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행정학석사학위논문

**Urban Migration and Local District
Government Expenditure
from the Perspective of Urban
Competitiveness**

- A Study on 25 Seoul Districts -

도시 경쟁력의 관점에서 본
인구이동과 지방정부 지출
- 서울시 25개 자치구를 대상으로 -

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Abstract

Urban Migration and Local District Government Expenditure from the Perspective of Urban Competitiveness - A Study on 25 Seoul Districts -

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This research mainly investigates the relationship between urban migration and local government expenditure within 25 districts in Seoul, Korea. The network analysis provides different origin-destination combinations of migration within Seoul, and it also shows the frequency and popularity of certain districts. Another part of the research, which is based on a 7-year (2008-2014) panel data multiple regression analysis on government expenditures, has discovered positive relationships between migration and local district government expenditure on social welfare, and migration and local district government expenditure on living environments. The results as a whole seem to be concurrent with bigger current issues in many local governments including Seoul, as social welfare and regional developments have become more and more important factors in many local administrations.

The results of this research additionally propose a potential improvement of measures of urban competitiveness, as current measures do not reflect citizens' choice of relocation or migration. As customer-oriented trend continues in public administration and public policy areas, seeing how consumers behave and react to policies may give implications for how local governments can improve their cities.

Keyword: urban competitiveness, migration, residential relocation, local government expenditure, tax, Seoul, Korea

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I. Introduction

1. Research background and purpose

Among the three basic most basic things human needs – foods, clothing, and shelter – shelter may well be the most important. This is because eating and other daily human activities happen in certain spaces, not limited to a bedroom but including any enclosed or open spaces. To give a more concrete example of an enclosed or open space, city or urban area is fundamentally an enlargement of a house.

Why do people live in cities? O’Sullivan (2012) states that cities “facilitate innovation, production, and trade, so they increase our standard of living... [while they] are noisy, dirty, and crowded” (1). Numerous literatures on development of cities point out that people may have gathered in an area that is endowed with abundant resources. Others then observe and are eventually attracted to the prosperity of the area. As this might continue to be the case, the area might experience endless influx of people. The area will grow to a city, and even in a larger sense, a metropolitan area.

With the advent of decentralization in many developed and developing countries including the United States, United Kingdom, Japan and Korea, local governments within a country have competed with each other to attract people. The classic incentive for this competition would be tax income.

Wilson (1984) assumes capital mobility that ultimately may be associated with property tax income. The more the invested capital, the more the tax income. However, Wilson's interregional tax competition model takes lowering tax rates into account, while varying tax rates are not applicable in every country. Korea, for example, does not have varying tax rates across local governments, unless some localities offer tax deductions to certain industries. In order to keep current residents from moving out, a local government may need to collect more tax by attracting more residents.

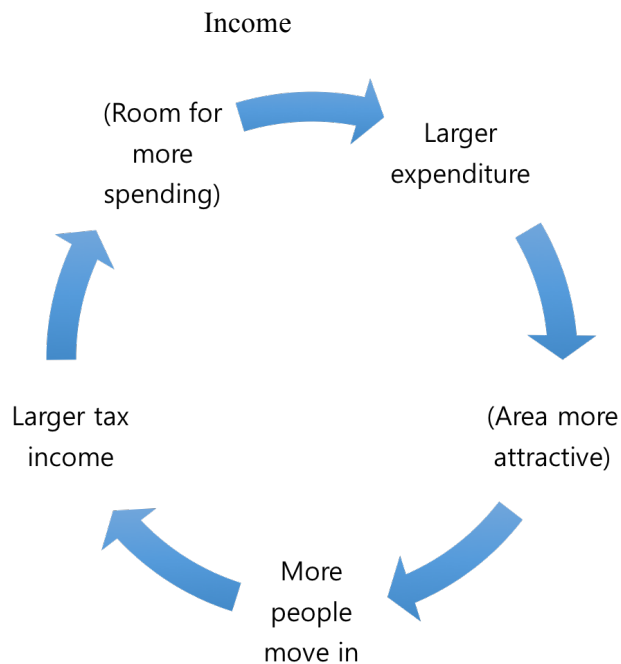
If one city seems to be more attractive than another, a resident may choose to relocate to a certain city. In addition to decentralization, the New Public Management and New Public Service created a trend of customer-oriented delivery of public service and public goods. Not only public service and public goods directly provided by local governments but also private businesses mostly regulated and authorized by local governments may pertain to people's actual migration.

Major factors affecting people's choices may differ from person to person, but there may be general common core factors affecting their choices. Some people may be more attracted to number of parks in the city than any other factors; some others may consider most important the number of jobs available in the city; others may favor private amenities such as cafe and restaurants, or public amenities including, but not limited to, public education and public transportation system. These factors have been considered in previous researches including Shin & Ahn (2010)'s research. Shin and Ahn

investigated the location choice of single-person households in Seoul, and the research included these features as explanatory variables affecting location choice probabilities.

It is difficult to not notice the costs behind these aforementioned public and private amenity factors. Previous researches have analyzed the relationship between local government expenditure – local public goods and services – and population migration (or relocation). In order for a local government to have a large tax income, more people will need to move into this area; in order to have more people move in, the local government needs to increase spending and make its area more attractive.

Figure 1 Flow of Local Government Expenditure – Migration – Tax



SOURCE: Prepared by the author

Figure 1 depicts a flow of *larger local government expenditure – (area becomes more attractive) – more people move in – larger tax income – (room for more spending) – larger local government expenditure* series that may continue on and on. This research will mainly focus on the relationship *larger expenditure – (area becomes more attractive) – more people move in*. The investigation of this relationship may well represent the effectiveness of local government expenditure on providing public services and public goods, measured by the number of people moving into the area.

The research will also be able to observe which major factors attract people in 25 respective districts, and in Seoul as a whole. According to annual local government budget audits, Seoul's each local district government has reported expenses on various public services it directly provides to citizens. The dependent variable, which is residents' migration to 25 districts, may serve as an indication of a district's competitiveness. The model engages local government expenditures in different policy areas. With these indicators as major independent variables, this research steps aside from most previous major researches that have focused on the location choice of industries and unemployment. Some factors such as population and housing prices of each district will be controlled in several different ways.

Analyses conducted in this study may have urban policy implications for not only local governments but also for central governments. Readers may

obtain implications on which direction governments should take in order to make their areas more attractive to their citizens and bring in more people.

2. Scope of the study

This research focuses on Seoul, Korea, to investigate the relationship between migration local government expenditures. Although the focus is on Seoul, policy implications may not be limited to Seoul.

Seoul is a metropolitan city with a population reaching more than 10 million. However, 25 districts in Seoul are not identical to each other in terms of residents' income, housing prices, urban amenities, education and et cetera. However, the cost incurred by migration itself is relatively lower than cost for migration to cities far away. But assumption is that people are not indifferent over different districts, and people prefer certain district based on their needs. Moreover, each of 25 districts in Seoul has local government, meaning that each district is autonomous in planning budget on its own.

As can be found in Table 2, districts greatly differ in terms of their population and budget. These difference may or may not work against migration to and from districts. In addition, certain parts of the city may have smaller number of residents because they are central business districts that have no or only a few housing for residing purposes. However, in Seoul, Central Business Districts (CBDs) and residential areas are often adjacent to

each other, or they are at least interconnected via roads, metro lines and bus system. Seoul as a whole is a thorough mixture of different urban functions.

II. Theoretical Background and Literature Review

The literature review section of this research consists of several smaller parts. The discussion begins with definition of cities and urban area. It will then continue with previous models on local government expenditure, consumer city and other factors that all may or may not result in population migration among different cities.

1. Urban area

i. Definition

Urban economists usually define an urban area as “a geographical area that contains a large number of people in a relatively small area,” and this implies that it is rather densely populated than loosely populated (O’Sullivan, 2012: 2). Urban economics is a hybrid of economics and geography that mainly studies utility maximization processes of different entities with a given set of

resource endowments. Six categories of urban economics are: (1) market forces in the development of cities; (2) land use within cities; (3) urban transportation; (4) crime and public policy; (5) housing and public policy; (6) local government expenditures and taxes, as categorized by O’Sullivan (2012: 2). The first category deals with how people choose the location of city, and how they make cities grow or shrink. The second category covers how cities are centralized or decentralized, and segregated. The third category involves traffic congestion and public transportations system. The fourth and fifth categories are based on public policy choices encountering social problems, while the sixth category is essentially about people choosing where to live based on local public goods and services at certain costs. Based on the definition of an urban area, densely populated area is a key feature of a city, because more people may bring more diversity as well as direct or indirect financial benefits to city governments. The more the people that migrate in, the more the money local governments will make. This may be the motivation for a city government to make people migrate into its area.

