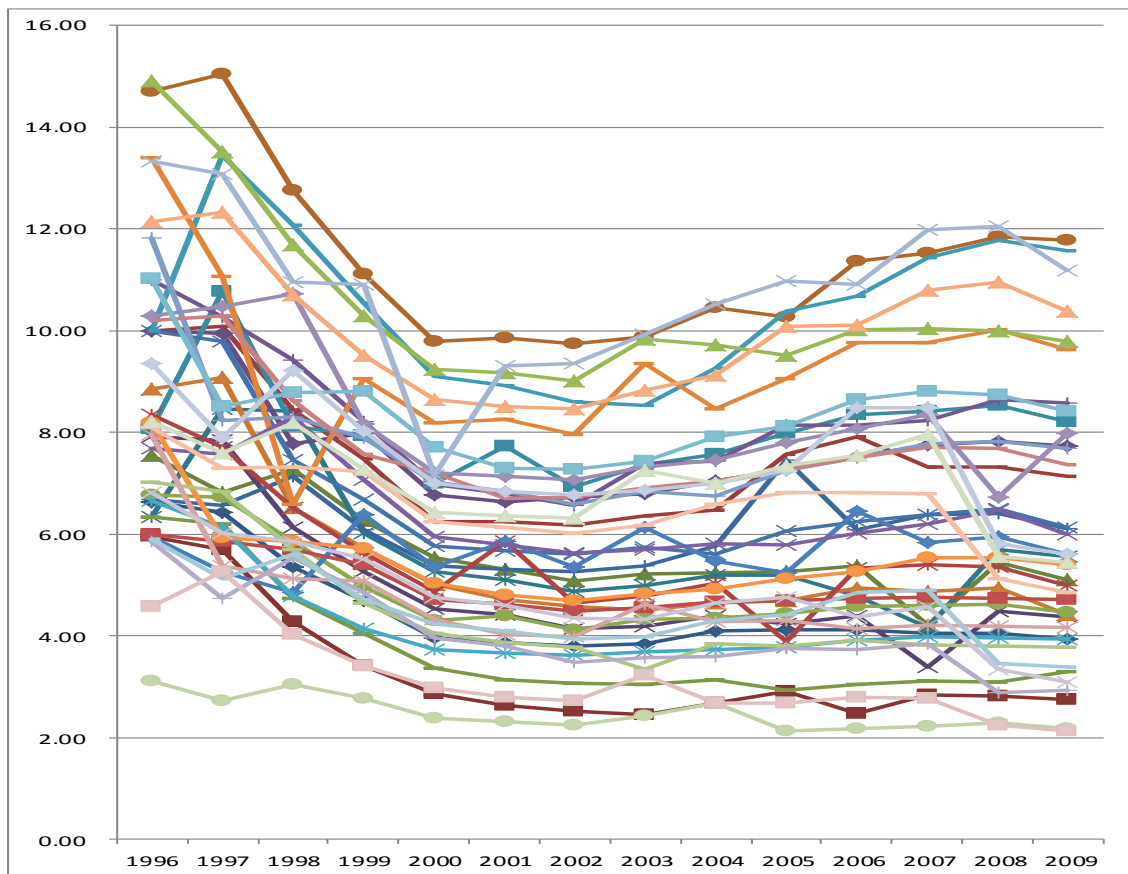
(Unit: Number of Individual Residents)

City	2004	2005	2006	2007	2008	2009	2009-1996	% change (2009-1996)
Pyeongtaek	4.08	4.12	4.11	4.04	4.04	3.93	-2.70	-40.72
Namyangju	2.67	2.90	2.47	2.84	2.81	2.76	-3.20	-53.69
Chuncheon	5.24	5.26	5.38	4.20	5.44	5.10	-2.44	-32.36
Wonju	4.39	4.23	4.40	3.38	4.48	4.38	-3.54	-44.70
Gangneung	5.19	5.18	4.78	4.17	5.70	5.56	-0.78	-12.30
Samcheok	10.44	10.27	11.37	11.53	11.84	11.79	-2.91	-19.80
Chungju	5.76	7.46	6.08	6.39	6.40	6.10	-0.59	-8.82
Jecheon	6.47	7.56	7.91	7.32	7.31	7.13	-2.87	-28.70
Cheonan	3.13	2.93	3.04	3.12	3.08	3.30	-3.04	-47.95
Gongju	7.04	7.27	7.53	7.75	7.82	7.72	-2.28	-22.80
Boryeong	7.57	7.98	8.35	8.42	8.54	8.20	0.14	1.74
Asan	4.65	4.70	4.94	4.86	4.93	4.41	-4.45	-50.23
Seosan	5.59	6.06	6.24	6.37	6.50	6.13	-3.86	-38.64
Gunsan	5.04	3.88	5.33	5.40	5.35	4.98	-3.36	-40.29
Iksan	4.34	4.44	4.57	4.61	4.62	4.46	-2.30	-34.02
Jeongeup	7.42	8.15	8.14	8.23	8.65	8.57	-2.42	-22.02
Namwon	9.26	10.39	10.67	11.44	11.77	11.57	1.58	15.82
Gimje	8.46	9.07	9.76	9.77	10.02	9.64	-3.76	-28.06
YeoSu	5.46	5.25	6.46	5.83	5.95	5.59	-0.80	-12.51
Suncheon	4.66	4.69	4.74	4.75	4.75	4.72	-1.28	-21.33
Naju	9.73	9.51	10.01	10.03	9.98	9.79	-5.12	-34.34
Gwangyang	5.80	5.79	6.02	6.21	6.48	5.98	-1.71	-22.24
Pohang	3.73	3.78	3.90	3.98	3.97	3.94	-2.72	-40.84
Gyeongju	4.92	5.12	5.26	5.54	5.54	5.39	-2.79	-34.11
Gimchun	6.75	7.26	7.51	7.78	7.81	7.69	-4.14	-35.00
Andong	7.05	7.26	7.50	7.70	7.68	7.36	-2.83	-27.77
Gumi	3.84	3.80	3.90	3.83	3.80	3.78	-3.23	-46.08
Yeongju	7.45	7.81	8.06	8.35	6.73	7.99	-2.30	-22.35
Yeongcheon	7.91	8.12	8.65	8.80	8.73	8.41	-2.60	-23.61
Sangju	9.13	10.08	10.10	10.80	10.95	10.37	-1.77	-14.58
Mungyeong	10.51	10.99	10.90	11.97	12.06	11.19	-2.14	-16.05
Gyeongsan	4.28	4.30	4.15	4.21	4.19	4.17	-3.79	-47.61
Changwon	2.67	2.13	2.18	2.22	2.28	2.17	-0.95	-30.45
Masan	3.60	3.75	3.72	3.84	2.89	2.93	-2.93	-50.00
Jinju	4.30	4.41	4.84	4.89	3.45	3.39	-2.51	-42.54
Tongyeong	6.59	6.81	6.82	6.80	5.13	4.85	-3.25	-40.12
Sacheon	7.00	7.26	8.49	8.48	5.81	5.61	-3.75	-40.06
Gimhae	2.68	2.68	2.79	2.77	2.24	2.12	-2.45	-53.61
Miryang	7.01	7.35	7.56	7.95	5.55	5.44	-2.78	-33.82
Geoje	4.63	4.75	4.37	4.57	3.34	3.08	-3.75	-54.90

Source: Municipal Yearbook of Korea

Figure 10 graphically depicts the change in the number of public employees (per 1000 of population) for the 40 consolidated cities. The curve in Figure 10 is U shaped. It fell from 1996 to 2002, and then began to rise after 2003. Based on this graphic, we can conclude that in the short term city-county consolidation leads to a reduction of governmental workers. The results don't appear to be constant or permanent and in the long term, the numbers began to rise. It appears that as the number and size of governmental programs increases, additional governmental employees are required to manage and implement programs for its citizens.

Figure 10
 Number of Public Employees (per 1,000 Population) Following City-County Consolidation, 1996-2009



Source: Municipal Yearbook of Korea

Change in Total Expenditures

City-county consolidations are expected to reduce the costs of local government management and the redundant costs between cities and counties. The potential efficiency outcomes resulting from the elimination of duplicated services from city-county consolidation should be more apparent by examining expenditure trends following the consolidation (Carroll, Wagers, & Wiggins, 2010, p.204). This study analyzes change in total expenditures of 40 consolidated cities from 1996 to 2009.

The data in Table 13 shows that the average of total expenditure per capita of the 40 consolidated cities has increased on an annual basis except in years 2000, 2003, and 2006. Current dollars are converted to constant dollars using the Consumer Price Index (CPI), with 1996 base year. This trend seems contrary to the expectations regarding consolidation because we should see a greater efficiency in public service provision as a result of eliminating duplicate services. According the data in this analysis, it appears there was no cost savings effect as a result of the city-county consolidations in South Korea.

Table 13
Average Total Expenditures per Capita for the 40 Consolidated Cities, 1996-2009
(Unit: 1,000,000 Korean won)

Year	1996	1997	1998	1999	2000	2001	2002
Average of expenditures per capita	0.828	0.939	0.992	1.190	1.007	1.502	1.508
Annual % of Change	-	0.110	0.053	0.198	-0.182	0.494	0.006
Year	2003	2004	2005	2006	2007	2008	2009
Average of expenditures per capita	1.468	1.739	1.936	1.899	2.015	2.120	2.470
Annual % of Change	-0.040	0.271	0.197	-0.036	0.115	0.105	0.350

Source: Financial Yearbook of Local Government of Korea

Table 14 below provides the total expenditures per capita for each of the 40 consolidated cities in South Korea from 1996 to 2009. The expenditures per capita have increased an average 198.23% over 14 years. In several cities (Namwon, Samcheok, Mungyeong, Gimje, Sangju, and Jeongeup), the total expenditures per capita have greatly increased compared to other consolidated cities. All of these cities were similar in that their population was below 150,000 in 2009, and the size of rural area within the jurisdiction was larger than that of the urban area. This seems to imply that consolidated governments must increase their expenditure per capita since the boundaries have been expanded to serve county residents who were not originally part of the city government.

Figure 11 illustrates the trends in total expenditures per capita. As can be seen from the figure, total expenditures per capita for the 40 cities have increased and the deviation among consolidated cities has increased as year passed. Following the mergers, the consolidated city-county governments experienced a large shift upward in expenditures.

As a result of examining the data in this study, it is difficult to argue that city-county consolidation leads to a reduction in administrative expenses due to elimination of the duplication of services. If anything, consolidated governments had to increase total expenditures because of the expanded geographic size of the administrative area and the necessity provide additional services for those in the rural areas.

Table 14
 Total Expenditures per Capita Following City-County Consolidations, 1996-2009
 (Unit: 1,000,000 Korean won)

City	1996	1997	1998	1999	2000	2001	2002	2003
Pyeongtaek	0.696	0.703	0.723	0.969	0.641	0.817	0.811	0.926
Namyangju	0.644	0.729	0.627	0.885	0.686	0.698	0.666	0.751
Chuncheon	0.774	0.830	0.850	1.114	0.862	1.388	1.388	1.477
Wonju	0.591	0.742	0.793	0.928	0.746	1.179	1.161	1.339
Gangneung	0.696	0.921	1.062	1.357	0.898	1.470	1.477	1.726
Samcheok	1.355	1.617	1.741	1.894	1.782	2.862	2.948	2.954
Chungju	0.801	0.869	0.891	1.057	0.999	1.667	1.683	1.811
Jecheon	1.011	1.158	1.315	1.265	1.086	1.809	1.846	1.930
Cheonan	0.624	0.614	0.639	0.723	0.662	0.869	0.846	0.755
Gongju	1.227	1.187	1.096	1.277	1.178	1.452	1.469	1.458
Boryeong	1.095	0.994	1.114	1.616	1.326	1.727	1.759	1.647
Asan	0.868	0.876	1.097	0.985	0.873	1.265	1.249	1.555
Seosan	0.883	0.978	1.037	1.196	0.972	1.184	1.182	1.249
Gunsan	0.881	0.786	0.804	0.963	0.788	1.052	1.056	1.041
Iksan	1.302	0.589	0.616	0.779	0.854	0.852	0.850	1.023
Jeongeup	0.895	1.187	1.286	1.318	1.086	1.299	1.300	0.632
Namwon	0.789	1.427	1.481	1.515	1.493	1.935	1.928	1.690
Gimje	1.079	1.212	1.247	1.396	1.350	1.629	1.637	1.955
YeoSu	0.533	0.560	1.356	0.864	0.925	1.613	1.631	2.179
Suncheon	0.629	0.732	0.931	1.224	0.904	1.349	1.342	1.466
Naju	1.048	1.232	1.259	1.825	1.462	2.433	2.491	3.301
Gwangyang	0.646	1.016	0.929	1.157	0.933	1.286	1.282	1.495
Pohang	0.549	0.601	0.636	0.860	0.725	0.933	0.934	0.739
Gyeongju	0.730	0.864	0.806	0.968	0.864	1.189	1.199	1.063
Gimchun	0.823	1.143	1.084	1.332	1.143	1.642	1.631	1.502
Andong	0.866	1.057	1.034	1.394	1.226	2.196	2.220	1.667
Gumi	0.595	0.694	0.624	0.870	0.751	1.031	1.009	0.757
Yeongju	1.040	1.065	1.197	1.294	1.230	1.954	1.991	1.577
Yeongcheon	0.987	1.178	1.178	1.209	1.010	1.923	1.951	1.700
Sangju	1.138	1.292	1.408	1.478	1.399	2.308	2.358	1.959
Mungyeong	1.218	1.356	1.426	1.908	1.761	2.848	2.872	2.371
Gyeongsan	0.737	0.758	0.803	1.017	0.726	1.101	1.090	0.898
Changwon	0.384	0.506	0.461	0.763	0.553	1.666	1.651	0.851
Masan	0.411	0.495	0.507	0.622	0.507	0.958	0.957	0.956
Jinju	0.601	0.733	0.771	0.991	0.757	1.012	1.018	0.909
Tongyeong	0.844	0.943	0.871	1.056	1.001	1.376	1.389	1.340
Sacheon	0.827	1.007	1.111	1.389	1.076	1.338	1.338	1.336
Gimhae	0.625	0.836	0.905	1.814	0.955	1.306	1.269	1.853
Miryang	0.921	1.203	1.133	1.337	1.162	1.665	1.686	1.709
Geoje	0.760	0.850	0.835	0.976	0.939	1.789	1.745	1.161

