

The Effect of Municipal Consolidation on Urban Manufacturing Productivity

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· *International Journal of Urban Sciences*, 12(2), 2008, 104-115
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This paper is focused on analyzing the effect of municipal consolidation on urban manufacturing productivity in Korea. The results indicated that the investments and government expenditures of the consolidated cities have higher impacts on urban labor productivities by generating agglomeration and network economies. Road expansion, on the other hand, generates a negative effect on productivity due to wider market openness from the improvement of spatial accessibility. Urban labor productivity can be maximized when the population size of the consolidated city is between 300,000 and 400,000 people. This size can be applied to setting up a guideline for reorganizing regional administrative units in Korea.

Keywords: regional integration, urban productivity, municipal consolidation, population management

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1. INTRODUCTION

Traditionally, decentralization has had a number of political and economic advantages such as efficiency gains, more public participation on policy implementation and planning processes, and cost savings by the homogenous policy preferences formulation (Sorensen, 2006). However, it fails to offer specialized public services and may well generate scale and agglomeration economies. Consolidating municipal or city-counties and comprehensive local government planning can be effective strategies to realize economic efficiency under the New Regionalism principle. It can provide improved public services at lower prices and may lead to strong regional economic development and political leadership (Fleischmann, 2000).

In Japan, the national government promoted municipal consolidation through the allocation of government expenditures (Tareji, 2006). The Ministry of Internal Affairs and Communications was involved in the restructuring and consolidation process with intention to reduce the size of the municipal governments. The number of mayors, local assembly members, and municipal offices and employees was reduced and maintains the principle of minimal efficient scale to equate per capita cost for provision with marginal crowding. In order to speed-up the consolidation process, the national government has reduced the budget allocation of non-consolidated municipalities since 2002 (Tareji, 2006). Sweden also attempted to reorganize the localities from 1952 in order to enhance their capabilities in self financial support.

In the 1990s, the Korean government tried to promote regional integration through consolidation of local administrative units. It was a necessary action to achieve the regional balanced development in Korea and enhance urban competitiveness as well as to compete internationally with other large cities.¹⁾ Geographical boundaries of this new municipal

consolidation have been determined by historical background, consumption and commuting patterns of households and spatial interactions. The Korean government is also attempting to change the current government structure composed of 230 counties and cities within 16 provinces. There are two major proposals on redistricting the nation: 1) dividing the nation into seven large districts (called the “five plus two zones”) and 2) merging the current 230 counties and cities into 60 to 70 counties. Such regional consolidations are expected to generate agglomeration economies, but it involves greater career risk to both politicians and government officers at the same time.

What are the economic impacts of municipal consolidation on the regional economies? Rusk (1993) found out that consolidation of cities with adjacent developing areas could achieve higher regional economic growth than unconsolidated cases. The consolidated regions with a few large sized sub-districts led to relatively high regional economic growth compared to those with lots of small sized sub-districts. Blair, Staley and Zhang (1996) discussed that inter-regional cooperation could achieve higher regional economic growth than the city-county and metropolitan consolidation. They argued that cooperation between local governments without changing basic governance structures within the same metropolitan areas was effective in enhancing the economic welfare of the citizens.

