



Article

The Influence of Urban Planning-Related Pledge Budget on Local Election Votes: A City Case in Korea

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Abstract: Most election pledges require a significant budget for their implementation. In the case of a candidate for the head of a local government who presented his pledges related to urban planning by subdividing them into voting districts, we tested how the size of the budget committed to the voters affected the votes. Based on the urban planning-related pledged budget, the economic utility value of one vote was estimated to be about 2050 USD. In elections for local government heads, as the pledged budget related to urban planning increased, the vote percentage and the degree of competition for votes increased positively. Moreover, when the pledged budget related to urban planning exceeded a certain level, the slope of the vote percentage curve tended to be gentle. The slope of the curve is steep in the section up to the pledged budget of 50 million USD, and the slope becomes gentle in the next section. This study was based on a specific case that was limited in terms of space and time, and it was limited to analyzing only the election pledge and election result data without considering the socioeconomic background factors of the voters.

Keywords: urban planning; election pledge; pledge budget; local election; vote; Korea

1. Introduction

An election pledge is effective for obtaining votes only when it can provide short-term and tangible results [1,2]. In this respect, various regional development pledges can provide a better opportunity for politicians to effectively communicate their plans or achievements to voters in comparison to welfare pledges [3]. In parliamentary elections, political factors, such as regionalism and political party preference, mainly influence the election outcome [4–6]. Because urban planning has a significant impact on the economic interests of local residents, the influence of urban planning-related pledges cannot be ignored in local elections.

Urban planning is closely related to land use. In cities, land is used for residential, commercial, industrial, or transportation purposes or a combination of these uses. To manage the efficiency of land use in a city, the head of the local government has the authority to make decisions on urban planning [7,8]. Most candidates for local government heads tend to emphasize urban planning-related projects in their election pledges [9,10]. Furthermore, a local government head elected through a local election will pursue re-election in the next election based on faithful implementation of the urban planning-related projects that have been pledged.

There are several stakeholders in the urban planning-related projects of local governments. Local residents reflect their demands for urban infrastructure-related projects in the policies of local governments through local elections. In particular, in the Seoul metropolitan area in Korea, local residents have high demands for projects such as redevelopment, reconstruction, residential environment maintenance, and infrastructure expansion.

The major election pledges that influence voters' choice of candidates include welfare pledges, urban development pledges, transportation pledges, and sports facility pledges. Previous studies have primarily focused on demonstrating that various election pledges influence voters' choice of candidates. However, few previous studies have analyzed the relationship between election results and urban planning-related pledges proposed by candidates for the head of the local government [11,12].

The Central Election Commission provides the data of election results based on candidates and voting districts. Most candidates present urban planning-related pledges at the entire constituency level, but some candidates subdivide them into voting districts. In the case of candidates who have presented their urban planning-related pledges by voting district, the election result data and urban planning-related pledges have a geographical commonality. Urban planning-related pledges require a budget to implement them. Considering geographical commonality, research is needed to link election results data with urban planning-related pledge budgets that have spatial relationships. Previous studies of voters' voting behavior have been mostly based on the individual characteristics of voters; however, few empirical studies have considered the geographic characteristics of voting districts [13].

Therefore, we examined the effect of the urban planning-related pledge budget on voting in local elections, compared the slope change of the vote percentage curve by budget size, and estimated the utility value of voting. This study is based on the case of the mayoral election of the Seongnam City (Hereinafter referred to as the City), one of the metropolitan areas in Seoul. In this study, "urban planning-related" is a concept that includes urban development projects, urban renovation projects, and infrastructure projects. "Vote percentage" means the vote percentage of candidates for the City mayor in the sixth local election, and "competition for votes" is the value obtained by subtracting the vote percentage of the second-most competitive candidate from the vote percentage of the first-place candidate for the sixth local election.

2. Theoretical Background

In this section, we discuss previous studies on the relationship between urban planning-related pledge budget and local election votes, which is the basis for specifying a set of predictions to be tested.