2. Competitive urban areas

i. Definition

There may be no unified definition of urban competitiveness or competitive cities. This is due to the fact that people may disagree over which

aspects of an urban area to look at. However, numerous institutions have conducted researches and announced ranks on urban competitiveness, or city competitiveness.

World Economic Forum (2014) defines city competitiveness as “the set of factors – policies, institutions, strategies and processes – that determines the level of a city’s sustainable productivity.” Sustainability here encompasses economic, environmental and social issues. WEF (World Economic Forum) measures city competitiveness based on its own evaluation framework: institutions, policies and regulation of the business environment, hard connectivity, and soft connectivity.

Most city competitiveness indices reflect economic productivity, sustainable development, soft and hard infrastructure of different cities, all of which may make respective cities look attractive to various people. Economic productivity may represent the competitiveness of a city as long as earning money is a top priority to most people. However, making money may not fully reflect the actual quality of life urban people enjoy in their cities.

ii. Various efforts to measure urban competitiveness

Currently, there are few other city competitiveness indices including: Global City Competitiveness Index (Economist Intelligence Unit), Global Cities Index (A. T. Kearney), Global Economic Power Index (CityLab), Cities of Opportunity (PricewaterhouseCoopers) and Global Power City Index (Mori Memorial Foundation). Many of these share similar evaluation categories, and

their rankings announced on a regular or irregular basis happen to have minor differences.

Global Cities by A. T. Kearney incorporates two different indices: Global Cities Index (GCI) and Global Cities Outlook (GCO). The first index evaluates current performance of different cities on five categories: “business activity, human capital, information exchange, cultural experience, and political engagement” (A. T. Kearney, 2015: 1). The second index projects a city’s potential on four different areas: “rate of change in personal well-being, economics, innovation, and governance” (A. T. Kearney, 2015: 1). A. T. Kearney implicitly defines a city’s competitiveness as its ability to “attract and retain global capital, people, and ideas, as well as their future prospects” (2015: 1). On the other hand, United Nations Human Settlements Program’s City Prosperity Index defines a prosperous city as one that provides productivity, infrastructure development, quality of life, equity and social inclusion, as well as environmental sustainability (United Nations Human Settlements Programme, 2012: 14).

Global Power City Index reported annually by the Mori Memorial Foundation’s Institute for Urban Strategies evaluates global cities in 6 categories: economy, research and development, cultural, livability, environment and accessibility. The index aims at ranking global cities by their “magnetism,” or “comprehensive power which allows them to attract creative individuals and business enterprises from every continent and to mobilize their

assets in securing, economic, social and environmental development” (Mori Memorial Foundation Institute for Urban Strategies, 2015: 1).

From the definition of urban area, a densely populated area appears to be the major component that best characterizes cities; advantages and disadvantages of cities, as implied by categories of urban economics, are derived from densely populated urban areas. Several economists have further analyzed the relationship between urban density and productivity. Abel, Dey, and Gabe (2010) utilize U.S. metropolitan area data to find out that doubling of population density in an urban area increases output per worker productivity by 2-4 percent. Authors have adopted the idea of knowledge spillover effect that result in highly densely populated area of high-level human capital. The Economist Intelligence Unit (2014), based on a statistical research, argues that urban density is a key to competitiveness of a city. Whether a city is small or large has only a small correlation with productivity or competitiveness, while urban population density appears to be positively related with productivity. Along with an example of Hong Kong’s well-planned, high-density urban development that has led to 4th place in the Global City Competitiveness Index, EIU also provides a counter-example: Mexico City (71st place) with inefficient urban structure leading to urban sprawl. Ciccone and Hall (1996)’s research also shows a positive relationship between input-output ratio and urban population density possibly resulting from an increasing marginal cost of delivering intermediates at increasing distances.

There also appears to be a tendency of capital and resources flowing into already economically prospering cities such as New York, London or Tokyo, and many of them are larger cities (Sohn, 2011: 182). Therefore, these larger cities may grow even further as national economy is concentrated on them (Markusen & Gwiasda, 1994). As more and more people move into a city, more interpersonal interactions will follow. Benefits of gathering together, or so-called agglomeration benefits, will increase with economy of scales and external economy (Sohn, 2011: 182-183; Roh & Kim, 2012; University of Seoul Department of Urban Administration, 2014: 6). Proximity to each other is an important positive factor in this case.

However, shift from manufacturing industry to knowledge-based high technology industry since the late 20th century has decreased the importance of mutual proximity within a city (Camagni, 1993; Sohn, 2011). Moreover, as population growth continued in larger, densely populated urban areas, diseconomies of agglomeration start to offset advantages from agglomeration. Excessive congestion within a city drives some people outward to suburban areas, but the city population continues to grow; as diseconomies of agglomeration exceeds the benefit from agglomeration, de-urbanization or urban sprawl results in a deteriorating urban area (Roh & Kim, 2012; University of Seoul Department of Urban Administration, 2014: 7). This will in the end increase infrastructure costs and production costs, making the city less competitive (Sohn, 2011: 190).

To summarize, ideas from previous literatures and city competitiveness indices imply that people as well as local governments may be aware of benefits from densely populated urban areas, and these benefits, mostly economic factors, are usually considered as key measures of urban competitiveness. It is interesting to find, however, that these city competitiveness indices do not necessarily reflect people's actual choice in migration. Investigating how people actually move, or plan to move in accordance with different urban components, may feature more realistic policy implications for local government public servants. There is also room for further explaining which factors may bring in more people to an urban area than to another. There also is a need to explicate more on costs involved in urban issues. Following sections will briefly investigate different models that suggest relationship between people's choices of migration and urban features.

3. Migration and local government expenditure

Since benefits of densely populated urban areas are often accompanied by urban problems such as congestion and pollution, people may choose to move out of the area if their benefits seem not big enough to go with many disadvantages. Here, local government that is in charge of the area should successfully manage to take care of these problems in order to avoid move-outs. A number of researchers have presented that people may choose their location

of residence based on local governments' public goods and services in addition to costs (usually taxes) incurred.

i. Tiebout Model

Tiebout (1956) suggests that fully mobile residents within a municipality may choose to move to other municipalities by following the set of local government public services (measured by local government expenditures and revenues) that suit them best. Older researches such as that of Musgrave and Samuelson assumed government expenditures at the central level only (Samuelson, 1954: 387, Tiebout, 1956: 418). However, Tiebout (1956: 418) argues that some parts of government [public] services are provided by competing local governments, not at the federal [central government] level. In addition, central government is assumed to react to a so-called "consumer-voter's" preference on public goods, while local governments have smaller room to adjust their revenue and expenditure structures (Tiebout, 1956: 418). In the latter case consumer-voter is expected to choose among numerous communities that vary in the financial structure and compete with each other. One of many potential drawbacks of Tiebout's model is that an employment opportunity is out of consideration in people's choice of migration (Tiebout, 1956: 419). Also, there is no spillover effect for public services to other communities; in other words, "no external economies or diseconomies" (Tiebout, 1956: 419).

Numerous researches have been conducted to empirically test Tiebout's model in the reality. Grassmueck (2011) has chosen the State of Pennsylvania, USA to examine how residents will migrate to different municipality within a county. In order to keep in line with Tiebout's assumption that migration takes no monetary cost, Grassmueck has chosen the sample to accommodate short-distance migrations. The author assumes that independent variables such as government expenditure on fire protection, law enforcement and roads, along with school district change, housing stock and local taxes may affect intra-county migration. The result exhibits that residents are attracted by visible outputs of local government expenditure, which includes public goods and public services such as education and fire protection. Migration, however, appears not to be discouraged by taxes as long as they are used appropriately to provide public goods and services. In general, greater local government expenditure is discovered to be "encouraging in-migration while discouraging current residents to move" (Grassmueck, 2011: 135).

On the other hand, Choi (2012) adopts additional model to explain population relocation. In addition to the Tiebout model, the author adopts Todaro model. The Todaro model considers expected income, actual income and employment as major attributes to inter-local migration (Choi, 2012: 141; Harris & Todaro, 1970). Harris and Todaro (1970) formulates a "two-sector model of rural-urban migration" which assumes a minimum urban wage level higher than most agricultural earnings (126). Many factors including the minimum urban wage level are often determined politically and publicly based

on economic gap between rural and urban areas. Some researches doubt that public sector contributes more than these (private) economic factors do (Kim & Jang, 1997; Choi, 2012: 141). Yoo (1991), Choi (1982) and Lee & Kim (1996) suggest that while public goods and services are important factors, household income distribution, ages, and housing type and stocks serve as factors more significant in explaining variations in resident relocation (Choi, 2012: 142-143).

ii. Oates's Model and Hirschman's Model

Following Tiebout's model that people choose their residency with the optimal set of local public goods and services, Oates (1969) adds that people are willing to live in a municipality that tax them the least, while still enjoying an optimal level of services. This idea is based on an empirical study that involves property values, property taxes and local government's public spending. Property values and property taxes are shown to be in a negative relationship, while property values and public spending are positively related to each other (Oates, 1969).

