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Scope and Aim
The Nordic Journal of Surveying and Real Estate Research (NJSR) is an international scholarly Open Access journal focusing on the various perspectives of built environment research including Cadastre and Land Management, Spatial Information Management, Urban and Regional Planning and Development, Real Estate Economics and Management, as well as Construction Economics and Management. NJSR also publishes Special Series from conferences and other real estate research initiatives.
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Guest Editorial

Malmö Real Estate Research Conference (MRERC) started in 2012 as a workshop primarily for doctoral candidates. The Real Estate group at Malmö University had just earned their two first PhDs, the year before. It was a national gathering of about 15 participants. The interest for the workshop, and Real Estate research related questions, gained more and more interest over the years. In 2016, the workshop had developed into an international conference with 56 participants, and over 20 papers presented.

The Malmö Real Estate Research Conference addresses a wide range of real estate research questions. The conference includes topics such as Construction, Finance and Appraisal, Housing, Management, Real Estate Law, Urban and Regional Development, as well as Education. This year's conference was scheduled for 8–9 May 2020, but like so many events, the physical gathering had to be cancelled due to Covid-19 pandemic. Nonetheless, Professor Marketta Kyttä from Aalto University, was able to deliver her very topical keynote speech titled Using place-based knowledge from people in urban planning and development virtually to an international audience.

Prior to the cancellation, 22 papers had already been accepted to be presented at the conference. To provide this research an outlet to reach the scientific community, MRERC teamed up the Nordic Journal of Surveying and Real Estate (NJSR), published by the Finnish Society for Built Environment Research. This Special Series of the NJSR includes three papers that were initially to be presented at MRERC 2020. It is our pleasure to present these diverse papers, well reflecting the broad scope topics typically at MRERC. The Special Series includes two peer-reviewed scientific papers, one on rental legislation, and the other one on hedonic modelling of house prices. Additionally, a peer-reviewed pedagogical case to be used with real estate management students is included in this Special Series.

The opening paper in this Special Series by Helgason and Kopsch on the issue of rental legislation in Iceland. The paper deals with a market that has, after the financial crises, undergone a structural change, and discusses whether the Icelandic rental legislation is in need of modification. The authors pinpoint an interesting question relating transaction costs to the rental market change over the years, and the legislation.

The second paper by Long and Wilhelmsson deals with the influence of shopping malls on housing prices. The paper finds that the number of shopping malls is positively correlated with apartment prices, while the distance to a shopping mall has an inverse relationship.

The last paper is a pedagogical case by Liu, Staffansson Pauli and Johansson. The case explores the complexity of stakeholder management, using a housing renovation project from Malmö. We believe everyone teaching real estate has felt the need for relevant teaching cases, so we are happy to present educators with this facilitation tool.

As editors, we trust that publishing these three papers in the NJSR Special Series sparks further intellectual debate. We wish to thank all authors and reviewers for their invaluable contribution. Furthermore, we would like to thank Malmö University and Centrum för fastighetsföretagande (CFFF) for generously supporting MRERC during this special year. Finally, we are thankful to the Finnish Society for Built Environment Research for their collaboration and sponsoring this Special Series.

Looking forward to upcoming real estate conferences, be they physical or virtual!

Guest Editor Peter Palm, Urban Studies, Malmö University, Sweden

Guest Editor Saija Toivonen, Built Environment, Aalto University, Finland.

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Rental Legislation and the Changing Icelandic Rental Market

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Abstract. *Rental markets play an important role for a functioning housing market. Households with shorter time horizons, as well as households with little private equity and difficulties acquiring capital can see their housing needs met on the rental market. A functioning rental market does however require some sort of legislation. In this paper we argue that legislation must adapt to changing rental markets. We do so from the specific case of Iceland. The Icelandic rental market has, since the financial crisis, undergone noticeable structural change, evident from a number of perspectives. Based on the presented structural change of the Icelandic rental market, and our presented view on the role of private rental housing, we conclude that there is a case to be made for changes to the Icelandic legislation.*

Keywords: *Iceland, rental markets, rent legislation, transaction costs*

1 Introduction

Rental markets can cater to different types of individuals and households depending on what type of legislation a country has implemented. However, the type of households who turn to the rental market can change over time regardless of the structural legal framework. If this happens, it may warrant changes in the legal framework. The rental market in Iceland, we will argue, has undergone structural changes since the financial crisis of 2008 (from here on referred to as *the financial crisis*). More households have become renters, and they stay renters for longer. In addition, the number of professional for-profit rental companies has increased and the majority of their market share is divided between two large companies. With this paper, we aim to present a discussion of the legislation governing the Icelandic rental market. The question of pressing interest is: Is there a case to be made for changes to the legislation in order to adapt to the evolutionary process of the private rental market?

