Private takings
: Empirical Evidence of Post-taking Performance[*]

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<Abstract>

While private takings are often used for land development, they also trigger intensive debates, such as in the *Kelo* case. The most-common supporting argument is that private development contributes to a wide variety of benefits to the locality. In contrast, a counter-argument exists that inadequate public oversight, together with profit-maximization motives, leads to overreliance on takings by private entities. Utilizing a dataset of 259 taking projects for large industrial complexes in Korea, we show that private takings are more likely to result in irregularities such as cancellation than public takings. This paper is expected to provide beneficial insights for governments in various countries that intend to use private takings for rapidly promoting economic development.

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1. Introduction

The U.S. Supreme Court in *Kelo v. City of New London* [545 US 469, 2005] made it clear that the public use requirement in the Fifth Amendment allows the government to take private property for transferring it to other private parties to promote economic development. This ruling also suggested that almost all claims of public benefits satisfy the public use criterion. However, the case generated an enormous backlash and the debate over 'public use' among jurists and scholars (Somin, 2015, p. 3).

Advocates of private takings tend to base their arguments on the rationale that they are *at least* efficient in terms of bolstering the economy by increasing employment or tax revenue. Nevertheless, "*the main danger posed by 'economic development' takings is the possibility that this rationale can be used to condemn virtually any property for transfer to a private commercial enterprise*" (Somin, 2015, p. 74). Further, the argument does not appear to be supported from an empirical perspective (e.g., Turnbull et al., 2014; Kerekes and Stansel, 2014),[1] although more evidence has yet to be accumulated.

Private takings occur in two ways. First, private developers can 'directly' take lands as long as they fulfill the conditions stipulated in relevant Acts. Second, governments take lands for private developers.[2] In this paper, while we mainly focus on the first

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[1] Turnbull et al. (2014, p. 130) found a negative and significant relationship between the use of eminent domain for economic development and the growth in private sector employment. Kerekes and Stansel (2014, p. 35) also found virtually no evidence of a significant positive relationship between eminent domain activity and the level of tax revenue.

[2] In the U.S., for example, these government-mediated takings are often called 'public-private takings' (e.g., Kulick, 2000; Scott, 2003; Cohen, 2006; Bell, 2009), and include famous cases such as *Poletown Neighborhood Council v. City of Detroit* [304 NW2d 455, Mich. 1981] and *Kelo*. Thus, according to Bouckaert and De Geest (1995, p. 463) broad definition, these two belong to 'private takings' in that private lands are ultimately transferred to other private entities by coercion.

'direct private takings,' the most of their discussions can be applied to public-private takings. Legal systems for private takings vary across countries. For example, in Korea, private takings are generously allowed in many projects. As of November 2015, private takings are permitted in 57 individual Acts apart from the baseline Act governing takings, the 'Korea Land Takings and Compensation Act (KLTC).'[3]

The specific purposes of this paper are to probe the efficiency of private takings and to empirically investigate their post-taking performance. As for the latter, we utilize a dataset of 259 large-scale taking projects for industrial complexes in Korea. This sample has several merits. For example, the proportion of private takings was about half of the entire dataset. We subsequently show that post-taking *irregularities* such as 'cancellations' and 'changes in project runners' are more serious in private takings than in public takings. Cancellations, for example, not only are likely to imply social inefficiency but represent significant inadequacy (i.e., uncertainty of actualization) in qualifying the use of economic development takings as, among others, in Justice Peter Zarella's dissenting opinion for *Kelo* at the Supreme Court of Connecticut in 2004.[4]

The order of the paper is as follows. Section 2 outlines the legal provisions for private takings of six countries as the relevant literature is scarce. It is verified that private takings are very generously allowed in Korea. Competing opinions on private takings by the constitutional judges are then explained. In Section 3, we first briefly summarize the literature, and make conjectures, based on reasonable assumptions, about

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[3] Private takings have been so frequent that landowners challenged their constitutionality. However, the Constitutional Court of Korea has upheld them based on §23.3 of the Constitution.

[4] For example, after the *Kelo* house was razed upon the ruling, the development plans did not proceed and the condemned land remains empty.

the economic incentives of private entities that intend to execute eminent domain power. It is highlighted that private takings can be more inefficient than public takings.

Sections 4 and 5 are devoted to empirical analysis. In Section 4, we explain the data and its merits, and construct appropriate variables for our analysis. In Section 5, we empirically examine the post-taking performance of private takings. The results appear to support the main hypothesis that private takings are more likely to result in an unfinished project. In the later part of this section, an example is presented with an additional dataset that consists exclusively of private golf-course construction projects *with* and *without* eminent domain, showing that private takings can be more inefficient than market transactions. This supplementary illustration is believed to reinforce the main empirical findings of this paper. Section 6 concludes with policy implications.

2. Legal aspects of private takings: Korea and abroad

2.1. Legal provisions for private takings: a brief comparison

Comparative surveys on the legal structure of private takings are almost non-existent. Therefore, based on Kim (2015), we briefly summarize legal systems for private takings across only six countries (Australia, Germany, Japan, U.K., U.S., and Korea). First, 'direct private taking (DPT)' is allowed in Korea, Germany, U.K., and U.S.. However, except for Korea, the scope of DPT is limited to typical social infrastructures. Private takings appear to have been allowed because the government was not able to meet the increasing demand for infrastructures in the process of rapid industrialization, or partly because these countries undertook privatization of public

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corporations.[5] In contrast, the scope of private takings in Korea is very wide, extending even to small sporting facilities.