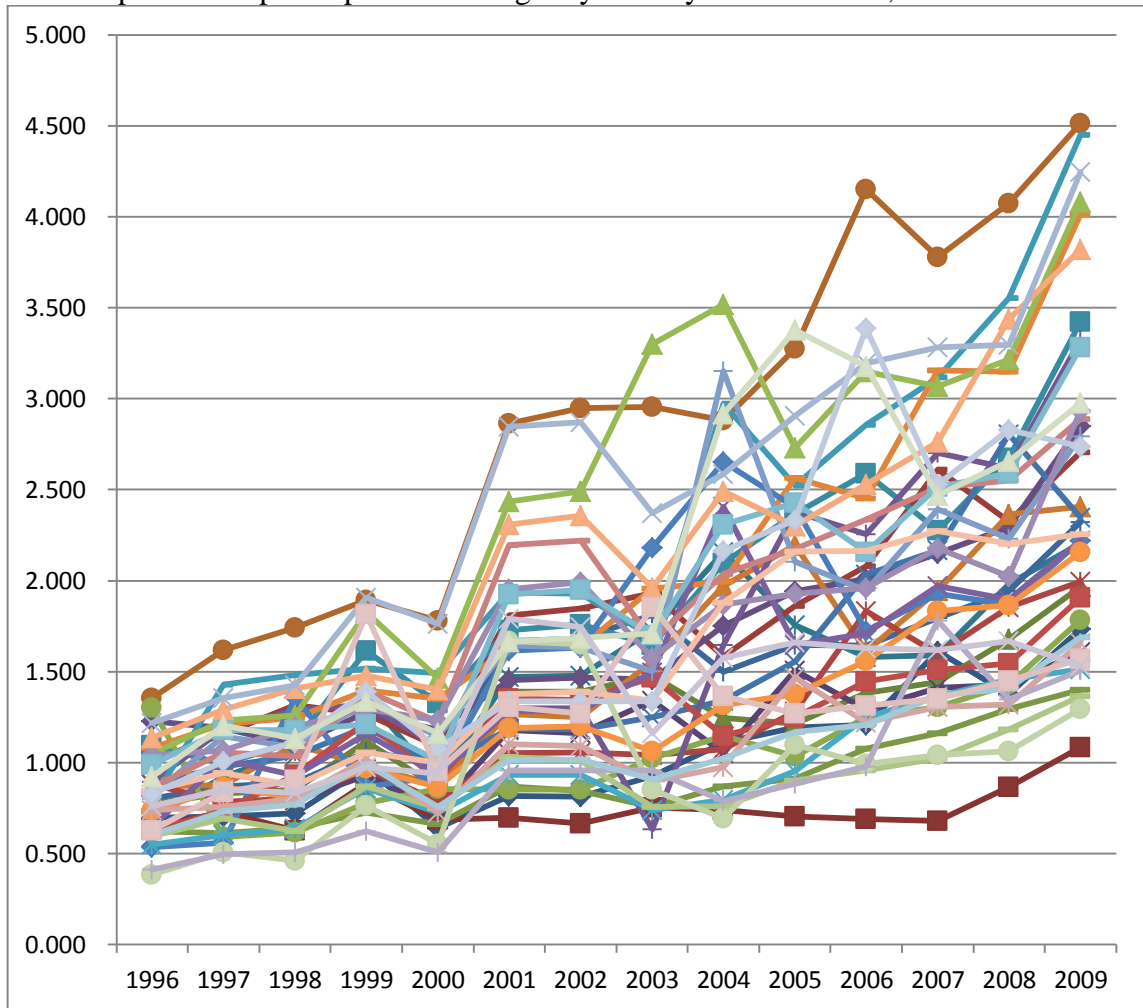
Source: Financial Yearbook of Local Government of Korea

Table 14 (Continued)
Total Expenditures per Capita Following City-County Consolidations, 1996-2009

City	2004	2005	2006	2007	2008	2009	2009-1996	% change (2009-1996)
Pyeongtaek	1.109	1.193	1.206	1.610	1.377	1.733	1.037	149.04
Namyangju	0.737	0.703	0.688	0.681	0.864	1.082	0.438	68.05
Chuncheon	1.245	1.213	1.384	1.442	1.679	1.968	1.193	154.17
Wonju	1.051	1.507	1.291	1.411	1.428	1.609	1.018	172.20
Gangneung	2.158	3.757	1.578	1.592	1.980	2.207	1.510	216.85
Samcheok	2.880	6.276	4.150	3.780	4.073	4.514	3.159	233.08
Chungju	1.498	1.648	1.643	1.794	1.944	2.321	1.519	189.60
Jecheon	1.583	1.862	2.080	2.611	2.326	2.706	1.696	167.78
Cheonan	0.870	0.911	1.075	1.162	1.294	1.401	0.777	124.59
Gongju	1.751	1.942	2.008	2.149	2.293	2.851	1.624	132.44
Boryeong	2.098	2.368	2.588	2.277	2.675	3.423	2.328	212.64
Asan	1.970	2.196	1.611	1.947	2.365	2.407	1.539	177.21
Seosan	1.341	1.556	2.035	2.168	2.804	2.345	1.463	165.72
Gunsan	1.073	1.282	1.834	1.598	1.854	1.993	1.112	126.20
Iksan	1.146	1.033	1.248	1.306	1.427	1.783	0.481	36.98
Jeongeup	1.648	2.378	2.255	2.700	2.617	3.326	2.431	271.73
Namwon	2.974	2.523	2.857	3.116	3.552	4.450	3.660	463.64
Gimje	1.994	2.564	2.451	3.157	3.148	4.015	2.937	272.20
YeoSu	2.652	2.403	1.722	1.928	1.868	2.221	1.688	316.53
Suncheon	1.146	1.248	1.445	1.511	1.545	1.907	1.278	203.09
Naju	3.516	2.731	3.148	3.069	3.217	4.083	3.035	289.55
Gwangyang	2.405	1.648	1.711	1.969	1.898	2.221	1.575	243.65
Pohang	0.796	0.952	1.249	1.365	1.455	1.514	0.965	175.91
Gyeongju	1.316	1.376	1.559	1.834	1.865	2.155	1.424	194.99
Gimchun	3.151	2.105	1.946	2.392	2.230	2.792	1.969	239.30
Andong	2.038	2.173	2.336	2.513	2.550	2.890	2.023	233.53
Gumi	0.760	0.902	0.957	1.024	1.183	1.363	0.769	129.23
Yeongju	1.867	1.927	1.960	2.177	2.023	2.934	1.894	182.20
Yeongcheon	2.308	2.428	2.158	2.516	2.589	3.283	2.296	232.50
Sangju	2.491	2.301	2.530	2.760	3.437	3.821	2.683	235.86
Mungyeong	2.585	2.906	3.195	3.283	3.296	4.247	3.029	248.72
Gyeongsan	0.976	1.466	1.221	1.304	1.321	1.656	0.919	124.64
Changwon	0.694	1.096	0.991	1.042	1.064	1.296	0.912	237.75
Masan	0.787	0.881	0.980	1.782	1.348	1.504	1.094	266.38
Jinju	1.025	1.167	1.207	1.369	1.409	1.690	1.089	181.24
Tongyeong	1.879	2.158	2.162	2.273	2.201	2.254	1.411	167.21
Sacheon	2.164	2.334	3.387	2.529	2.827	2.737	1.909	230.87
Gimhae	1.365	1.271	1.311	1.352	1.451	1.570	0.946	151.46
Miryang	2.917	3.377	3.177	2.471	2.655	2.976	2.055	223.09
Geoje	1.578	1.661	1.630	1.620	1.668	1.532	0.772	101.48

Source: Financial Yearbook of Local Government of Korea

Figure 11
 Total Expenditures per Capita Following City-County Consolidation, 1996-2009



Source: Financial Yearbook of Local Government of Korea

Change in the Amount of Local Taxes Collected

One of the ways to assess whether or not a local government is performing efficiently is to look at the change in the amount of tax collected. This statistic should serve as an indicator of governmental efficiency because the amount of tax collected from each resident should be reduced following city-county consolidations due to the increased tax base, elimination of duplication, and improved efficiency in service

provision.

Table 15 shows that the average amount of local taxes collected per capita for 40 the consolidated cities from 1996 to 2009. The average tax collection was 1.35 million Korean Won (KRW) in 1995, but it rose to 4.07 million KRW in 2009. The table also shows that taxes have tripled over a 14 year period.

Table 15
Average Amount of Local Tax Collected per Capita for the 40 Consolidated Cities, 1996-2009

(Unit: 1,000,000 Korean Won (KRW))							
Year	1996	1997	1998	1999	2000	2001	2002
Average of local taxes collected per capita	1.35	1.55	1.60	1.48	1.52	1.55	2.07
Annual % of change	-	0.20	0.05	-0.12	0.04	0.03	0.52
Year	2003	2004	2005	2006	2007	2008	2009
Average of local taxes collected per capita	2.29	2.52	2.86	3.23	3.61	3.89	4.07
Annual % of change	0.22	0.22	0.34	0.37	0.38	0.28	0.18

Source: Financial Yearbook of Local Government of Korea

This study also analyzed the percent of change with regard to the local taxes collected per capita following city-county consolidations during the 14 year period of time from 1996 to 2009. Iksan is the only city in which the tax collected percentage was reduced following consolidation. Six of the 40 consolidated governments have experienced less than a 100% increase, and nine over 300% during this period. It is clear that the amount of taxes collected per capita has sharply increased on an annual basis in the majority of consolidated cities.

Table 16
Amount of Local Taxes Collected per Capita Following City-County Consolidations,
1996-2009

(Unit: 1,000,000 Korean Won)

City	1996	1997	1998	1999	2000	2001	2002	2003
Pyeongtaek	0.99	1.14	1.03	0.95	0.96	1.10	1.40	1.65
Namyangju	1.30	1.40	1.59	1.45	1.16	1.16	1.48	1.57
Chuncheon	1.39	1.36	1.68	1.35	1.44	1.37	1.71	1.98
Wonju	1.27	1.31	1.46	1.31	1.19	1.28	1.59	1.75
Gangneung	1.17	1.28	1.40	1.40	1.29	1.39	1.78	1.94
Samcheok	2.49	2.84	2.80	2.90	2.96	3.04	4.05	5.73
Chungju	1.22	1.51	1.38	1.20	1.36	1.76	1.80	2.03
Jecheon	1.59	1.61	1.68	1.52	1.53	1.69	2.32	2.55
Cheonan	1.09	1.15	1.20	1.01	1.01	0.56	1.20	1.35
Gongju	1.34	1.65	1.61	1.61	1.92	1.22	2.53	2.72
Boryeong	1.46	1.84	2.13	2.12	2.18	1.46	2.96	4.26
Asan	2.01	2.55	2.24	1.91	1.97	1.33	3.00	3.02
Seosan	1.84	2.16	2.42	2.37	2.28	1.32	3.14	3.21
Gunsan	0.99	1.07	1.15	1.01	1.00	1.10	1.36	1.51
Iksan	1.75	0.73	0.79	0.71	0.74	0.79	1.01	3.26
Jeongeup	1.07	1.23	1.38	1.18	1.17	1.33	1.65	0.83
Namwon	1.24	1.75	1.96	1.79	1.94	2.08	2.95	1.83
Gimje	1.33	1.37	1.58	1.49	1.67	1.81	2.24	2.62
YeoSu	0.78	0.87	0.92	0.97	1.03	1.07	1.23	1.46
Suncheon	0.94	0.99	1.05	1.05	1.14	1.04	1.12	1.43
Naju	1.38	1.76	1.96	1.90	1.87	2.08	2.89	2.88
Gwangyang	2.38	3.48	3.48	2.75	3.01	3.88	4.76	3.93
Pohang	0.65	0.80	0.75	0.74	0.76	0.88	1.01	1.05
Gyeongju	1.07	1.21	1.25	1.15	1.15	1.28	1.54	1.64
Gimchun	1.31	1.47	1.73	1.45	1.78	1.84	2.11	2.34
Andong	1.09	1.19	1.20	1.23	1.30	1.41	1.83	1.86
Gumi	1.31	1.47	1.40	1.13	1.31	1.58	1.80	1.78
Yeongju	1.44	1.56	1.64	1.67	1.71	1.74	2.24	2.40
Yeongcheon	1.86	2.19	2.25	1.95	1.99	2.25	3.07	3.28
Sangju	1.22	1.24	1.43	1.39	1.46	1.64	2.04	2.22
Mungyeong	1.70	1.81	2.09	1.98	2.02	2.25	3.00	3.47
Gyeongsan	2.18	2.32	2.04	1.59	1.58	1.63	2.25	2.21
Changwon	0.78	0.78	0.81	0.73	0.81	0.80	1.18	1.63
Masan	0.67	0.77	0.78	0.87	0.74	0.83	0.96	0.96
Jinju	0.73	0.91	0.48	0.85	0.85	1.04	1.04	1.20
Tongyeong	1.67	1.71	1.82	1.93	1.78	1.89	2.86	3.29
Sacheon	1.56	1.82	1.96	1.92	2.02	2.19	1.39	2.87
Gimhae	1.30	1.56	1.35	1.20	1.08	1.28	1.53	1.63
Miryang	1.39	1.53	1.84	1.65	1.82	1.81	2.40	1.56
Geoje	1.77	2.32	2.08	1.94	1.84	2.01	2.42	2.83

Table 16 (Continued)
Amount of Local Taxes Collected per Capita Following City-County Consolidations,
1996-2009

(Unit: 1,000,000 Korean Won)

