Stigmatized Properties: Filter Theory

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Abstract: International literature does not treat stigmatized properties in a uniform manner. In the proposed article, the Author employs the following definition: “A stigmatized property is one assigned with a real or perceived negative external effect on the users. That external effect modifies or reduces property market value through a specific, multilayered filter.” Many property-related stigma cases are mentioned in the literature, such as high-voltage lines, noise, air pollution, airports, haunted properties, and many other similar situations. The various stigmas, as well as identical stigmas on different properties, have been assessed individually so far. Knowing the depreciating mechanism of a stigma allows for valuers the uniform handling of stigmas on different properties, as well as understanding the depreciating mechanisms of new stigmas. Using extensive literature research on various stigma cases, the Author built up a framework that explains the major variables and their interdependencies. As the result of the research, the new theory describes the change in value caused by the stigma takes place through a filter that combines the distance between the stigmatizing factor and the stigmatized property, the environmental conditions and community perceptions and interprets them differently over time.

1. Introduction
The problem of stigmatized properties is widely discussed in the international literature. However, there is no uniformly accepted definition of this concept, and the literature most often cites the definitions of Patchin [1], Mundy [2], Morgan [3], Roddewig [4], Greenberg et al. [5] or Slovic [6]. In this article, we use the most recently published definition produced on the basis of the above, namely: “Stigmatized property is property assigned with a real or perceived negative external effect on the users. That external effect modifies or reduces property market value through a specific, multi-layered filter.” [7]

The impact of depreciation on stigmatized properties has been examined in numerous case types and locations, and the relevant literature now contains hundreds of articles. The case types studied range from the stigmatizing effect of airports [8,9,10] to the topic of so-called “haunted properties” [11]. A typical stigma case type is properties under high-voltage power lines [12] and the case of properties near mobile telephone relay towers [13]. Many studies have also examined the depreciating effects of spills of chemical pollutants or landfill sites [2,14,15]¹.

The depreciation of stigma may be calculated using traditional valuation methods or new, so-called non-traditional methods. These are the Revealed Preference (RP) and Stated Preference (SP) procedures

¹ The referenced literature is just an illustration from a vast set of publications
Most case studies were carried out using the hedonic model within the SP methodology. The hedonic pricing method (HPM) essentially breaks down the value of the property into value components, to which multiplication factors are assigned, expressing the weight of each valuer in the total value as a “shadow price” [17]. This analysis starts out from the value of transactions (or ad data) and, by breaking them down into components, it quantifies the stigma effect. At the same time, the SP procedures examine the expected pricing preferences of the interviewed future consumers, which is often referred to under the umbrella term “contingent valuation” [18]. In both methodological groups, the usual research practice is to include variables based on empirical experience, while explanatory variables with stigmatizing effects do not cover the full range of factors causing the stigma. There is no guiding principle that systematically defines the range of explanatory variables.

The objective of this article is to present a uniform theory, using the same characteristics of the different case types, that provides the same approach for all stigmatised property scenarios.

After this introductory part, the article discusses the mode of action of the stigma in a separate chapter, and then presents the filter theory developed by the author, which is suitable for combining case types.

2. Mode of action of stigma in the case of properties

In literature research on the case types of stigmatized properties, researchers basically group the entire range of stigmatized properties according to the stigmatizing effect and the nature of the stigmatizing property. Most of these publications are related to a geographical location, as the most important variable determining the value is location. Case types have a lot in common; they have the same mechanism of a depreciation effect.

Based on the itemized case descriptions and literature, the following common characteristics for each stigma case type can be identified [7]:

- Each case has a negative charge and a negative judgement;
- Most of the cases listed are triggered by human activity (investment, emergency, regulation);
- This human activity is often related to construction and investment;
- The development of the effect is usually linked to a property or a group of properties (this property is the stigmatizing property);
- In cases discussed in the literature, the surrounding (stigmatized) properties are generally not affected by any actual physical effect;
- However, the persons using the property are generally affected by or presumed to experience an adverse effect;
- This adverse effect is difficult to objectify and difficult to measure;
- For this adverse effect, users list additional risks that are or considered to be serious;
- There was a lively social and professional discourse about these cases.