On the other hand, Hirschman (1970) categorizes individuals' reactions to dissatisfying community. His initial exit, voice, and loyalty model (Hirschman, 1970) presents that people dissatisfied with the service of the local government may: 1) choose to move out of the community (exit); 2) actively participate in politics (voice); 3) or stay in the current community just waiting for others to make changes (loyalty). It is important to, however, notice how

these options are related with each other. People of different socio-economic background may choose to react differently to dissatisfying local government. Sharp's research tests Hirschman's model and finds out that exit option is the second best option to better-educated people's voice option, while exit option is primarily considered among people that are less-educated but have resources to relocate (1984: 77-78).

4. Other factors of migration

i. Consumer City and urban scenes

Aside from Tiebout, Oates, and Hirschman's models, literatures from other fields of study such as sociology and cultural studies also suggest some additional factors that may result in migration. Right before the beginning of the 21st century, an economist Glaeser (2000) anticipated an emergence of consumer city, which embraces retail facilities spread throughout the city, with greater accessibility than most other cities. This idea extends to previous discussion on urban density. Glaeser proposes that "people must continue to want to live close to one another" in order for cities to continue to prosper (Glaeser, 2000: 2). However, earlier and most eminent urban economists have paid more attention to urban productivity than to urban consumption. The idea of city as the center of consumption stems from the assumption that people's

incomes will be increasingly larger and quality of life improves over time. Glaeser's categorization of factors that make each city attractive includes the following: 1) variety of private services along with consumer goods, 2) physical attributes, 3) good public services, 4) ease of accessibility to jobs and services, both cost and time-wise (Glaeser, 2000: 2-3). This is a major departure from previous researches that had dealt with employment, productivity, and public expenditures for public services only. Higher income will, according to the author, increase the need for more and better private services as it encourages income and price effects (Glaeser, 2000: 5). Moreover, time becomes more expensive, so the need for better transportation system and better means of transmitting thoughts are increasingly significant in modern urban life (Glaeser, 2000: 5). Shorter commuting time and instant yet effective means of communication has become crucial for more sophisticated urban lifestyle. To summarize, Glaeser suggests a consumer-oriented urban area designs that improve residents' quality of life.

Silver & Clark (2015: 425) identify the significance of the "overall picture," or urban scene that different urban amenities generate together. Urban scenes may include cafes and restaurants that line up on the streets, where people gather and interact with each other. Based on a statistical research of 30 major localities in the United States such as Washington, D.C., Boston, MA, Chicago, IL, and New York, NY, the authors argue that urban scenes, along with classical variables such as rent and education, strongly predict economic growth, population, and incomes (Silver & Clark, 2015: 443).

ii. Further examples of studies

Shin and Ahn (2010) shows the relationship between one-person households' residential location choices and amenities as well as housing options. They categorize different factors that may contribute to households' residential location choices: commuting, public transportation, police, amenities and housing. As they point out, despite wide range of public transportation options including more than 10 Metro lines and the Seoul metropolitan bus system, the research focuses on a few representative variables for each group of variables. Work location and residence location choice data from 2007 together leads to a probability of residential location choice in Seoul's 518 neighborhoods. The result of a logistic regression analysis on these variables has shown different location choices depending on income level. Accessibility to metro lines has shown a negative relationship with mid-income and high-income households. Per capita area of social welfare facilities is in a positive relationship with low income households whereas it is in a negative relationship with high-income residents. Lastly, lower housing prices seems to attract residents regardless of their income levels.

Table 2 Exemplary list of independent and dependent variables for residential location choice study

Variable Type	Group	Variables
Independent	Commuting	Commuting distance (km)

	Public Transportation	Number of Metro neighborhoods
		Number of Metro Line 2 stations
	Police	Number of crime per 1,000 people
	Amenities	Per capita area of social welfare facilities
		Per capita area of culture facilities
		Per capita area of commercial stores
		Per capita area of green open space
	Housing	Average m ² sales price of condominium (apartment)
		Number of houses
Dependent	Probability of residential location choice	(Number of households living in area <i>j</i>) / (Number of people working in area <i>i</i>)

Source: Shin, E., & Ahn, K. (2010: 73). Modified.

Extending from Shin & Ahn's study, Hong, Kim & Ahn (2011) investigates residential migration patterns and pull-factors of smaller households in Seoul, Korea. Household migration data has been filtered down to households of one, two and four people to set the number of in-migration of these households as a dependent variable. Independent variables include six different factors: housing, education, land use, work accessibility, transportation system, and amenities. The results imply that amenities do not necessarily have significance in people's migration choices, while housing and work accessibility are key factors to most choices (Hong, Kim & Ahn, 2011: 61). However, there are several limitations in this study, because the microdata does not include income data for each household or person. Also, it is unclear if each migration case represents migration of an entire household (or family in most cases). Kim (2014) and Chae et al. (2014) respectively discover the migration pattern of one-person households, and analyze factors of

concentration of one-person households in Seoul. Chae et al. (2014) use a dependent variable showing if a certain area is popular for households, and age group, employment opportunity, housing characteristics and transportation characteristics as independent variables.

Percey and Hawkins (1992) identify that housing values, public schools, crime rates and property taxes are determinants for movers relocating outside Milwaukee, Wisconsin, based on Recent Movers Survey 1986 conducted by Department of City Development, City of Milwaukee (1155). These factors all relate to local government policies, following Tiebout's model in which people choose to leave for municipality that better serves them with local public services or policies.

Kim (2009) analyzes a 2008 survey that encompasses Hirschman's exit, voice, and loyalty model as dependent variables, along with local government service and cultural factors as independent variables. The survey was conducted on citizens of Seoul and Chuncheon. The statistical analysis shows that a person who owns a property in his community is unlikely to exit but rather voice up and present loyalty, while those dissatisfied with local government services accelerate exit and not promote voice. In terms of cultural factors, hierarchy-based culture appeared to deter exit and promote voice, while individualism incurred exit.

Byun (2014) states that soft-power of a city is becoming increasingly important whereas hard-power of a city solely has been the major factor considered in a city's competitiveness. Residents or other people who engage

in different activities create a city's culture, and this culture may attract other people as well. This will continue to become a cycle (Byun, 2014: 138). It is interesting to notice that public amenities may affect how culture is created within a city or urban area.

Barr (1972) defines an urban area as a "contiguous market area... [that] depends on its employment opportunities" (67). Potential employees take opportunities at certain costs including commuting expenses, congestion, and high land rents, but with benefits of public amenities, higher urban wages and advantages from increased social interactions (Barr, 1972: 67). The author also points out that increasing returns from urban agglomeration may result from "increased specialization, economies of scale in goods production, and the provision of public goods and services," and diminishing returns, or increasing social costs from agglomeration may be associated with "costs of travel and congestion, social packing, and the limitations of urban organization" (Barr, 1972: 68). By utilizing the concept of urban agglomeration, Barr shows that various factors affect people's choice of location.

Publications reviewed in this section provide various underlying insights for this research. First of all, the denser the population locate within a city, the more the productivity of a city becomes. Next, higher productivity means more money, more consumption, more properties, and more tax a local government can collect from people. Then the local government will be able to spend tax income on different projects that are intended at improving the city in different ways and attracting more people. A continuous pattern of *spending*

– *more people – tax – spending* may come across via combination of ideas brought up in previous researches.

III. Research Design and Research Method

1. Research questions

Building on previous theories and researches conducted on population migration, this research asks a few questions regarding local government expenditure, local public goods and population migration. It is important to note that these questions assume universal tax rate across districts. Therefore, the research model disregards the tax rate of Seoul's local districts while focusing on their spending sides and effects on resident migration.

- Research question 1: Do Seoul districts have local government expenditure systems that match the needs of residents?

- Research question 1-1: Does a greater local district government expenditure on industry and small businesses bring in more migration?

- Research question 1-2: Does a greater local district government expenditure on social welfare bring in more migration?

- *Research question 1-3: Does a greater local district government expenditure on education bring in more migration?*
- *Research question 1-4: Does a greater local district government expenditure on living environment bring in more migration?*
- *Research question 1-5: Does a greater local district government expenditure on natural environment bring in more migration?*

The main research question, or research question 1, will be tested through proxy research questions 1-1, 1-2, 1-3, 1-4 and 1-5. These research questions as a whole will give implications on how each district government's expenditure is concurrent with residents' needs.

2. Data

i. Korea Statistics Microdata

The main source of data for this research is Statistics Korea's Microdata Integrated Service (MDIS) and Seoul Statistics Data. Statistics Korea's MDIS provides various data obtained at personal level. Specifically, Statistics on Domestic Household Migration will be relevant in this research.