Second, government-mediated 'public-private taking (PPT)' is, in principle, allowed in all countries. It has much to do with promptly supporting regional development or regeneration projects. In this regard, PPT is often regarded as a subsidy for developers in the form of supplying lands for lower prices,[6] and the primary mediators of PPT are local government or (public) development corporations. Yet, although the requisite conditions differ across countries, relative to Korea, stricter scrutiny is exercised in varying dimensions such as the scope of projects and the type of condemnation (Kim, 2015, Section III.2). In contrast, PPT is virtually recognized as public takings in Korea.

Therefore, we conclude that private takings are allowed most generously in Korea. Let us explain only one primary reason. In Korea, condemners must obtain an administrative disposition called the 'permission of a public project' according to §2.7 of KLTC. The disposition is equivalent to finalizing the strict scrutiny on the public-interest criterion. However, this filtering process by the Minister of Land, Infrastructure, and Transport (MLIT) can be effectively circumvented by the so-called 'quasi-

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[5] Refer to Section III.1 of Kim (2015) not only for more discussions on DPT in Germany (e.g., § 87.3 of BauGB), the U.K. (e.g., Transport and Works Act), and the U.S. (15 U.S.C. 717f(h)) but also for relevant legal stringency in Japan and Australia. In particular, DPT is legal in only 11 states in terms of state laws (Turnbull, 2012, p. 311) such as Oregon (ORS §772), Ohio (ORC §1703.01), and Kansas (KSA 26-101).

[6] PPT often attracts considerable public attention when it is recognized as a privilege for private entities in many countries. Examples include *Kelo v. City of New London* [545 US 469, 2005], *Boxberg* [BVerG, 1 BvR 1046, Germany, 1985], and *Alliance Spring Co. Ltd. and Others v. the First Secretary of State* [EWHC 18 UK, 2005]. According to Cypher and Forgey (2003, pp. 259-261), 49% of the condemned lands were transferred to private developers in the U.S., and, in 94% of the sample, the transfer prices were lower than the compensation amounts to landowners.

permission of a public project' based on §4.8 of KLTC.[7] As explained in the next subsection, such circumventions are being used mostly in private takings.

2.2. Private takings in Korea and related controversies[8]

Takings have been allowed in as many as 111 Acts. The scope of public projects was widely distributed from railroads and dams to projects that would confuse most people when attempting to understand *why* and *how* such projects are allowed. Striking is that many projects specified in these separate Acts overlap precisely with those already stipulated in detail by KLTC. We suspect that a major motivation behind this lies in the incentive of condemners to avoid the strict scrutiny of §2.7 of KLTC. Thus, the overwhelming majority of takings are conducted through the quasi-permission that has rendered the public-interest scrutiny ineffectual.

More intriguingly, private takings are now possible in 57 Acts. While private entities are able to take other private owners' lands for a variety of reasons, the predominant types of projects were associated with development purposes. The representative example of such Acts is the 'Industrial Location and Development Act.'[9] Notice also that the quasi-permission process is available in most of the 57 Acts. While no official statistic has been presented, we are fairly confident that *every* private taking in Korea has been conducted through these separate Acts.

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[7] §4.8 of KLTC stipulates that a project is effectively regarded to have received the 'permission of a public project' if public entities such as heads of local governments, who are delegated the power from MLIT, simply endorse a development plan.

[8] This subsection draws upon Section II of Kim (2015).

[9] Private takings allowed by this Act appear to be so extensive that we will analyze the case of developing industrial complexes in Sections 4 and 5 below.

Given these backgrounds, debates intensified from the 1980s regarding whether private takings can be justified on the ground of public necessity or public interest. Later, landowners also challenged the constitutionality of private takings. However, the Constitutional Court of Korea firmly upheld takings by private entities in the 2007_C.C_BA114 case which involved the 'Industrial Location and Development Act.' This decision was solidified in other cases.

The main arguments in favor of the constitutionality in these cases are two-fold. First, their 'legislative purposes' conforms to the public necessity condition stipulated in the Constitution. Second, the 'appropriate means' guarantee to protect the condemnee's interests, as private takings should also be subject to the same due process requirements for public takings. These decisions triggered considerable debates. An advocate group provided rationales that are almost identical to the arguments made by the Constitutional Justices above. The opposing group raised three issues: *risk of compulsory redistribution*, *unaccountability for public necessity*, and *exclusive enjoyment of surplus*. Surprisingly, the dissenting opinions of Justice J. Kim precisely encapsulate these three-fold counter-arguments.[10] In fact, economic reasoning, as outlined in Section 3, lends support to his concern to an extent.

3. Economic perspective on private takings

3.1. Arguments in favor of private takings

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[10] In fact, his first counter-argument is very similar to the 'reverse Robin Hood fashion' argument made by Justice O'Connor in *Kelo*. His second concern about the contingency where private condemners afterwards become unaccountable for the public necessity condition is almost identical to the argument by Judge Ryan who dissented in *Poletown Neighborhood Council*. Further, his third concern shares closely the principle represented in the well-known tale of two pies in Epstein (1985, pp. 3-5).

Various commentators have offered rationales for private takings. First, as most commonly claimed by local governments and courts, private development activities contribute to creating a wide variety of benefits to the region in question. The representative example is *Kelo*.[11] Second, the private sector's superior efficiency in production is merited, based on the compatibility with its profit-maximizing incentive, because they can reap the surplus from completed development projects (Bell, 2009, p. 521). Also, private entrepreneurs are perceived to be less burdened by corruption of politics, distortions of the political process, and rent-seeking (Bell, 2009, p. 575). Third, the advantage in the private entities' funding ability is lauded *vis-à-vis* the public sector's inefficiency-causing taxation (Shavell, 2010, p. 18). Finally, granting eminent domain power to private developers is justified on the mere ground that holdouts can threaten private projects (Miceli, 2011, p. 46; Brooks and Lutz, 2011).