An election pledge is an official promise made by a candidate to persuade the voters, and at the same time, it can be a concrete policy that the elected person implements by reflecting local issues and the needs of the residents [14]. Election pledges are not simply a factor that affects the immediate election results; rather, the performance of such pledges is also a factor that affects the next election. There have been various previous studies on the effect of the implementation of election pledges on the performance of an incumbent candidate in the next election or the effect of this on the evaluation of the ruling party. Election promises affect both voting and voter beliefs about how much politicians will contribute to public funds [15]. Voters respond to the fulfillment of party pledges in voting. According to a study by Matthieß [16] analyzing data from 69 elections in 14 countries, the ruling party's election results were influenced by previous commitments. A ruling party that fulfills more election pledges is more likely to prevent election losses [16]. Naurin, Soroka, and Markwat [17] conducted an experimental investigation on the tendency of governments to be punished for unfulfilled pledges rather than rewarded for fulfilling them. Their findings show that non-implemented pledges are more important to government evaluation than implemented pledges [17].

As urban planning policy shifts in cities around the world, it is more important than ever to understand the rationale for urban planning [18]. Now is the time for a theoretical study on the relationship between local elections and the pledge budgets for urban planning of candidates for local government heads. The theoretical basis suitable for this analysis is the theory of public choice. Public choice can be defined as an economic study of non-market decision-making [19,20]. Decision-making in the public sector is made through balance and agreement in the pursuit of self-interest by politicians, voters, bureaucrats, and interest groups. According to the public choice theory, politicians seek maximization of votes, voters seek maximization of rational utility, bureaucrats

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seek maximization of budget, and interest groups seek additional private interests from public organizations and public resources [21].

Politicians determine public policy, and the demands of voters are external pressure factors that force politicians to make specific public policy decisions. It can be assumed that a politician wishes to maximize votes to get the position he or she wants. Since politicians will try to promote policies that are most advantageous to voters for election, the personal motivation of politicians is not maximizing social utility; rather, it is maximizing votes [22].

Voters choose a candidate (or political party) whom they think can best represent their interests to maximize their utility [22–24]. The theory of public choice attempts to derive predictions about political outcomes from individuals who act rationally, and a core task of this theory is to explain voting behavior, such as "why individuals vote" [25]. From the perspective of public choice theory, we tried to estimate the economic utility value of one vote in the election of the head of local government with the pledged budget related to urban planning.

In addition, there have been some studies on the effect of politicians' election pledges on votes that have been empirically analyzed with election results. Hwang conducted a study that analyzed the relationship between election pledges related to traffic and election results using local election data [13]. However, the generalizability of the results is limited because the effects of traffic-related election pledges on local election results are inconsistent [13]. The candidate group who made election pledges related to sports had a higher winning competitiveness index than the candidate group who did not include such pledges in their pledges [26]. In Daegu, the third-largest metropolitan city in Korea, 54% of candidates for the head of the local government made library pledges [27]. Some of the elected people actively fulfilled their library pledges, whereas others did not [27]. In addition, there have been some previous studies on the relationship between elections and various factors, such as the competitiveness of incumbent candidates, the impact of election publications, and manifesto scores. When the incumbent head of a local government runs for re-election, the voter can be expected to vote in consideration of the performance of various pledges of the candidates. Local government heads prefer project-oriented expanded budgets rather than sound and efficient financial management [28]. Local voters also tend to support such incumbent candidates more to maximize their utility [28]. As for policy factors, an emphasis on regional development policies had a positive effect on the vote percentage [29]. A manifesto is a document in which an organization, such as a political party, states their beliefs, goals, and policies. Regarding elections, a manifesto can be said to be an election pledge that presents the budget and schedule for the implementation of the pledge. The higher the manifesto score, the higher the vote percentage of candidates for local government heads [30].