Figure 1 shows the example of the form that each move-in reporter needs to complete and submit to a community center within the new district. Each report is converted into an observation or case in the dataset, and it is

important to notice that the completed dataset is a census data. The Household Migration Data from Statistics Korea's Microdata Integrated Service (MDIS) is based on this form, and the original data includes variables as follows:

- destination province or metropolitan city
- destination city or district
- destination community
- year of migration
- month of migration
- day of migration
- origin province or metropolitan city
- origin city or district
- origin community
- whether the reporter is a householder (head of the household)
- age of the householder
- gender of the householder
- total number of people moving in
- total number of male moving in
- total number of female moving in

Figure 2 Sample Move-In Reporting Form, in Korean

1. 전입신고서 양식

■ 주민등록법 시행령 [별지 제15호서식] <개정 2012.6.1> 민원24(www.minwon.go.kr)에서도 신고할 수 있습니다.

[] 전입 [] 국외이주 [] 재등록 신고서

“거짓으로 신고(사망자 전입신고 등)하면 3년 이하의 징역 또는 1천만원 이하의 벌금형을 받게 됩니다.”

* 뒤쪽의 유의사항과 작성방법을 읽고 작성해 주시기 비라며, []에는 해당하는 곳에 √ 표를 합니다. (앞쪽)

접수 번호	신고 일자					년	월	일	
신고인	성명	(서명 또는 인)					세대주와의 관계		
	주민등록번호	전화번호				세대전화번호			
새로 사는 곳 (전입지, 국외이주지)	구 분	[] 세대 구성 [] 다른 세대로 전입 [] 세대 합가(두 세대주가 하나의 세대 구성)							
	전(前) 세대주 또는 본인	성명 (서명 또는 인)						주민등록번호	
	세대주	성명 (서명 또는 인)		전화번호		세대주전화번호		전자우편주소	
	주 소	관할 읍·면사무소, 동주민센터 []							
	*전입 주소가 구분등기가 안된 다가구주택인 경우 주택명칭		주택명칭						층 호
	*주된 1가치		[] 직업 (취업, 사업, 직장이전 등)	[] 가족 (가족과 함께 거주, 결혼, 분가 등)	[] 교육 (진학, 학업, 자녀교육 등)	[] 주거환경 (교통, 문화·편의시설 등)	[] 자연환경 (건강, 공해, 전원생활 등)	[] 그 밖의 사유 (자세히 기재)	
전에 살던 곳 (전출지, 말소지, 거주불명 등록지)	세대주	성명					주민등록번호		
	구 분	[] 세대 전부 전출 [] 세대주를 포함하여 세대 일부 전출						[] 세대주를 포함하여 세대 일부 전출	
	세대 주를 포함하여 세대 일부가 전출한 경우	남은 세대의 세대주 성명		주민등록번호	전화번호	세대전화번호			
* 전입자 인적사항(남 명, 여 명)									
세대주와의 관계	성명	생년월일	등록장애인	인감	주민등록증 정리	비고			
위임장									
‘주민등록법’ 제11조제1항 단서와 같은 법 시행령 제19조에 따라 [] 전입 [] 국외이주 [] 재등록 신고를 신고인에게 위임합니다.									
						년	월	일	
위임한 사람(세대주)						(서명 또는 인)			
우편물 전입지 전송(전입신고일부터 3개월까지) 및 전입지 주소정보 제공 동의서									
동의하는 세대원 성명 기재:									
						신청인 (서명 또는 인)			

210mm×297mm[백상지 80g/㎡]

SOURCE: Korean Government Civil Affair Service Website.

<http://www.minwon24.go.kr>

There was another option to use Population Migration data instead of Household Migration data. In addition to data listed above, it also provides age and gender information about every single person in a migration. However, considering that migration often takes place at family level, and that the migration reporting form needs to be completed by only a single representative of migration, age and gender may or may not be significant. Moreover, neither the migration reporting form nor the dataset includes detailed information that can clearly distinguish person from person. In the end, the microdata does not have sufficient information to fully describe each person or each migration, as it does not include income or property tax data that may all contribute to migration.

Therefore, Household Migration micro datasets for years 2008-2014 (7 years) have been aggregated into a 7-year panel data for 25 Seoul districts. The panel data consists of the following information.

- district name and code
- migration year
- number of migration for each district, by year

The panel data above have then been appended to local district government expenditure data, that also was converted to match the panel data format.

ii. Seoul Statistics

Seoul Statistics Data engage a wide variety of statistics on different topics. Among various topics of statistics, Seoul Statistics consist of numerous regional demographic, economic, social, public policy and environmental indicators for 25 respective districts and Seoul as a whole. Analysis of research questions 1-1 through 1-5 will be based on a 2008-2014 data of 25 Seoul districts. Each district has different population and different gross area. Research questions will be tested for these districts.

Table 3 Seoul statistics, as of 2014.

Zone	Seoul District	Area(km ²)	Population 2014	Population Density (person/km ²)
Downtown	Jongro	23.91	156,993	6,566
	Jung	9.96	128,065	12,858
	Yongsan	21.87	235,951	10,789
Northeast	Seongdong	16.86	296,086	17,561
	Gwangjin	17.06	363,354	21,299
	Dongdaemun	14.21	363,687	25,594
	Jungnang	18.50	418,836	22,640
	Seongbuk	24.58	466,706	18,987
	Gangbuk	23.60	335,025	14,196
	Dobong	20.71	353,709	17,079
Northwest	Nowon	35.44	582,552	16,438
	Eunpyeong	29.70	498,644	16,789
	Seodaemun	17.61	310,376	17,625
Southwest	Mapo	23.84	385,439	16,168
	Yangcheon	17.40	486,221	27,944
	Gangseo	41.44	585,160	14,121
	Guro	20.12	425,831	21,165

	Geumcheon	13.02	238,463	18,315
	Yeongdeungpo	24.53	382,352	15,587
	Dongjak	16.35	407,470	24,922
	Gwanak	29.57	513,186	17,355
Southeast	Seocho	47.00	449,678	9,568
	Gangnam	39.50	578,114	14,636
	Songpa	33.88	664,738	19,620
	Gangdong	24.59	476,597	19,382
Total		605.25	10,103,233	16,693

Source: Seoul Statistics Website, <http://stat.seoul.go.kr>. Retrieved March 10, 2016. Modified.

Before conducting any investigation on migration within Seoul, it is important to research on basic information about the metropolitan Seoul and its 25 districts. Each Seoul district has local government that has certain amount of autonomy on its fiscal policy. Thus, each district is an autonomous entity that has independent local government expenditure, auditing and reporting system that is checked by local councils. Based on the local characteristics of each district, each district government tries to meet the need of its residents.

Table 3 shows the categories of local government expenditure of Seoul districts. Each district has general accounting system that closely resembles that of the city government of Seoul. This general accounting system has been in effect since 2008.

Table 4 Flow of fiscal expenditures, Seoul.

	Greater category	Items
--	------------------	-------

Total Budget	Public administration	<ul style="list-style-type: none"> • Local government & financial support • General administration • Finance • Legislation and election management
	Education	<ul style="list-style-type: none"> • Early childhood and elementary education • Continuing education
	Public order and safety	<ul style="list-style-type: none"> • Fire prevention • Disaster prevention • Police
	Social welfare	<ul style="list-style-type: none"> • Support for vulnerable groups • Childcare family women • Senior citizens and teenagers • Housing • Labor • Social welfare (general)
	Culture and tourism	<ul style="list-style-type: none"> • Culture and the arts • Cultural assets • Sports • Tourism • Cultural assets and tourism
	Environmental conservation	<ul style="list-style-type: none"> • Water supply and water quality and sewage • Atmosphere • Waste • General environmental conservation • Environment
	Public health	<ul style="list-style-type: none"> • Healthcare • Food and drug safety
	Transportation and traffic	<ul style="list-style-type: none"> • Public transportation and distribution, etc. • Roads • Urban railways
	Agriculture and fisheries	<ul style="list-style-type: none"> • Agricultural and rural communities

	Industry and small businesses	<ul style="list-style-type: none"> • Industry promotion and acceleration • Industry and small businesses (general)
	Land and regional development	<ul style="list-style-type: none"> • Regions and towns • Water resources • Industrial complex
	Other	<ul style="list-style-type: none"> • Other (general)
	Science and Technology	<ul style="list-style-type: none"> • Science and technology (general)
	Reserve funds	<ul style="list-style-type: none"> • Reserve funds (general)

Source: Fiscal Clock of Seoul, <http://stat.seoul.go.kr/inter/en/tax/index.html>, retrieved March 10, 2016. Modified.