These arguments may hold true when core requirements for takings are met strictly: that is, public interest, high transaction costs, and just compensation. Although, in the next subsection, we carry out economic scrutiny of private takings under the assumptions that these basic conditions are mostly met, critics have questioned whether such requirements are indeed put in place. In particular, these critics have expressed doubt about the assumptions of public interest and high transaction costs, subsequently suggesting that the private takings could result in inefficiency.

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[11] "*[T]he City has carefully formulated an economic development plan that it believes will provide **appreciable benefits to the community**, including **… new jobs and increased tax revenues** …*" (Justice Stevens in *Kelo*, emphases added). This argument for the so-called 'conceivable public purpose' was upheld repeatedly in the U.S. Supreme Court decisions including *Berman v. Parker* [348 U.S. 26, 1954] and *Hawaii Housing Authority v. Midkiff* [467 U.S. 229, 1984].

First, the requirement of public interest has been expanded from strict 'public ownership or use' to 'public purpose or interest.' However, critics argue that there is a risk of the occurrence of private takings that not only fail to meet the relaxed public interest requirement but also cause a multitude of rent-seeking activities.[12] The primary reason is that the ambiguous definition of 'public interest' allows for a broad interpretation to include boosting regional development, increasing employment, or raising tax revenues. This ambiguity allows condemners to hide private interests (Kelly, 2006, p. 34). This argument is reinforced considering incomplete information on the part of the condemnee and sometimes public agencies in charge of approval.

The second criticism concerns the common assumption of high transaction costs. Bell (2009, p. 530) and Miceli (2011, p. 46), for example, presuppose that holdout in private takings is as serious as in public takings. Regardless, private condemners possess various ways to overcome holdout.[13] In fact, as claimed by Benson and Brown (2010, p. 152) and Epstein (2008, p. 82), actual market participants have discovered many ways to induce people to reveal their relative preferences in situations similar to those that would characterize purchases of contiguous parcels of land from multiple owners by private firms. The bottom-line is that holdout, particularly in private taking, is not as severe as more academic writings tend to suggest.[14]

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[12] Refer to Merrill (1986), Kelly (2006, 2009), Somin (2007, 2015), Kim and Park (2010), Eagle (2011), among others, for rent seeking in the process of takings.

[13] Representative examples include transactions through secret agents (Merrill, 1986, p. 81; Cohen, 1991, p. 352; Kelly, 2006, p. 1; Somin, 2007, pp. 205-208), land assembly districts, or auction mechanism (Heller and Hills, 2008, p. 1473; Lehavi and Licht, 2007, p. 1735; Kelly, 2011, pp. 364-368).

[14] Also, holdout incentives for sellers may be weaker, particularly in the case of selling only part of his land, as the value of the remaining land can be increased with the development (Engel et al., 2002).

Unfortunately, Kerekes (2011) and Lanza et al. (2013) are the only empirical analyses that bear relevance, although somewhat remotely, to the major tenet (i.e., relative efficiency of private takings) outlined below in this section. They investigated differences in the frequency of private takings across U.S. states, utilizing an identical dataset. Corruption was treated as important. While the proxy for corruption did not show a significant coefficient in Lanza et al. (2013) (and their working paper version of 2010), the proxy had significant explanatory power in Kerekes (2011) upon an adjustment made reflecting population sizes.[15] The result from Kerekes (2011) can thus imply a likelihood of abuse in private takings, although, for a more solid conclusion, a comparable study focusing on public takings as well would be required.

All in all, the relative efficiency of private takings have been hardly validated at least empirically. Certainly, further work would be necessary for a decisive conclusion. An empirical investigation would be especially beneficial if the samples consist of public and private takings for the identical development project. The design of such a setting of empirical investigation is described in Section 4.

3.2. Arguments regarding the plausible inefficiency of private takings

Causes of the potential inefficiency of private takings are at least three-fold. The first is the *socially inefficient choice of land*. Suppose that the condemner can freely choose the location of land to take. A benevolent government supposedly chooses land to maximize social welfare, but private condemners would choose land to maximize profit (Turnbull, 2012, p. 3). While condemners prefer under-priced lands that would

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[15] Both used the identical proxy, which is the number of convictions of state and local public officials.

mainly lead to greater profits, other factors such as the subjective value of landowners are less considered (Merrill, 1986, p. 107; Epstein, 2008, p. 85).

The possibility of an inefficient choice of land is greater in private takings even if we suspend our assumption of government neutrality. Public servants might have an incentive to choose locations with a lower subjective value of landowners *ceteris paribus*, partly because they cannot directly appropriate profits, and partly because strong dissent from landowners and constituents can have adverse impacts on their political careers. On the contrary, private condemners, being able to appropriate profits from land price increases (Kelly, 2006; 2011), persistently endeavor to obtain under-priced lands sometimes even with irregular activities including bribes, rebates, and illegal campaign support (Kelly, 2009, p. 178). Illegal activities can take place in public takings, but the process of private takings tends to be more opaque.[16]

The second source of inefficiency is the *risk of excessive taking*. It is well known that a major rationale underlying just compensation for taking is to discourage excessive taking due to fiscal illusion. Nonetheless, it is established that even compensation based on market value can cause under-compensation bias (e.g., Ellickson, 1973; Epstein, 1985; Burrows, 1991; Cho and Kim, 2002; Wyman, 2007). Also, Turnbull (2012) argues that, based on the Averch-Johnson effect, condemners have incentives to invest overly in physical assets such as lands under rate regulations.