City	2004	2005	2006	2007	2008	2009	2009-1996	% change (2009-1996)
Pyeongtaek	1.86	1.88	2.10	2.23	2.40	2.40	1.41	142.42
Namyangju	1.41	1.39	1.71	1.69	1.67	1.53	0.23	17.69
Chuncheon	2.13	2.60	2.29	2.83	3.05	3.01	1.62	116.55
Wonju	1.86	2.13	2.45	2.74	2.45	2.57	1.30	102.36
Gangneung	2.14	2.20	2.04	2.73	2.90	2.78	1.61	137.61
Samcheok	5.97	5.95	7.15	6.77	6.49	5.54	3.05	122.49
Chungju	2.16	2.63	2.55	3.24	3.59	3.58	2.36	193.44
Jecheon	2.82	3.22	3.43	4.00	4.90	4.53	2.94	184.91
Cheonan	1.70	1.86	1.71	1.83	1.76	1.66	0.57	52.29
Gongju	3.32	3.42	3.44	4.43	4.76	4.70	3.36	250.75
Boryeong	4.00	5.09	4.96	5.82	5.94	6.80	5.34	365.75
Asan	3.93	4.57	4.81	5.52	5.62	5.13	3.12	155.22
Seosan	3.86	5.13	6.27	5.60	6.14	5.99	4.15	225.54
Gunsan	1.55	1.80	1.72	2.09	2.52	3.19	2.20	222.22
Iksan	1.16	1.28	1.35	1.51	1.51	1.72	-0.03	-1.71
Jeongeup	1.62	2.57	2.61	3.15	3.48	3.37	2.30	214.95
Namwon	2.92	3.92	3.55	3.91	4.40	5.21	3.97	320.16
Gimje	2.61	3.28	3.80	4.13	4.76	5.94	4.61	346.62
YeoSu	1.49	1.84	2.01	2.34	2.26	2.76	1.98	253.84
Suncheon	1.62	1.57	1.59	1.74	1.77	1.99	1.05	111.70
Naju	3.26	3.82	4.52	5.98	6.30	6.37	4.99	361.59
Gwangyang	4.54	5.45	7.35	8.19	7.44	7.81	5.43	228.15
Pohang	1.12	1.28	1.73	1.99	1.78	2.04	1.39	213.85
Gyeongju	1.82	1.99	2.45	3.30	3.27	3.18	2.11	197.20
Gimchun	2.45	2.89	3.43	4.01	4.14	4.24	2.93	223.66
Andong	1.97	2.42	2.62	2.87	3.41	3.22	2.13	195.41
Gumi	1.89	2.03	2.35	2.30	2.32	2.35	1.04	79.39
Yeongju	2.66	2.74	3.43	3.59	3.52	4.56	3.12	216.67
Yeongcheon	3.59	4.52	5.87	7.03	8.17	8.64	6.78	364.52
Sangju	2.42	2.74	3.36	3.76	5.25	5.00	3.78	309.84
Mungyeong	3.80	4.25	4.94	5.47	6.47	7.18	5.48	322.35
Gyeongsan	2.27	2.50	3.11	3.07	3.38	2.85	0.67	30.73
Changwon	1.59	1.49	1.75	2.10	2.36	2.60	1.82	233.33
Masan	1.24	0.68	0.67	0.72	1.51	1.71	1.04	155.22
Jinju	1.23	1.41	1.70	1.94	1.87	1.88	1.15	157.53
Tongyeong	3.52	3.59	3.88	3.95	4.34	5.16	3.49	208.98
Sacheon	3.25	3.30	4.48	5.01	5.71	6.24	4.68	300.00
Gimhae	1.48	1.65	1.73	1.95	2.13	2.20	0.90	69.23
Miryang	3.29	3.75	4.45	5.01	6.33	6.68	5.29	380.58
Geoje	3.11	3.51	3.74	3.87	3.55	4.55	2.78	157.06

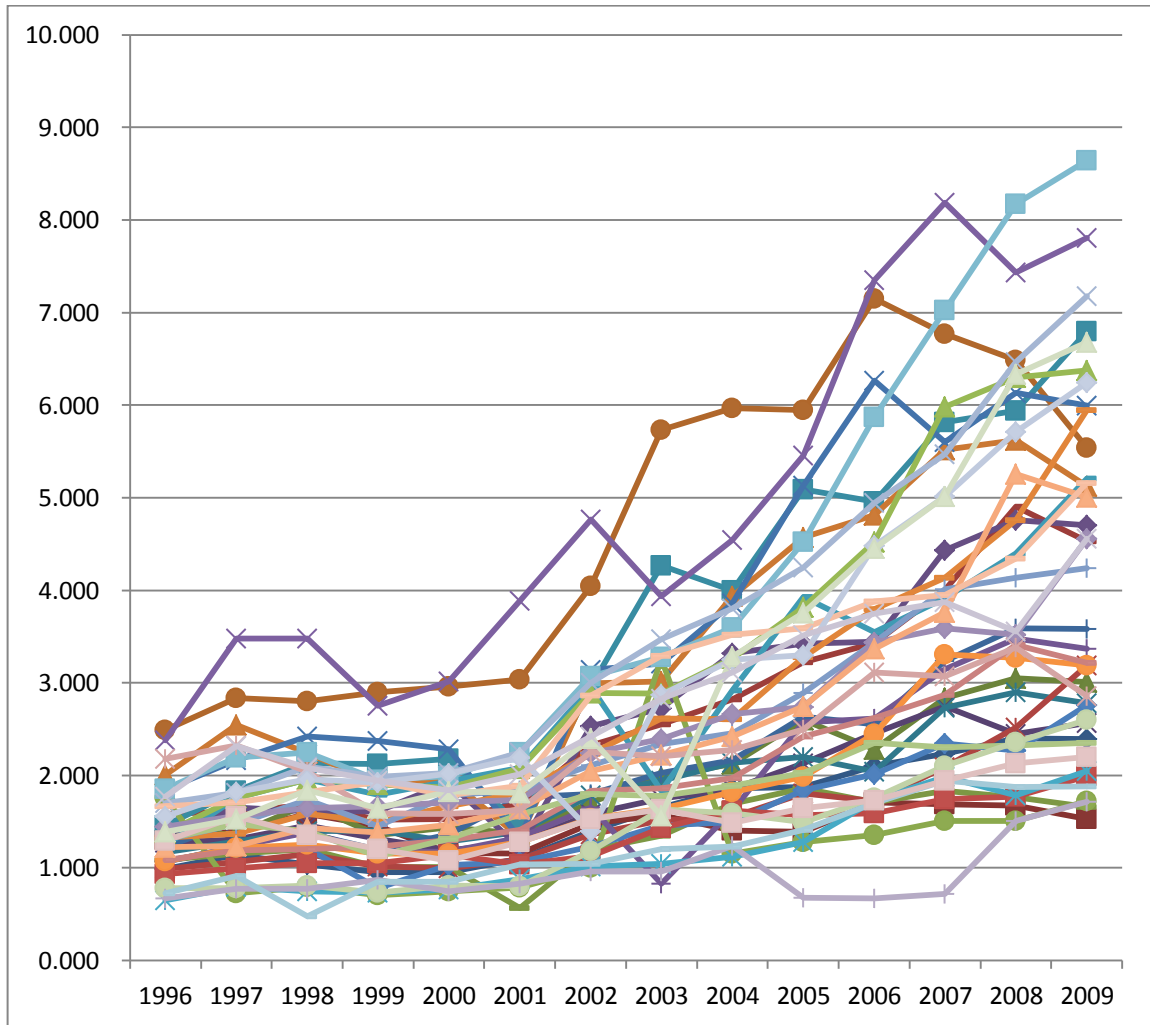
Source: Financial Yearbook of Local Government of Korea

In nine consolidated cities (Miryang, Boryeong, Yeongcheon, Naju, Gimje, Mungyeong, Namwon, Sangju, and Sacheon), the amount of local tax collected per capita has increased over 300%. These cities are located far away from the metropolitan area, and agriculture and fisheries are the major industry. In six cities (Iksan, Namyangju, Gyeongsan, Cheonan, Gimhae, and Gumi), the amount of local tax collected per capita was below 100%. These cities are near major metropolitan areas with large industrial complexes.

Figure 12 shows that the amount of local tax collected per capita has sharply increased from 2002, and the delta among consolidated governments gets larger and larger on an annual basis. As a result of these findings, the researcher concludes that South Korean city-county consolidations have created a significant disparity among local governments with regard to the citizen's tax burden rather than reducing the tax burden equally for all.

In addition to failing to reduce the citizen's tax burden, and the disparity among consolidated governments, another serious problem seems to also have been created. Following the city-county consolidations, the amount of local tax collected increased over 300% from 1996 to 2009. The fiscal self-reliance of the consolidated cities is below 30%, and this is indicative that the cities do not have adequate finances. The results observed by the researcher are the opposite of the improved efficiency and decreased taxes suggested by the proponents of consolidation. Leland and Wood (2006) arrived at the same conclusions in their 2006 study (p.247).

Figure 12
 Amount of Local Tax Collected per Capita Following City-County Consolidation, 1996-2009



Source: Financial Yearbook of Local Government of Korea

Change in Technical Efficiency

This study uses data envelopment analysis (DEA) to measure the technical efficiency of 40 consolidated local governments. DEA provides a linear programming approach to efficiency measurement for decision making units (DMU) and it uses multiple incommensurable units of inputs to produce multiple incommensurable outputs. As explained in Chapter III, the researcher selected several inputs and outputs to calculate

the efficiency with regard to the city-county consolidated governments. In this study, the “number of public employees per 1,000 population”, and “total expenditures per capita” are selected as input factors, and “geographic size of administrative area”, “water supply ratio”, “percentage of population receiving welfare (basic living security)”, “percentage of paved roads” (i.e., paved versus non-paved comparison), and “the amount of local taxes collected per capita” are the output factors.

Two scale assumptions are generally employed in DEA: the Constant Returns to Scale (CRS) model, and Variable Returns to Scale (VRS) model. Constant Returns to Scale (CRS) reflects the fact that output will change by the same proportion as inputs. CRS means that the producers are able to linearly scale the inputs and outputs without increasing or decreasing efficiency. Variable Returns to Scale (VRS) reflects the fact that production technology may exhibit increased, decreased, or constant returns to scale. Both the CRS model and VRS model are used in this study to analyze the efficiency of the 40 consolidated local governments.

Table 17 provides the average efficiency scores of the 40 consolidated cities on an annual basis from 1996 - 2002. The data in reveals there has been little change in the efficiency scores for the city-county consolidated governments following the mergers. The average efficiency score for the 40 consolidated governments was 88.9% in 1996, and 90.0% in 2009. Following a peak at 94.6% in 2000, the scores have steadily declined through 2009. It is also notable that the number of efficient consolidated governments (i.e., those with 100% efficiency) increased during the period 1996-2005, but then decreased during the period from 2006-2009 (see Table 17).

Table 17
Average of Efficiency Score of 40 Consolidated Cities and the Number of Efficient Consolidated Cities, 1996-2009 (Based on the CRS DEA Model)

Year	1996	1997	1998	1999	2000	2001	2002
Average efficiency score	88.9%	83.0%	89.5%	94.1%	94.6%	87.9%	89.8%
% Annual Change	-	-5.9%	6.5%	4.5%	0.5%	-6.7%	1.9%
The number of efficient consolidated cities	13 (32.5%)	13 (32.5%)	15 (37.5%)	20 (50.0%)	19 (47.5%)	12 (30.0%)	12 (30.0%)
Year	2003	2004	2005	2006	2007	2008	2009
Average efficiency score	87.9%	87.7%	94.3%	88.4%	85.3%	90.8%	90.2%
% Annual Change	-1.9%	-0.1%	6.5%	-5.8%	-3.2%	5.6%	-0.7%
The number of efficient consolidated cities	14 (35.0%)	12 (30.0%)	24 (60.0%)	14 (35.0%)	11 (27.5%)	13 (32.5%)	14 (35.0%)

The efficiency score of the 40 consolidated cities as measured by the CRS model is shown in Table 18. This table reflects the percent of change with regard to efficiency scores. Gunsan experienced the greatest increase in efficiency score between 1996 and 2009. The results are inconsistent, reflecting the efficiency score was 66.3% in 1996, but 100.0% in 2009. Namyangju, Jecheon, Tongyeong, and Pyeongtaek also experienced increased efficiency scores following the city-county consolidations. Namyangju experienced a 20.1% change, Jecheon was 19.0%, Tongyeong was 18.2%, and Pyeongtaek was 16.8%. Namyangju and Pyeongtaek are large satellite cities near the

Seoul metropolitan area. Gunsan, Jeacheon, and Tongyeong are small cities located near the sea. These cities have little in common and as a result, it is difficult for the researcher to come to a conclusion with regard to this portion of the analysis.

Naju experienced the greatest decrease in efficiency score after consolidation. The efficiency score of Naju was 100.0% in 1996, but it was 79.6% in 2009. Naju was an efficient city in 1996, but became inefficient following consolidation. Boryeong's efficiency score also decreased greatly after consolidation. Boryeong was also classified as efficient consolidated government in 1996, but its efficiency score dropped to 79.7% in 2009. Namwon and Chungju both experienced significant decreases in their efficiency scores. Typically, the cities with significant efficiency score reductions were those with a population of less than 200,000. In South Korea, these would be considered small to mid-sized cities and they are typically agricultural in nature. The primary research finding is that cities with small populations and agricultural economies rarely improved their efficiency following consolidation.

Half of the cities experienced an overall increase in efficiency scores following consolidation and the other half experienced a decrease. The analysis reveals the efficiency score increased in 18 cities, it decreased in 18 cities, and the score was constantly at 100% in four cities.