Voters tend to support candidates who present policies that are expected to be beneficial in maximizing their utility. For the evaluation of the utility of voters, the equation proposed by Riker and Ordeshook based on Downs' theory is widely applied [22,31]. Downs stated that the difference in utility between political parties (or candidates) is the expected utility when a candidate preferred by the voters is elected [22].

The budget per pledge did not have a certain pattern [32]. Voters have rational ignorance and heuristic tendencies toward information processing [33]. Candidates who present more commitments with emotional appeal were more likely to win. The more budget-intensive project pledges a candidate presents, the more economic benefits the voter can expect [34].

According to the results of previous studies, voting districts with more budgetary support for urban planning pledges will have higher vote percentages and voting competition. Therefore, we predicted that the urban planning-related pledge budget of the local government head candidate has a positive effect on the vote percentage and the competition for votes.

Because a political party's candidate ultimately represents the interests of the voters, the policy preferences and ideologies of the voters are important factors in the selection of candidates [35,36]. In general, the choice is determined by three factors, namely the characteristics of the decision maker, the available alternatives and their characteristics, and the decision rules [37]. Local government heads

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who want to run for re-election prefer project-oriented expanded finance because they are conscious of the next local election, and local voters also tend to support such local government heads more to maximize their utility [28].

According to the results of previous studies, the difference in the vote percentage can be expected to vary depending on the size of the election pledge budget. Therefore, we predicted that the slopes of the vote percentage curve and the competition for votes curve in the section where the pledge budget is low are steeper than those in the high section.

3. Materials and Methods

3.1. Materials

3.1.1. Study Site

This study focused on the city of Seongnam, one of the large-scale cities located within the Seoul Metropolitan Area of Korea. This city has a population of about 940,000 and an area of about 141 km². The mayor and members of the City Council are elected through local elections held every four years.

Seongnam was selected as the study site because data analysis was possible for the following two reasons. First, the mayors of large cities such as Seongnam have great influence on the residential environment of local voters because they have the authority to make decisions about most urban planning. Secondly, the election result data are published only at the candidate and administrative dong (voting district) level by the Central Election Commission. In other words, the election result data include a geographic factor. Among candidate election pledges, urban planning pledges are closely related to geographic factors. Most of the candidates for local government leadership tend to present urban planning pledges around the entire electoral area. Thus, it is difficult to find an election case that presents urban planning pledges at the voting district level, which is the minimum standard for voting areas. However, since Jaemyung Lee (mayor of the City, 2000–2014; 2014–2018) presented election pledges related to urban planning in units of voting districts, it was possible to analyze the election result data in connection with the candidate's urban planning pledges by voting district.

3.1.2. Data on Vote Percentage

We conducted a case study of the mayoral election in the City and used regression analysis for prediction testing. The City had 48 administrative dongs (voting districts) at the time of the sixth local election. The focus of this study was to investigate the effect of candidates' urban planning-related pledge budget on the vote percentage based on the City mayor's sixth local election. The Central Election Commission publishes the result data of local elections for each candidate in the minimum unit of the voting district.

In the sixth local election held in the City, the total number of registered voters was about 750,000, of which about 400,000 voted, showing a 51% turnout Figure 1. Specifically, incumbent candidate Lee succeeded in re-election in the sixth local election with a "vote percentage" of about 52%, and the top competing candidate Shin won 175,056 votes, resulting in 44.83% of the vote (Figure 2a).

For the collection of research data, this study mainly adopted the method of analyzing existing statistical data held by public institutions. This method is a form of non-interventive measurement. The unit of analysis applied to existing data is often a group rather than individuals [35]. When this method is used, there is a limitation in that it is impossible to verify all variables or concepts that might be included in the research topic because the research can only be conducted in the context limited to the existing data. To compensate for this limitation, this study targeted local elections in certain regions with relatively high socioeconomic homogeneity. In addition, this study assumes that all socioeconomic variables other than the factors related to election pledges are the same.