The approach described in this article is irrespective of the specific trigger effect and should be applied uniformly to the whole range of stigmatized properties.

In the literature, researchers studied the stigmatizing effect – depreciation function and gave a quantified opinion on the decrease in the expected value of the Market Value. As an example, the general rule of the effect of the proximity of an airport is that an increase in noise level of 1 dB reduces the value of the property by 1% [16]. Of course, user and residential perception is also present in the mapping of this function, but the extent and components of this are very difficult to filter out from the total depreciation effect. The literature often mentions and indicates the presence of this residential perception, but it fails to provide a method to show the extent and proportion of the total effect.

Similarly, most authors have recognized that the distance from the source of the stigmatized property has a significant effect on the extent of the stigma. Many of the researchers not only described the location effect by distance, but also by regional location and spatial coordinates (based on GIS or LIDAR...
systems). The so-called 'Space Syntax' theory has been used in urban planning since the 1970s, which serves to analyse the density of the urban fabric and the relationship between urban values. Giannopoulou et al. [19] combine this theory with the analysis of the evolution of spatial market values, thus relativizing “distance” depending on the urban location.

The literature did not point to an important issue related to the topic of distance: the presence of intermediate elements in the space between the stigmatizing effect (stigmatizing property) and the stigmatized property. If a mobile relay tower is 200 metres away from a residential building and there is a nice lawn between the two properties, it obviously has a greater impact than if a busy road ran along the same place. The impact of the proximity to the airport can also be modified by a nearby, noisy highway, and even the proximity of a haunted house can override that if there is, say, a cemetery between the two properties. It should also be taken into account that, in the urban environment, a property can be affected by several stigmatizing effects at once. The effect may be single, but the effects of several stigmas may be cumulative (or they may even cancel each other out). As a variable, we must therefore also evaluate the environment, its structures and its effects in the model of depreciation of stigmatized properties.

It is important to note that buildings with different functions but under the same effect suffer different depreciation effects, and similarly, buildings with the same function but in different conditions show different depreciation levels even under the same effects.

The stigma's depreciating effect changes as time passes. Timeliness plays an important role in determining the market value; according to the valuation standards, the market value is valid for a given date (the valuation record date). We also try to learn the effect of the stigma by valuation date; however, from the appearance of the stigmatizing effect, the value modification effect changes – it typically decreases [4]. Regardless of the date, the effect is also modified by social opinion. Hence, it is not enough for the appraiser to record the fact of stigma; they must also examine the specific stage of the stigma. Therefore, determining the depreciation of the stigmatized property is also a particularly complicated task, because the existence of this variable, as well as its evolution over time, requires analysis. The vast majority of the literature did not include the temporal cycle of the stigma among the variables when creating models. This, of course, is not the case for a single analysis for a single valuation issued, but if multiple valuations are analysed (for example in a sample space test), this may become a relevant criterion.

In all cases, the fear of the specific effect is greater, and the risk associated with the effect is greater than what the objective extent of the effect would justify. The subjective perception of the person, and even more so the community, plays an important role in the mode of action of the market depreciation of stigmatized properties. Social inclusion must be interpreted through a social filter of environmental risks. The 1992 Royal Society report on risks states that risk acceptance can be interpreted through people’s beliefs, attitudes, perceptions and feelings, as well as through the broad cultural and social position that determines their behavior towards hazards [20]. In fact, this is about accepting 'technical risks'. According to Bickerstaff’s literature review [21], this filter is of a societal and social nature. He proves that using the example of air pollution. According to him, the attitude of the people around him, the place of residence, the method of perception (e.g. the sight of dead animals) and the trust in the source of communication should be interpreted together. The author thus identifies social risk as a common perception of the recipients. The relationship between the actual degree of risk and the perception is not a simple “mistake”. The community’s opinion at any time is an essential element of the depreciating effect of the stigma.