Table 18
Efficiency Scores of 40 City-County Consolidated Cities, 1996-2009 (Based on the CRS DEA Model)

City	1996	1997	1998	1999	2000	2001	2002	2003
Pyeongtaek	62.5	73.2	79.2	79.4	91.1	100.0	94.3	82.8
Namyangju	79.9	84.6	100.0	100.0	100.0	100.0	100.0	100.0
Chuncheon	85.6	100.0	95.7	92.0	98.3	85.7	86.4	82.8
Wonju	100.0	92.2	93.4	100.0	100.0	91.5	91.1	87.4
Gangneung	100.0	81.9	69.8	92.5	97.6	89.4	93.0	74.2
Samcheok	74.8	78.0	77.2	93.3	89.7	79.3	79.0	100.0
Chungju	96.0	98.0	83.0	94.1	89.5	85.5	81.7	76.9
Jecheon	66.2	68.4	72.0	85.9	90.5	81.0	84.0	77.9
Cheonan	82.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gongju	77.2	77.8	93.4	100.0	96.0	99.6	98.0	90.1
Boryeong	100.0	91.0	87.0	91.8	91.5	71.4	84.6	100.0
Asan	96.2	100.0	88.5	100.0	100.0	92.1	100.0	100.0
Seosan	75.0	83.6	95.3	100.0	100.0	100.0	100.0	100.0
Gunsan	66.3	77.3	80.2	86.7	100.0	99.2	91.0	98.8
Iksan	98.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Jeongeup	100.0	100.0	85.7	100.0	100.0	100.0	100.0	100.0
Namwon	89.8	79.6	77.4	89.9	78.9	80.2	82.8	81.2
Gimje	83.6	77.8	100.0	89.7	90.4	93.2	94.3	100.0
YeoSu	88.4	85.2	82.1	78.3	76.1	64.3	62.1	65.4
Suncheon	100.0	100.0	100.0	100.0	100.0	97.2	98.3	89.4
Naju	100.0	97.4	100.0	100.0	100.0	95.1	98.3	89.5
Gwangyang	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Pohang	91.2	99.9	100.0	100.0	99.9	100.0	97.9	97.5
Gyeongju	91.6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gimchun	86.2	83.5	84.4	84.4	92.5	88.1	88.9	82.1
Andong	100.0	100.0	100.0	100.0	100.0	100.0	100.0	91.8
Gumi	83.3	89.9	99.5	94.2	92.5	85.1	78.4	100.0
Yeongju	85.2	71.1	68.2	87.3	77.0	76.2	76.3	78.5
Yeongcheon	83.5	100.0	95.7	100.0	100.0	90.3	85.8	92.0
Sangju	71.5	71.1	66.4	76.6	85.9	77.7	77.4	70.7
Mungyeong	83.0	83.8	79.0	77.9	100.0	74.3	72.8	74.7
Gyeongsan	100.0	100.0	100.0	97.7	100.0	100.0	100.0	100.0
Changwon	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Masan	100.0	100.0	100.0	100.0	100.0	84.3	83.9	85.7
Jinju	87.4	90.2	80.0	88.1	84.7	88.5	90.0	83.1
Tongyeong	81.8	65.0	81.8	100.0	83.9	70.8	79.4	89.5
Sacheon	92.7	77.1	76.3	81.2	93.5	92.1	68.6	100.0
Gimhae	100.0	100.0	100.0	100.0	100.0	100.0	100.0	94.8
Miryang	89.5	88.9	81.5	91.9	98.0	94.0	92.5	69.6
Geoje	93.6	89.5	91.3	100.0	87.3	80.0	81.3	98.4

Table 18 (Continued)
Efficiency Scores of 40 City-County Consolidated Cities, 1996-2009 (Based on the CRS
DEA Model)

City	2004	2005	2006	2007	2008	2009	Average Score, 2009-2003
Pyeongtaek	79.5	100.0	75.3	75.6	83.1	79.3	16.8
Namyangju	100.0	100.0	100.0	100.0	100.0	100.0	20.1
Chuncheon	95.2	100.0	100.0	100.0	100.0	100.0	14.4
Wonju	96.7	99.7	93.5	100.0	100.0	100.0	0.0
Gangneung	81.4	100.0	94.8	100.0	89.3	91.4	-8.6
Samcheok	83.9	100.0	66.0	96.8	72.1	71.5	-3.3
Chungju	79.8	75.0	81.8	73.1	86.6	80.7	-15.3
Jecheon	90.6	84.2	71.1	80.4	90.3	85.2	19.0
Cheonan	100.0	100.0	100.0	85.0	83.5	81.9	-1.0
Gongju	86.0	100.0	84.8	77.5	89.2	79.4	2.2
Boryeong	87.0	100.0	74.4	78.5	78.6	79.7	-20.3
Asan	100.0	100.0	94.1	100.0	100.0	84.5	-11.7
Seosan	100.0	100.0	92.2	83.2	82.7	89.7	14.7
Gunsan	100.0	100.0	97.5	96.2	95.6	100.0	33.7
Iksan	98.8	100.0	100.0	100.0	100.0	100.0	1.3
Jeongeup	100.0	95.6	93.1	92.3	90.6	85.3	-14.7
Namwon	61.6	100.0	75.6	73.5	72.0	70.5	-19.3
Gimje	99.6	97.1	100.0	91.0	94.2	94.9	11.3
YeoSu	57.1	72.3	81.9	71.0	70.7	75.8	-12.6
Suncheon	89.7	100.0	100.0	87.9	100.0	91.4	-8.6
Naju	92.4	100.0	88.6	87.0	84.2	79.6	-20.4
Gwangyang	95.3	100.0	100.0	100.0	100.0	100.0	0.0
Pohang	100.0	100.0	100.0	94.4	95.6	100.0	8.8
Gyeongju	100.0	100.0	100.0	75.5	98.3	98.1	6.5
Gimchun	70.0	96.5	87.6	69.2	91.6	79.5	-6.7
Andong	86.5	100.0	96.3	68.3	97.7	97.5	-2.5
Gumi	100.0	89.8	89.6	88.7	89.5	99.2	15.9
Yeongju	72.3	89.4	83.9	77.0	83.4	80.8	-4.4
Yeongcheon	75.5	100.0	100.0	100.0	100.0	100.0	16.5
Sangju	68.2	100.0	75.9	59.9	65.0	68.6	-2.9
Mungyeong	71.2	84.3	71.2	68.4	76.9	70.9	-12.1
Gyeongsan	100.0	89.8	100.0	100.0	100.0	99.9	-0.1
Changwon	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Masan	98.8	78.1	91.0	77.9	90.5	94.5	-5.5
Jinju	82.1	91.2	84.4	79.4	100.0	100.0	12.6
Tongyeong	79.4	67.7	66.3	72.1	91.2	100.0	18.2
Sacheon	64.9	71.4	59.4	73.4	91.8	97.0	4.3
Gimhae	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Miryang	74.6	100.0	67.0	77.5	100.0	100.0	10.5
Geoje	90.9	88.5	100.0	79.9	99.2	100.0	6.4

The CRS assumption is only appropriate when all DMUs are operating at an optimal scale, and imperfect competition may cause the DMU not to operate at an optimal scale. Banker, Charnes and Cooper (1984) suggested an extension of the CRS DEA model using variable a returns to scale (VRS) model to account for situations such as this (pp.1078-1092). Using the methodology recommended by Banker, Charnes and Cooper, this study measured the efficiency score of the 40 city-county consolidated governments using the VRS DEA model. Table 19 provides a summary and results of the analysis. Using the VRS model, the average of efficiency score of 40 consolidated cities was 93.4% in 1996, reached the peak of 98.0% in 1999, but then dropped to 92.7% in 2009. By 2009, the average efficiency score had almost returned to its 1996 level.

Table 19
Change of in the Average Efficiency Score for the 40 Consolidated Cities and the Number of Efficient Consolidated Cities, 1996-2009 (VRS DEA Model)

Year	1996	1997	1998	1999	2000	2001	2002
Average efficiency score	93.4%	91.7%	93.8%	98.0%	96.9%	96.8%	97.0%
% Annual change	-	-1.77%	2.16%	4.17%	-1.06%	-0.12%	0.22%
The number of efficient cities	20 (50.0)	22 (55.0%)	24 (60.0%)	30 (75.0%)	28 (70.0%)	31 (77.5%)	33 (82.5%)
Year	2003	2004	2005	2006	2007	2008	2009
Average efficiency score	95.8%	95.2%	96.3%	96.6%	92.8%	94.5%	92.7%
% Annual change	-1.19%	-0.67%	0.15%	0.27%	-3.82%	1.70%	-1.75%
The number of efficient cities	28 (70.0%)	28 (70.0%)	29 (72.5%)	27 (68.5%)	24 (60.0%)	24 (60.0%)	22 (55.0%)

The number of efficient consolidated governments grew from 20 in 1996 to 33 in 2000. The overall number decreased after 2003, and by 2009, there were only 22 efficient governments with an efficiency score of 100.0%. The number of efficient governments in 1996 and 2009 were approximately equal, and the results were similar with regard to the changes related to the average of efficiency scores of 40 consolidated cities. In short, the efficiency score of consolidated governments as measured by the VRS model increased in the short term, however in the long term, they fell back to the 1996 levels that were observed immediately following the consolidation.

Table 20 shows the efficiency scores as measured by VRS DEA model for the 40 consolidated cities from 1996 to 2009. Gunsan experienced the greatest percentage change with regard to its efficiency score, going from 70.5% in 1996 to 100.0% in 2009. The efficiency scores of three cities, Jecheon, Seosan, and Tongyeong, increased about 20% from 1996 to 2009. These are small and mid-sized cities and their population is below 300,000. The results for these three areas were similar when applying CRS DEA model. This implies that the size of government has little effect on the efficiency of consolidated government.

Sangju experienced the greatest decrease in efficiency score (-32.0%) following consolidation with the score dropping from 100.0% in 1996 to 68.0% in 2009. Mungyeong (-25.1%), Yeosu(-23.3%) and Naju (-17.9%) also experienced significant decreases. The VRS DEA model also reflected significant reductions for these cities, so the two models were very similar in this regard.

Table 20
Efficiency Scores of the 40 Consolidated Cities, 1996-2009

(Based on the VRS DEA Model)

City	1996	1997	1998	1999	2000	2001	2002	2003
Pyeongtaek	63.2	79.1	86.5	80.3	92.7	100.0	100.0	83.4
Namyangju	100.0	85.0	100.0	100.0	100.0	100.0	100.0	100.0
Chuncheon	85.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Wonju	100.0	92.6	100.0	100.0	100.0	100.0	100.0	100.0
Gangneung	100.0	100.0	80.6	100.0	100.0	100.0	100.0	81.0
Samcheok	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Chungju	98.2	100.0	83.1	94.2	90.7	94.6	86.3	79.1
Jecheon	66.3	68.6	77.2	88.0	93.9	88.3	100.0	96.6
Cheonan	85.6	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gongju	90.3	79.4	100.0	100.0	99.3	100.0	100.0	100.0
Boryeong	100.0	92.2	90.9	100.0	100.0	100.0	100.0	100.0
Asan	99.9	100.0	100.0	100.0	100.0	93.1	100.0	100.0
Seosan	75.1	83.9	100.0	100.0	100.0	100.0	100.0	100.0
Gunsan	70.5	77.3	90.2	98.6	100.0	100.0	100.0	100.0
Iksan	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Jeongeup	100.0	100.0	86.1	100.0	100.0	100.0	100.0	100.0
Namwon	92.3	100.0	87.6	100.0	84.7	100.0	100.0	86.4
Gimje	83.9	77.9	100.0	90.8	91.5	100.0	100.0	100.0
YeoSu	100.0	100.0	100.0	98.9	78.0	65.3	62.7	66.0
Suncheon	100.0	100.0	100.0	100.0	100.0	100.0	99.4	94.3
Naju	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gwangyang	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Pohang	91.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gyeongju	91.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gimchun	87.9	85.0	89.6	90.2	95.8	96.6	100.0	95.3
Andong	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Gumi	92.1	91.2	100.0	100.0	100.0	100.0	100.0	100.0
Yeongju	96.7	71.4	68.7	91.7	77.0	81.2	81.2	86.8
Yeongcheon	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sangju	100.0	73.6	75.0	100.0	100.0	100.0	100.0	100.0
Mungyeong	100.0	82.3	100.0	100.0	100.0	90.7	100.0	100.0
Gyeongsan	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Changwon	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Masan	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Jinju	91.5	100.0	83.3	94.0	86.7	100.0	100.0	90.9
Tongyeong	83.6	69.0	81.9	100.0	100.0	71.6	100.0	100.0
Sacheon	93.9	78.9	95.2	100.0	100.0	100.0	69.8	100.0
Gimhae	100.0	100.0	100.0	100.0	100.0	100.0	100.0	94.8
Miryang	100.0	89.3	84.9	92.9	99.4	100.0	98.7	78.7
Geoje	97.0	89.5	92.0	100.0	87.3	90.8	82.9	100.0

Table 20 (Continued)
 Efficiency Scores of the 40 Consolidated Cities, 1996-2009

(Based on the VRS DEA Model)