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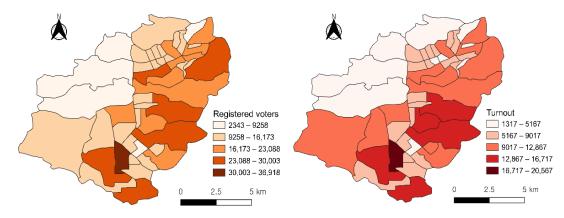


Figure 1. Registered voters and turnout.

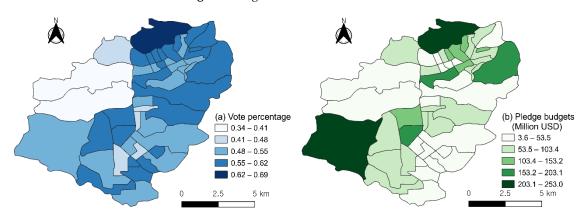


Figure 2. (a) Vote percentage and (b) pledge budgets.

3.1.3. Data on Urban Planning-Related Pledge Budget

The size of the budget for urban planning-related pledges presented by the candidates for the head of local governments to voters may affect the outcome of local elections. Because most candidates tend to exaggerate the size of the pledge to maximize votes during the election process, the size of the pledge budget expected by the candidate at the time of election may differ from the annual pledge execution plan after the election.

At the time of the sixth City mayoral election, the incumbent candidate Lee presented pledges related to urban planning by subdividing the pledges into each voting district, and the size of the pledged budget he proposed was from a minimum of about 3.6 million USD to a maximum of about 253 million USD, depending on the voting district and was about 77.5 million USD per voting district on average (Figure 2b). On the other hand, Shin, the top rival candidate, categorized his urban planning-related pledges according to the contents of his pledges and presented them comprehensively for the entire City. The budget size of his urban planning-related pledges was at least 11.5 million USD depending on the voting district. The maximum amount was 84.3 million USD and averaged about 46 million USD per voting district.

According to the following procedure, the amount of budget for pledges related to urban planning of Lee, the incumbent candidate, was calculated. (1) We classified candidate Lee's pledges related to urban planning according to details. (2) For pledged projects with budget data in the main business plan of the City, the budget was applied to those projects. (3) For pledged projects for which an actual project budget was not established by the City, the average budget for similar projects was substituted. (4) In particular, the pledge budget related to the urban improvement fund and remodeling fund, which accounted for a large proportion of the total pledged budget, was distributed by voting districts based on the four-year application period by searching the pledges' publicity materials produced before the election. On the other hand, because Youngsoo Shin, the first rival candidate, did not

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accurately present his urban planning pledges by voting districts, we estimated the pledged budget by voting districts in consideration of the type and content of each project.

3.2. Methods

This work was an exploratory study based on the case of local elections in a city located in a metropolitan area of Korea. In general, a correlation can be expected between an election candidate's pledge related to urban planning and the election result. However, because voting is done by individual voters, and the voting results are disclosed only at the voting district, it is almost impossible to obtain actual data suitable for such an analysis. Fortunately, we pursued this study because we found a rare case in which a candidate for local elections presented a pledge related to urban planning at the voting district level.

In general, a case refers to a spatially delimited phenomenon observed at a single point in time or over some period of time, and a case study refers to an intensive study on a single or a small number of cases [36]. Case studies promote understanding of a small number of cases, but there has been an assessment that it is unsuitable for theorizing work through generalization. Levy [37] described case studies as idiographic case studies, hypothesis-generating case studies, hypothesis-testing case studies, and plausibility probe case studies. In recent years, interest in mixed research using both qualitative and quantitative research has been increasing [38]. This study was an exploratory case study that confirmed the predictions derived from previous studies and case analysis. Regression analysis was performed to quantitatively analyze the relationship between the factors related to the study case.