Icelandic housing policy was centered around a home-owning society with minimal state involvement until the 1980s. Thus Icelandic housing policy differed greatly from that of the other Nordic countries, especially Sweden in the post-World War II era (Sveinsson, 2004; Bengtsson et al., 2013). Innovations in the

fisheries sector in the early 20th century fueled an economic change which caused rapid urbanization, forming a large rental market in the fast-growing towns. By 1920, half of the population in Iceland lived in urban areas, a share which had more than doubled from the beginning of the century. 53% of housing in Iceland were rentals. The rental market was largest in Reykjavik where it is estimated that 63% of all housing were rental apartments. The share of rentals remained high up until World War II. Homeownership in early urban Reykjavik was highly related to class and wealth (Sveinsson, 2004, Statistics Iceland, 1997).

However, the share of rentals decreased after World War II and reached 17% in Reykjavik in 1983 and 11% for the whole country in 1990 (Statistics Iceland, 1997). The allied occupation of Iceland brought about strong economic growth during and after the World War II, and resulted in improved standard of living and a sharp rise in per capita income. This can probably partly explain this increasing share of homeownership. However, exceptionally high inflation from 1940–1990 is likely to have played a large role in this development (Sveinsson, 2004) as owning your own house provided protection of your savings (Ministry of Social Affairs, 2004).

The current legislation governing the rental market in Iceland came into effect in January 1995 as a revision of the former legislation from 1979 and has not undergone major revisions since then. The legislation from 1979 was considered in many ways unsuitable for the Icelandic market (Ministry of Social Affairs, 2004), however it provided some tenant security. For the most of the post-war period, following war time rent regulation, the rental market was more or less free and unregulated (Sveinsson, 1992).

Following the new and revised legislation attitudes towards renting started to change and laws on rental assistance also played a role by inducing improvement in the condition of rental properties (Ministry of Social Affairs, 2004). Prior to the financial crisis in 2008, the rental market stayed relatively small and policy changes at the time further stimulated a rise in homeownership. In 2004 the Housing Financing fund, a state-owned mortgage lender, eased its loan regulation and started offering 90% mortgage loans. According to Elíasson and Pétursson (2009) this caused a strong response from the newly privatized domestic commercial banks that actively entered the mortgage market for the first time. Long-term real mortgage rates declined, access to credit increased and housing demand rose substantially, causing a 25% increase in house prices one year after the shock and similar percentage rise in housing investment two years after the shock.

Since the financial crisis the size and structure of the rental market as well as attitudes and preferences towards renting, seem to have undergone change. Government policy has started to cater more to the rental market than before for example by providing increased housing allowances and by incentivizing the construction and purchases of rentals for lower income households by providing endowment capital to non-profit companies. There has also been an increased political pressure and demand for new legislation. This is the focus of the current paper.

The rest of the paper is structured as follows. Section 2 will provide an overview of the role of rental markets. Section 3 will provide the argument for

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a structural change of the Icelandic rental market. In section 4 we provide a discussion of the Icelandic private rental legislation and how changes may be motivated in line with the structural changes presented in section 3. Section 5 provides a discussion of the results, and concludes.

2 The role of the private rental market

In order to provide a fruitful discussion of changes in the private rental market and associated changes in legislation governing said market we need some type of understanding of what the role of the housing market is. Such perspectives can be drawn from different research disciplines. In this paper we will mostly focus on the market perspective given by the economic science, although we will briefly discuss non-market based viewpoints stemming from other social sciences.

The most obvious prerequisite for a functioning rental market is the existence of apartments available for rent. For the purpose of this discussion we will assume that this is already in place. If, for some reason, policy makers want the rental market to increase, this can be achieved in a number of different ways. For example by changing land policies or by introducing subsidies to new construction. Such political instruments do however lie outside the scope of the current paper. In addition, the structure of rent legislation will likely differ depending on the structure of the rental market. Kemeny (1995 and 2007) (further discussed in e.g. Kemeny, Kersloot and Thalmann (2005)) has developed the concepts of 'integrated' and 'dualistic' rental markets. An integrated rental market one will find non-profit housing firms aiming at broad parts of the population. Sweden and Austria are examples of such markets. Such countries are likely to have adopted one type of legislation aimed at both the private and the public, or non-profit, housing sectors. A dualistic rental market will on the contrary have a larger degree of separation between the private rental market, and its governing legislation, on the one hand, and the public or non-profit sector. Iceland falls within the dualistic category, with a private rental market and a social housing sector. In this paper, however, we will only consider the private rental market. The reason is that this is the market undergoing structural change, and at the same time facing a discussion of possible changes in the legislation.