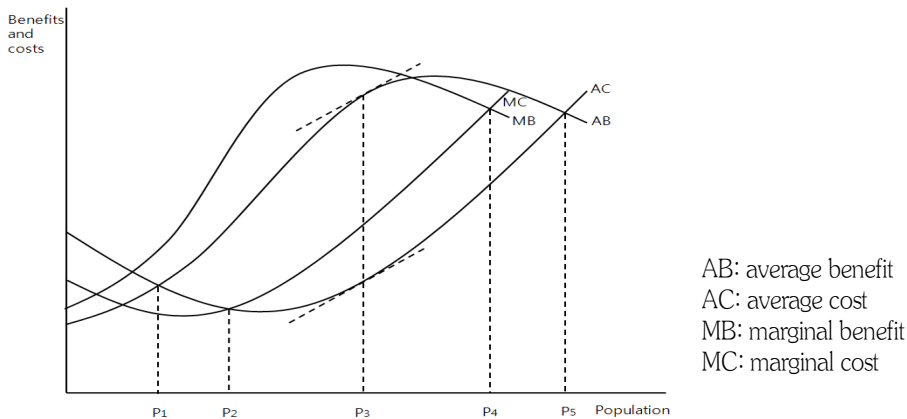
The objective of this paper is to examine the urban productivity changes with respect to municipal consolidation in Korea. The regional value added models of the manufacturing sector are estimated with 40 consolidated cities, while there are 167 local administrative units including the Seoul Metropolitan Area. This paper will proceed as follows. In Section 2, previous theoretical and empirical studies on municipal consolidations are reviewed. Section 3 presents the analysis and the main findings of the effects of municipal consolidation on productivity changes.

Section 4 summarizes our main conclusions and future research agenda.

2. LITERATURE REVIEW

Why do many countries try to formulate municipal consolidation? One of the major answers to this is its generation of agglomeration economies. The economies of agglomeration are classified into localization economies and urbanization economies. The former occurs when average production costs of urban areas are lower than that of rural areas in the same industry. The urbanization economy occurs when the unit costs of all industries are lower in those with a high population density. Since both economies are mainly determined by the size of population including labor inputs, the success of municipal consolidation depends on whether the population size after the consolidation is close to an optimal size.

How can we find the optimal city size or optimal size of an urban population? Theoretically it is derived from how benefits and costs are sensitive to population changes. Marginal benefits should be equal to marginal costs at the optimal size of population. In Figure 1, the net benefit, a difference between total benefits and total costs is maximized in population size, P4 that is optimal in terms of profit maximization. However, such optimal sizes of population somewhat vary with the definition of ‘optimality.’ For example, the optimal size for the governor or policy decision-maker might be different from the businessman and local residents. The residents may prefer a population size, P3, maximizing the difference between average benefits (AB) and average costs (AC) or net average benefit. The policy maker can regard the population size, P2, as the optimal one because the minimization of average costs can be attained at this point. Outsiders might think that the population size, P5, is optimal since they are willing to move into these areas within the point where the average costs are not higher than the average benefits.



Source: Richardson (1973)

⟨Figure 1⟩ Benefits and costs

There is ample literature available to analyze the effects of regional consolidation on efficiency. For example, Vojnovic (2000) argued that the development of a single coordinating political administration in Canadian provinces could address dilemmas of population spillovers by providing the urbanized municipality and the neighboring jurisdiction with systematic planning for environmental protection, infrastructure investment and waste management. However, the integration of municipalities and the restructuring of geographical boundaries should solve the problem of fiscal accountability in a city that has considerable variations in services. This paper emphasizes the design of an equitable and efficient tax-service structure in terms of fiscal accountability. The author also suggested that one of the alternatives to reduce inefficiencies and inequities within an urban area could be to redesign the tax-service structure rather than the municipal consolidation. The redesign process could contribute to establishing a clear relationship between the benefits and costs of service provision and price policy for improving equity and efficiency within the urban economy. Rosentraub (2000) examined the planning goals of Indianapolis to implement the development of unified government (UniGov). Indianapolis was one of three major consolidations in the 1960s and 1970s, which succeeded in operating a municipal consolidation program. This paper discusses how the consolidated governance structure could be effective in developing the downtown revitalization to reduce urban sprawl and stabilize population and job levels. The new governance system needed the financial tools to progressively distribute the benefits and costs from the program.