We thus submit that the possibility of excessive taking can be higher in private takings. Given the same magnitude of under-compensation bias, private condemners

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[16] Local governments or politicians of the jurisdiction in question often build partnership with private condemners because of the expected outcomes of a private taking such as regional development (Kanner, 2007; Mihaly, 2007). See also Epstein (2008, p. 76).

have strong incentives to take as they can enjoy profits, for example, by selling the land. This phenomenon has been termed 'speculative takings' by Cooney (1996, p. 752).[17] In contrast, public takings are subject to much stricter guidelines against selling-off, and profits cannot be enjoyed by public servants. In this regard, takings essentially offer private developers an *underpriced call option*. They can effectively exercise the option (i.e., take and sell-off the land) when the market value of the underlying asset is above the strike price, for example, if land prices rapidly increase afterwards.[18]

The third source of inefficiency, to which our empirical work may have relatively greater relevance, stems from private condemners' various forms of *opportunism*. It is our own observation that the public-interest requirement tends to hinge overwhelmingly on the official purpose of the taking 'as it is announced.' However, a considerable information gap exists concerning *other* critical components of the public-interest requirement such as the precise value of the project and the likelihood of actual completion. The complexity of calculating benefits and costs and the time lag may severely hinder the scrutiny of these components (Somin, 2015, pp. 81-82). The private condemners thus have incentives to undertake opportunism, the clear example of which is 'adverse selection.'[19] The information gap in combination with less accountability suggests that the problem of adverse selection is more serious in private takings.

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[17] Especially in Korea, as long as the original purpose of the taking project is maintained, landowners are not eligible for the so-called 'repurchase right' (Kim and Park, 2010).

[18] We are grateful to the editor for helping to delineate the essential characteristics of private takings.

[19] The meaning of adverse selection is essentially the same as that used in the *market for lemons*. The problem of adverse selection here refers to the phenomenon that the current system with incomplete information would invite the private condemners who have higher tendency of encountering the undesirable contingencies. Also, as elaborated later, the inefficiency due to adverse selection refers to the phenomenon that the pre-existing investment sinks completely or partially. We are grateful to the referee who helped distinguish this aspect of inefficiency from that associated with the socially inefficient choice of land discussed earlier.

Furthermore, local governments, which expect more jobs and tax revenues from private takings, provide subsidies in various forms. The subsidies range widely from tax privileges to loan guarantee, provision of basic public facilities, and minimum revenue guarantee. However, these supports can prompt private developers to exercise less precautionary efforts as the supports can be perceived as unconditional *insurance*. Thus, the privately optimal level of precaution falls short of the social optimum. This increased possibility of project failure is a typical example of 'moral hazard.'

In conclusion, both types of condemners' opportunism increase the occurrence of irregularities in private takings more than in public takings. The two most tangible examples of the post-taking irregularities are 'cancellation' and 'change in the project runner' by selling-off or disposition through public seizure and auction. Surely, while opportunism is not necessarily the only cause of these post-taking irregularities, they tend to incur social costs as explained below. Furthermore, once these contingencies occur, the land will remain abandoned for several years.

4. Data and empirical design

4.1. Data

We test the main hypothesis that the post-taking irregularities increase in private takings. Among numerous taking projects conducted by private entities, we choose 'general industrial complexes' for their various merits. First, they are mostly large-scale taking projects.[20] Second, the frequency of these takings is large enough for parametric estimation. Third, private takings comprise about half of the total takings. Fourth,

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[20] Thus, the public interest requirement and high transaction costs are warranted to an extent.

takings for general industrial complexes are evenly distributed across the country. Finally, although there are three more types of industrial complexes, we include only general industrial complexes to increase the *homogeneity* of project characteristics.[21]

Post-taking events for industrial complexes proceed over three time phases. Compensation starts at τ_1 when an area is designated with a taking decision. At τ_2, compensation is completed and construction subsequently starts. The construction is finalized at τ_3. This is the 'regular' process. Such regular process is not only assumed in most academic literature, but is also the scenario imagined by most policy makers.

However, in reality, 'irregularities' take place after τ_1. Besides routine delays in the payment of compensation, there are often 'changes in the project runner.' Such changes occur, for example, when the original condemner sells the land off when its price rises rapidly. A more drastic form of irregularities is complete 'cancellation' of the project. Cancellation sinks *all* pre-investments, while change in project runners usually sinks pre-investments *partially* together with massive delays.[22] We call these two contingencies *CoC* (**C**ancellation **o**r **C**hange in project runners). While the sources of *CoC* might vary, such as the aforementioned inefficient opportunism or other contingencies, it apparently is a meaningful index of post-taking performance. For the first time in the literature, we inquire about factors that affect the occurrence of *CoC*, including the entity of takings.

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[21] The other three types of industrial complexes are national, high-tech municipal, and agricultural-manufacturing. However, these are not only developed predominantly by the public sector, but also tend to be concentrated in certain regions often with particular purposes.

[22] In many countries, immediately after the announcement of a taking, landowners are subject to severe restraints in their land use until they finally leave. In Korea, types of regulatory takings are very wide-ranging (Cho and Kim, 2002). The obvious under-utilization of lands for longer durations certainly indicates higher social costs. Complete cancellation also causes severe externality costs to the community.

The sample period for τ_1 is from 2003 to 2010. The total number of takings was previously given in the single digits; however, on the premise of balanced growth by a new administration in 2003, it dramatically increased to 16 that year and continued to grow. 2010 was fixed as the final year because we intended to reserve a follow-up period to observe CoC for 3 years to the end of 2013, in order to minimize the right-censoring problem.[23] The 'Industrial Land Information System (ILIS)' was utilized to obtain the most basic information.