4. Results and Discussion

4.1. Results

4.1.1. Estimating the Utility Value of Voting

With the pledged budget related to urban planning, the economic utility value of the votes in the election of local government heads was estimated. To calculate such utility value, it was necessary to first establish a suitable equation. To establish such an equation, the following Equation (1) developed by Riker and Ordeshook was referred to, which is based on the theory of Downs [22,31].

$$R = PB - C + D \tag{1}$$

Here, *R* is the voter's reward or expected net benefit from voting [38], *B* is the benefit that the election of the preferred candidate will bring, *C* is the cost of voting, and *P* is the probability that a voter's vote will have an outcome or a benefit. Among the voting benefits, *D* refers to long-term participation values, such as satisfaction, including the fulfillment of civic obligations [39].

Downs stated that *B* in Equation (1) is the difference in utility between parties. Substituting these parties with candidates, *B* in Equation (1) can be regarded as the difference in utility between candidates [22]. According to Downs [22], this difference in expected utility between candidates can be regarded as the benefit obtained through voting, and this can be calculated as Equation (2).

$$B = E(U_{t+1}^A) - E(U_{t+1}^B)$$
 (2)

Here, t is the period until the immediate election (current election period); t+1 is the period from the immediate election to the next election (the next election period); $E(U_{t+1}^A)$ is the expected utility that candidate A (or the political party) is expected to bring to the voters by taking power and carrying out policies through the immediate election; and $E(U_{t+1}^B)$ is the expected utility of candidate B, a competitor [22].

The utility of voting is the difference in utility between parties or candidates [22], and the vote share rate of leading candidates is not only affected by their own election expenses but also negatively

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influenced by the election expenses of competing candidates [40]. Therefore, when calculating the expected utility of voting based on the pledge budget, it is necessary to consider the negative effects of the competing candidate's pledge budget.

In general, the expected utility in an election can be influenced by several factors. Regionalism or political party support has a great influence on voters' choice of candidates, but this study assumes that all socioeconomic variables other than the factors related to election pledges are the same. Policy pledges have a strong influence on the voters' choice of candidates. In other words, because the election results are affected by the expected benefits of any candidate's regional development [41], the size of the urban planning-related pledge budget of local election candidates and the probability of implementing such pledges are factors that have a great influence on local elections.

According to the above logic, it is possible to establish a formula for calculating the economic utility value of a vote in a local election. In other words, the difference in utility between two competing candidates can be calculated by using the pledge budget as a proxy for the expected utility in Equation (2) of Downs [22]. Then, by multiplying the result of the calculation by the probability of fulfilling the pledge and dividing it by the total number of voters, the economic utility value of one vote can be calculated. Therefore, this calculation process is expressed as

$$B_{tv} = \left[\left\{ E_b(U_{t+1}^A) - E_b(U_{t+1}^B) \right\} * (P_f) \right] / N_v$$
(3)

 B_{tv} : The economic utility value of a vote exercised by an individual voter;

 $E_b(U_{t+1}^A)$: The expected utility of candidate A to win the election and fulfill promises to the voters by executing the urban planning-related pledge budget;

 $E_b(U_{t+1}^B)$: The expecting utility of candidate B to win the election and fulfill promises to the voters by executing the urban planning-related pledge budget;

 P_f : Probability of implementing pledge budget;

 N_v : Total number of voters.

The pledge implementation probability (P_f) to be applied to Formula (3) is the pledge implementation rate of the head of the basic local government (the City mayor) announced by the Korea Manifesto Headquarters as a proxy indicator. According to this data, because the pledge fulfillment rate in the current market is SA level (85 points or more in 100 points), the pledge fulfillment probability applied was 85% [42].

The result of calculating the economic utility value of one vote in the local election by Equation (3) was 2050 USD per voter. When a candidate who has made an election pledge for a particular urban infrastructure is elected as the head of a local government, all local residents, regardless of whether or not they supported him or her, share the benefits of such infrastructure. Therefore, the utility value per voter can be considered a realistic indicator.

4.1.2. Impact of Pledge Budget

We examined the first prediction that the urban planning-related pledge budget of a local government head candidate has a positive effect on the vote percentage and the competition for votes.