From an economics point of view on housing as a commodity, housing differs from other consumption goods in three ways (see Isaac, Allen and Mary, 1991; Quigley, 2002; Kopsch, 2019b). First, housing is a durable good with relatively high production costs and relatively low operating and maintenance costs (see e.g Martin, 2003; Malpezzi, Ozanne and Thibodeau, 1987; Wilhelmsson, 2008; or references within). Second, moving is associated with relatively high transaction costs compared to changing consumption of other goods (see e.g. Piazzesi and Schneider, 2009; Van Ommeren and Van Leuvensteijn, 2005; Hauring and Gill, 2002 or references within). Third, housing is heterogeneous. No house is exactly the same as another, implying there is no perfect substitution to any house.

The first two aspects make housing suitable for renting. Households who fail to meet capital restrictions, because they hold low amounts of wealth or for

other reasons typically turn to the rental market. They cannot pay the large initial production costs, and cannot get loans to cover them. They may however be able to cover the running costs and expenses associated with housing. This will give us a group of households on the rental market without options to leave the rental market.

The rental market may also appeal to some households because of the lower transaction costs. In this group of households we will typically find younger households and students. They have a temporary need for housing and know that they will demand some other type of housing in a relatively near future. Within this group of households one will also find those who have recently moved to a new city. Such households have little information on their own locational preferences, and may choose to rent for the duration it takes them to get acquainted with their new home town.

This distinction of two groups that the rental market can cater to due to attributable differences to housing as a consumption good does not exclude the possibility that other types of households may prefer the rental market, for other reasons. For example, it is likely that we will also find relatively risk averse households on the rental market as renting is associated with a much lower risk of value fluctuations and also because of unforeseen costs, such as for maintenance. We will also likely find households with a strong preference for service provided on the rental market.

The above discussion of the role of rental markets do of course stem from a specific view, housing as a marketized consumption good. To a great extent it is, and under such conditions, one could argue, legislation should be focused on facilitating functioning markets. However, housing can also be viewed as a part of the welfare state, as something that ought to be publicly provided. To some extent, this falls outside of the scope of this paper in terms of the re-distributional aspects that non-profit housing is likely to have on a dualistic rental market. Nevertheless, even private rental market legislation, without re-distribution, is likely to be influenced by a view of housing as a social right. In fact, such a social right point of view may very well be motivated, although not explicitly so, by transaction cost motives.

The view of housing and the role of rental markets is typically described differently between scientific disciplines. The abovementioned economic perspective can very well be complemented by social science perspectives. Noteworthy when discussing rental market legislation is the view of housing as part of the welfare system. This literature can provide us with further insights into understanding rental market legislation. For example, Bengtsson (2001) discusses housing as a social right and what it implies for public policy. Bengtsson argues that the right to housing should be viewed as a political marker, rather than a governmental obligation to supply housing. To some extent, such a political goal might warrant inclusion of housing in traditional welfare provision, along with health care, education and social security. The duality of housing, belonging to both the market and the welfare state has received much attention, starting from Torgersen (1987) and the literature that has followed.

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Nevertheless, different groups of households will benefit differently from rental market legislation. In this paper we will be interested in three dimensions of rent legislation, namely: *security of tenure, legislation restricting rent increases under a contract* and *restrictions on rent increases between contracts.* All these dimension can be viewed from a transactions costs perspective, where stronger legislation in one aspect may lower expected transaction costs to one group, but increase them to another. Let us develop this line of thought.

One of the abovementioned characteristics of housing as a good is that moving, i.e. change in consumption, are associated with relatively high transaction costs. Although transaction costs are relatively lower on the rental market, compared to owning, they are still high enough for households to be likely to demand tenant security, specifically if they have a longer time horizon. Households also make relatively large social investments in their homes. One chooses school for the children, meets new friends in the neighborhood etc. This further increases costs of moving and such investments increase with time. That is, households who are planning to stay long in their rental housing will demand some sort of security in knowing that they can stay for long. That is, legislation providing *security of tenure* in some way or another is warranted for the rental market to cater to such a group of households. Legislation aimed at tenant security can either take the form of demanding certain lengths of tenure in the contractual agreements, or stipulate under what circumstances landlords or tenants can terminate the contract. If the rental market would only consist of households in transition, security of tenure would be less of a problem. One can think about the market for hotel rooms which solely consists of short term rental, and hence has no legislation providing tenure security.

Legislation providing strong security of tenure demands some sort of restrictions on rents. This brings us to our second dimension of rent legislation, *legislation restricting rent increases under a contract* (what Arnott, 2003 would call *tenancy rent control*). Without restrictions to rent increases within contracts, legislation aimed at certain lengths of tenure and prohibiting evictions of tenants may become rather pointless. For example, of legislation would demand a length of tenure of ten years, though stipulating a minimum contractual length, the absence of restrictions on rent increases during those ten years would provide an obvious circumvention of legislation. Landlords could simply increase rents such that renters are forced to move.