The final sample size is 259. As shown in Table 1, private takings account for 48.6% of the sample.[24] The number of irregularities defined as CoC is 55 (21.2%). At least one out of the four takings did not proceed as officially announced at τ_1 and, considering the number of cancellations (20), 'at least' 7% of the takings were nullified. In particular, the CoC rates in the last column indicate that the rate of private takings (30.2%) more than doubled that of public takings (12.8%). Nevertheless, these simple statistics can hardly be regarded as definite evidence of the characteristics of private takings. The task of finding clearer evidence is thus undertaken below.

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[23] The average durations from τ_1 of cancellation and change in project runners were 3.2 and 2.2 years, respectively. While 3 years is not a sufficiently long time, it would certainly ameliorate the right-censoring problem.

[24] These explanations so far in Section 4.1 and Table 1 in this paper are a summary of pp. 22-28 of our essay written in Korean ("An Economic Analysis of Private Takings in Korea," *Korea Real Estate Review*, 2013, pp. 7-33), which utilized only the descriptive statistics. For the same 259 observations, we therein allowed the follow-up period to only 2012. However, by the time we completed the above essay in early 2013, we were very surprised to find that many incidences of CoC particularly in private takings were occurring over only a few more months that year. Therefore, we believed that a more rigorous investigation with parametric estimation would be necessary to draw a more reliable conclusion. We then started to collect all explanatory variables data to be used in this paper and to undertake a more thorough survey of the literature to construct our theoretical conjectures in Section 3.

Table 1

Post-taking irregularities in private and public takings.

	Industrial Complexes (A) (%)	Cancellation (B)		Change in Project Runners (C)	B+C ([B+C]/A, %)
		Actual	In process[*]		
Private Takings	126 (48.6)	13	2	23	38 (30.2)
Public Takings	133 (51.4)	2	3	12	17 (12.8)
Total	259 (100.0)	15	5	35	55 (21.2)

[*] Administrative processes required for formal cancellation were simply being under way as of the end of 2013.

4.2. Variables and descriptive statistics

We attempt to uncover major factors that contributed to the occurrence of CoC. For the probit estimation of Eq. (1), vector X contains control variables and Z includes the variables related to the entity of takings that are our main focus.

$$\Pr(CoC_i = 1 \mid X_i, Z_i) = \alpha + X_i'\beta + Z_i'\gamma + \varepsilon_i, \quad where \quad i = 1, \cdots, 259. \tag{1}$$

In Table 2, the dependent variable, CoC, takes a value of 1 if CoC has occurred. For explanatory variables, we first use all year dummies indicating each taking decision, in order to control time fixed effects. NH^{METRO} is a dummy taking a value of 1 if the construction site is located in metropolitan areas. NH^{METRO} reflects better conditions for industrial complexes in terms of transportation, securing labor, and other social infrastructures. Thus, other things being constant, NH^{METRO} would lower the probability of CoC.

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Table 2

Definitions of variables and descriptive statistics.

Variables	Description	Mean (S.D)	Min	Max
CoC	Cancellation or Change in Project Runners. (Yes=1)	0.212 (0.410)	0	1
NH^{METRO}	If the construction site is located within or near metropolitan areas. (Yes=1)	0.355 (0.480)	0	1
LFR	Average rate of the annual price change for 3 years from plan announcement (%).	21.20 (23.28)	-2.74	140.2
$AREA^{SMALL}$	If the complex size is less than 300,000 ㎡. (Yes = 1)	0.371 (0.484)	0	1
Dmd	If the complex is to be used exclusively for the condemner' on-going business. (Yes=1)	0.181 (0.386)	0	1
RGN^{SEOUL}	If the complex is located within the Seoul metropolitan area. (Yes=1)	0.197 (0.398)	0	1
PRI	If the condemner is private. (Yes=1)	0.486 (0.501)	0	1
PUB^{MET}	If the condemner is metropolitan (including central and provincial) governments and their affiliated public corporations. (Yes=1)	0.274 (0.447)	0	1
PUB^{LOC}	If the condemner is local government. (Yes=1)	0.239 (0.428)	0	1
PRI^{BIG}	If the condemner is a large corporation. (Yes=1)	0.062 (0.241)	0	1
PRI^{MEDIUM}	If the condemner is a medium-size corporation. (Yes=1)	0.143 (0.351)	0	1
PRI^{SMALL}	If the condemner is a small-size corporation. (Yes=1)	0.282 (0.451)	0	1
$TIME\_EXT$	Time extension requested by condemners after τ_1 to complete the project.	0.552 (1.282)	0	6

We included land price changes (LFR) to take into account the condemner's higher incentives to not cancel the project as the value of the complex would increase. However, land price increases might also induce the initial condemners to sell off the land. We calculate LFR as the average rate of price changes for 3 years after τ_1.[25]

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[25] For each observation, we referred to the *Officially Assessed Land Prices* (provided by MLIT) of the most elementary precinct to which the piece of land in question belongs.

$AREA^{SMALL}$ is a size-related dummy taking a value of 1 if the complex size is relatively

small.[26] A smaller area indicates less difficulty in raising the required fund, thus

lowering the probability of CoC. Dmd is a dummy indicating that the complex is to

be used exclusively for the condemner's own business, i.e., the demand by the end user.