Vojnovic (2002) explored the transition and short-term effects of municipal consolidation on five recently amalgamated municipalities in Canada. The municipal consolidation was composed of complex reorganization of intricate administrative and political structures, so whether the consolidation could achieve greater efficiency and effectiveness in governance and service

delivery was determined by the distinct history and the spatial and economic circumstances. This paper argues that the consolidation agreement should specify the expected changes in municipal salaries, services, provisions, municipal governance, and tax rates. The larger municipalities were likely to have higher costs per capita of transition than smaller jurisdictions, so it was very hard to find out evidence to reduce the costs from the amalgamation of larger municipal units. The reorganization of municipal boundaries would not guarantee an efficient and equitable tax structure, and there were many options to achieve the same objective without paying high restructuring costs.

Carey, Srinivasan and Strauss (1996) presented an analytical framework for the geographic aggregation of municipalities into larger and more populous municipal districts in order to reduce the costs of providing public services. They developed a cost model of local government services to estimate the optimal number of districts and the amount of cost savings for a fixed population size in a given geographic area. Under a tradeoff between financial efficiency as the economic benefit of consolidation and political feasibility as the socioeconomic constraint, they assessed various alternative consolidation schemes using the least cost model. Crecentea, Alvareza and Frab (2002) attempted to explore the variables and procedures to measure the economic, social and environmental effects of land consolidation projects in Galicia. The impact analysis was applied to consolidated and non-consolidated areas. Land use was regarded as an operative indicator at a larger scale, and land consolidation contributed to retaining farmland in agricultural use. They argued that efficiencies might increase with the modification of procedures such as Act of Land.

Sorensen (2006) found that in the Norwegian local government structure, unification could enhance efficiency, and that the role of the national government should be focused on stimulating voluntary mergers. Generous grants from the national government were excessive for compensating diseconomies of scale in

local government. It argued that local politicians in small municipalities were not likely to merge in comparison to those in more populous municipalities, and the elimination of revenue disparities could lead to further consolidations. Dur and Staal (2008) developed a simple model to estimate the effects of transfers from higher-level governments. They found that the decentralized public good provision could lead to under-provision in the case of positive spillovers. Under the small spillover effect, centralized provision may aggravate under-provision in the smallest districts. With respect to a social welfare perspective, the residents in the village have insufficient incentives to vote for consolidation. A national government can alleviate these problems by implementing a transfer scheme such as an earmarked transfer and a lump-sum transfer. If the national government does not have information on local preferences, these transfers could

not achieve the social optimum. Teraji (2006) stated that the consolidation tended to be inefficiently large and was not under the decentralized regime, examining the conditions for the consolidation of political jurisdictions.

3. ANALYSIS

In 2003, there were 167 local administrative units in Korea. Among these administrative units, Seoul is one of the largest cities and is considered a metropolitan area. There are six large cities (Busan, Incheon, Daegu, Kwangju, Daejeon and Ulsan), 77 small and medium sized cities and 83 counties. Table 1 presents the consolidated cities with respect to City-County Consolidation Law in 1995.

〈Table 1〉 Consolidated cities in 1995

<i>Province</i>	<i>Consolidated Cities</i>
Gyeonggi	Pyungtaek, Namyangju
Gangwon	Chuncheon, Kang-leong, Wonju, Samchuk
Chungcheong	Chungju, Jechun, Cheonan, Gongju, Boryong, Asan, Seosan
Jeolla	Gunsan, Iksan, Jeongub, Namwon, Kimje, Yeosu, Suncheon, Naju, Gangyang
Gyeongsang	Pohang, Gyeongju, Kimcheon, Andong, Gumi, Youngju, Youngcheon, Sangju, Moonkyeong, Gyungsan, Changwon, Masan, Jinju, Tongyoung, Sacheon, Kimhae, Milyang, Geoje

Table 2 and 3 show the value added and population changes of consolidated and unconsolidated cities in 1995 and 2005. For consolidated cities, the value added per capita improved from 51 million Korean won in 1995 to 120 million Korean Won in 2005. The population has also increased by approximately 16,000 people during the last ten years. The growth

rate of the value added per capita of the consolidated cities during 1995 to 2005 is about 2.33, which is much higher than the case of the unconsolidated cities. However, the population growth rate is lower in the consolidated cities.