Table 4 shows a re-categorization of Seoul’s local district government expenditure based on major reasons for migration, which has been obtained from Household migration microdata. Industry and small businesses have been re-categorized as “work” because local government expenditure promotes and accelerates industry and small businesses, implying a potential increase in employment opportunities in a district. Social welfare is included in a “family” section because items such as childcare, care for women, senior citizens and other vulnerable groups potentially mitigate family problems within a district. “Living environment” includes public order and security, culture and tourism, transportation and traffic, and land and regional development as these fiscal projects under these categories are aimed at improving the living environment in general. Lastly, “natural environment” consists of land and regional development, environmental conservation and public health because these

items improve the green environment and promote healthier lifestyle in urban areas.

Table 5 Local government expenditure re-categorized based on migration reasons

Major reason for migration	General accounting categories
Work	Industry and small businesses
Family	Social welfare
Education	Education
Living environment	Public order and security
	Culture and tourism
	Transportation and traffic
Living / Natural environment	Land and regional development
Natural environment	Environmental conservation
	Public health

SOURCE: Prepared by the author

iii. KB Real Estate Housing Price Index

Average housing sales price and average housing rent (*jeonse*) price will be controlled for each district. These housing price variables have been derived from the Kookmin Bank (KB) Real Estate Pricing Statistics. The KB Real Estate Pricing Statistics monthly and annually announces the house pricing index for district or community in Korea. The most current data as of March 2016 has set yearly price of 2015 as a base year. The actual average

housing sales and rent prices have been calculated through the following equation.

$$\text{average housing price}_{\text{year}} = \text{base year price} * \frac{\text{annual price index}}{100}$$

3. Variables

A multiple regression analysis will be conducted with a newly created panel dataset, on STATA statistical computer package application.

- i. Dependent variable

For a panel data multiple regression analysis, *the ratio of a district being chosen as a migration destination, among 25 districts* will be a dependent variable. Using a ratio as a dependent variable may decrease original values' variability as ratios usually range from 0 to 1. However, this measure is crucial when the number of entire cases varies over time, and cross-group comparison is needed.

- Ratio of a district being chosen as a migration destination among 25 districts

ii. Independent variables

This research focuses on the relationship between migration and local district government expenditures. As mentioned before, local government expenditures of 25 Seoul districts have been re-categorized according to the major reasons for migration in the Household migration data.

The five independent variables are as follows:

- Ratio of local district government expenditure on “work”
- Ratio of local district government expenditure on “family”
- Ratio of local district government expenditure on “education”
- Ratio of local district government expenditure on “living environment”
- Ratio of local district government expenditure on “natural environment”
-

These re-categorization was based on the sub-category items of annual local government expenditures.

iii. Control variables

With three variables from the Household Migration data (district, year, number of migration) and five variables from Seoul Statistics local district general accounting dataset, each panel has been integrated with average housing sales price and rent (*jeonse*¹) price per square meter, for each destination district.

- Average housing sales price (million KRW/m²)
- Average housing rent price (million KRW/m²)

Housing values are being controlled because local government expenditures are main concerns in this study, but there still is room for housing values' effects on the ratio of a district being chosen as a migration destination.

¹ Jeonse is a Korean-specific means of renting houses. It is usually on a 2-year term, with a large amount of deposit and usually no monthly rent.

Table 5 List of dependent, independent and control variables.

Variable Type	Variables	Data Source	Year
Dependent Variable	Ratio of district chosen as a destination	Korea Statistics Microdata Integrated Service: Household Migration Data	2008-2014
Independent Variables	[Work] Ratio of local district government expenditure on industry & small businesses	Seoul Statistics: General Accounting	2008-2014
	[Family] Ratio of local district government expenditure on social welfare		
	[Education] Ratio of local district government expenditure on education		
	[Living environment] Ratio of local district government expenditure on living environment		
	[Natural environment] Ratio of local district government expenditure on natural environment		
Control Variables	Average housing sales price (million KRW/m ²)	KB Real Estate	2008-2014

	Average housing rent price (million KRW/m ²)	Housing Price Index	
--	--	---------------------	--

SOURCE: Prepared by the author

However, it is important to assume time-lagging effect of local district government expenditures. This effect has been taken into consideration as the preliminary microdata is spread throughout a year. Similarly, items under each category of local district government expenditures have been found to be carried out throughout a year. It is still difficult to catch exactly until when an expenditure project begins and ends; it may take more than a year to finally observe the fruit of the expense, but for simplicity, this research matches the timespan for every panel.

Also, there are several reasons stock variables are not included as either independent variable or controlling variable. Local government expenditures are mostly flow variables, that are expected to have causal relationship with stock variables such as the number of parks and number of schools in a district. These expenditures usually aim at improving the quality or increasing the quantity of these stock variables. However, it is unclear if the increasing quantity of stock variables necessarily implies the improvement of quality. Because of this reason, this research rather focuses on adopting flow variables as independent variables: local district government expenditures.

4. Research method

i. Network analysis

A network analysis using Gephi computer software will be conducted for all household migration cases within 25 Seoul districts. The visual network analysis visualizes the frequency of each origin-destination combination, as well as proximity of one district to another. In the network analysis, only two variables – origin and destination districts – will be considered. A visual and numerical example of analysis for year 2014 will supplement the panel data multiple regression analysis. However, the analysis will not aggregate the data for all years (2008-2014), unlike in the panel data multiple regression analysis.

ii. Panel data multiple regression analysis

A random effect panel data multiple regression analysis will be conducted on a panel data of 2008-2014. This will facilitate cross-district investigation of the relationship between independent and dependent variables, as it will be able to take into account time-to-time variations within a district.

IV. Research Results

1. Network analysis of household migration in Seoul

Based on a frequency analysis of migration data for 25 Seoul districts in the most recent data of 2014, Table 6 indicates an example of frequency table for respective districts as either migration destination or migration origin. According to the frequency table of migration for each district in 2014, the top 3 destination districts for migration within Seoul were: 1) Gangnam, 2) Gangseo, and 3) Songpa. The top 3 origin districts for migration within Seoul were: 1) Songpa, 2) Gwanak, and 3) Gangnam. Juxtaposing Tables 2 and 6 will hint at a possible correlation between population size and migration frequencies. The Gangnam, Gangseo and Songpa, all of which are in the top 3 destinations, are also in the top 3 in terms of their population size in 2014. The top 3 origin districts are also part of 5 most populated districts. Results imply that the larger the population, there may be more potential migration. Similar pattern has appeared in years 2008 – 2013 as well.

On the other hand, Table 7 shows the exemplary comparison of migration within a district and migration to other districts. In 2014, there were more migrations within (57.28%) each district than migrations to other (42.72%) districts. Although more than half of migrations in Seoul happened within respective districts, the rest of these cases – which still count more than

40% - might have been affected by unverified features of each district. These unverified feature may include local district government expenditures, which will be covered in the next part of this chapter.

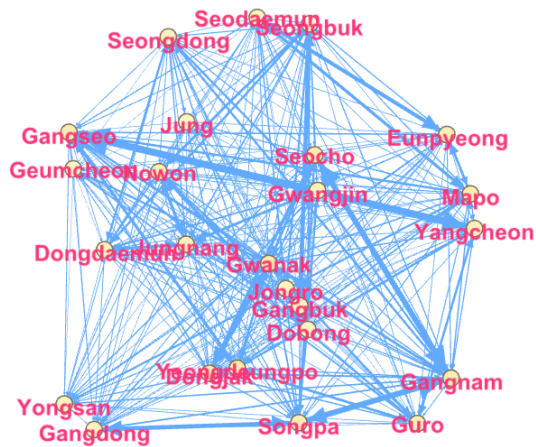
Table 6 Destination and Origin Frequency, year 2014

Districts	Destination Frequency	Destination Percent	Destination Cumulative	Origin Frequency	Origin Percent	Origin Cumulative
Jongro	13,364	1.57	1.57	15,286	1.8	1.8
Jung	11,620	1.36	2.93	12,525	1.47	3.27
Yongsan	21,034	2.47	5.4	22,131	2.6	5.86
Seongdong	25,840	3.03	8.44	26,721	3.14	9
Gwangjin	33,098	3.89	12.32	34,771	4.08	13.09
Dongdaemun	32,687	3.84	16.16	33,371	3.92	17
Jungnang	37,957	4.46	20.62	35,584	4.18	21.18
Seongbuk	36,725	4.31	24.93	40,595	4.77	25.95
Gangbuk	28,485	3.34	28.28	28,591	3.36	29.31
Dobong	26,080	3.06	31.34	26,351	3.09	32.4
Nowon	40,273	4.73	36.07	40,342	4.74	37.14
Eunpyeong	40,547	4.76	40.83	38,908	4.57	41.71
Seodaemun	24,985	2.93	43.77	26,409	3.1	44.81
Mapo	36,646	4.3	48.07	35,255	4.14	48.95
Yangcheon	34,079	4	52.07	35,078	4.12	53.07
Gangseo	54,923	6.45	58.52	47,055	5.53	58.59
Guro	32,947	3.87	62.39	31,893	3.75	62.34
Geumcheon	18,687	2.19	64.58	18,668	2.19	64.53
Yeongdeungpo	32,911	3.86	68.45	34,104	4	68.54
Dongjak	33,076	3.88	72.33	34,576	4.06	72.6
Gwanak	50,038	5.88	78.21	53,601	6.29	78.89
Seocho	38,739	4.55	82.76	36,584	4.3	83.19
Gangnam	57,196	6.72	89.47	53,237	6.25	89.44
Songpa	53,674	6.3	95.78	53,739	6.31	95.75
Gangdong	35,960	4.22	100	36,196	4.25	100
Total	851,571	100		851,571	100	