Dmd is expected to have a negative coefficient. RGN^{SEOUL} is a dummy indicating a

complex located within the Seoul metropolitan area. Due to very tight regulations

against land development in the area, it is usually considered a privilege, also lowering

the probability of CoC.

Upon finding a baseline specification, we then determine whether the type of

condemners, public (PUB) or private (PRI), affects the dependent variable.[27] To

capture differentiating effects of public entities, we distinguish metropolitan

governments and their affiliated public corporations (PUB^{MET}) from smaller local

governments (PUB^{LOC}). If our conjectures in Section 3.2 hold, private entities will have

a higher probability of CoC. Further, we hardly expect that all private entities will

show identical magnitudes of such effects, so we sort them into three subgroups.

PRI^{BIG} represents large companies. PRI^{MEDIUM} and PRI^{SMALL} indicate medium and

small-sized companies, based on the classification in the Medium and Small Companies

Act. Smaller companies will have a higher likelihood of default due to the greater

liquidity constraints and limited experiences. Differentiating the effects of these three

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[26] If the size is less than 300,000m², the complex is legally categorized as a 'small complex' according to the Industrial Location and Development Act.

[27] For this information, we first used the ILIS database, all related *Administrative Gazettes*, and the Electronic Disclosure System of the Financial Supervision Service.

variables *vis-à-vis* that of PUB^{MET} will be particularly interesting, since PUB^{MET} is routinely presumed to be the entity exercising the takings power.

Finally, in Korea, large scale development projects are often given various support from the central government. Given that industrial complexes are built throughout the nation at a fairly large scale, such support was often used as a campaign pledge in presidential elections. Even in this regard, the year 2008 was exceptional since, immediately after President M. Lee was elected, an extremely generous package of support was provided in 2008.[28] The number of takings project increased to 63 that year. However, when the Asian financial crisis severely hit the Korean economy, such high expectation was not realized in the ensuing years.

We intend to find a proxy that can reflect the condemner's incentives associated with this intense period. The 'time extension that condemners requested after τ_1 (*TIME_EXT*)' could be a reasonable candidate.[29] Requests for time extension could stem from genuinely exogenous changes. Nonetheless, the rationales behind our inference that *TIME_EXT* might reflect the adverse aspects are two-fold. First, given the same difficulties encountered after τ_1, *TIME_EXT* will become longer for more unqualified developers. Second, condemners would request a longer extension if, rather

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[28] Details of the extraordinary support provided in 2008 are found in more than 10 official reports such as *Improving the Regulations Concerning Land Uses in the Seoul Metropolitan Areas* (MLIT, 2008) and *How to Support the Infrastructure for Industrial Complexes* (MLIT, 2011).

[29] By law, project runners can request a time extension, and the government usually permits the request when it is made 2 to 3 years after τ_1. We found that the request for the extension to an average of 1.8 years was made in approximately two thirds of the sample. We were then intrigued by the discovery that the request was made in 86% of the 63 taking projects approved in 2008. Further, the average *TIME_EXT* was longer (i.e., 2.3 years) and its maximum value even reached 6 years. We are grateful to the referee who provided constructive suggestions on the estimation over revision.

than increasing their precautionary efforts, they seek greater insurance through the administrative processes which usually take long time. Based on these two rationales, $TIME\_EXT$ is likely to be positively associated with CoC.

5. Empirical investigations

5.1. Estimation results: post-taking irregularities of private takings

The estimation results are reported in Table 3. In $M1$, NH^{METRO} was included with all year dummies of the taking decision to control time fixed effects. The coefficient estimate of NH^{METRO} shows the expected negative sign at the 10% significance level. However, LFR, $AREA^{SMALL}$, and Dmd did not show significant coefficient estimates in models $M2$ to $M4$. RGN^{SEOUL} showed an expected negative estimate in $M5$. We regard $M5$ as the baseline specification of Eq. (1).

Turning to the types of condemners, we note that PRI in $M6$ provided a positive estimate at the 1% significance level. Its inclusion increased the R^2 by 7.2% points. According to the marginal impact analysis (MIA), PRI raises the probability of CoC by 12.4% points. Before proceeding further, we examined the exogeneity of PRI, for which a bivariate probit model was used as suggested by Wooldridge (2010, pp. 594-597). The control variables in $M5$ were used both for CoC and PRI. For an additional instrument variable, we considered $EQUITY^{RATIO}$ that is defined as the ratio of the total equity to the total development costs for each project.[30] The exogeneity of

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[30] Financing for projects in real estate development depends on two primary categories, and debt financing typically funds 50 to 80 percent of project costs (Long, 2011, pp. 29-30). Further, the blend of debt and equity is determined through negotiation in which the expected profit rate is the major determinant of the proportion of debt (Steiner and Butler, 2012, p. 406). In Korea, while these general

PRI was confirmed at the 10% level based on the Wald-test statistics.

We then categorized the private entities into PRI^{BIG}, PRI^{MEDIUM}, and PRI^{SMALL}, while separating the public entities into PUB^{LOC} and PUB^{MET}. The R^2 increased by 3.6% points. The inclusion of the first four variables, with PUB^{MET} used as the default situation, revealed surprising results in $M7$. All four coefficient estimates are positive as expected if our hypothesis in Section 3.2 would hold with respect to adverse selection. In particular, PRI^{MEDIUM} and PRI^{SMALL} have biggest coefficient estimates in absolute terms with the highest significance levels.