〈Table 2〉 Value added and population of consolidated cities in 1995 and 2005

Consolidated Cities	1995		2005		Growth Rate	
	Value added per capita (A) (million Won)	Population (B) (person)	Value added per capita (C) (million Won)	Population (D) (person)	Value added per capita (C/A) (million Won)	Population (D/B) (person)
Pyungtaek	55	322,637	171	391,468	3.1304	1.2133
Namyangju	31	281,896	60	454,498	1.9524	1.6123
ChunCheon	29	233,016	54	256,455	1.8535	1.1006
Wonju	48	238,027	82	290,073	1.7036	1.2187
Kang-leong	58	223,775	81	225,595	1.3880	1.0081
Samchuk	41	90,043	83	73,434	2.0065	0.8155
Chungju	53	213,353	80	207,173	1.5087	0.9710
Jechun	32	146,324	75	138,920	2.3583	0.9494
Cheonan	56	334,800	173	518,818	3.1055	1.5496
Gongju	58	138,202	125	130,595	2.1809	0.9450
Boryong	29	123,023	80	108,639	2.7736	0.8831
Asan	56	158,737	133	208,448	2.3950	1.3132
Seosan	182	142,331	288	151,283	1.5874	1.0629
Gunsan	63	276,263	146	264,750	2.3357	0.9583
Iksan	36	329,212	96	320,780	2.6407	0.9744
Jeongub	37	151,353	79	129,868	2.1554	0.8580
Namwon	36	109,224	44	94,095	1.2189	0.8615
Kimje	39	128,490	70	103,446	1.8024	0.8051
Yeosu	27	329,367	371	302,391	13.8070	0.9181
Suncheon	40	251,316	78	271,961	1.9503	1.0821
Naju	65	116,322	80	98,770	1.2212	0.8491
Gangyang	206	129,177	473	138,730	2.3000	1.0740
Pohang	98	510,867	272	509,148	2.7744	0.9966
Gyeongju	37	284,230	89	277,764	2.4059	0.9773
Kimjeon	60	151,807	117	142,688	1.9560	0.9399
Andong	36	192,684	67	172,029	1.8551	0.8928
Gumi	68	304,217	294	378,560	4.3099	1.2444
Youngju	18	138,727	70	119,668	3.9408	0.8626
Youngcheon	36	123,406	78	108,745	2.1922	0.8812
Sangju	24	133,944	76	110,892	3.1754	0.8279
Moonkyeong	31	95,815	59	78,357	1.8707	0.8178
GyungSan	34	165,571	77	231,677	2.2820	1.3993

Consolidated Cities	1995		2005		Growth Rate	
	Value added per capita (A) (million Won)	Population (B) (person)	Value added per capita (C) (million Won)	Population (D) (person)	Value added per capita (C/A) (million Won)	Population (D/B) (person)
Changwon	62	480,099	120	508,499	1.9185	1.0592
Masan	35	431,984	81	427,119	2.3122	0.9887
Jinju	39	334,649	68	337,728	1.7536	1.0092
Tongyoung	25	142,759	65	133,429	2.6557	0.9346
Sacheon	62	122,894	98	111,930	1.5959	0.9108
Kimhae	35	264,965	70	448,796	1.9961	1.6938
Milyang	28	131,390	69	114,320	2.4824	0.8701
Geoje	55	155,590	93	199,483	1.6845	1.2821
Average	51	215,812	120	232,276	2.3264	1.0763