Table 1 shows the results of the regression analysis that we conducted to verify the impact of urban planning-related pledge budget size on the vote percentage and the competition for votes of the local government head candidate Lee. In the case of incumbent candidate Lee, as the size of the urban planning-related pledge budget increased, the vote percentage and competition for votes were positively affected at the level of p < 0.01. The urban planning-related pledge budget of the competing candidate Shin did not have a statistically significant effect on the vote percentage. Taking these findings together, our first prediction was partially adopted.

Table 1. The effect of a pledge budget on votes.

Dependent Variable	Independent Variable	Unstandardized Coefficients		Standardized Coefficients		Ciamidaanaa I aaal	
		В	Std. Error	Beta	t	Significance Level	Remarks
vote percentage	(constant)	0.505	0.013		37.886	0.000	$R^2 = 0.211$ adj. $R^2 = 0.194$
	budget	4.225×10^{-7}	0.000	0.459	3.508	0.001	F = 12.303 ** **: p < 0.01
competition for votes	(constant)	0.018	0.027		0.660	0.513	$R^2 = 0.212$ adj. $R^2 = 0.194$
	budget	8.535×10^{-7}	0.000	0.460	3.514	0.001	F = 12.345 ** **: <i>p</i> < 0.01

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In particular, urban planning-related pledges are highly visible and easy to convey to voters, but a large budget is required to implement such pledges. However, the priority for a candidate is to be elected first. The results of this study indicate that the pledged budget related to urban planning affects the candidate's votes. In general, candidates tend to make excessive pledges that are unreasonable in terms of the required budget [43]. A candidate elaborately presenting a pledged budget related to urban planning that can contribute to the increase in the economic utility of the voters is an advantageous election strategy to gain support from the voters.

4.1.3. Change in Slope of the Vote Percentage Curve by Budget Size

We examined the second prediction that the slopes of the vote percentage curve and the competition for votes curve in the section where the amount of pledge is low are steeper than those in the high section. Figure 3 shows the results of regression analysis on the influence relationship between the natural logarithm of the pledge budget and the vote percentage of the incumbent candidate Lee. As shown in this figure, the vote percentage curve of candidate Lee differs in slope according to the pledge amount. As a result of estimating the log-linear model, the slope of the vote percentage curve is steep in the section up to the pledge budget of 50 million USD, whereas the slope of the curve becomes gentle in the subsequent section, particularly in the section exceeding 100 million USD. That is, above 50 million USD, as the pledge amount increases, the effect of increasing the vote percentage weakens. Therefore, the most effective pledged budget for each voting area is about 50 million USD.

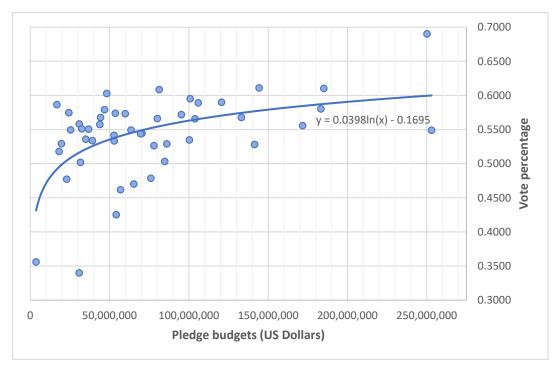


Figure 3. The slope of the vote percentage according to pledge budgets.

In addition, regarding the change in the slope of the competition for votes curve according to the pledge budget, as shown in Figure 4, the trend of change is similar to that of the vote percentage. The impact of pledge budget on competition for votes, which means the difference in the vote percentage between the first-place candidate Lee (incumbent candidate) and the second-place candidate Shin (competing candidate), gradually decreases as the pledge amount begins to exceed 100 million USD.