City	2004	2005	2006	2007	2008	2009	Average Score, 2009-2003
Pyeongtaek	80.1	100.0	75.8	76.2	83.2	79.6	16.4
Namyangju	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Chuncheon	100.0	100.0	100.0	100.0	100.0	100.0	14.3
Wonju	98.8	100.0	95.4	100.0	100.0	100.0	0.0
Gangneung	97.9	100.0	99.8	100.0	93.4	92.6	-7.4
Samcheok	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Chungju	80.8	80.3	83.9	73.2	86.0	80.8	-17.4
Jecheon	100.0	100.0	100.0	100.0	97.7	85.3	19.0
Cheonan	100.0	100.0	100.0	86.1	85.4	86.5	0.9
Gongju	100.0	100.0	100.0	86.9	89.5	79.4	-10.9
Boryeong	100.0	100.0	83.4	100.0	87.9	86.1	-13.9
Asan	100.0	100.0	99.3	100.0	100.0	94.7	-5.2
Seosan	100.0	100.0	100.0	88.3	82.8	94.0	18.9
Gunsan	100.0	100.0	100.0	100.0	100.0	100.0	29.5
Iksan	98.9	100.0	100.0	100.0	100.0	100.0	0.0
Jeongeup	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Namwon	79.4	100.0	85.6	100.0	81.4	77.0	-15.3
Gimje	100.0	100.0	100.0	100.0	100.0	100.0	16.1
YeoSu	57.8	100	100	72.0	70.7	76.6	-23.3
Suncheon	90.9	100.0	100.0	96.5	100.0	92.4	-7.6
Naju	100.0	100.0	100.0	100.0	100.0	82.1	-17.9
Gwangyang	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Pohang	100.0	100.0	100.0	100.0	97.6	100.0	8.5
Gyeongju	100.0	100.0	100.0	75.9	98.5	98.1	6.4
Gimchun	86.3	97.8	92.5	96.2	91.7	79.5	-8.4
Andong	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Gumi	100.0	94.0	100.0	100.0	100.0	100.0	7.9
Yeongju	87.4	85.9	84.4	77.5	83.6	80.8	-15.9
Yeongcheon	100.0	91.3	100.0	100.0	100.0	100.0	0.0
Sangju	100.0	100.0	100.0	82.4	65.6	68.0	-32.0
Mungyeong	100.0	100.0	92.9	73.7	83.5	74.9	-25.1
Gyeongsan	100.0	91.9	100.0	100.0	100.0	100.0	0.0
Changwon	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Masan	100.0	88.8	100.0	82.3	100.0	100.0	0.0
Jinju	100.0	84.7	99.1	87.8	100.0	100.0	8.5
Tongyeong	100.0	69.9	100.0	100.0	100.0	100.0	16.4
Sacheon	69.6	77.0	72.9	75.4	100.0	100.0	6.1
Gimhae	100.0	100.0	100.0	100.0	100.0	100.0	0.0
Miryang	78.4	100.0	98.2	100.0	100.0	100.0	0.0
Geoje	100.0	90.8	100.0	80.0	100.0	100.0	3.0

The Effect of City-County Consolidation on Technical Efficiency

Applying pooled-regression analysis, this study analyzes whether city-county consolidation leads to an increase in technical efficiency. As mentioned in Chapter IV, the dependent variable is "technical efficiency" and is calculated using both the CRS DEA and VRS DEA models. The independent variable is "city-county consolidation," and it is necessary to set control variables to measure the pure effect of city-consolidation on technical efficiency. The eight control variables are: "population size", "population density", "number of people of 65 age and over", "percentage of population receiving welfare", "percentage of population that is employed", "number of cars per 100 population", "number of public employees per 1,000 population", and "total expenditures per capita."

As reflected in Table 21, the coefficients of "city-county consolidation" indicate that city-county consolidation is negatively associated with consolidated government's technical efficiency. These results were consistent when measured using both the CRS DEA and VRS DEA models. The coefficient of city-county consolidation (-0.0991) in CRS DEA model indicates that every year there is a 0.0991% decrease in technical efficiency. In this regard, the negative coefficient of city-county consolidation in both models suggests that city-county consolidation did not lead to an increase the technical efficiency of consolidated governments.

Table 21
Effect of City-county Consolidation on Technical Efficiency

Variables	Technical Efficiency (CRS DEA model)	Technical Efficiency (VRS DEA model)
City-county consolidation	-.0991** (-2.77)	-.0939** (-4.727)
Population size	.0001 (1.19)	.0000 (1.89)
Population density	-.0012 (-0.10)	.0017 (0.34)
Number of people of 65 aged and over	.1984** (4.23)	.1611** (3.87)
Percentage of population receiving welfare	.0272 (0.94)	.0271* (2.20)
Percentage of population that is employed	-.0060 (-0.46)	-.0025 (-0.44)
Number of cars per 100 population	.0142 (1.11)	.0225* (2.40)
Number of public employees per 1,000 population	-.0450 (-1.12)	-.0228 (-1.73)
Total expenditures per capita	-.0830* (-2.09)	-.0376 (-1.04)
F	9.831**	10.566**
R ²	0.372	0.384

**Significant at the 0.01 level

*Significant at the 0.05 level

t statistics are shown in parentheses

Financial Status

This study examines total expenditures per capita and general administration expenditures per capita in order to analyze the change in size of the budget after the city-

county consolidations. It also examines the fiscal self-reliance ratio to review financial soundness of the consolidated governments. Finally, this study examines local shared tax per capita, National Treasury subsidy per capita, and local transfer fund per capita in order to determine the changes with regard to the South Korean central government's financial support for the consolidated governments.

In order to analyze the data, all the variables were converted to a constant 1996 monetary value (the Korean Won or KRW) using the South Korean Department of Commerce's Implicit Price Deflator to control for inflation. Per capita expenditures are used to adjust for population differences across cases, and the expenditures of the previous fiscal year are included as a variable to control incremental budgeting. The two-way fixed effects model of the pooled regression is employed in this study to control the unit-specific and time-specific measures.

Total Expenditures and General Administration Expenditures

Consolidation proponents in South Korea argued that city-county consolidations would result in a significant savings related to public service delivery costs by achieving economies of scale and by reducing general administration expenditures by removing duplicate organizations and manpower between cities and counties that would be merged. The proponents of fragmentation were concerned that consolidation could lead to an increase in expenditures and they were uncertain that economies of scale could be achieved.

This study analyzes the change in total expenditures per capita and the general administration expenditures per capita following the city-county consolidations in South

Korea in 1996. Table 22 shows the results of the pooled regression analysis focusing on the changes related to total expenditures and general administration expenditures. The two variables related to expenditures are reflected in the columns and the eight constants are depicted in the rows.

Table 22
Effect of City-County Consolidations on Total Expenditures and General Administration Expenditures

Variables	Total Expenditure Per Capita	General Administration Expenditure Per Capita
(Constant)	-35431.72 (-5.21)**	-15698.76 (-5.59)**
One Year before (t-1)	0.59 (22.20)**	0.52 (19.87)**
Population size	0.30 (12.01)**	0.15 (11.15)**
Population density	-5.49 (-4.54)**	-1.65 (-2.69)**
Number of people of 65 aged and over	172.31 (0.78)	61.32 (0.68)
Percentage of population receiving welfare	2682.13 (5.42)**	742.25 (3.65)**
Percentage of population that is employed	232.14 (1.18)	129.63 (1.58)
Number of cars 100 population	-267.43 (-0.93)	-81.86 (-0.61)
Number of public employees per 1000 population	-427.29 (-1.58)	-35.24 (0.39)
City-County Consolidation	4749.75 (6.04)**	1743.28 (5.17)**
F	959.52**,	496.98**,
R ²	0.928	0.896

**Significant at the 0.01 level

*Significant at the 0.05 level

t statistics are shown in parentheses

The analysis as reflected in Table 22 indicates that “one year before (t-1)”, “population size”, “population density”, “percentage of population receiving welfare”, and “city-county consolidation” achieved statistical significance as determinants in both of total expenditures and general administration expenditures. Statistical significance was achieved for both of the two variables. The coefficient with regard to total expenditures per capita and general administration expenditures per capita was 4,749.75 KRW and 1,743.28 KRW respectively. These numbers suggest that on an annual basis, the city-county consolidations resulted in a 4,749.75 KRW increase in total expenditures per capita, and in 1,743.28 KRW increase in general administration expenditures per capita.

It is clear that the total expenditures and general administration expenditures increased following the city-county consolidations. This result is significantly different from the consolidation proponent’s argument that the city-county consolidations would result in significant governmental savings.

South Korean Central Government’s Financial Support for Consolidated Governments

In South Korea, the head of a central administrative agency and the provincial governors may advise, recommend, or provide guidance on the affairs of local governments. If necessary, they may also request that local governments to provide background documents and records so audits can be conducted to determine financial soundness. When a local government is unable to manage its own affairs with the resources that are available, the central or regional government will often provide supplemental financial or technical support to the local government (Kim, Cho, Keum,

Joo, & Kim, 2010, pp.30-31).

In South Korea, there are three types of grants earmarked for local governments. These include the Local Shared Tax, the National Treasury Subsidy, and the Local Transfer Fund. The Local Shared Tax is a general grant whose size and allocation formula is defined by law. This grant is primarily used for intergovernmental fiscal relations and is used to reduce fiscal disparities among local governments. The National Treasury Subsidy and the Local Transfer Fund are categorical grants provided to local governments for specific projects. The size and number of projects are determined annually by the Ministry of Planning and Budget. In contrast, the Local Shared Taxes are allocated based on formulas.

The National Treasury Subsidy is intended to correct inefficient resource allocations arising from inter-jurisdictional externalities and it is used to maintain proper quality levels of public services, implement nationally integrated projects, provide new projects and respond to special fiscal needs. This grant is normally used by the central government to support specific projects requested by local governments.

The Local Transfer Fund is also provided by central government and is earmarked for certain specified projects. It is a conditional grant that requires local governments to provide a matching fund as a contribution to the overall grant allocation (Kim, Cho, Keum, Joo, & Kim, 2010, pp.52-55).

In South Korea, local revenues are comprised of local taxes, non-tax revenues, local shared taxes, subsidies, and municipal loans. As of Fiscal Year (FY) 2010, the total size of local revenues was 139 trillion KRW. This includes local taxes (34%), non-tax revenues (23%), local shared taxes (18%), subsidies (21%), and municipal loans

(4%)(Yoon, 2011, pp.139-140). Grants for local governments are approximately 39% of the total and as a result, the central government is able to exert significant influence on local governments through the use of these fiscal transfers. The central government played a significant role during the process of city-county consolidation, and used grants to leverage the process. The central government established the reform process, and designed the procedures and guidelines governing the whole process. If local government rejected the central government's proposal for consolidation, it was clear that they would not receive financial support from the central government. When local governments supported and adopted the central policy, additional financial support was provided to the local government. The central governmental grant system was used to influence policy and it was used as "the carrot or the stick" with regard to city-county consolidation.

This study used pooled regression and examines whether the central government's financial support has increased in long term after city-county consolidation. Table 23 shows that the city-county consolidations are positively associated with three types of central government grants. The coefficient of correlation for "city-county consolidation" in Table 23 suggests the correlation is lowest in National Treasury Subsidy per capita at 772.34, and highest in Local Transfer Fund per capita at 5,567.22. This indicates that central government's financial support for city-county consolidation was made mainly through Local Transfer Fund.

It is also noteworthy that central government's financial support for local governments increased significantly following the city-county consolidations. The analysis reveals the South Korean central government has kept its promises to provide financial support as consolidation inducement.

Table 23
Effect of City-County Consolidation on the Central Government's Financial Support to Consolidated Governments

Variables	Local Shared Tax per capita	National Treasury Subsidy per capita	Local Transfer Fund per capita
(Constant)	24783.28 (4.73)**	-3435.82 (-0.85)	-15373.61 (-1.87)
One Year before consolidation (t-1)	0.01 (0.19)	0.07 (1.21)	0.18 (3.09)**
Population size	-0.07 (-3.83)**	0.03 (3.02)**	0.05 (1.82)
Population density	-4.02 (-3.50)**	-2.59 (-3.34)**	-5.32 (-3.06)**
Number of people of 65 aged and over	256.23 (1.28)	-1.81 (-0.04)	-32.41 (-0.11)
Percentage of population receiving welfare	322.48 (0.71)	358.79 (1.92)	2440.54 (3.73)**
Percentage of population that is employed	-124.35 (-0.71)	-21.32 (0.04)	165.10 (0.58)
Number of cars per 100 population	-361.23 (-1.32)	54.72 (0.35)	-832.87 (-2.00)*
Number of public employees per 1000 population	442.12 (-1.71)	-92.11 (-0.66)	-44.98 (-0.12)
City-County Consolidation	2577.29 (3.85)**	772.34 (2.65)**	5567.22 (5.21)**
F	79.34**,	25.34**,	54.25**,
R ²	0.474	0.374	0.397

**Significant at the 0.01 level

*Significant at the 0.05 level

t statistics are shown in parentheses

Fiscal Self-Reliance Ratio

The South Korean city-county consolidation in 1995 was primarily an urban-rural consolidation. An important characteristic of this consolidation is that the central government was the catalyst, and the top level of government planned and implemented the consolidation process. Key officials in the South Korean central government and consolidation proponents argued that a consolidated government better provides the capacity and authority to address economic growth problems at the regional and local levels. Also, the proponents who favored city-county consolidations argued that the mergers would eliminate free riders, the practice of out-of-city residents using city facilities without paying for them. They also suggested that the mergers would reduce financial inequities and make the local governments more professional. As a result, they believed the city-county consolidations would lead to an improved financial condition and fiscal self-reliance.

On the other hand, opponents of city-county consolidation maintained that the mergers would result in bigger government and high taxes without better services. They were concerned that consolidation between financially sound cities and financially unstable counties might create serious financial problems throughout the newly created region.

The Fiscal Self Reliance and Improvement Index (FSRII) is constructed out of the ratio of Revenue Receipts (RR) to Revenue Expenditures (REX). This study examines how the fiscal self-reliance ratio changed following the city-county consolidations.

Table 24
Effect of City-County Consolidations on Fiscal Self-Reliance Ratio

Variables	Fiscal Self-Reliance Ratio
(Constant)	62.48 (16.63)**
One Year before consolidation (t-1)	-0.21 (-0.53)
Population size	0.00007 (0.61)
Population density	-0.003 (3.35)**
Number of people of 65 aged and over	-0.08 (-0.52)
Percentage of the population receiving welfare	-0.87 (-3.16)**
Percentage of the population that is employed	0.03 (0.30)
Number of cars per 100 population	0.51 (2.98)**
Number of public employees per 1000 population	-0.28 (-1.69)
City-County Consolidation	-1.91 (-4.23)**
F	19.34**,
R ²	0.461

**Significant at the 0.01 level

*Significant at the 0.05 level

t statistics are shown in parentheses

Table 24 shows that with respect to city-county consolidations, coefficient of correlation with regard to the “number of cars per 100 people” is positively associated, while that of “population density” and “percentage of population receiving welfare” is negatively associated with fiscal self-reliance ratio. The overall coefficient of correlation with regard to “city-county consolidation” is -1.91. It means that fiscal self-reliance ratio

has decreased 1.91% annually following the city-county consolidations. Since the self-reliance ratio for consolidated governments has decreased continuously following the mergers, it is difficult to argue that city-county consolidation leads to an improved fiscal capacity within consolidated government.