Source: Korea National Statistical Office

〈Table 3〉 Value added and population of unconsolidated cities in 1995 and 2005

Unconsolidated Cities	1995		2005		Growth Rate	
	Value added per capita (A) (million Won)	Population (B) (person)	Value added per capita (C) (million Won)	Population (D) (person)	Value added per capita (C/A) (million Won)	Population (D/B) (person)
Uijeongbu	31	281,896	39	404,937	1.2644	1.4365
Gwangmyung	56	344,417	106	329,716	1.9165	0.9573
Dongducheon	34	72,879	48	84,601	1.4399	1.1608
Gwacheon	26	70,385	63	61,206	2.4720	0.8696
Guri	27	143,742	59	193,532	2.1807	1.3464
Osan	55	69,810	97	131,377	1.7692	1.8819
Siheung	48	139,901	68	397,983	1.4286	2.8447
Gunpo	46	245,190	67	280,492	1.4617	1.1440
Uiwang	60	109,948	81	146,937	1.3499	1.3364
Hanam	31	117,462	47	134,159	1.4820	1.1421
Yongin	187	244,763	169	702,007	0.9043	2.8681
Paju	36	168,803	68	267,607	1.8655	1.5853
Icheon	104	156,202	174	194,130	1.6680	1.2428
Anseong	63	124,897	98	160,061	1.5739	1.2815
Gimpo	32	108,824	70	214,901	2.2221	1.9748

Unconsolidated Cities	1995		2005		Growth Rate	
	Value added per capita (A) (million Won)	Population (B) (person)	Value added per capita (C) (million Won)	Population (D) (person)	Value added per capita (C/A) (million Won)	Population (D/B) (person)
Hwaseong	63	164,284	136	310,562	2.1552	1.8904
Gwangju	37	93,195	66	220,705	1.7961	2.3682
Yangju	36	94,992	55	167,248	1.5366	1.7607
Pocheon	30	128,702	50	162,455	1.6597	1.2623
Donghae	145	100,329	260	99,547	1.7943	0.9922
Taebaek	19	64,877	29	52,614	1.5314	0.8110
Sokcho	24	80,709	35	87,583	1.4473	1.0852
Nonsan	41	150,190	101	135,210	2.4903	0.9003
Mokpo	32	239,571	69	243,872	2.1241	1.0180
Jinhae	45	130,201	71	158,624	1.5619	1.2183
Yangsan	44	161,953	79	224,943	1.7951	1.3889
Average	52	146,466	85	213,683	1.6383	1.4589

Source: Korea National Statistical Office

The impact of the municipal consolidation on urban productivities is examined in the following two ways: (1) a change in the urban manufacturing productivities before and after the municipal consolidation and (2) a change in the urban manufacturing productivities between consolidated cities and unconsolidated cities. This paper defines the urban manufacturing productivity as the value added by manufacturing sectors per labor input or employer. From the pretests on productivity functions and the literature reviews, the urban

manufacturing productivity is determined by capital productivity (capital stock per capita), economy of scale (number of employees per firm), public expenditures (distance-decayed government expenditures), and infrastructure (the total road length per urban area). In particular, the public expenditure variable is measured with gravity-typed form to take into account spillover effects of the government expenditures across the administration boundaries. The urban labor productivity equation is as follows:

$$\ln(V_i / L_i) = \beta_0 + \beta_1 \ln(K_i / L_i) + \beta_2 \ln(L_i / F_i) + \beta_3 \ln\left(\sum_j \frac{GOVT_j}{d_{ij}^2}\right) + \beta_4 \ln(ROAD_i) \quad (1)$$

where V_i is value added in region i , K_i is capital stock in region i , L_i is the number of employees of the manufacturing sector in region i , F_i is the number of companies in the manufacturing sector in

region i , $GOVT_i$ is government expenditures in region i , $ROAD_i$ is the total road length in region i , d_{ij} is the distance between region i and region j