Higher tenant security may however come with certain costs. For one, if it is difficult to terminate rental agreements, private individuals may be reluctant to entering them in the first place. Thus the supply of rental apartments will be reduced. In addition, if current tenants receive a high level of tenure security, in terms of length of contracts and protection from rent increases, they will become less likely to move, and thus incurring a cost to those who want to become tenants in the future. Stricter protections to current tenants result in less mobility and a less efficient use of the housing supply (see e.g. Glaeser and Luttmer, 2003). This implies that it will become more difficult to find adequate rental housing. In other words, transaction costs on the rental market increases. The reader may recall that lower transaction costs is one of the benefits of the rental market.

Related to legislation restricting rent increases *within* a contract for an existing tenant we might also see restrictions on rent increases *between* contracts and between tenants. Such legislation may be motivated from a policy perspective as ensuring affordable housing, as it implies a general cap on rent levels. Restricting the general rent level may, however, result in other unwarranted outcomes. Rents lower than their market level may for example be counteracted by demands of monetary compensation from landlords when tenants move in, so called key money (Malpezzi, 1988, Kopsch, 2019b). It may also result in tenure conversions where rental apartments are instead sold to owner occupiers (see Diamond et al. 2019; Donner and Kopsch, 2018; Kopsch, 2019b; Turner and Malpezzi, 2003).

Strict legislation in these three dimensions may be beneficial to current tenants, and to those who manage to become tenants. It will be less beneficial to landlords, who will face larger difficulties in increasing rents or choosing their tenants. In addition, by reducing supply both through reducing the frequency with which households move and by shifting incentives toward supplying apartments on the owner occupant market, strict legislation may hamper the possibilities for a household to become a renter. Legislation has to balance the interests of these three groups, landlords, tenants, and those who want to become tenants.

The further discussion of the legislation governing the Icelandic rental market will focus on these three dimensions; *security of tenure, restrictions on rent increases under a contract* and *restrictions on rent increases between contracts.* An interesting aspect is that the structure of the rental market, e.g. what type of households reside there, for how long and for what reasons, as well as what type of financial actors enter the market, and the legislation will not develop together in an organic fashion. Legislation will have to adapt to changes in the rental market. We will first turn to how the Icelandic rental market has changed over time.

3 Evidence of structural change under the current rental legislation

In the following section we rely on data gathered by Statistics Iceland for the EU-SILC survey. These surveys have been conducted since 2004. In addition, we rely on national surveys of the housing market, including renters, made in the years 2003 and 2015 by Gallup for the Ministry of Social Affairs[1], 2007 by University of Iceland, Social Science Research Institute and since 2017 by Zenter research for the Housing and Construction Authority in Iceland and its predecessor.[2] The included questions vary over the years which makes statistical testing rather difficult. Instead, we will here present our argument in a more qualitative fashion, looking at what we will argue to be evidence of structural changes.

We argue that the gathered evidence from the available surveys allow for the conclusion that the Icelandic rental market has been undergoing structural change. We will in the following present seven distinct arguments in favor of

[1] The Ministry of Social Affairs has undergone name changes. In 2015 it was called the Ministry of Welfare.

[2] In the beginning of 2020, its predecessor the Housing Financing Fund and the Iceland Construction Authority merged to form the new institution, Housing and Construction Authority.

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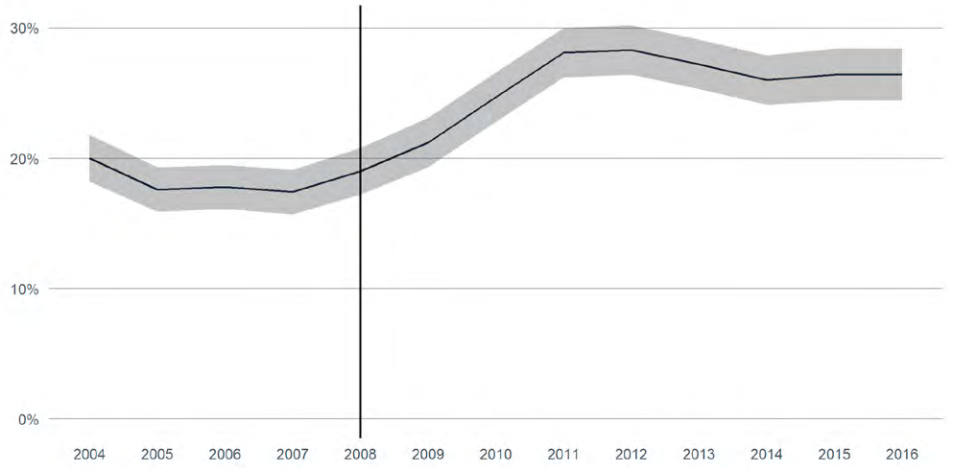

Figure 1. *Share of households on the rental market, 2004–2016.*
Source: Statistics Iceland EU-SILC survey, 2004–2016

such a structural change, along with how these structural changes may or may not warrant changes to legislation.

