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A Study on the Necessity of Retroactive Effect in the Crisis Management Law System

- Focused on Piloti Structural Buildings

Hak Su Lee

Department of Cricisnomy, Chungbuk National University

A B S T R A C T

Piloti structural buildings began to spread to Korean society in 2009 due to the efficient use of urban space and economic advantages. These Piloti structural buildings have claimed numerous lives to date due to the risk of fire that was not initially considered. The government belatedly recognizes the risk of fire in Piloti structures and tries to manage the crisis using various policies, but it is interfering with the principle of banning retroactive legislation, revealing policy limitations. Our society cannot develop if we recognize the crisis that exists in our society in the crisis management legal system and neglect our efforts to improve it. This study analyzed the risk of fire in Piloti structured buildings as two factors, examined the government's policy efforts and limitations to improve them, and suggested the need for reasonable retroactive legislation through the formation of a national consensus under the rule of law

Key words: Piloti structured buildings; retroactive legislative prohibition principles; entrance protection; incombustion of exterior materials

1. Introduction

1.1. Background and purpose of the study

On March 29, 2022, the fire at a maternity clinic in Cheongju, Chungbuk, was once again an example of raising awareness about the risk of fire in the Piloti structural building. At that time, the fire broke out in the thermal heat inside the ceiling of the Piloti structure parking lot, just like the fire at a sports center in Jecheon, which occurred around 15:00 on December 21, 2017. The Cheongju obstetrics and gynecology fire resembles the fire at the Jecheon Sports Center, where 29 people died five years ago, the cause and starting point of the fire (Kim Eun-cho, 2022).

However, in the Cheongju obstetrics and gynecology fire, 11 people inhaled simple smoke, and no major casualties occurred. The reason why there was no casualty was that hospital officials responded quickly and the fire department responded quickly, but if you look more closely, the spread of the flame was delayed because the entrance to the building was closed, and it was connected to the next building and the inner passage.

In this way, regulations were tightened whenever large-scale fires occurred as well as fires in Piloti structures, but there were blind spots that did not apply to existing buildings in common (Lee Ki-oh, 2018: 202: Umji, 2017). Therefore, the existing Piloti structural buildings exist as a crisis that threatens the safety of people in our society until they are virtually destroyed. One of the reasons why most of these crisis management policies have the scope of application after the establishment of the policy is the principle of prohibiting retroactive legislation, one of the important principles of the Constitution.

However, we know that not only the constitutional value of guaranteeing legal stability but also the value of human dignity and respect for human life are important ideological orientations in crisis management (Lee Jae-eun, 2006:33). Therefore, in this study, it was suggested that exceptions to the principle of prohibiting retroactive legislation should be actively applied in the crisis management legal system, focusing on the risk of fire in Piloti structured buildings.

1.2. Scope and method of study

There is a limit to dealing with all the numerous legal systems related to crisis management. What is important is what value our society values in the legal system related to crisis management and what

direction should we move in. This study focused on the risk of fire in Piloti structured buildings. We looked at the definition and background of the Piloti structural building, how many Philoti structural buildings are built and the statistics of fire occurrence nationwide, and the administrative efforts promoted by the government and local governments. In addition, he pointed out the limitations faced by these administrative efforts, and in particular, emphasized that exceptions to the principle of non-retroactive legal action, that is, retroactive effect, are absolutely necessary. As for the research method, previous studies on the fire risk and improvement plan of Piloti structured buildings were referenced, and the concept of the principle of legal non-retroactivity was also examined at the legal level by referring to the existing research data.

2. A theoretical discussion

2.1. Fire Risk in Piloti Structures

2.1.1 Definition and Appearance of Piloti Structures

Pilotis (French: Piloti) or Pier (English: peer) means a pillar supported by a column, such as "gang", "footnotes", and "yeolju" (Lee Song-man, 2018:3). It is a structure in which all or part of the building with two or more floors is opened without installing external walls and facilities other than structures that support loads such as columns and bearing walls on the ground.