Finally, while $TIME\_EXT$ in $M8$ had a positive coefficient, it was insignificant. We divided $TIME\_EXT$ into two subgroups of public ($TIME\_EXT^{PUB}$) and private takings ($TIME\_EXT^{PRI}$), and substituted these for $TIME\_EXT$. In $M9$, only $TIME\_EXT^{PRI}$ shows the significant estimate with the positive sign and a larger magnitude. This empirical result at least partially confirms that the projects launched in the intensive rush of 2008 tend to fail more frequently in private takings.[31]

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principles apply to private takings, public takings depend overwhelmingly on equity financing. As expected, the averages of $EQUITY^{RATIO}$ in our data were 27.9% and 93.4% for private and public takings, respectively. Thus, $EQUITY^{RATIO}$ had a high correlation coefficient with PRI ($\rho = -0.912$). However, while $EQUITY^{RATIO}$ showed significant variations among private takings (i.e., its standard deviation, 19.4, far exceeded that of public takings, 8.16), no tangible difference in $EQUITY^{RATIO}$ existed between when $CoC = 1$ (25.8%) and when $CoC = 0$ (28.8%).

[31] Although we admit that we are not providing ideal identification, in this regard, we cautiously suspect that the first rationale associated with $TIME\_EXT$ can reflect adverse selection. Further, the second rationale concerning $TIME\_EXT$ might also reflect the project runners' moral hazard.

Table 3

Estimation results: post-taking irregularities of private takings.

	NH^{METRO}	LFR	$AREA^{SMALL}$	Dmd	RGN^{SEOUL}	PRI	PUB^{LOC}	PRI^{BIG}	PRI^{MEDIUM}	PRI^{SMALL}	$TIME\_EXT$	$TIME\_EXT^{PUB}$	$TIME\_EXT^{PRI}$	Cons.	McFadden R^2
$M1$	-0.595** (0.239)													-0.568** (0.251)	8.5%
$M2$	-0.607** (0.243)	0.005 (0.016)												-0.660** (0.318)	8.6%
$M3$	-0.588** (0.240)	0.004 (0.012)	-0.219 (0.280)											-0.538 (0.336)	9.1%
$M4$	-0.574** (0.240)	0.005 (0.012)	-0.196 (0.205)	-0.218 (0.260)										-0.533 (0.336)	9.3%
$M5$	-0.661*** (0.247)	0.006 (0.012)	-0.154 (0.210)	-0.265 (0.263)	-0.580** (0.278)									-0.451 (0.343)	11.1%
$M6$	-0.721*** (0.260)	0.006 (0.012)	-0.326 (0.224)	-0.784*** (0.290)	-0.475 (0.297)	1.044*** (0.246)								-1.056*** (0.392)	18.3%
$M7$	-0.708** (0.278)	0.011 (0.013)	-0.443* (0.236)	-0.750** (0.295)	-0.416 (0.308)		0.883** (0.351)	1.076** (0.549)	1.822*** (0.400)	1.591*** (0.363)				-1.673*** (0.485)	21.9%
$M8$	-0.731*** (0.277)	0.010 (0.013)	-0.433* (0.239)	-0.772** (0.299)	-0.374 (0.309)		0.877** (0.352)	1.059* (0.554)	1.817*** (0.401)	1.605*** (0.365)	0.142 (0.105)			-1.654*** (0.487)	22.6%
$M9$	-0.720** (0.282)	0.010 (0.013)	-0.428* (0.240)	-0.786** (0.301)	-0.332 (0.310)		0.868** (0.356)	1.022* (0.563)	1.771*** (0.418)	1.567*** (0.383)		0.174 (0.125)	0.238* (0.135)	-1.621*** (0.492)	23.3%

Year dummies indicating the taking decision are included in all specifications to control for time fixed effects.

***, **, and * represent statistical significance at the 1%, 5%, and 10%, respectively. Standard errors in parentheses.

5.2. Further remarks on identification related to post-taking irregularities

Suspicion can arise surrounding the interpretation of our findings in two-fold ways. First, while *CoC* sinks pre-investments, causes delays, and imposes externality on the community, the *nature of CoC* might be argued to be efficient responses by the condemners, as altering or abandoning the initial project could be their *loss-minimizing* strategy. For example, a development that fails to attract expected tenants may be optimally abandoned. Then, if private entities are likely to have a *harder* budget constraint than public entities, given the same financial shock, *CoC* by private entities can be an outcome that faithfully reflects market forces.

In spite of the plausible validity,[32] we cautiously conjecture that these arguments do not appear to be highly relevant for our study based on a few statistical observations. First, an industrial complex is operated for long (i.e., at least for 20 to 30 years), requiring substantial scrutiny over a number of years before deciding to build one. Thus, if *CoC* occurs shortly, it would most probably reflect ill preparation. In our data, the time taken for private *CoC* was only 2.6 years. The real duration should be far shorter (i.e., significantly less than 2 years), as the administrative procedure takes a long time for *CoC* to be officially announced. Second, the duration of private *CoC* has shortened recently. We regard this as evidence that the adverse incentive has been solidified. Third, the average duration for 17 projects of public *CoC* was also short (i.e., 3.0 years), suggesting that government agencies do not have a much *softer* budget constraint. Thus, the nature of *CoC* is unlikely to be closely related to efficiency, although we recognize the limited relevance of this conclusion to the current paper.

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[32] We are very grateful to an anonymous referee and the editor for raising this issue.

Secondly, another suspicion can be raised concerning the *nature of the coefficient estimate of PRI*: i.e., it might capture the characteristics of the development projects in which private firms tend to engage. Thus, if private firms usually opt for projects with higher risks, our empirical results might be subject to two competing arguments: 'abuse of private takings' vs. 'difficulty in private projects.' If the latter is ever the case, it will represent a source of selection bias in our estimation.