First, since the financial crisis both supply and demand on the rental market has increased. After the collapse of the banking system a lot of newly built and half-finished housing was available. House prices fell and were expected to fall even more. Due to an increased uncertainty of real estate prices, decreased income, decreased access to capital excluding certain households from buying and negative equity of households it was hard to sell real estate. Many decided to rent out their properties until conditions would improve on the market (Institute of Economic Studies, 2011). Between 2007 and 2012 the share of Icelandic households residing on the rental market increased from 17,4% to 28,3% according to EU-SILC survey gathered from Statistics Iceland. That is, an increase of 70% in the number of homes.

Figure 1 depicts the share of households who reside on the rental market in Iceland during the period 2004 to 2016.[3] The share includes both the general rental market, i.e. those who rent at market rate, as well as those who rent at reduced rate such as social housing, student housing and other types of rentals. In the immediate years after the financial crisis the general rental market grew the most. In 2012 the number of households on the private rental market were 50% higher than the number of households renting at reduced rate. However, in 2016 the size of these markets have converged to equal size. From figure 1 one can make the argument that the rental market has stabilized at a new, larger equilibrium. A larger rental market is not by itself an argument to change the governing legislation. We must in addition gain some understanding as to why the rental market has been increasing in size over the past years.

[3] Statistics Iceland has not published newer results from the EU-SILC survey than 2016 regarding the number of homes on the rental market.

Second, the stated reasons of why households rent have changed. The share of households who report seeing renting as a temporary solution to their housing need has decreased from an average of 39% in the years 2003 and 2007 to an average of 26% in the period of 2015 to 2019.[4] Households claiming to rent by necessity has increased from an average of 44% in 2003 and 2007 to 63% in the period between 2015 and 2019. In contrast, households stating they prefer to rent has decreased from an average of 17% in 2003 and 2007 to 11% in the period of 2015 to 2019, reaching a low point of 8% in 2018 and a high point of 19% in 2003. These results apply to the total rental market. If we instead look only at the private rental market (from here on excluding friends and family unless stated otherwise), the difference becomes even larger. In 2019 around 72% of private market renters were renters by necessity, 19% saw it as temporary and a mere 10% had a preference for renting. This can be compared to the 2003 survey, where 46% of private market renters stated necessity, 16% by preference and 38% saw renting as a temporary solution.

Thus, there is evidence that the rental market is growing partly because some households do no longer see any other options. Such households may demand tenure security to a larger extent than what renters have demanded in the past, when the rental market to a larger extent catered to temporary housing needs. If so, this change can constitute part of an argument for more protection through legislation on the rental market, which will demand changes to existing legislation. However, as we will turn to now, tenant security may improve even without legislation.

Third, the length of tenure has increased, i.e. tenants report that they stay longer on average in their current rental apartments than in the years before the financial crisis. Figure 2 shows that there is a clear change in the share of tenants on the total rental market with tenure less than a year from 2003 compared to the more recent years. We can also see an increase in the share of renters with longer tenure. This is consistent with the hypothesis that the growing over all rental market can be explained, at least partly, by increasing difficulties for households to purchase their own housing and that the share of temporary renters are decreasing.

In 2003 the average length of tenure was 2.5 years. By 2015 this average had increased to 2.8 years in 2015 and measured at 2.6 in 2019. The averages do not imply much of a change. If we instead look at the development on the private rental market alone, the average length of tenure was 1.4 years in 2003, 2.2 years in 2015, 2.1 years in 2018 and 1.9 in 2019. That implies roughly a 48% increase in the later survey years compared to the pre-financial crisis market.[5]

[4] The survey conducted in 2007 had slightly different questions and was quite smaller in scale regarding the number of renters who answered. It had the same options as in the other surveys but included an option: "temporary and necessity". This option captures renters who rent temporarily due to necessity reasons and thus these answers were combined with the temporary option by the authors of this paper.

[5] The surveys in 2015–2019 included a new option in the question about whom you rent from compared to 2003. The option for people renting on the private market was split into two different categories: rent from arm's length individuals and rent from professional rental companies. The option for the general market in 2003 should include professional rental companies but at the time

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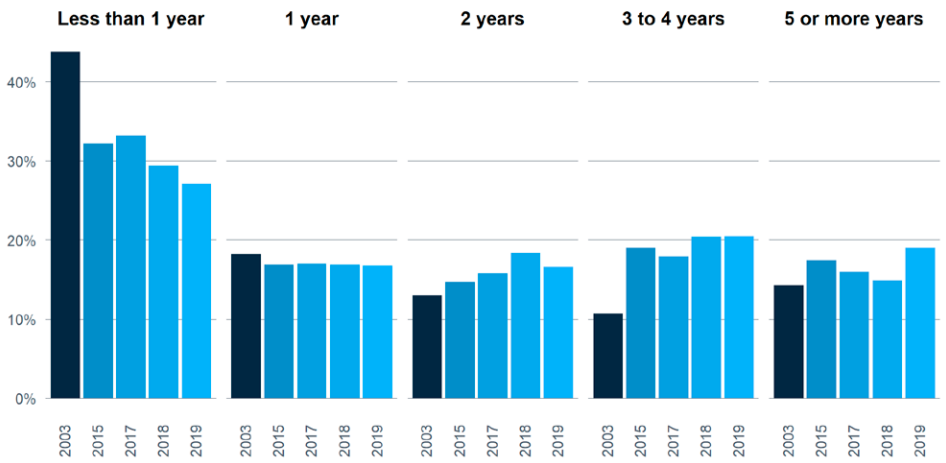