This Piloti space is used in various ways, such as parking lots, garbage classification facilities, and traffic spaces for people and vehicles, and since the Piloti space is excluded from the number of floors and the total floor area of the building, there is a significant benefit in terms of construction costs (Choi Seung-bok, 2017:3). Although these Piloti-structured buildings have been around for a long time, most urban living houses are built in this Piloti structure, with the advantages of the building law and the spatial advantage to solve the growing lack of parking spaces.

In Korea, Nakwon Shopping Center and Sewoon Shopping Center were representative Pilot structures during the redevelopment project in Seoul in the 1960s, and the number of apartments such as Jamsil City Apartment also increased due to the "plan to revitalize urban supply and build homes" in 2009 (Han Jin-young, 2015:4).

<Table 1> Status of Piloti structured buildings by city and province(as of November 2017 by Ministry of Land, Infrastructure and Transport)

Local government name	Total number of buildings	Piloti Architecture	Ratio	Current status by use	
				residential use	non residential use
Nationwide	7,108,562	236,810	3.3	200,588	36,222

As can be seen from <Table 1>'s estimation status of Piloti buildings by city and province nationwide (data from the Ministry of Land, Infrastructure and Transport), it can be seen that there are no accurate statistics of Piloti buildings scattered across the country. In the case of Chungcheongbuk-do, a total of 7,836 buildings were estimated based on the area and number of floors, of which 6,308 were residential and 1,528 were non-residential (Chungbuk Fire Headquarters, 2022:1).

2.1.2 Fire hazards and major fire cases

According to the analysis of the cause of fire spread in Uijeongbu Apartment and Jecheon Sports Center, the installation of combustible parking lot ceiling finishes and insulation, not installing fire doors and windows in openings leading to the building, and lack of fire prevention in buildings were the main causes (Hanjiwoo, et al., 2019: 151, 2018: 101). In summary, the risk of fire in a Pilotis structure can be classified into several factors. It is the risk of the first ignition factor. Piloti space is mainly used as a parking lot, so there is a high risk of vehicle fire (Kim Jeong-yeon, 2022: 96; Jeong Gi-shin, 2016:2). The 2015 Uijeongbu apartment fire was a fire caused by a four-wheel motorcycle parked in the Piloti space (Choi Seung-bok, 2017: 69). In addition, a fire occurs in the heating wire installed to prevent freezing of pipes in the upper ceiling of Piloti (Kim Hong-sik, et. al., 2020: 20). This includes the Jecheon Sports Center fire and the fire at Cheongju Obstetrics and Gynecology in March.

In addition, there are many cases where waste sorting facilities are installed and various wastes are piled up, and since there are many unspecified traffic, cigarette butts thrown away can also be a cause

of ignition (Kim Jeong-yeon, 2022:2). Second, it is the risk of expanding combustion. Since the Piloti space is an open space in contact with outside air, the supply of air is smooth, leading to rapid growth. Fireproofing performance of ceiling finishes directly exposed to flames in the event of a piloti structure fire affects fire spread (Han Ji-woo, et. al., 2018: 101). In addition, the combustion expansion path of the fire in the Piloti space is largely extended to the upper floor along the outer wall in two directions, and the combustion expansion path into the building through the entrance of the building. Most of the doors from the Piloti space to the inside of the building are equipped with glass doors, but if the entrance leads to the Piloti parking lot, the door must be installed as a fire door (Jang Yong-pyo, 2019: 73). In addition, the flame, which expands to the outer wall, rapidly extends upward through the exterior wall made of combustible materials such as drybeats, and in this process, flames and smoke penetrate into the building through openings such as windows (Song Yoo-chul, 2020:5). The last is the risk of evacuation. In most of the Piloti structural buildings, there is only one positional statistics group inside the building (small), and vertical spaces of elevators or pipes exist depending on the size of the building. This vertical space becomes the combustion expansion path of the fire. Eventually, people inside the building have to evacuate through flames and smoke coming up to the top. In the above, the fire risk of the Piloti structure building was classified into three factors and investigated. One of the major cases of fire in domestic Piloti structural buildings was the fire at Daebong Green Apartment in Uijeongbu on January 10, 2015. Five people were killed and 125 injured in the fire. The ignition location was in the Piloti parking lot. The other was a fire at the Jecheon Sports Center on December 21, 2017. The fire killed 29 people and injured 40 others (Lee, 2018: 86). The ignition place was also a Piloti parking lot, and a fire broke out due to electrical factors in the heating wire of the pipe inside the Piloti ceiling. According to the Fire Statistics Yearbook of the National Fire Agency, 81 fires occurred in Chungbuk over the five years from 2017 to 2021, accounting for only 1% of the total 7,467 fires during the same period, while 30 fire deaths account for 30% of all 97 fire deaths. As can be seen from these statistics, the frequency of fire in the Piloti structure building is small, but it can be seen that if a fire occurs, a huge loss of life occurs. To summarize the fire progress mechanism of the Piloti structural building, a fire similar to a furnace, the internal expansion of toxic gas due to chimney effect after destruction of the central entrance, the ceiling material drop-down (vehicle combustion) the Coanda effect (drybit exterior expansion) (Chungbuk Fire Department, 2022: 11).