Reduction of Disparity Between Urban and Rural Areas

One of the significant challenges facing city-county consolidated local governments in South Korea is the disparity between urban and rural residents (Kim, 2006, p.256). In South Korea, the rapid process of urbanization in the 1970s and 1980s had brought about significant local government fragmentation. The number of metropolitan areas and cities increased from one metropolis and 20 cities in 1950 to seven metropolises and 72 cities in 1990. Inequities between the local governments were a very serious problem, especially between the cities and counties with regard to the provision of public facilities and services. Thus, the provision of public facilities and services became a key factor and a major point of discussion with regard to the proposed city-county consolidations in South Korea (Cho & Kim, 1999, p.346). This study uses a survey to collect the data necessary to analyze whether the city-county consolidations have reduced the disparity between urban and rural areas.

Characteristics of Respondents

The researcher concluded that a mailed survey was the most efficient method to obtain the data because personal and telephonic interviews were not feasible and would have been inconsistent, time-consuming and too costly. The researcher mailed

questionnaires to 2,433 Ri-Jangs of the 37 consolidated cities, and a total of 1,843 questionnaires were returned by mail.

The characteristics of the respondents are reflected in Table 25 were overwhelming male (71.9%) and primarily in their 40s (20.1%) and 50s (36.9%). A total of 63.9% of the respondents had a middle school and a high school diploma, and 36.1% had a college degree. It is also interesting to note that 55.4% of the respondents lived in the city and 44.6% lived in the county just prior to the city-county consolidation.

Table 25
Characteristics of Survey Respondents

	Characteristics	N	%
Gender	Male	1,316	71.9
	Female	514	28.1
Age	30-39	242	13.2
	40-49	551	30.1
	50-59	675	36.9
	60 and older	361	19.7
Education	Less than high school	1,169	63.9
	College degree	626	34.2
	Graduate degree Or '1-2 years at graduate level'	34	1.9
Residential district before consolidation	City	1,012	55.4
	County	816	44.6
	Total	1,843	100.0

Factor Analysis and Reliability

This research accomplished factor analysis and reliability analysis to test the validity of survey. Factor analysis is a statistical method used to describe variability among the sample's observations. It correlates the variables in terms of the potentially lower numbers of unobserved variables and these are referred to as factors. This study carried out a confirmatory factor analysis (CFA) and a principal component analysis (PCA) for the various types of factors. Confirmatory factor analysis (CFA) seeks to determine if the number of factors and the loadings of the measured variables on them conform to what is expected based on pre-established theory. Principal component analysis (PCA) seeks a linear combination of variables so that the maximum variance is extracted from the variables.

Reliability analysis allows the researcher to determine the extent to which a scale produces consistent results if the measurements are repeated. This analysis is accomplished by examining the proportion of systematic variation in a scale. This study uses a statistical method, referred to as Chronbach's alpha, to determine the internal consistency. The alpha coefficient ranges in value from 0 to 1 and is used to describe the reliability of factors extracted from dichotomous and multi-point formatted questionnaire scales. An alpha above .07 is considered reliable, and above .60 is probably reliable. An alpha value below .59 is considered not reliable. The higher the score, the more reliable the generated scale is considered. (George & Mallery, 2003, p.59)

In order to accomplish the factor analysis, the 19 questions in the survey were divided into five primary factors. The Kaiser-Meyer-Olkin (KMO) measure is .924. The Chi-Square is 16695.974, and its associated probability is .000 using Bartlett's test of

sphericity. As a result, the correlation matrix is considered to be an identity matrix, and the factor model is appropriate. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy is an index used to test whether the partial correlations among variables are small and if the factor analysis is appropriate. Bartlett's test of sphericity tests whether the correlation matrix is an identity matrix and it can also be used to indicate that the factor model is inappropriate.

In Table 26, Factor 1 includes the questions related to reducing disparity between urban and rural areas, Factor 2 questions are related to the mayor's leadership with regard to reducing disparity between urban and rural areas, Factor 3 questions are related to the homogeneity between cities and counties, Factor 4 questions are related to the political support for reducing disparity between urban and rural areas, and Factor 5 questions are related to the administrative support for reducing disparity between urban and rural areas.

The overall results of reliability analysis are found in the final column in Table 26. As the table indicates, the range of Chronbach's alpha value (internal consistency) of all variables is from 0.709 to 0.860. As a result, this range is considered to be good considering that 0.70 is the cutoff value for being acceptable. The Chronbach's alpha value for each of the variables is as follows: "reducing disparity between urban and rural areas" is 0.860, "mayor's leadership with regard to reducing disparity between urban and rural areas" is 0.828, "homogeneity between city and county" is 0.796, "political support for reducing disparity between urban and rural" is 0.789, and "administrative support for reducing disparity between urban and rural" is 0.709. The internal consistency values for each variable are well above the 0.70 level for acceptance.

Table 26
Results of Factor Analysis and Reliability Analysis

Variable	Question #	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Chronbach's Alpha
Reducing disparity between urban and rural areas	V19	.854	.157	.057	.123	.103	.860
	V18	.798	.160	.070	.079	.114	
	V20	.788	.117	.060	.132	.158	
	V17	.661	.205	.055	.227	.224	
Mayor's leadership with regard to reducing disparity between urban and rural areas	V10	.194	.782	.127	.102	.147	.828
	V11	.199	.763	.092	.141	.267	
	V12	.138	.714	.115	.159	.276	
	V9	.242	.674	.095	.201	.123	
Homogeneity between city and county	V2	.002	.108	.819	.093	.057	.796
	V4	.050	.032	.803	.098	.087	
	V3	.045	.126	.778	.013	.107	
	V1	.081	.108	.686	.116	.033	
Political support for reducing disparity between urban and rural areas	V6	.151	.199	.102	.804	.155	.789
	V7	.155	.277	.111	.786	.113	
	V5	.216	.044	.085	.717	.188	
	V8	.181	.416	.233	.427	.173	
Administrative support for reducing disparity between urban and rural areas	V13	.075	.112	.035	.167	.712	.709
	V14	.198	.255	.172	.162	.632	
	V16	.343	.282	.083	.060	.554	
	V15	.303	.425	.079	.147	.548	
Eigen value		7.775	2.275	1.510	1.296	1.021	
% of Variance		35.342	10.342	6.863	5.889	3.879	

To examine consolidation effect with regard to the possible reduction of disparity between urban and rural, this study also analyzes whether the disparity is reduced in terms of governmental services, education, economic development, and public facilities provision. These elements are addressed in the section that follows.

Reduction of Disparity Associated with Governmental Services

In South Korea, it was very difficult to provide adequate public services for residents in the county areas before the city-county consolidations because their geographic size of administrative areas were too broad to meet the needs of their citizens. Because of the limited funds available to county governments, the limited number of government employees was typically inadequate to provide the required governmental services. The proponents favoring city-county consolidations argued that governmental merger would remedy the shortage of public employees, because it would eliminate duplicated workload between the city government and county governments.

The survey asked whether the city-county consolidation resulted in a reduction of the disparity associated with governmental services. The answer to this question is provided in Table 26. Based on the survey results, in 25 consolidated cities over 50% of the respondents agreed that the disparity related to governmental services between the residents in cities and the residents in counties was reduced following city-county consolidation. For each of the consolidated city-county governments, there were more who responded favorably than negatively. In Miryang, Gimchun, and Samcheok, over 80% of the respondents believed that consolidation had reduced disparity. Overall, 49.1% of 1,837 respondents agreed or strongly agreed that the consolidation had reduced disparity, and only 9.2% believed it was ineffective. Therefore, the survey and analysis reinforces the notion that city-county consolidations have led to a reduction in the disparity associated with the governmental services available to the citizens in urban and rural areas.

Table 27
 Survey Results Pertaining to Whether There Was a Reduction of Disparity Associated
 with Governmental Services Following City-county Consolidations

City	Strongly Disagree or Disagree	Neither	Agree or Strongly Agree	Total
Pyeongtaek	3.8	34.6	61.5	100 (N=52)
Namyangju	9.5	39.6	51.0	100 (N=53)
Chuncheon	12.0	22.0	66.0	100 (N=50)
Wonju	4.5	68.2	27.3	100 (N=44)
Gangneung	6.0	28.0	66.0	100 (N=50)
Samcheok	0.0	18.5	81.5	100 (N=54)
Chungju	2.2	23.9	73.9	100 (N=46)
Jecheon	3.6	21.8	74.5	100 (N=55)
Cheonan	21.1	38.5	40.4	100 (N=52)
Gongju	14.0	50.0	36.0	100 (N=50)
Boryeong	6.0	34.0	60.0	100 (N=50)
Asan	6.6	22.2	71.1	100 (N=45)
Seosan	4.0	28.0	68.0	100 (N=50)
Gunsan	4.0	28.0	68.0	100 (N=50)
Iksan	5.8	40.4	53.8	100 (N=52)
Jeongeup	4.0	30.0	66.0	100 (N=50)
Namwon	32.0	24.0	44.0	100 (N=50)
Gimje	4.0	18.0	78.0	100 (N=50)
Suncheon	8.3	41.7	50.0	100 (N=48)
Naju	16.0	24.0	60.0	100 (N=25)
Gwangyang	13.0	32.6	54.3	100 (N=46)
Pohang	8.6	25.7	65.7	100 (N=70)
Gyeongju	13.7	43.1	43.2	100 (N=51)
Gimchun	0.0	14.9	85.1	100 (N=47)
Andong	5.8	53.8	40.4	100 (N=52)
Gumi	19.3	31.6	49.1	100 (N=57)
Yeongju	2.0	34.0	64.0	100 (N=50)
Yeongcheon	23.8	42.9	33.4	100 (N=42)
Sangju	3.3	46.7	50.0	100 (N=60)
Mungyeong	24.5	36.7	38.7	100 (N=49)
Gyeongsan	13.0	23.9	63.0	100 (N=46)
Jinju	12.5	45.8	41.7	100 (N=48)
Tongyeong	5.9	19.6	74.5	100 (N=51)
Sacheon	0.0	66.0	34.0	100 (N=50)
Gimhae	10.5	31.6	57.9	100 (N=38)
Miryang	0.0	14.0	86.0	100 (N=50)
Geoje	22.2	55.6	22.2	100 (N=54)
Total	9.2	34.0	56.8	100 (N=1,837)

*The numbers are the percentage of total respondents

Reduction of Disparity Related to Education

Most parents in South Korea are extremely zealous with regard to obtaining an excellent education for their children. Many parents want to live in an area with good school systems, and school districts have a significant impact on professional decisions related to tenure and residential mobility. Availability of appropriate educational opportunities is often cited as one of the most important factors with regard to a family decision to relocate. The educational gap between cities and counties is one of the most significant reasons for the rapid process of urbanization in South Korea and the urbanization has resulted in local government fragmentation (Kim, 2006, p.250). Therefore, those who favored governmental consolidation in South Korea were optimistic that the mergers would reduce the educational disparity between cities and counties.

In this study, the survey asked whether city-county consolidation had resulted in a reduction of the disparity with regard to the education services available within the urban and rural areas. The results are presented in Table 28. A total of 30.3% respondents strongly disagreed or disagreed that city-county consolidations had assisted in reducing the disparity related to education service between urban and rural areas, and only 22.2% agreed or strongly agreed with the notion that the disparity had been reduced. Overall, there were significantly more respondents who believed that the disparity had not been reduced.

Table 28
 Survey Results Pertaining to Whether Educational Disparity Was Reduced Following
 City-county Consolidations

City	Strongly Disagree or Disagree	Neither	Agree or Strongly Agree	Total
Pyeongtaek	18.1	72.8	9.1	100 (N=44)
Namyangju	21.1	45.6	33.3	100 (N=57)
Chuncheon	10.6	44.7	44.7	100 (N=47)
Wonju	23.5	43.1	33.4	100 (N=51)
Gangneung	17.6	47.1	35.3	100 (N=51)
Samcheok	44.9	36.7	18.4	100 (N=49)
Chungju	32.7	38.5	28.8	100 (N=52)
Jecheon	13.0	39.1	47.9	100 (N=46)
Cheonan	24.0	56.0	20.0	100 (N=50)
Gongju	26.9	51.9	21.2	100 (N=52)
Boryeong	24.0	42.0	34.0	100 (N=50)
Asan	19.2	71.2	9.6	100 (N=52)
Seosan	19.2	48.1	32.7	100 (N=52)
Gunsan	20.0	50.0	30.0	100 (N=50)
Iksan	26.0	44.0	30.0	100 (N=50)
Jeongeup	18.0	44.0	38.0	100 (N=50)
Namwon	20.0	42.3	37.7	100 (N=45)
Gimje	33.3	59.3	7.4	100 (N=54)
Suncheon	14.0	68.0	18.0	100 (N=50)
Naju	23.6	38.2	38.2	100 (N=55)
Gwangyang	20.0	52.7	27.3	100 (N=55)
Pohang	32.0	42.0	26.0	100 (N=50)
Gyeongju	10.0	53.4	36.6	100 (N=60)
Gimchun	28.3	50.9	20.8	100 (N=53)
Andong	8.0	56.0	36.0	100 (N=50)
Gumi	28.6	38.6	32.8	100 (N=70)
Yeongju	23.4	53.2	23.4	100 (N=47)
Yeongcheon	6.0	52.0	42.0	100 (N=50)
Sangju	30.4	43.5	26.1	100 (N=46)
Mungyeong	33.4	42.8	23.8	100 (N=42)
Gyeongsan	15.8	26.3	57.9	100 (N=38)
Jinju	16.0	48.0	36.0	100 (N=50)
Tongyeong	20.8	33.3	45.9	100 (N=48)
Sacheon	31.2	39.6	29.2	100 (N=48)
Gimhae	8.0	40.0	52.0	100 (N=50)
Miryang	26.9	50.0	23.1	100 (N=52)
Geoje	36.0	52.0	12.0	100 (N=25)
Total	22.2	47.5	30.3	100 (N=1841)

*The numbers are the percentage of total respondents

The survey indicates that two city-county governments, Gyeongsan and Gimhae, experienced a reduction in disparity in three areas, Gimje, Pyeongtack, and Asan, there was little or no reduction. In Gyeongsan 57.9% of the respondents agreed that city-county consolidation helped reduce the educational disparity. In Gimhae 52.0% of the respondents agreed that city-county consolidation helped reduce the educational disparity. In contrast, less than 10% in Gimje, Pyeongtack, and Asan thought that the city-county consolidation served to reduce the disparity.