Table 7 Migration within the same district vs. Migration to another district, year 2014

Migration to other districts	Frequency	Percent	Cumulative Percentage
0 (migration within the same district)	487,797	57.28	57.28
1 (migration to another district)	363,774	42.72	100.00
Total	851,571	100.00	

Figure 3 Network Analysis of migration within 25 Seoul districts, year 2014



The Appendix A shows the table of combinations of origin districts and migration districts in 2014. The table also shows frequency for each of 625 combinations. This frequency is visualized by the thickness of lines between two districts in the Figure 3. For example, migrations between Gangnam and Seocho, Gangnam and Songpa, Gangseo and Yangcheon are three of the most frequent combinations of migration within Seoul's 25 districts. These combinations have also been popular in years 2008, 2009, 2010, 2011, 2012 and 2013.

2. The migration-local government expenditure relationship

Table 9 provides the result for panel data multiple regression analysis for migration within Seoul's 25 districts in years 2008-2014. The 7-year panel data has derived a statistically significant positive relationship between *the percentage of a district chosen as a migration destination and the ratio of local district government expenditure on social welfare*. The analysis has also shown a statistically significant positive relationship between *the percentage of a district chosen as a migration destination and the ratio of local district government expenditure on living environment*. Therefore, research

hypotheses 1-2 and 1-4 have been supported. However, research hypotheses 1-1, 1-3, and 1-5 have not been supported by the analysis.

Table 8 Descriptive statistics for variables in use

Variable		Mean	Std. Dev.	Min	Max	Observations
Percentage chosen as destination	overall	3.999657	1.293443	1.31	7	N = 175
	between		1.296818	1.485714	6.671429	n = 25
	within		.2219214	2.883943	4.845371	T = 7
Avg. Housing Sales Price	overall	494.5143	149.1368	298	953	N = 175
	between		150.9557	321.2857	924.4286	n = 25
	within		15.49018	444.0857	532.0857	T = 7
Avg. Housing Rent Price	overall	256.0114	65.00124	154	495	N = 175
	between		57.57936	173.2857	413.1429	n = 25
	within		32.00159	175.2971	340.2971	T = 7
Ratio of expenditure on "work"	overall	.0115595	.0118256	.0004882	.0927666	N = 175
	between		.0075526	.0027269	.0343124	n = 25
	within		.0092071	-.0087867	.0700137	T = 7
Ratio of expenditure on "family"	overall	.5892642	.117444	.2711485	.8041679	N = 175
	between		.0794821	.4043707	.7013219	n = 25
	within		.0877127	.4141309	.8017039	T = 7
Ratio of expenditure on "education"	overall	.0342421	.0129014	.0035721	.0843518	N = 175
	between		.0092364	.0212546	.0641717	n = 25
	within		.0091693	.0012845	.068165	T = 7
Ratio of expenditure on "living environment"	overall	.1828576	.0720709	.0583262	.4473078	N = 175
	between		.0455449	.1112451	.2845059	n = 25
	within		.0564925	.0474424	.3614974	T = 7
Ratio of expenditure on "natural environment"	overall	.1820767	.0500244	.0988013	.3665243	N = 175
	between		.0335371	.1339902	.276537	n = 25
	within		.0376362	.1067578	.2920079	T = 7

Table 9 Panel Data Multiple Regression Analysis, years 2008-2014

Random-effects GLS regression Number of observations = 175
Group variable: district Number of groups = 25
R-sq: within = 0.5529 min = 7

between = 0.0006 Obs. per avg = 7.0
 overall = 0.0150 group: max = 7

Ratio of a district being chosen	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
Avg. housing sales price	-.0000408	.0010279	-0.04	0.968	-.0020554	.0019738
Avg. housing rent price	-.0007808	.0012048	-0.65	0.517	-.0031422	.0015806
Ratio of expenditure on "work"	1.098438	2.260972	0.49	0.627	-3.332986	5.529861
Ratio of expenditure on "family"	2.156038	.9083363	2.37	0.018	.3757315	3.936344
Ratio of expenditure on "education"	-.7266388	2.553951	-0.28	0.776	-5.732291	4.279013
Ratio of expenditure on "living environment"	2.963147	1.260168	2.35	0.019	.4932639	5.433031
Ratio of expenditure on "natural environment"	(omitted)					
_cons	2.419593	.9711385	2.49	0.013	.5161965	4.322989

V. Conclusion

1. Summary of results

The network analysis of migration within 25 Seoul districts shows that Gangnam and Songpa districts have been popular destination for migration during the time period of interest. The results have shown that most frequent migrations have occurred among districts adjacent to each other (refer to Appendix A and Table 2. Seoul district zones (downtown, northeast, northwest, southwest and southeast) consist of adjacent districts).

The 7-year (2008-2014) panel data multiple regression analysis on government expenditures has discovered positive relationships between migration and local district government expenditure on social welfare, and migration and local district government expenditure on living environments. Expenditure on living environments include spending on: public order and safety, culture and tourism, as well as transportation and traffic (refer to Table 4). Just like bigger expenditure on social welfare may increase satisfaction of service recipients (most of which are residents of a district), improvements of safety, transportation and advances in regional culture may as well make people happier. This projection is based on an assumption that more money will improve public service in both quality and quantity. Higher quality and quantity in certain areas of public service in a desired way will entice more people into a local district.

The results as a whole answer main research question: *Do Seoul districts have local government expenditure systems that match the needs of*

residents? The answer is, both yes and no. Local district government spending in certain policy areas have appeared to be effective in making more people move in. On the other hand, spending on other policy areas such as work and education have proved ineffective in increasing the number of residents in respective districts.

However, we may still have minor implications from results that are not statistically significant. Local government spending on work has a positive coefficient with migration, suggesting potential effectiveness of local government efforts to financially support underprivileged industries and small businesses. Such effort may create and secure more jobs available to residents, thus attracting more people from outside the district. In contrast, local government spending on education has a negative coefficient with migration. This finding may pertain to the prevailing trend that many students and parents perceive school (public education in a larger sense) as ineffective, while they depend more on private tutoring and courses taught outside school. A district's expenditure on education may be targeted mostly at improving public school facilities, but it may also include increased regulation towards private tutoring and courses. The latter may go against students' and parents' interest.

2. Policy implications and final remarks

While there are numerous policy areas that local district governments may spend money on, expenditures on social welfare and living environments

have appeared to be in a positive relationship with the percentage of people choosing certain district as their migration destination. The research result is concurrent with Seoul's situation in which social welfare and land & region development take the biggest part of Seoul's fiscal projects. Social welfare for seniors, babies and people in need has all been major issues around Korean central and local governments. In addition, regional development efforts to improve living environments and make city life vibrant have long been at the center of attention since the post-Korean war period. It is advised of local governments to make the most out of their endowments in order to bring in more residents and see their areas prosper both economically and socially. This may be done through a thorough investigation of what each district has, and how much improvement has been made with its fiscal projects.

In addition, the research result may propose an enhanced measure of urban competitiveness using migration as a factor, as the result has shown the relationship between migration and government expenditure. Including not only factors of what local governments do (such as expenditure), but also how residents actually make choices (which is migration), may better reflect the urban competitiveness in residents' (customers') perspectives.

Finally, due to a limited availability of appropriate data, the panel data for multiple regression analysis have been limited to only a 7-year timespan. Household migration data have been available since long before 2008, but current categories of Seoul local district government's general accounting have only been in effect since 2008. This may have caused some statistical

insignificance of several local government expenditure variables. As far as enough future data will be collected after year 2014, future research on a similar topic may bring more thoughtful ideas that have implication towards local governments.

Also, this research has not separated different sources of local government budget. Local district government budget may plan on expending not only tax collected within a district, but also central government grants and private funding. Separating different sources of funding in a future research could result in an interesting outcome and pinpoint a refined policy implication towards local and central governments.

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Appendix A

Table 6 Per-capita local district government expenditure, re-categorized by major reasons for migration. 2008-2014.