In fact, we were already aware of this conceivable self-selection issue. For this reason, as explained earlier, we included *only* general industrial complexes to maintain a higher level of *homogeneity* in project characteristics, although other types of industrial complexes were available. Further, at least part of this issue was dealt with by the explanatory variables that may reflect such project characteristics or difficulties to a certain degree; also, large disparities were not observed in the means of the two groups for the four variables that might relate to failure rates.

Regardless, in order to capture the impact of takings *per se*, the dataset would be ideal if it also included industrial complexes that were privately constructed *without* the assistance of takings. However, such an ideal dataset is impossible to construct because *all* industrial complexes were developed through takings. We thus introduce the empirical investigation by Kim and Park (2012, pp. 88-96; KP hereafter) below because we find their empirical work to be illuminating in the present context. In Korea, most golf courses are privately owned. Nonetheless, land is acquired either through 'private market transactions' or through 'private takings.' KP examined all cases that obtained the official approval of construction from 2005 to 2009. Private takings were used in 42.8% of the entire sample. Note that, in the remaining cases, private entities have discovered ways to purchase contiguous parcels. KP observed that, of a subsample

consisting of 167 cases approved up to 2008, construction was yet incomplete in 39 cases at the end of 2010, although the duration for completing construction was only 2.1 years for the 128 completed cases. Three remarks deserve mention as follows.

First, KP used the 'delay in construction (τ_d)' compared to the normal progress as a proxy for inefficiency.[33] Second, KP numerically showed that a longer τ_d for an 18-hole course increases social costs by at least US\$ 7 million per year, due to fixed costs such as paying interest to banks, underuse of lands, and sometimes even legal expenses of seizing and public auction.[34] Certainly, extremely long delays eventually caused the demise of CoC. Third and most importantly, KP discovered that delays in the cases involving eminent domain were significantly more serious than in market transactions, by 1.72 to 2.08 times depending on the measures used for τ_d.

These results appear to support the argument of 'abuse of private takings' rather than that of 'difficulty in performing private projects,' especially considering the *higher homogeneity* in project type and the *relatively shorter time* needed to finish construction (i.e., approximately 2 years). Although we admit the possibly limited relevance of this illustration due to the differences between industrial complexes and golf courses, we

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[33] The contingency of CoC hardly occurred in this sample. The primary reason for almost no cancellation was that, apart from spending a large sum of money to an official approval, most project runners had such a high expectation of lucrative profits up to US\$ 100 million by simply selling-off *upon the completion of construction* (Anti-Corruption and Civil Rights Commission of Korea, 2010). Furthermore, the project runners attempted to avoid selling-off before the completion because the transfer-income tax rate was set at a prohibitively high level.

[34] KP offered another rationale for using τ_d as an inefficiency proxy in that delays are dominantly determined by the project runner's productivity and willpower during a relatively short period, since other exogenous hurdles mostly take place before an official approval is made.

can conclude that the findings in the current paper render it somewhat legitimate to infer that eminent domain can give more inefficient incentives to private entities.

6. Conclusion

Our estimation results support the hypothesis that private takings are more likely to result in unfinished projects or different owners than public takings, approximately by 12.4% points *ceteris paribus*. Although these performance variables might represent efficient responses under different circumstances, we confirmed that their nature of efficiency appears to be only slightly relevant at least for our study. We also offered a theoretical conjecture regarding the plausible connection between inefficient incentives and these performance variables. Furthermore, the extant literature generally critical of private takings has been primarily based on the topic of inefficiency.

Therefore, although further studies are needed for a more decisive conclusion, the current empirical findings can be beneficial to an extent in delivering a message that eminent domain could more easily become an inefficient institution for private takings especially when market transactions are available. It is necessary to be alerted against the common claim that private economic development is indeed of public benefit because it can stimulate job growth and yield higher tax revenue. Hence, the paper is expected to shed constructive insights, especially for countries that intend to use private takings as an effective instrument in achieving rapid economic development.[35]

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[35] These insights will be reinforced by considering other undesirable aspects from fairness and equity grounds. A tangible example of the fairness ground is the demoralization of condemnees from under-compensation. Also, any social harm stemming from the equity ground would manifest itself well *via* more inequality as expressed by the 'reverse Robin Hood fashion' in *Kelo*.

Solutions can be explored in order to minimize the potential abuse arising from private takings. One prevalent proposal is to adopt stricter criteria for public use, such as the checklists offered by Staley (2010) and Somin (2011) for determining whether the taking project in question would actually generate public benefits. A more active participation of landowners has also been suggested by Eagle (2010). While we basically agree on these suggestions, legislating for more generous compensation to landowners might be another beneficial policy prescription for Korea.

In the same vein of the argument that 'creating benefits to the region' hinges on a private condemner's *profit motive*, a fairly generous compensation rule for landowners can effectively overcome at least the informational asymmetry which can be the major source of adverse selection and inequitable redistribution.[36] Further, if part of the so-called development surplus is distributed to landowners, we expect landowners to have a stronger incentive to monitor against the post-taking ill-intended behaviors of private condemners. Although we are aware of the opposing arguments and also of the fact that development surplus is not shared in most jurisdictions, we still believe that this can be a viable option. Of course, rigorous simulations regarding the degree of generosity and the way in which such generosity will be provided should be required before the actual implementation of the policy.

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[36] Epstein (1985, p. 174) previously explained the Mill Act of New Hampshire that required the 50%-Plus rule. Refer also to Krier and Serkin (2004, pp. 865-873), Wyman (2007, p. 257), Heller and Hills (2008, pp. 1475-1476), Bell (2009, p. 559), and Lee (2013, p. 634) for generous compensation.

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