There are two types of time series date sets (period of 1988–1994 and period of 1999–2005) to identify the

effect of the municipal consolidation on the productivity, while the reference year 1995 is the year when the city–county consolidation law was enforced. Three equations are estimated for the cases of 1) consolidated cities after the municipal consolidation (1999–2005) (A); 2) consolidated cities before the municipal consolidation (B) (1988–2004); and 3) unconsolidated cities after the municipal consolidation (C) (1999–2004). The results of the estimation are shown in Table 4. The results in Table 4 show that all parameters except for the case of the road variable in the consolidated cities after the municipal consolidation are statistically

significant at 5% level and have expected signs. The capital stock per capita and the firm size variables have positive effects on the labor productivity through inducing new investments in plants and equipment or relocating and clustering industrial facilities in all three cases. The government expenditure also contributes to the increase in urban labor productivities. However, the road expansion in the consolidated cities after the municipal consolidation tends to decrease the labor productivities since it appears to open the local market and accelerate the trade inflows from other regions.

〈Table 4〉 Parameters estimation of urban manufacturing productivities

<i>Parameters</i>	<i>Consolidated Cities after the Municipal Consolidation (A)</i>	<i>Consolidated Cities before the Municipal Consolidation (B)</i>	<i>Unconsolidated Cities after the Municipal Consolidation (C)</i>	<i>Parameter Difference (A-B)</i>	<i>Parameter Difference (A-C)</i>
intercept	-0.748*	0.152*	0.548*	-0.900*	-1.296*
β_1	0.449*	0.423*	0.375*	0.026*	0.074*
β_2	0.182*	0.174*	0.202*	0.008	-0.020
β_3	0.440*	0.174*	0.220*	0.266*	0.220*
β_4	-0.005	0.049*	0.020*	-0.054*	-0.025*

* indicates that the parameter is statistically significant at 5% level.

The net effects of municipal consolidation on productivities (e.g. how much the impact on the productivities increase by consolidation) can be traced out with T-test or Chow test on the parameter differences of consolidated cities before and after the municipal consolidation (the case of A and B), as well as the differences in consolidated and unconsolidated cities (the case of A and C). In Table 4, the differences of parameters are statistically significant at 5% level except for the firm size variable. The parameters of the capital productivity and the government expenditure variables after the municipal consolidation increase by 5.74% and 60.48% compared to the case before the

consolidation. Also, their effects on the productivities against the unconsolidated cities improve by 16.40% and 50%, respectively. Since the change in the elasticity of the government expenditure variable with respect to the labor productivity is much larger than the case of the capital productivity variable, the consolidated cities are expected to generate agglomeration economies by integrating regions with public expenditures such as the development of the infrastructure network. It implies that the regional economies of the consolidated cities tend to be more sensitive to accumulation of the capital stock and the networking of the regional governments. However, the

effects of the firm sizes (scale of the economy variable) of the consolidated city on urban productivity are insignificant and even lower than the unconsolidated cities.

How large does the consolidated city have to be in order to maximize economic growth? This is an important issue that needs to be addressed for better spatial planning. Reorganization of administrative districts and urban growth management and control, such as smart growth, could bring urban economies with an efficient allocation of economic resources even with low national economic growth. The optimal

population size for municipal consolidation could be obtained from the strong relationship between population and productivity.

From the pretests on the various specifications and the selection of independent variables, urban manufacturing productivity is estimated with four dummy variables of urban population categories for 40 consolidated cities. The urban economic variables include: capital productivity, firm size, government expenditure per capita and relative land size of the manufacturing sector to total urban size.

$$\ln\left(\frac{V_i}{L_i}\right) = -0.3307^{**} + 0.3929^* \ln\left(\frac{K_i}{L_i}\right) + 0.1425^* \ln\left(\frac{L_i}{F_i}\right) + 0.3557^* \ln\left(\frac{GOVT_i}{P_i}\right) + 0.0439^* \ln\left(\frac{MA_i}{UA_i}\right) \quad (2)$$

$$+ 0.0968^* DUM12 + 0.0749^{**} DUM23 + 0.1459^* DUM34 + 0.1122^* DUM45$$

* and ** indicates that the parameters are statistically significant at 5% and 10%, respectively.