District	Year	Exp_Work	Exp_Social Welfare
Jongro	2008	1044	22259
	2009	2441	31316
	2010	1936	30222
	2011	1069	31477
	2012	663	38777
	2013	610	48797
	2014	748	56127
Jung	2008	2437	33636
	2009	4642	54691
	2010	3270	50279
	2011	2102	45850
	2012	2382	55481
	2013	1984	62614
	2014	4437	66851
Yongsan	2008	61	22504
	2009	597	32753
	2010	334	27470
	2011	645	28240
	2012	130	34682
	2013	406	40948
	2014	203	46199
Seongdong	2008	135	21494
	2009	1627	28697
	2010	641	26202
	2011	1005	29955
	2012	406	33575

	2013	1168	41193
	2014	1207	48032
Gwangjin	2008	590	17342
	2009	2508	24634
	2010	891	23898
	2011	139	24096
	2012	741	28985
	2013	457	34679
	2014	560	41020
	Dongdaemun	2008	1817
2009		266	29574
2010		231	29248
2011		181	30200
2012		422	35173
2013		740	41587
2014		767	48745
Jungnang	2008	1181	23439
	2009	174	33542
	2010	335	32762
	2011	231	33657
	2012	271	36867
	2013	51	44075
	2014	240	52092
Seongbuk	2008	210	19689
	2009	84	26992
	2010	78	26826
	2011	580	28642
	2012	322	33961
	2013	631	41442
	2014	1468	50158
Gangbuk	2008	87	27513
	2009	325	40782
	2010	368	40040

	2011	180	41405
	2012	169	43216
	2013	2555	52332
	2014	1242	60536
Dobong	2008	1760	19963
	2009	1613	29596
	2010	257	28930
	2011	82	30704
	2012	210	35374
	2013	110	42745
	2014	299	50863
Nowon	2008	92	25407
	2009	220	33396
	2010	650	33977
	2011	155	37144
	2012	327	42289
	2013	286	49728
	2014	369	58114
Eunpyeong	2008	20	21275
	2009	229	31491
	2010	165	29095
	2011	77	31688
	2012	249	36589
	2013	249	44118
	2014	184	52079
Seodaemun	2008	114	21638
	2009	494	29075
	2010	1625	25884
	2011	1052	27951
	2012	1273	31852
	2013	1289	39921
	2014	1153	47385
Mapo	2008	1041	21307

	2009	1114	29887
	2010	801	28966
	2011	299	32067
	2012	212	33066
	2013	536	40869
	2014	282	46695
Yangcheon	2008	502	16724
	2009	4136	20629
	2010	1762	23630
	2011	1452	24949
	2012	1079	30078
	2013	868	36462
	2014	848	44283
Gangseo	2008	134	22609
	2009	331	31463
	2010	786	32018
	2011	1031	35080
	2012	165	39571
	2013	195	46601
	2014	112	52727
Guro	2008	223	18001
	2009	525	25343
	2010	695	25734
	2011	738	28464
	2012	392	36545
	2013	783	44643
	2014	369	51733
Geumcheon	2008	634	29163
	2009	1818	37801
	2010	1380	37905
	2011	1352	41263
	2012	1985	50706
	2013	799	59817

	2014	712	61520
Yeongdeungpo	2008	246	20499
	2009	982	26624
	2010	613	25395
	2011	339	26179
	2012	270	32127
	2013	261	39873
	2014	288	46135
Dongjak	2008	588	18170
	2009	149	27565
	2010	129	26794
	2011	155	27314
	2012	145	31792
	2013	106	38150
	2014	189	44050
Gwanak	2008	106	18344
	2009	319	26464
	2010	346	25665
	2011	377	27017
	2012	280	31510
	2013	370	38397
	2014	223	44973
Seocho	2008	282	12975
	2009	900	18892
	2010	328	17337
	2011	58	15473
	2012	161	20149
	2013	186	28119
	2014	279	32678
Gangnam	2008	1049	18703
	2009	2367	24000
	2010	1846	24673
	2011	730	28289

	2012	526	30727
	2013	408	35988
	2014	369	41198
Songpa	2008	176	13787
	2009	149	19315
	2010	135	17733
	2011	72	19365
	2012	62	24403
	2013	60	30552
	2014	58	36944
Gangdong	2008	287	14351
	2009	451	21104
	2010	54	20985
	2011	169	23855
	2012	233	28832
	2013	198	36777
	2014	312	43666

District	Year	Exp_ Education	Exp_ Living Environment	Exp_ Natural Environment
Jongro	2008	1348	28819	18314
	2009	1740	36184	27911
	2010	1740	21935	17328
	2011	5081	15419	12989
	2012	5960	19438	18891
	2013	8110	20981	17647
	2014	6473	26009	17650
Jung	2008	3694	47993	19533
	2009	5914	44325	23202
	2010	4478	29446	18145

	2011	4096	17129	15324
	2012	4249	19377	15946
	2013	4215	22452	19490
	2014	4000	26715	21428
Yongsan	2008	1146	14323	11714
	2009	2191	14940	12778
	2010	1707	9686	11034
	2011	2489	10154	12568
	2012	2315	8259	9310
	2013	1855	8877	10886
	2014	1850	8471	11262
Seongdong	2008	1379	11909	9517
	2009	2274	14705	11619
	2010	2996	13382	10446
	2011	3233	12944	9330
	2012	2841	14496	8493
	2013	2643	10806	8864
	2014	2162	11408	10292
Gwangjin	2008	830	10907	6443
	2009	175	11351	10323
	2010	321	8989	7904
	2011	1774	6259	6009
	2012	1760	6615	6387
	2013	1714	7201	7807
	2014	2190	8855	9377
Dongdaemun	2008	1457	10826	10849
	2009	1694	12539	21402
	2010	1858	8977	12153
	2011	2214	6392	11837
	2012	2622	4481	8543
	2013	2227	6388	9593
	2014	1874	8912	11609
Jungnang	2008	1554	9909	8518

	2009	2285	12111	14835
	2010	3169	7682	12533
	2011	1609	7730	10257
	2012	1142	4477	6689
	2013	1680	5907	7805
	2014	3462	6245	8249
Seongbuk	2008	788	10890	7711
	2009	1578	13299	13592
	2010	1455	12320	13150
	2011	1866	6005	7586
	2012	1864	7619	7468
	2013	1983	8350	7617
	2014	1994	8696	7819
Gangbuk	2008	1291	9775	10325
	2009	1266	12547	13783
	2010	1830	9043	7468
	2011	1507	6889	6591
	2012	1426	6000	6504
	2013	1379	6735	6907
	2014	1538	8591	8703
Dobong	2008	457	9270	9065
	2009	1413	12144	9656
	2010	1630	11743	10921
	2011	1543	6847	7556
	2012	1591	7282	7920
	2013	1870	7174	8061
	2014	1877	8864	8078
Nowon	2008	2014	6949	7831
	2009	2257	9750	11408
	2010	2225	7313	9732
	2011	1896	4574	6322
	2012	1730	5324	6675
	2013	2072	3974	6389

	2014	2332	4215	7236
Eunpyeong	2008	731	9685	9253
	2009	1601	11438	10496
	2010	1533	5757	7632
	2011	1554	7127	7237
	2012	2070	5657	6218
	2013	1795	6755	7262
	2014	1891	5849	7025
Seodaemun	2008	939	11225	11864
	2009	1152	12974	16387
	2010	1567	9397	12392
	2011	1680	6042	9377
	2012	1524	6792	8783
	2013	2449	7999	9632
	2014	2347	5676	8570
Mapo	2008	1082	7004	7457
	2009	2129	9496	9749
	2010	1431	8305	8265
	2011	1693	6280	8311
	2012	1506	5607	7877
	2013	1689	7011	8482
	2014	1870	8172	8745
Yangcheon	2008	787	5933	6077
	2009	998	9689	9133
	2010	1102	8750	8349
	2011	1501	5848	5740
	2012	1684	7080	6755
	2013	1786	6693	7026
	2014	1868	6592	7127
Gangseo	2008	543	6797	5546
	2009	937	8631	10469
	2010	1053	8120	9341
	2011	1285	5071	6496

	2012	1403	6463	7724
	2013	1346	5770	8668
	2014	1494	6318	7776
Guro	2008	1572	11559	10061
	2009	1608	13047	11375
	2010	1530	13599	11443
	2011	1539	8739	8983
	2012	1859	10264	9324
	2013	2176	8391	8726
	2014	2098	8407	10400
Geumcheon	2008	607	18325	9711
	2009	826	18589	9531
	2010	1773	10952	8959
	2011	2207	8400	8547
	2012	2357	6489	8007
	2013	2024	7691	9811
	2014	1604	7181	8767
Yeongdeungpo	2008	1035	10161	9125
	2009	1287	11242	13344
	2010	1659	11575	11359
	2011	1716	8882	9290
	2012	2248	9172	11042
	2013	2407	10649	12513
	2014	3169	8370	10280
Dongjak	2008	726	9369	8067
	2009	1118	11188	11938
	2010	1144	9217	9756
	2011	1793	7227	8521
	2012	1321	6128	7921
	2013	1897	5082	7601
	2014	1594	4695	7843
Gwanak	2008	807	6992	6126
	2009	1127	9796	8512