Figure 2. *Current length of tenure, 2003–2019.*
Source: Gallup 2003 and 2015, Zenter research 2017–2019.

These averages do not include the new agent on the rental market, namely the professional for-profit rental companies. Such companies constituted around 11% of the total market in 2015 and between 14–16% in 2018 and 2019. The average length of tenure for renters with professional companies was 2.7 years in 2015 and 3.5 years in 2019. The weighted average of length of tenure on the private market (professional companies and arm's length individuals) was 2.3 years in 2019, a 66% increase since 2003. The increase of professional rental companies leads us to our fourth observation.

Fourth, there has been a rise, or rather an awakening, of large professional for-profit rental companies. Rental companies did exist before the crisis but they were very small and didn't have a large market share. Their exclusion from the early surveys is telling to this fact. Comparing survey data from 2003 to recent years we can see how the structure of the market has changed, figure 3 provides a visualization.

The most evident change is the rise of the professional rental company as well as the decreasing share of municipal social housing and of the private individual arm's length landlord. The share of those renting from friends and family has more or less stayed the same, with an average of 20% in 2015–2019 compared to 17% in 2003. Student housing has also increased from 6% in 2003 to 11% in 2018–2019. In 2003 around 17% of respondents lived in municipal social housing which in 2015–2019 had decreased to 6–8%. The private rental market had a share of 48% in 2003 compared to 58% in 2015–2017 and 52% in 2018–2019 when including the professional rental companies.[6] These companies have a market

their market share was very low.

[6] The question in 2003 did not include an option for private companies. Therefore the share of those, if any, are included in the share of the private market.

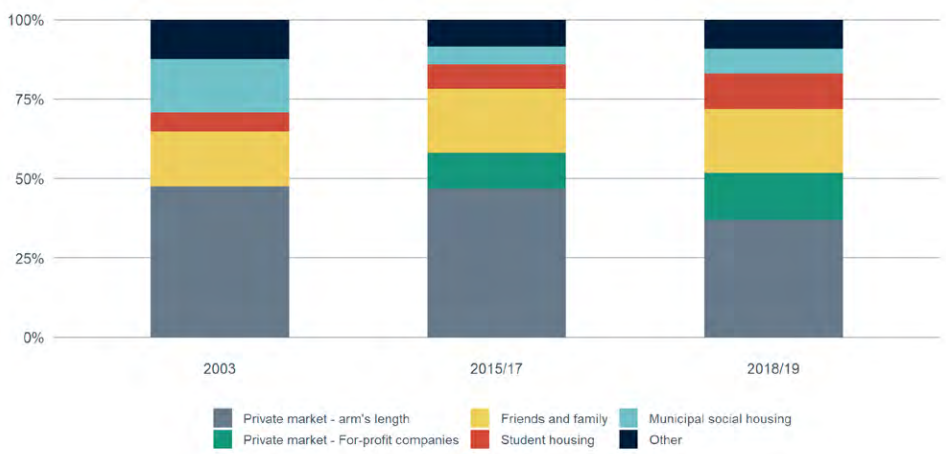

Figure 3. *Shares of different types of rentals, 2003–2019.*
Source: Gallup 2003 and 2015, Zenter research 2017–2019.

share of around 14–16% in recent surveys whereof two companies have a total share of around 8–9%[7] or about 60% of the share of these companies. This might not seem very much but this is the share of the total rental market which includes social and student housing. If we only look at the private market and exclude other types of housing that are rented out at a reduced rate and are not available to all, i.e. social housing, student housing and housing from non-profits, the market share of these companies could have been around 20% during that period and as high as 30% in 2018 and 2019 if we also exclude rentals from friends and family which are typically rented out below market rate.

The rise of the private rental companies can be partly explained by the development of residential property and rental prices after the financial crisis. In the years after the crisis residential housing was believed to be undervalued which attracted investors. In January 2011, real prices in the capital region had fallen by 34–37% from the peak in January 2008, depending on whether the CPI including or excluding housing costs is used for deflation, see figure 4.

In 2014 two companies were formed that in the coming years would merge with smaller rental companies and buy up large stocks of housing available, for example from the Housing Financing Fund, and other apartments already on the rental market.