2.1.3 Government's efforts and limitations in managing fire crisis in Piloti structures

We looked into the policies being pursued in the wake of the fire in the Piloti structure building. First, the national fire safety standards were improved to install automatic fire extinguishing facilities for parking or garage inside buildings such as pilotage windows ('19.8.13). The government, along with local governments, is pushing for a "fire safety performance reinforcement support project" that temporarily (~22 years) supports fire safety performance reinforcement costs for existing buildings built before reinforcement such as the Building Act (Park Joon-ho, 2022). The government, local governments, and private institutions will provide 1/3 of the cost of installing flammable exterior materials and sprinklers to multi-use facilities with a total floor area of less than 1,000 square meters, such as medical facilities, elderly children's centers, and youth training centers. As of November 2017, 236,810 buildings were estimated to be Piloti, of which 84.7% were 200,588 buildings for residential use (Chungbuk Fire Headquarters, 2022:1). Therefore, the government's policy shows a limit that applies only to 15.3% of non-residential buildings, excluding 84.7% of residential buildings. On October 7, 2015, the Ministry of Land, Infrastructure and Transport revised some of the rules (Ordinance of the Ministry of Land, Infrastructure and Transport) to use flame retardant finishing materials above the flame retardant performance standard on the ceiling of the structure. However, existing buildings were excluded. As such, urban living houses, which account for most of the Piloti structural buildings, are outside the boundaries of the law, making it difficult to avoid the risk of fire until they are destroyed. Many media and experts who reported the Jecheon Sports Center fire, Uijeongbu apartment fire, and Cheongju obstetrics and gynecology fire continue to point out that existing buildings are in blind spots. The following <Table 2> summarizes major revisions such as the Building Act revised by the government to strengthen fire safety standards for Piloti structured buildings.

<Table 2> Summary of major revisions such as the building Act

Sortation	**content**	**the date of implemente**	**the relevant laws**

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materials	Subject to reinforcement of exterior wall finishes: 6 or more floors or 22 meters → 3 or more floors or 9 meters or more	2019. 11.7.	Article 61 of the Enforcement Decree of the Building Act
	Use finishing materials above semi-non-combustible materials	2019. 11.7.	Article 24 of the Rules on Standards for Evacuation, Fire Protection, etc. of Buildings
	Finished above semi-incombustible materials up to the second floor, including pilotystructure ceilings and walls	2019. 11.7.	Article 24 of the Rules on Standards for Evacuation, Fire Protection, etc. of Buildings
Building materials Strengthen quality control	Development of Detailed Standards for Quality Recognition System for Building Materials, etc	2022. 2.11.	Quality Recognition and Management Standards for Building Materials, etc