	2010	1346	8733	7678
	2011	1592	4594	5442
	2012	1739	4289	5481
	2013	1743	4575	5971
	2014	2827	5636	6866
Seocho ²	2008	2235	14759	17503
	2009	2235	25210	22437
	2010	3325	15563	15823
	2011	1830	11414	12191
	2012	2287	10282	10647
	2013	2047	14633	11332
	2014	2319	7018	10685
Gangnam	2008	4496	20591	19727
	2009	4496	27691	24695
	2010	4224	22800	15377
	2011	3870	11438	12178
	2012	4269	11874	12632
	2013	4523	11842	12506
	2014	3980	12235	14103
Songpa	2008	985	7335	8432
	2009	1277	9744	10570
	2010	1251	7732	8992
	2011	953	6053	7852
	2012	1341	7534	8513
	2013	1379	7069	7834
	2014	2225	5099	8280
Gangdong	2008	686	10517	7764
	2009	1019	11412	8107
	2010	1131	12598	6905

² Annual local district government expenditures on education for Seocho and Gangnam had not been carried out in 2008. Expenditures in 2009 have been used instead.

	2011	1328	6610	6569
	2012	1569	6267	5955
	2013	1738	5818	7086
	2014	1837	6075	7401

Preliminary Source: Seoul Statistics: General Accounting. Modified by the author.

Appendix B

o. district / d. district	Jongro	Jung	Yongsan	Seongdong	Gwangjin	Dongdaemul	Jungnang	Seongbuk	Gangbuk	Dobong	Nowon
Jongro	6,317	410	344	320	187	550	207	1,376	341	177	262
Jung	336	5,035	556	911	267	408	213	441	215	145	234
Yongsan	306	512	11,105	477	289	279	230	424	224	163	256
Seongdong	239	776	460	12,819	1,594	1,561	788	571	315	253	479
Gwangjin	156	292	274	1,438	19,494	1,119	1,994	451	304	262	731
Dongdaemul	377	302	279	1,184	994	18,771	2,103	1,528	548	454	1,163
Jungnang	177	162	206	536	1,429	1,508	23,286	597	428	505	2,133
Seongbuk	1,028	432	431	688	591	1,639	1,013	21,142	3,302	1,282	1,932
Gangbuk	255	191	225	287	284	531	565	2,334	16,181	2,660	1,354
Dobong	186	135	194	251	285	421	623	986	2,329	15,454	2,352
Nowon	240	208	250	442	629	981	2,346	1,534	1,233	2,151	24,578
Eunpyeong	529	240	379	354	290	327	306	484	328	225	371
Seodaemun	679	292	403	306	264	303	223	437	250	163	256
Mapo	320	364	1,083	366	342	344	291	503	234	199	307
Yangcheon	159	120	246	179	189	178	164	234	118	129	231
Gangseo	157	156	319	271	285	321	277	342	215	199	337
Guro	123	140	236	214	248	192	191	226	127	116	232
Geumcheon	57	45	105	99	112	98	120	121	85	57	101
Yeongdeungpo	234	177	457	337	297	331	238	309	171	133	254
Dongjak	172	176	530	370	453	326	331	370	209	178	364
Gwanak	285	264	595	439	709	477	484	571	346	259	448
Seochu	284	288	786	689	442	321	258	387	180	163	327
Gangnam	372	483	961	1,626	1,098	601	515	554	295	287	543
Songpa	237	269	409	834	1,291	623	599	470	264	244	572
Gangdong	139	151	201	423	1,035	477	592	333	243	222	456
Total	13,364	11,620	21,034	25,840	33,098	32,687	37,957	36,725	28,485	26,080	40,273

o district / d	district	Eumbyeong	Seodaemun	Mapo	Yangcheon	Gangseo	Guro	Geuncheon	Yeongdeung	Dongjak	Gwanak	Seocho	Gangnam	Songpa	Gangdong	Total
o	district / d	Eumbyeong	Seodaemun	Mapo	Yangcheon	Gangseo	Guro	Geuncheon	Yeongdeung	Dongjak	Gwanak	Seocho	Gangnam	Songpa	Gangdong	Total
Jonro		806	937	489	141	264	181	61	288	211	298	314	436	232	137	15,286
Jung		353	329	542	122	229	158	47	230	202	274	372	510	273	202	12,525
Yongsan		576	431	1,474	275	539	318	121	528	625	511	864	982	420	22,131	
Seongdong		388	285	495	224	441	250	106	322	339	493	694	1,473	864	492	26,721
Gwangjin		351	245	451	216	513	293	132	371	444	651	567	1,382	1,522	1,118	34,771
Seodaemun		418	305	446	221	377	305	121	398	311	545	389	724	636	472	33,371
Jungrang		302	187	268	168	413	253	124	250	286	411	301	582	576	496	35,584
Seongbuk		742	493	747	274	591	334	159	447	421	589	547	800	614	377	40,595
Gangbuk		383	221	275	176	353	201	99	217	209	410	238	391	333	218	28,591
Dobong		258	152	249	126	296	175	100	195	208	275	235	349	310	207	26,351
Nowon		413	283	479	246	446	286	128	310	344	476	448	766	707	418	40,342
Eumyeong		2,6073	2,377	1,425	409	995	393	167	485	357	579	454	626	474	261	38,908
Seodaemun		12,969	12,969	2,343	349	1,661	566	197	1,006	507	780	668	870	595	264	35,255
Mapo		1,921	2,113	19,011	743	1,661	566	197	1,006	507	780	668	870	595	264	35,255
Yeoncheon		401	287	722	19,915	5,795	1,637	263	1,223	426	624	534	694	386	224	35,078
Gangseo		580	451	966	4,277	32,008	896	330	1,158	540	774	570	743	573	310	47,055
Guro		331	231	629	1,694	1,441	19,354	1,014	1,596	727	1,249	408	528	414	232	31,893
Geuncheon		171	120	222	350	492	1,123	11,990	562	435	1,451	222	229	197	104	18,668
Yeongdeungpo		492	411	1,151	1,514	2,289	1,942	660	1,7319	1,648	1,374	736	766	583	281	34,104
Dongjak		385	339	672	510	1,033	886	505	1,799	1,681	3,234	2,395	1,257	744	357	34,576
Gwanak		671	543	989	861	1,518	1,758	1,615	1,586	3,256	30,246	2,008	1,868	1,234	571	53,601
Seocho		334	319	708	324	577	343	163	626	2,354	1,493	19,190	4,435	1,174	419	36,584
Gangnam		524	451	903	415	710	404	191	696	1,088	1,351	4,357	30,543	3,393	876	53,237
Songpa		398	311	667	327	738	379	156	546	568	917	1,301	4,532	33,749	3,338	53,739
Gangdong		279	195	323	202	435	197	107	262	262	489	526	1,164	3,216	24,267	36,196
Total		40,547	24,985	36,646	34,079	54,923	32,947	18,687	32,911	33,076	50,038	38,739	57,196	53,674	35,960	851,571

요약(국문초록)

본 연구는 대한민국의 수도 서울의 25 개 자치구 내에서 발생하는 인구이동과 각 자치구의 지방정부 지출과의 관계를 분석한다. 먼저 네트워크 분석을 통하여 각각의 근원지-목적지 조합의 빈도수를 보여주며, 어떤 자치구가 서울시민들이 주거지로 빈번하게 선택하는 곳인지 보여주고 있다. 연구의 또다른 부분은 2008 년부터 2014 년까지의 7 개년에 대한 패널 다중회귀분석을 통하여 인구이동과 자치구 복지부문 지출, 그리고 인구이동과 자치구 주거환경부문 지출이 각각 양의 관계를 보인다는 것을 분석하였다. 네트워크 분석과 패널 다중회귀분석을 통한 결과는 최근 서울뿐만 아니라 전세계의 많은 지방정부가 사회복지와 지역 개발을 중요한 사안으로 여기고 있다는 것에 부합한다.

또한 본 연구의 결과는 도시경쟁력을 측정하는 방법의 개선 방안으로 실제 시민들의 주거지 선택 및 이동을 적용하는 것을 제시하고 있다. 행정과 정책 부문에서 시민들을 고객 또는 소비자로 여기는 추세가 계속되는 만큼, 이들이 정책에 어떻게 반응하며 행동하는지 살펴보는 것이 각 지방정부들이 어떻게 지역을 발전시킬지에 대하여 많은 정책적 함의를 제공할 것으로 보인다.

주요어: 도시 경쟁력, 인구이동, 주거지 선택, 지방정부 지출, 세금, 서울,
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