where P_i is the urban population in region i ; MA_i is the land size of the manufacturing sector in region i ; UA_i is the land size of the consolidated city in region i ;

$DUM12$ is Dummy variable = 1 for population size with 100~199 thousand person; otherwise 0

$DUM23$ is Dummy variable = 1 for population size with 200~299 thousand person; otherwise 0

$DUM34$ is Dummy variable = 1 for population size with 300~399 thousand person; otherwise 0

$DUM45$ is Dummy variable = 1 for population size with over 400 thousand person; otherwise 0

Among four economic variables, capital productivity and government expenditure have high positive effects on urban labor productivity. For example, an increase in the capital productivity by 1% can raise the labor

productivity by 0.3929%, while the same amount of productivity growth in the relative land size of the manufacturing sector is only 0.0439%. Also, the parameters in Equation (2) showed that the maximum level of urban labor productivity of the consolidated city could be attained if the population size ranges from 300,000 to 400,000 people. This size can be applied to set up a guideline for reorganizing regional administrative units and municipal integration in terms of regional economic growth. Table 5 shows the average population distribution of consolidated cities during 1995 to 2006. There are 7 cities (Yeosu, Iksan, Jinju, Gu-mi, Nam-yangju, Pyungtaek, and Kimhae) with a population range from 300,000 to 400,000 people.

⟨Table 5⟩ Average population distribution of consolidated cities during 1995–2006

<i>Population (thousands)</i>	<i>Number of Cities</i>	<i>Consolidated Cities</i>
Under 100	2	Samchuk, Munkyeong
100–199	19	Nam–won Naju, Kimje, Boreong, Youngcheon, Sachun, Sang–ju, Mil–yang, Young–ju, Gongju, Gwang–yang, Tong–yeong, Jecheon, Jeong–ub, Kimcheon, Seosan, Geoje, Andong, Asan
200–299	8	Gyeongsan, Chungju, Gangleong, Chuncheon, Suncheon, Wonju, Gunsan, Gyeongju
300–399	7	Yeosu, Iksan, Jinju, Gu–mi, Nam–yangju, Pyungtaek, Kimhae
400–499	2	Masan, Chun–an
over 500	2	Chang–won, Pohang

Source: Korea National Statistical Office

4. CONCLUSION

This paper is focused on analyzing the effect of municipal consolidation on urban manufacturing productivity in Korea. The results in this paper indicate that the investments and government expenditures for the consolidated cities have higher impacts on urban labor productivities by generating agglomeration and network economies. Moreover, urban labor productivity can be maximized when the population size of the consolidated city is between 300,000 and 400,000 people. This size can be applied to set up a guideline for reorganizing regional administrative units in Korea.

However, the optimal size of urban population should be examined in terms of not only economics but also political and environmental perspectives. The population sizes derived from the analysis need to be regarded as one of the alternatives for the population size in discussing restructuring of local governments in Korea. Road expansion, on the other hand, generates a negative effect on the productivity due to wider market openness from the improvement of spatial accessibility.

The limitation of this study is that it is only concerned with the benefits of the consolidation in terms of urban productivity and it neglects the cost factor. For future studies, the costs from the municipal consolidation should be taken into account in the analysis of the economic impacts. The costs may include the political tension between the rich and poor regions and the increment of heterogeneity among the populations as discussed in Teraji (2006). In addition, the economic impact could be measured by spatial econometric models since the municipalities or spatial units are linked together through trades of commodity and services, population migration and innovative diffusion. The model can succeed in capturing the extent to which the direct effects of regional integration are amplified through the feedback circuits of adjacent regions.

FOOTNOTES

- 1) The concept of regional integration can be understood in various ways, such as inter–regional economic integration and inter–regional economic cooperation. In this paper, city–county consolidation among adjacent administrative units is used to define the concept of regional integration.

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Received: October 06, 2008

Accepted after one revision: December 12, 2008