Overall, the data presented in Table 28 shows that city-county consolidation has had little or no impact on reducing educational disparity between the urban and rural areas except in two of the city-county governments.

Reduction of Disparity Related to Economic Development

Economic development is the primary catalyst for a successful city-county consolidation. In South Korea, reformers argued that consolidation is the solution to the economic development and that the merger will benefit the entire community. They indicated that a single larger government would be better able to attract new businesses than smaller fragmented municipalities. Proponents also indicated that consolidation would lead to improved economic development for the region and it would help end the sometimes counter-productive competition between cities and counties. Some contemporary researchers now believe that following a city-county consolidation, the city and the county would work together to bring about large capital projects that would be located within the same jurisdiction and provide benefit for all (Leland & Thurmaier, 2010, pp.4-5). This economic development argument is one of the more persuasive

justifications for city-county consolidation (Feiock & Carr, 1997, p.167).

This study also used the survey results to obtain respondents views related to whether the disparity of economic development between cities and counties was reduced following city-county consolidations. The survey results are presented in Table 29.

Only 28.3% of 1,824 respondents indicated that city-county consolidation served to reduce the disparity related to economic development between urban and rural. In 19 of the 37 consolidated cities involved in this survey, there were more respondents who agreed or strongly agreed than those who disagreed. In Suncheon (64%) and Gimhae (56%) over half of the respondents answered in the affirmative, but in Samcheok, 51% of the respondents indicated that city-county consolidation has a little or no effect of reducing the disparity.

In conclusion, the data are not conclusive, and it is difficult to determine whether the city-county consolidations served to decrease the disparity related to economic development except in two locations, Suncheon and Gimhae.

Table 29
 Survey Results Pertaining to Whether Economic Development Disparity Was Reduced
 Following City-county Consolidations

City	Strongly Disagree or Disagree	Neither	Agree or Strongly Agree	Total
Pyeongtaek	36.3	54.5	9.1	100 (N=44)
Namyangju	18.2	56.4	36.3	100 (N=55)
Chuncheon	29.8	25.5	46.8	100 (N=47)
Wonju	36.0	32.0	32.0	100 (N=50)
Gangneung	17.7	33.3	51.0	100 (N=51)
Samcheok	51.0	38.8	22.4	100 (N=49)
Chungju	28.9	42.3	36.6	100 (N=52)
Jecheon	28.2	39.1	50.0	100 (N=46)
Cheonan	28.0	54.0	26.0	100 (N=50)
Gongju	23.1	48.1	34.6	100 (N=52)
Boryeong	38.0	42.0	20.0	100 (N=50)
Asan	17.3	69.2	26.9	100 (N=52)
Seosan	42.3	38.5	33.4	100 (N=52)
Gunsan	28.0	46.0	40.0	100 (N=50)
Iksan	30.0	46.0	34.0	100 (N=50)
Jeongeup	14.0	42.0	50.0	100 (N=50)
Namwon	22.2	40.0	35.5	100 (N=45)
Gimje	48.1	29.6	29.6	100 (N=54)
Suncheon	6.0	30.0	56.0	100 (N=50)
Naju	16.3	47.3	40.0	100 (N=55)
Gwangyang	31.5	48.1	18.5	100 (N=55)
Pohang	24.0	48.0	36.0	100 (N=50)
Gyeongju	20.0	63.3	20.0	100 (N=60)
Gimchun	20.8	50.9	39.6	100 (N=53)
Andong	10.9	69.6	30.4	100 (N=46)
Gumi	24.3	47.1	30.0	100 (N=70)
Yeongju	25.5	38.3	27.7	100 (N=47)
Yeongcheon	20.0	50.0	24.0	100 (N=50)
Sangju	41.4	46.3	34.1	100 (N=41)
Mungyeong	26.2	52.4	19.0	100 (N=42)
Gyeongsan	22.2	50.0	27.8	100 (N=36)
Jinju	26.0	44.0	36.0	100 (N=50)
Tongyeong	45.8	20.8	33.3	100 (N=48)
Sacheon	43.8	50.0	31.3	100 (N=48)
Gimhae	8.0	36.0	54.0	100 (N=50)
Miryang	14.0	50.0	34.0	100 (N=50)
Geoje	36.0	40.0	36.0	100 (N=25)
Total	26.7	45.0	33.6	100 (N=1,824)

*The numbers are the percentage of total respondents

Reduction of Disparity Related to the Provision of Public Facilities

Before the South Korean city-county consolidations, residents of a county and residents of a city that shared the same territory for their daily activities also often shared a common local identity. Because a city often served as both the geographical and functional center of the county, residents in the county used city's public facilities for their employment, education, government, shopping opportunities and services. The opponents of consolidation in South Korea were concerned that following city-county consolidations, the public facilities such as parks, libraries, telecommunications, schools and sewer lines would be more often provided to the city, and this would result in a population concentration in the city (Shin, 2004, p.184).

This study accomplished a survey in 37 consolidated cities to help determine whether public facilities were provided uniformly between cities and counties following city-county consolidations. Table 30 provides the results of survey. A total of 33.6% of respondents agree or strongly agreed and 24.2% disagreed or strongly disagreed that public facilities were provided uniformly.

In 10 cities (Boryeong, Yeongju, Wonju, Samchuck, Pyeongtaek, Gimje, Gyeongju, Gumi, Gwangyang, and Mungyeong), the percentage of respondents who believed public facilities were equally provided between city and county was lower than the percentage of respondents who thought public facilities were not uniformly provided after the city-county consolidation. It is noteworthy that in only five cities (Sacheon, Miryang, Tongyeong, Seosan, and Gyeongsan) over 50% of respondents felt the disparity was reduced.

Table 30
 Survey Results Pertaining to Whether the Disparity Related to Public Facilities Provision
 Was Reduced Following City-County Consolidations

City	Strongly Disagree or Disagree	Neither	Agree or Strongly Agree	Total
Pyeongtaek	40.9	50.0	9.1	100 (N=44)
Namyangju	10.9	52.7	36.3	100 (N=55)
Chuncheon	12.8	40.4	46.8	100 (N=47)
Wonju	36.0	32.0	32.0	100 (N=50)
Gangneung	17.6	31.4	51.0	100 (N=51)
Samcheok	30.6	46.9	22.4	100 (N=49)
Chungju	25.0	38.5	36.6	100 (N=52)
Jecheon	8.7	41.3	50.0	100 (N=46)
Cheonan	22.0	52.0	26.0	100 (N=50)
Gongju	26.9	38.5	34.6	100 (N=52)
Boryeong	38.0	42.0	20.0	100 (N=50)
Asan	21.1	51.9	26.9	100 (N=52)
Seosan	23.5	43.1	33.4	100 (N=51)
Gunsan	24.0	36.0	40.0	100 (N=50)
Iksan	30.0	36.0	34.0	100 (N=50)
Jeongeup	22.0	28.0	50.0	100 (N=50)
Namwon	22.2	42.2	35.5	100 (N=45)
Gimje	40.7	29.6	29.6	100 (N=54)
Suncheon	8.0	36.0	56.0	100 (N=50)
Naju	21.8	38.2	40.0	100 (N=55)
Gwangyang	31.5	50.0	18.5	100 (N=54)
Pohang	24.0	40.0	36.0	100 (N=50)
Gyeongju	26.7	53.3	20.0	100 (N=60)
Gimchun	22.7	37.7	39.6	100 (N=53)
Andong	13.0	56.5	30.4	100 (N=46)
Gumi	31.4	38.6	30.0	100 (N=70)
Yeongju	29.8	42.6	27.7	100 (N=47)
Yeongcheon	18.0	58.0	24.0	100 (N=50)
Sangju	24.4	41.5	34.1	100 (N=41)
Mungyeong	31.0	50.0	19.0	100 (N=42)
Gyeongsan	5.6	66.7	27.8	100 (N=36)
Jinju	24.0	40.0	36.0	100 (N=50)
Tongyeong	29.2	37.5	33.3	100 (N=48)
Sacheon	31.2	37.5	31.3	100 (N=48)
Gimhae	12.0	34.0	54.0	100 (N=50)
Miryang	24.0	42.0	34.0	100 (N=50)
Geoje	24.0	40.0	36.0	100 (N=25)
Total	24.2	42.3	33.6	100 (N=1,823)

*The numbers are the percentage of total respondents

In summary, the survey results indicate that residents were satisfied with the equity of public facility provision in only five of the 37 cities. Therefore, it seems clear that city-county consolidation did not serve to reduce the disparity related to public facilities provision.

Determinants of Disparity between Cities and Counties

In order to develop recommendations regarding the appropriateness of future consolidations, this study attempts to identify the determinants related to reducing disparity between urban and rural areas. As indicated in Chapter IV, the researcher has identified eight independent variables which include: “population size”, “geographic size of administrative area”, “total expenditures per capita”, “number of individuals that are employed per 1,000 population”, “homogeneity between cities and counties”, “mayor’s leadership with regard to reducing disparity between urban and rural areas”, “political support for reducing disparity between urban and rural areas”, and “administrative support for reducing disparity between urban and rural areas.” For this analysis, the dependent variable will be the “reduction of disparity between the city and county.” Ordinary least squares (OLS) is employed for this analysis because the data is cross-sectional and was collected by observing many subjects at the same point of time (year: 2010). For independent observations where the goal is regression of an outcome on covariates, ordinary least squares (OLS) is the typical choice for researchers and analysts.

Table 31 shows the results of the OLS regression used to identify the determinants related to the reduction of disparity between urban and rural areas. In this regression model, the adjusted R squared (adj.R^2) is 0.711, and F value (random variable

that has an F distribution) is 8.618. Therefore, the explanatory power of the model is 71.1%, indicating that changes in independent variables account for 71.1% of the variation in dependent variable.

According to the analysis, only two of the independent variables are determinants associated with reducing disparity between urban and rural areas. “Homogeneity between city and county” and “administrative support for reducing disparity between urban and rural areas” are the two that achieved statistical significance. Their direction is positive as indicated in Table 31. This means that “homogeneity between city and county” and “administrative support for reducing disparity between urban and rural areas” have an effect on reducing disparity. The coefficient of “administrative support for reducing disparity between urban and rural areas (0.533)” is higher than the coefficient of “homogeneity between city and county (0.391)”. This suggests that administrative support for reducing disparity is a more important variable than the homogeneity between city and county.

In conclusion, consolidated governments have to make an effort to form a common local identity shared between residents of the city and the county. Additionally, it appears that political leaders must employ a variety of techniques (e.g., developing policies, holding diverse events, and providing public services to reduce the disparity between urban and rural areas).

Table 31

Determinants of Reducing Disparity Between Urban and Rural Areas

Variables	Reducing Disparity Between Urban and Rural Areas
(Constant)	-0.344 (-2.283)*
Population Size	-0.080 (-0.517)
Geographic Size of Administrative Area	0.037 (0.267)
Total Expenditures per capita	0.012 (0.078)
The Number of Public Employees per 1000 population	0.015 (0.018)
Homogeneity between city and county	0.391 (2.321)*
Mayor's Leadership with regard to Reducing Disparity between Urban and Rural Areas	0.339 (1.886)
Political Support for Reducing Disparity between Urban and Rural Areas	0.262 (1.575)
Administrative Support for Reducing Disparity between Urban and Rural Areas	0.533 (2.876)**
F	8.618**
R ²	0.711

**Significant at the 0.01 level

*Significant at the 0.05 level

t statistics are shown in parentheses

Summary

This study examines and analyzes several questions related to the South Korean city-county consolidations that were accomplished in 1995. The researcher sought to determine whether the consolidated governments were more efficient, if the financial status of the new merged municipalities improved, and if the disparity between urban and rural areas was reduced.

The following hypotheses were tested in the analysis:

H1: The technical efficiency of consolidated governments improved following the city-county consolidations.

H2: The financial status of consolidated governments improved following the city-county consolidations.

H3: The disparity between urban and rural areas was reduced following the city-county consolidations.

To test the three hypotheses, the researcher analyzed the data and drew several significant conclusions. For hypothesis H1, the data presented in Tables 9-21 do not provide support for the notion that the technical efficiency of consolidated governments improved following city-county consolidation. Although the number of public employees were reduced in short term, the data reveal that the local taxes and total expenditures increased following the consolidations.

Hypothesis 2 also analyzed whether city-county consolidation leads to increase technical efficiency of consolidated government applying pooled regression. The analysis revealed that city-county consolidation actually reduced consolidated government's technical efficiency.

The study also explored whether city-county consolidation serves to improve the financial status of consolidated governments. The three primary results were: (1) the total expenditure per capita and general administration expenditure per capita increased following city-county consolidation; (2) the central government's financial support for consolidated government increased following city-county consolidation; (3) self-reliance ratio of consolidated government decreased following city-county consolidation.

Although South Korean central government increased financial support for consolidated governments as promised, the data presented in Tables 22-24 do not provide much support for hypothesis H2 which focused on whether the financial status of consolidation governments had improved following city-county consolidation.

To test hypothesis H3, this study used the results from a mailed survey and examined whether the disparities related to governmental service, education, economic development, and providing public facilities were reduced. The researcher concluded that the disparity related to government service was reduced following consolidation, but disparities related to educational, economic development and public facilities provision were not. Therefore, with regard to reducing the disparity between urban and rural areas, the data provide no support for hypothesis H3.

This study also sought to identify the determinants which would most likely reduce the disparity between urban and rural areas. The researcher concluded that two determinants, “administrative support for reducing disparity between urban and rural areas” and “homogeneity between city and county,” are positively associated with efforts to reduce disparity between urban and rural areas.