Life History Management System	Building Life History Management System (From completion to dismantling)	2020. 5.1.	Article 7 of the Building Management Act
Regular inspection of buildings	Every first 10 years, every 2 years → Every 5 or 3 years	2020. 5.1.	Article 13 of the Building Management Act
Strengthening fire protection compartment standards	3rd floor → All floors, *Fire Protection Section between Piloti Parking Lot and Building	2019. 11.7.	Article 14 of the Rules on Standards for Evacuation, Fire Protection, etc. of Buildings
	Restriction on the use of all-in-one fire shutters	2020. 12.1	Criteria for Automatic Fire Shutter and Fire Door
Enactment of the Mechanical Equipment Act	Standard for construction of anti-freeze heating wires	2020. 4.18.	Mechanical Equipment Act

2.2. Principles and exceptions of retroactive legislation prohibition

The purpose of the constitutional ban on retroactive legislation is to prevent the destruction of legal stability, the ideology of the rule of law, by undermining individuals' trust in the law and breaking its predictability (Jeong Young-hoon, 2007:5). If the prohibition of retroactive legislation is an expression of legal stability, the exceptional permission of retroactive legislation is an expression of justice, another ideology of the rule of law, and the realization of human dignity and values or the fundamental value of justice pursued by our Constitution (Jeong

Young-hoon, 2007: 16-17).Legal stability, an ideology aimed at from the perspective of the rule of law, has something in common in that it is embodied in the principle of non-retroactive and trust protection (Lee Joon-il, 2021: 116). Therefore, the principle of prohibition of retroactive legislation is an important principle to comply with in the rule of law, and it is a difficult legislative and policy decision for the owner to deprive the right guaranteed by existing laws by post-legislative legislation. However, the value of the public interest in protecting against the danger of fire, such as respect for human life, respect for human dignity, and respect for human fundamental rights (Lee Jae-eun, 2006: 33), is considered to be a case of justifying retroactive legislation for serious public interest reasons. Therefore, as an exception to the principle of prohibiting retroactive legislation, retroactive application of amendments such as the Building Act of Piloti Structures is essential.

2.3. A review of previous studies

Choi Seung-bok (2017) studied the fire characteristics of urban dwellings with Piloti parking lots, which increased due to the announcement of "Enhancing Urban Supply and Housing for Bogeumjari" in 2009, and suggested the cause of fire, evacuation speed, damage, evacuation method, fire simulation, and distance from buildings. Lee Songman (2018) criticizes the overall social concern about fire risk in Piloti buildings, focusing on statistics and fire cases, and regulations created without confirmation or recognition of essential risks. In addition, measures were proposed to separate parking spaces and residential spaces, secure emergency exits, eradicate illegal parking to improve accessibility to firefighters, and secure windows for extinguishing fires. Song Yu-cheol (2021) suggested a study on how to improve the initial firefighting response through community fire response: the role of neighboring citizens, i.e., local communities, who can respond immediately as a countermeasure for piloti structured buildings, focusing on the case of combustible exterior materials such as drybit. In a real-scale fire experiment for fire behavior and temperature distribution evaluation of the piloti structure of urban living housing, Kim Jung-yeon (2022) derived the effect on the piloti pillar according to the growth size and propagation speed of architectural Reinforcement of finishingthe flame to confirm the fire resistance performance. Noh Young-jae (2022) explained the rapid combustion phenomenon of Piloti structured buildings by studying the combustion expansion path inside the building in the parking lot part of the Piloti structured building, while studying the combustion path spreading to the outer wall of the building. In a study on the fire risk of urban living houses, Han Jin-young (2015) argued that the fire prevention proposal should establish piloti fire safety standards, strengthen parking lot installation standards and access road standards, establish a bill to ban combustible exterior wall insulation, and upgrade the category of apartments under fire protection. In a study on the necessity of protecting the entrance to urban living housing, Jang Yong-pyo (2019) surveyed the ratio of urban living housing built in a piloti structure through a total survey of urban living houses in Seongdonggu, and found that 77 out of 88 urban living houses have parking lots on the first floor. In addition, the study of fire cases identified the causes of increased property damage due to the spread of fire in the Piloti structure and the causes of large casualties due to the blocking of evacuation routes, and suggested improvements.