The increasing share of professional rental companies has brought a few changes to the rental market. One such change is that more households now have a written contract than before. 87% renting from arm's length individuals on the private market answer affirmative to the question whether they had a written rental contract in the beginning of the tenancy or not, compared to 97%-98% of those renting from the professional companies. In 2003 around 80% on the private

[7] This is a rough estimate using the total number of rental apartments reported in annual statements of the two largest companies divided by an estimate of the number of rentals on the market, using Statistic Iceland's most recent number.

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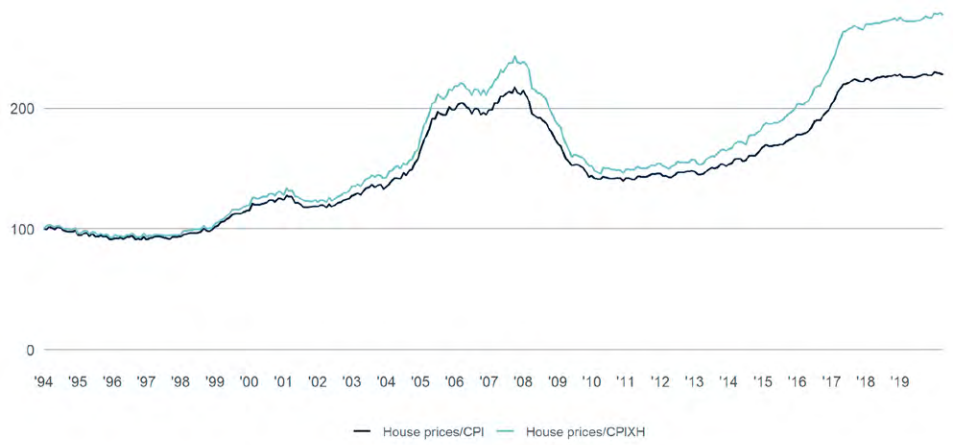

Figure 4. *Real house prices in the capital region, 1994–2019, Index, Jan 1994 = 100. Source: Registers Iceland, Statistics Iceland and authors' calculation*

market had a written contract. When asked whether they had a written contract at the time of question, the percentages in the surveys are very similar. Having a notarized rental contract adds security to the tenant and is a prerequisite to be able to apply for rental allowance, although not needed in the case for social and student housing since 2017.

Professional companies are more likely to initially make short-term contracts than individual landlords on the private market. In 2019, 64% of tenants renting from professional companies had a fixed-term contract between 12–23 months made in the beginning as compared to 51% of those renting from arm's length individuals on the private market. Only 13% had made a non-fixed term contract with the professional companies compared to 27% of those renting from arm's length individuals on the private market.

Although initially shorter, rental contracts with professional companies are renewed to a higher degree than contracts made with private arm's length individuals. The reasons may be several. For example, tenants may sort due to socioeconomic status, with more affluent tenants sorting to professional companies than the traditional market. There are signs in recent surveys that it might be more common for households with higher income to rent from these companies than households in the lower income brackets, maybe due to selection of the companies themselves. Another explanation can be found in that professional rental companies are less likely to demand the apartment for personal needs, than a private individual. The sole purpose of ownership of an apartment by a professional company is to rent it out long term to reduce transaction costs. However, it is not clear if all of these companies are in it for the long term and might as well sell off their portfolio when the price is right.

In 2019, 70% of those renting from professional companies had their contract renewed as compared to 44% renting from arm's length individuals on the private

market. This can probably explain some of the difference in perceived tenant security of those renting from these companies as compared to those renting from private arm's length individuals. Tenant security on the private market has stayed more or less the same in recent years but has decreased compared to 2003. In 2018, 13% renting from professional companies felt that it was rather likely or very likely that they would lose their apartment as compared to 32% of those renting from arm's length individuals on the private market. These results are almost identical in the 2015 survey. In 2003, 22% of tenants on the private market felt it was rather likely or very likely to lose their apartment. To compare this with 2018 and 2015, the weighted average for the private market is 26% and 27% respectively, when taking into account the professional companies. The survey conducted in 2019 can be interpreted to show similar results as in 2018 but it contained a slightly different question and thus cannot be directly compared to the earlier surveys.[8]

The rise of professional companies thus seems to have mitigated the decreasing tenant security on the private market. However, according to the 2019 survey, 91% of those renting from professional companies who had their initial contract renewed were offered a new contract with increased rent. The corresponding share for renters with arm's length individuals as landlords is 51%. There is also a difference in perceived bargaining power. In 2019, 46% of tenants renting from arm's length individuals on the private market considered their bargaining power to be rather strong or very strong and 26% of them rather weak or very weak. Contrasting to this, only 25% of tenants renting from professional companies perceived their bargaining power to be rather strong or very strong and 53% stated their bargaining power was rather weak or very weak.