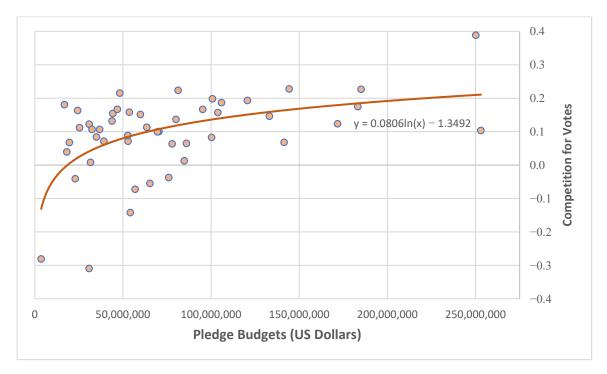


Figure 4. The slope of the competition for votes according to the pledge budget.

In summary, the slopes of the vote percentage curve and the competition for votes curve in the section where the amount of pledge is low are steeper than those in the high section as we predicted in our second prediction.

4.2. Discussion

Generally, politicians seek to maximize votes, while voters tend to support candidates who come up with policies that are expected to help maximize their utility [31]. Riker and Ordeshook's equations based on Downs' theory are widely applied to evaluate the utility of voters [20,21]. Downs argued that the difference in utility between political parties or candidates is the expected utility when a candidate preferred by a voter is elected [21].

As a result of estimating the economic utility value of one vote based on the urban planning pledge budget of the local government head candidate, it was found that the amount exceeded 2000 USD. Next, our findings showed that as the size of a candidate's pledged budget increases, his/her voting percentage also increases. However, when the pledged budget related to urban planning exceeds a certain scale, the increase in the candidate's vote percentage becomes stagnant according to the law of diminishing marginal utility.

Urban planning projects can provide good rent-seeking opportunities for stakeholders [44] and election incentives for politicians [10,45]. Voters' preferences for specific urban planning policies are an important factor in choosing candidates because the interests of voters depend on the candidate's election pledges [13,25,27]. This work appears to be consistent with certain empirical findings. For example, Hong and Park [46] found that regions receiving economic benefits from industrial complexes get more votes for incumbent parties in the next election. Cho et al. [47] found that the construction of new metro stations had a positive effect on the vote share of incumbent candidates in areas within walking distance from such stations. In European cities, the outcome of local elections also secured political support for urban planning projects [48].

However, the generalizability of this study is limited for several reasons; hence, it is necessary to be careful in interpreting its findings. First of all, this study was restricted to a region called Seongnam City in Korea, and it considered only the sixth local election. This study used voting districts as an analysis unit; in this regard, it differed from most previous studies, which used individual voters as the

analysis unit. Moreover, it did not consider the effect of individual voters' socioeconomic background on candidate selection.

Experimental study is an effective method in controlling various influencing factors and verifying the influence of specific factors [15]. Because this study analyzed previously produced local election data and the candidates' urban planning-related pledge data, it was not possible to control a number of factors that influence local election results. In future studies, it will be necessary to analyze the effect of election pledges of specific content on votes through experimental design that can control these factors.

5. Conclusions

An urban planning pledge is related to the economic interests of the voters and has a higher visibility than pledges in other fields. Therefore, the influence of urban planning-related pledges in local elections is inevitably strong.

This study examined the impact of urban planning-related pledge budgets on votes in local elections from the perspective of public choice. In this study, the relationship between pledge budgets and election results was verified using the statistical data of election results and candidates' election pledges in the case of an election in the City in Korea.

We have found that factors such as urban planning-related pledge budgets are also important influencing factors for local elections, like regionalism and party preference. The size of the urban planning-related pledge budget of the incumbent candidate had a significant positive effect on his vote percentage and the competition for votes. We also found that the slope of the vote percentage tended to be gentle when the urban planning-related pledge budget exceeded a certain level. The slope of the vote percentage curve was steep in the section up to 50 million USD in the pledge budget, while the slope became gentle in the subsequent section. In addition, based on the urban planning-related pledge budget, we estimated that the utility value of per voter is about 2050 thousand USD.

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