CHAPTER V

CONCLUSION

The term city-county consolidation has been defined in a variety of ways, but Lyons (1997) most succinctly indicates that consolidation involves the unification or merger of the governments of one or more cities with the government of the surrounding territory (p.5). City-county consolidation often involves an ongoing struggle in which different interests seek to institutionalize their preferences into the structure of local government (Feiock, Park, & Kang, 2006, p.23).

Those favoring mergers often suggest that consolidation minimizes the duplication of services and makes possible metropolitan-wide planning and administration (Saffell, 1993, p.266). They often argue that city-county consolidation is a good government reform to promote efficiency, equity, and accountability. It also serves to reduce disparities between urban and rural areas (Savitch, & Vogel, 2004, p.758).

Through the years, there has also been considerable opposition to consolidation. Public choice theorists and others who oppose city-county consolidation maintain that mergers results in bigger government and higher taxes without better services. They suggest that city-county consolidation creates inefficient monopolies, and as a result, consolidation fails to improve efficiency.

The purpose of this study was to examine whether the technical efficiency of the

consolidated governments in South Korea improved, to ascertain whether the city-county consolidation improved financial status of the consolidated governments, and to determine whether the disparities between urban and rural areas were reduced.

Summary of Tests Hypotheses

This study analyzed whether city-county consolidation in South Korea in 1995 achieved the purposes of consolidation in terms of technical efficiency, financial status, and equity. The research questions for this study are:

- Did consolidation lead to more efficient government in South Korea?
- Did it improve the financial status of the consolidated government?
- Did it serve to reduce the disparity between urban and rural areas?

This study includes four chapters in addition to this one, and the purpose of each is provided below. Chapter I provided the objectives of the study, the research questions, and the methodology. Chapter II examined the theories related to local government boundaries and optimal size, and reviewed previous studies in the United States and South Korea that analyze the effect of city-county consolidation. Chapter III provided the comprehensive research design and analytic methods that were used to test the hypotheses. Chapter IV analyzed the research data, and interpreted its meaning. Finally, Chapter V concludes the study with a brief discussion of the outcomes of city-county consolidation and the direction of future study.

This study provides comprehensive research and analysis related to the city-county consolidation in South Korea. The three hypotheses for this study are:

•H1: The technical efficiency of consolidated governments improved following the city-county consolidations.

•H2: The financial status of consolidated governments improved following the city-county consolidations.

•H3: The disparity between urban and rural areas was reduced following the city-county consolidations.

To test these hypotheses, Data Envelopment Analysis (DEA), pooled regression, and a mailed survey were employed. SPSS version 21.0, DEA-Solver, and STATA were used as the analytical tools. This study measured the technical efficiency of consolidated cities in South Korea from 1996 to 2009 using DEA, and analyzed the effect of city county consolidation focusing on the technical efficiency of consolidated government by applying pooled regression. To analyze the effect of city-county consolidation on the financial status of consolidated government, this study examined the changes of total expenditures, expenditures of general administration, local shared tax, the national treasury subsidy, the local transfer fund, and the fiscal self-reliance ratio. The survey was employed to analyze the effect of reducing the disparity between urban and rural areas.

H1: The technical efficiency of consolidated governments improved following the city-county consolidations

To analyze the efficiency improvements following city-county consolidation, this study examined population growth, change in the number of public employees, change of

total expenditures, change in the amount of local taxes collected, and change of efficiency score as measured by DEA. From the data available in governmental records, we observed that the majority of consolidated cities had minor changes with regard to population. The number of public employees were reduced in the short term following city-county consolidation. This was consistent with the expectations of the proponents of city-county consolidation. However, the analysis reveals that the reductions did not remain in the long term. As a result, it appears that consolidation appears to have had little impact on trends with regard to increases in total population, and the reduction in the number of public employees in South Korea.

Total expenditures per capita increased following the city-county consolidations in South Korea, so it seems there was no cost savings effect resulting from the mergers. Although there was very little population growth in the consolidated cities, the amount of local taxes collected per capita sharply increased following city-county consolidation. As a result, it appears the city-county consolidations increased the tax burden for citizens.

According to both CRS model and VRS models, there has been little change in the technical efficiency scores of the 40 consolidated governments. This study employed pooled regression to determine whether city-county consolidation leads to increase technical efficiency. The analysis revealed that city-county consolidation is negatively associated with the technical efficiency scores as reflected in both the CRS and VRS models. Therefore, it is difficult to argue that city-county consolidation leads to increase the technical efficiency of consolidated government. Hypothesis H1 is therefore rejected because the technical efficiency of consolidated governments did not improve following the city-county consolidations.

H2: The financial status of consolidated governments improved following the city-county consolidations

Using pooled regression, this study also analyzed the effect of city-county consolidation on the financial status of consolidated governments. The researcher examined the following elements following the city-county consolidations, including the change in size of the budget (total expenditures and general administration expenditures), fiscal self-reliance ratio, and South Korean central government's financial support (local shared tax, the national treasury subsidy, the local transfer fund). The results of the pooled regression revealed that both the total expenditures and general administration expenditures increased following the city-county consolidation and that city-county consolidation is negatively associated with self-reliance ratio for consolidated government. On the other hand, the city-county consolidations were positively associated with three types of central government grants. As a result of the analysis, it is clear that the city-county consolidations in South Korea did not result in governmental savings or lead to improve fiscal capacity. It is also clear that the South Korean central government kept its promises to provide increased financial support following city-county consolidations. Hypothesis H2 is therefore rejected because the financial status of consolidated governments did not improve following the city-county consolidations.

H3: The disparity between urban and rural areas was reduced following the city-county consolidations

One of the primary goals of city-county consolidation in South Korea was to reduce disparity between the urban and rural areas. This study used a survey to analyze

whether city-county consolidation was effective with regard to reducing disparity between urban and rural areas in terms of governmental services, education, economic development, and the provision of public facilities. The survey revealed that the disparity associated with the governmental services was indeed reduced following the city-county consolidations. However, it also revealed that the disparities related to education, economic development, and the provision of public facilities were not reduced. As a result of the survey and the researcher's findings, it is difficult to argue that city-county consolidation is a good reform which can be used to reduce the disparity between urban and rural areas. Hypothesis H3 is therefore rejected because the disparity between urban and rural areas was not reduced following the city-county consolidations.

This study also sought to identify the determinants involved with reducing disparity between urban and rural areas. Only two of the eight independent variables achieved statistical significance and they are (1) administrative support for reducing disparity between urban and rural areas; and (2) homogeneity between the city and county. Based on this finding, cities and counties contemplating consolidation should definitely consider the social, cultural, and economical homogeneity between the city and the county. Also, it is also clear that consolidation alone is not the answer with regard to reducing disparity. Political leaders in consolidated governments must also develop a variety of policies, sponsor diverse events, and provide public services aimed at reducing disparity between the urban and rural areas.

Conclusion and Recommendations

In conclusion, the findings from this analysis imply that the city-county

consolidations in South Korea did not serve to increase technical efficiency, improve financial efficiency, or equalize the development between urban and rural areas in the consolidated region. Therefore, the city-county consolidations in South Korea in 1995 seem to have been unsuccessful.

The findings in this study are also consistent with the majority of the literature highlighted in Chapter II pertaining to city-county consolidations in the United States. Martin and Schiff (2012) said that there is little or no evidence in existing empirical studies that city-county consolidation contributes to increasing efficiency or promoting equity between urban and rural areas. Benton and Gamble's (1984) research focused on determining whether the consolidation of Jacksonville and Duval County, Florida led to a reduction in property taxes or in expenditures. Their study, as did this one, found that tax and expenditures increased following city-county consolidation.

Therefore, it is difficult to identify a sustained result that city-county consolidations improve governmental efficiency, decrease total expenditures, or increase equity between urban and rural areas. The findings in this study support the public choice theorist's insistence that city-county consolidations result in bigger government and higher taxes without better services in South Korea.

Nevertheless, proponents of city-county consolidation in South Korea continue to argue that consolidation will reduce the overall cost of government and will reduce disparity between urban and rural areas. Likewise, the South Korean central government has continued to promote city-county consolidation as a viable concept. In 2010, Changwon, Masan and Jinhae were consolidated into the Changwon metropolitan city with a total population of approximately 1.05 million. This city-county consolidation was

planned and implemented by the central government and it intervened directly in this instance as it did in the earlier consolidation process.

As indicated, this study analyzed the effects of the South Korean city-county consolidations that were initiated in 1995. These city-county consolidations, initiated and driven primarily by the central government, were typically unsuccessful. As a result, it is reasonable to believe that future movements toward city-county consolidation should be led from the "bottom up" by local residents, and that the central government should not force local governmental consolidation from the "top down."

Based on the findings in this and other studies, it seems clear that the South Korean central government must explore new policies and identify other solutions aimed at local government problems such as inefficiency, unfavorable fiscal conditions, and inequality among local governments. City-county consolidation is by no means the only solution. For example, balanced development between local governments and other governmental policies and incentives aimed at easing overpopulation in metropolitan areas can also be effective.

Limitations and Future Directions

This study analyzed the effect of city-county consolidation in terms of technical efficiency, financial status, and the reduction of disparity between urban and rural areas in South Korea. Although this study is comprehensive with regard to analyzing the effects of consolidation over an extended period of time, its major weakness is that neither the time nor resources were available to accomplish a case study in conjunction with the analysis. As a result, it is difficult for the researcher to explain the causes of the

results, and to make recommendations for city-county consolidations in the future.

The opponents of governmental merger may use the findings of this study to support their position that city-county consolidations don't serve to increase technical efficiency, strengthen local government finances, or reduce disparity between urban and rural areas. Another limitation of the study is that the research focused only on the South Korea consolidation experience, and the findings are limited to consolidations in South Korea. As a result of the differences in nations, cultures, citizens and geographies, this research and its findings are not necessarily comparable to the consolidation experiences in other nations. South Korea is also a unique case in that the central government developed consolidation plans and initiated action from the "top down." The South Korean model is also unique in the fact that in some instances, multiple cities and counties were consolidated into one unit rather than the more typical one city and one county consolidation model which is prevalent in the United States.

The effects that consolidations have had in the past or will have in the future will continue to remain a topic for debate and will inspire future research and analysis. The impacts of economic development must be analyzed and additional research is required. Economic growth is a key promise of city-county consolidation, but it was difficult to analyze this effect based on the lack of data pertaining to economic development. This study also didn't have continuous and comparable data before and after consolidation. The format for the South Korean governmental statistical data changed following the city-county consolidations, and as a result, it was impossible to locate matching data for the analysis.

In conclusion, city-county consolidations are a worldwide phenomenon which

have inspired significant controversy in the past 24 years. This study sheds light on the mergers that took place in South Korea in 1995 and provides evidence indicating the consolidations have not been overly successful. The United States and other countries throughout the world have experienced similar consolidations and to varying degrees, similar studies have been accomplished to analyze the effects of governmental mergers. A comparative study among several nations to analyze the effect of city-county consolidation would contribute in a broader context to the debate on consolidation versus fragmentation among scholars and practitioners alike. This study provides the comprehensive methodology, analysis and findings for one nation that could serve as the foundation for such a study.

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APPENDIX

Survey of the Effect of City-County Consolidation

This research will focus on the effect of city-county consolidation and will examine comprehensive information regarding city-county consolidation in South Korea
Your answers are completely confidential and anonymous.

Participation is voluntary and no reference will be made in oral or written reports which could be linked to you. **You may choose not to answer any questions** with which you are not comfortable. The data will be completely confidential and will be stored in a secure location.

Your response is important for this study. If you have any questions, please contact Byoungik Min at (055) 772-1284 or email min@gnu.ac.kr.

Please complete the survey and return it in the postage-paid envelope to:
Byoungik Min, 900 Gajaw-Dong, Jinju, Gyeongsangnam-Do, South Korea

We sincerely appreciate your time and effort. Thank you again for your participation.

Which of the following best describes how you feel about the statement below:

1. There was a culture of homogeneity between city and county before consolidation?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

2. Your life zone (i.e., the primary area where a person lives and works) between city and county was the same following consolidation as it was before consolidation?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

3. There was a same historic consciousness between your city and county before consolidation?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

4. There was a same economic base between city and county before consolidation?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

5. The Mayor has made every effort to reduce disparity between urban and rural areas?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

6. The Mayor has tried to resolve conflicts between urban and rural residents?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

7. The Mayor has encouraged the public employee to do their best to reduce disparity between urban and rural areas?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

8. The Mayor has provided an institutional strategy to reduce disparity between urban and rural areas?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

9. The central government has kept the promises to offer incentives to reduce disparity between urban and rural areas?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

10. The national assemblymen have made an effort to reduce disparity between urban and rural areas?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

11. The provincial councilmen have attempted to reduce disparity between urban and rural areas?

- ① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

12. The city councilmen have attempted to reduce disparity between urban and rural areas?
① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree
13. The consolidated government has implemented policies to reduce disparity between urban and rural areas?
① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree
14. The consolidated government has offered diverse events to reduce disparity between urban and rural areas?
① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree
15. The consolidated government has proposed ordinances to reduce disparity between urban and rural areas?
① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree
16. The consolidated government has provided public services to reduce disparity between urban and rural areas?
① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree
17. The city-county consolidation has reduced disparity related to governmental services between urban and rural areas?
① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree
18. The city-county consolidation has reduced disparity related to education between urban and rural areas?
① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree
19. The city-county consolidation has reduced disparity related to economic development between urban and rural areas?
① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree
20. The city-county consolidation has reduced disparity related to public facilities provision between urban and rural areas?
① Strongly agree ② Agree ③ Neither ④ Disagree ⑤ Strongly Disagree

Demographic Information

D1. Are you:

- 1) Male
- 2) Female

D2. How old are you?

- 1) 29 and younger
- 2) 30-39
- 3) 40-49
- 4) 50-59
- 5) 60 and older

D3. What is your education level:

- 1) Less than high school
- 2) College degree
- 3) Graduate degree or 1-2 year at graduate level

D4. Where is your residential district before consolidation?

- 1) City
- 2) County

Thank you for completing this survey.
All your answers are completely confidential.
Please return the survey in the enclosed self-addressed envelope.