So far, we have talked about the value of the stigmatized property in general, as the authors in the literature generally use the term “value” without an adjective. This is, by some consensus, nothing other than the market value [22]. Market value is a defined form of value that quantifies the opinions of property market’s players about the property in a single sum. Research is typically aimed at including this generalization in the amount of depreciation due to stigma, i.e. we are looking for the average market player’s opinion of the stigma. However, there are certain defined forms of value (such as investment value or special value) that can be attributed to a particular market player. Obviously, a special
stigmatizing effect affects different individuals in different ways. It is therefore important to point out that the “common perception”, i.e. the community opinion referred to in the previous paragraph, relates to the market value, and other forms of individual value should not be determined by the value judgement of the average market player but by the specific, individual value judgement.

3. Filter theory
Taking into account the aspects described in the previous section together, the interpretative theory called the filter theory develops step by step. Figure 1 below shows the market mechanism of the general depreciation effect: some external (or internal) circumstance directly modifies the market value of the property in a measurable, objective manner. The number of such objective factors is infinite, but in real estate valuation practice 10-20 factors are examined that have a significant impact on property value.

**Figure 1: General value-adjusting effect**

The stigmatizing element, in most cases the stigmatizing property, is one of the important value-adjusting effects. According to the usual literary approach, in the case of the depreciation of stigmatized properties, the community’s opinion is a common element that changes the depreciation rate of the effect. This community opinion can be seen as a lens, and even more as a filter, which often magnifies or even reduces the objective effect. (Figure 2)

**Figure 2: Traditional approach**

Effects starting from the stigmatizing element (the stigmatizing property) weaken with distance. The effect of distance on value is also a complex relationship. There may also be environmental elements in the space between the two objects that positively or negatively affect depreciation. The depreciating effect of the relative location of the two objects is also influenced by the community’s opinion. Because of the above, the distance between the point of impact and the stigmatised property cannot be interpreted without the environmental elements, so the filter is not single, but includes the characteristics of the environment, among them any other stigmatizing effects – and therefore, mutatis mutandis, the distance
between the two objects themselves, as shown in Figure 3. So we are talking about three filters: distance, environment and community.

**Stigma deprecating effect – filtered by distance, environment & community**

![Diagram of filters](image)

**Figure 3:** The combination of the three filters

Stigmas emerge and disappear. Something that was not a stigma 20 years ago might be one today and might not be one in 15 years’ time. As mentioned earlier, the filters of the stigmatizing effect are constantly changing over time: based on the community opinion, each of the three filters is given or can be given a new meaning. The filters are joined together by a common variable: time. Thus, the change in value caused by the stigma takes place through a filter that combines the distance between the stigmatizing factor and the stigmatized property, the environmental conditions and the community perception and interprets them differently over time. The combined concept of the Filter Theory is illustrated in Figure 4.

**Stigma deprecating effect – filtered are changing with the time**

![Diagram of filters](image)

**Figure 4:** The concept of the filter theory

4. **Conclusion**

The library of literature on stigmatized properties mainly deals with the study of individual cases and locations, and so far the synthesis of these cases has been missing. This synthesizing theory is necessary in order to include the full range of explanatory variables for further studies.

The filter theory described in the previous chapter explains the depreciation mechanism of the stigma. Accordingly, the change in value caused by the stigmatization effect takes place through a filter that combines the distance between the stigmatizing factor and the stigmatized property, the environmental conditions and the community perception and interprets them differently over time.

Knowing the depreciating mechanism of a stigma allows for the uniform handling of stigmas on different buildings, as well as understanding the depreciating mechanisms of new stigmas. The filter theory can be used in any research or expert opinion where, in a specific stigma’s case, the decrease in the market value is the subject of the study, especially if the researcher wishes to quantify the general and temporal changes in market value caused by the stigmatizing effect.
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