In a study on the process and factors of the fire law, Hong Ki-ho (2009) closely analyzed the overall process of the fire law to maximize the efficiency of the organization, transform the fire into a competitive organization that meets the expectations of the people in the 21st century, and suggested the future of fire fighting. Son In-hyuk (2018) pointed out that there is a lack of fundamental consideration on the principle of trust protection as a constitutional limitation and inevitability of retroactive legislation, citing examples in the scope of the principle of non-punishment and trust protection. Lee Ki-oh (2021) pointed out a problem in the application of the retroactive legislative prohibition rule in an administrative legal study on fire safety in buildings.

3. The results of a study

3.1. Two important factors to prevent fire damage in Piloti structures

In this study, the most important factors of fire in the Piloti structural building were summarized in two ways. These two factors are also the two main channels of fire spread. One is the internal diffusion path through the entrance of the building in the Piloti structure parking lot, and the other is the path that extends along the outer wall of the building. These two factors are the important combustion expansion path of the Piloti structure building, and preventing them is an important factor in reducing large-scale human casualties. More specifically, to reduce fire damage to the Piloti structural building, it is to protect the inside of the first building from fire, and to finish the outer wall with non-flammable materials to prevent the spread of fire outside the second building.

3.2. Retroactive application of the revised Building Act, etc. is required

The new building will be subject to the amendment to the Building Act, which reflects two important elements of fire countermeasures against the Piloti structural building. However, 236,810 existing buildings were not applied, leaving them as a risk factor for our society. It is clear that the retroactive legislative prohibition principle based on legal stability is an important principle in the rule of law. However, issues that threaten the safety of the people that were not considered at the time of legislation should be supplemented by post-legislative legislation. The value of the rule of law is important, but if you neglect the safety of the people by being bound by those principles, it is also neglecting the duty of the state. However, in this process, it is necessary to consider how to compensate the people who believe in the legitimacy of retroactive legislation and the existing legal system and obey the law. And it is also necessary to form a consensus among the people in advance. It is necessary to draw public consensus through awareness improvement campaigns and education using various media, and rational compensation for the damaged builders is also required through budget support from the state and local governments. It is also desirable to include provisions on the basis of retroactive legislation related to crisis management when enacting the Framework Act on National Crisis Management (tentative name) (Lee Jae-eun, 2007:49) necessary to systematize and ensure comprehensive national crisis management laws.

3.3. Expansion of the scope of support for fire safety performance reinforcement support projects and extension of support period

The fire safety performance reinforcement support project, which is supported by the Ministry of Land, Infrastructure and Transport, LH Building Management Support Center, and local governments within the total construction cost of 40 million won, is temporarily in effect until 2022. However, residential buildings (205,588 buildings as of November 2017), which account for most of the Piloti structural buildings, are excluded from the support list, so policy limitations are clear. It is suggested that the temporary fire safety performance reinforcement support project should expand the scope of support to residential piloti structural buildings and extend the project period.

4. Conclusions

Since 2009, the number of Piloti structural buildings has soared nationwide in accordance with the government's policy to revitalize urban supply and build nesting houses, adding to social anxiety. The government is making policy efforts to solve these problems, but these policies show the limitations that apply only to most new buildings. In the meantime, many fires have broken out in the Piloti structures and precious lives have disappeared in pain. This pain is bound to continue in the future. Our society cannot develop into a better society unless we recognize and improve problems. If you recognize that there is a problem with the existing legal system, you should try to solve it before you suffer more. Our society is still making numerous social developments using scientific development as the driving force. However, as potential risks that have not been considered increase, our society is becoming a high-risk society. In order to reduce the potential risk of our society, we should move toward emphasizing the dignity and value of human society rather than paying attention to cost benefits or economic effects when enacting laws or systems.

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Profile

Hak Su Lee **(drager17@korea.kr)**

He has been a firefighter since 1995. Currently, he is working as the head of the 119 Special Rescue Team in Chungbuk, and his field of interest is rescue technique, especially an expert in diving.