Between January 2014 and January 2020, the price of rent in the capital region increased by 59% according to Registers Iceland rental price index. If deflated with the CPI, real rent has increased by 40% in the same period. This can probably be explained by the housing shortage that developed in the period due to lack of new housing constructions in the years after the financial crisis along with immigration effects and negative supply shock of long-term rentals due to Airbnb following the tourism boom, where the number of tourists almost quintupled between 2010 and the peak year 2018.

On the one hand, the increase of the market share of professional rental companies may demand according changes to legislation, clarifying tenant rights in tenure security and rent changes. From the perspective of the legislator it may be relevant to distinguish private landlords from each other. In particular, one might want to distinguish those who own apartments in the sole purpose of renting them out from those who do so for a transitional period when the personal

[8] Tenants were asked how much they agreed or disagreed with the statement that they believed they had tenant security. Respondents renting from arm's length individuals answered in the following way: 18% strongly agreed, 35% rather agreed, 7% neither/nor, 11% rather disagreed and 15% strongly disagreed. Those renting from professional companies were a little more positive or: 18% strongly agreed, 44% rather agreed, 17% neither/nor, 11% rather disagreed and 8% strongly disagreed.

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Figure 5. *Average number of moves during past, 10, 6 and 3 years, 2003–2019. Source: Gallup 2003 and 2015, Zenter research 2017–2019.*

need of the apartment is absent. On the other hand, the empirical observation is that professional rental companies, even in absence of legislation, offer a larger perceived tenant security than the traditional rental market.[9] Tenant security, realized in fewer moves by renters, is what we turn to next.

Fifth, the number of times people on the rental market have moved is trending downwards. In 2003 the average number of moves was 4.3 in a 10 year period. In 2019 this average had decreased to 3.6 moves. The same trend is visible for other time frames, 2.9 moves in the last 6 years in 2003 compared to 2.6 moves in 2019 and 1.8 moves in the last 3 years in 2003 compared to 1.5 moves in 2019. Regardless of chosen time frame, the average number of moves for households on the rental market have been declining over the past two decades, as depicted by figure 5. In 2019, the number of moves for those renting from a professional company was significantly lower than the number of moves of those renting from private arm's length individuals for both the past six years and three years.

The decreasing number of moves is in line with the observation of increasing length of tenure. These two observations, decrease in moves and increase in length of tenure, are interesting, especially when taking into account the rapid rise of Airbnb short-term rentals from 2014 to 2018. Mermet (2019) finds evidence of direct displacement where the landlords cancel rental contracts in order to turn the property to an Airbnb-rental. Elíasson and Ragnarsson (2018) estimated

[9] There were some changes made to the legislation in 2016 but only minor changes which are relevant to this discussion. Notice period for the termination of a rental contract for single rooms was increased from one month to three months for both parties. The notice period that for-profit rental companies must give their tenants when terminating a contract was increased from 6 months to 12 months, if they have lived in the apartment for a year. The longer notice period a landlord must give tenants who have lived in the same rental for 5 years used to be 12 months but was abolished. It is now the same regardlesss of length of tenure, 6 months. This, however, hasn't affected the perceived tenant security as the results in 2015 and 2018 are almost identical.

that around 1700 apartments from the residential housing stock had been taken over by Airbnb activity by the end of 2017, 1200 thereof in the capital region, if measured as apartments for more than 150 nights during a twelve month period. This amounts to around 10% of the estimated number of homes on the general rental market at the time. Legislation with the aim of restricting Airbnb-rentals was implemented in Iceland in 2017.

These past observations, regarding the increased length of tenure, decreased number of moves and increase of professional rental companies all speak to the fact that tenant security can increase without much changes to legislation. However, tenants on the private market might not feel that way as perceived tenant security has decreased a bit since before the crisis. One should also recall that we are looking at averages, which can of course hide individual cases where such legislation could have been fruitful. In addition, observations are not unambiguously pointing at improvements for tenants. As mentioned, while offering greater possibilities to keep on renting, professional companies are charging higher rents in renewal. Again, this speaks in favor of a possible duality in legislation, differing between the intention or identity of the landlord.

Sixth, from 2003 there has been a substantial change in how likely tenants believe it to be they will stay on the rental market. The share of renters stating it to be likely they are still on the rental market in a year has increased from 72.5% in 2003 to 89.3% in 2019. Households who believe it be unlikely or almost unthinkable that they are still on the rental market within a year has, in the same time period, decreased from 21.8% to 8.2%. These results reflect the total rental market. When we look at the private market only the differences are even larger. The share of households who believe it to be almost certain or likely has increased from 66% in 2003 to 90% in 2019, and those stating it to be almost unthinkable or unlikely has decreased from 27% to 8%.

When asked about longer time horizons the trend is the same but the difference becomes even clearer. These differences are depicted in figure 6. Panel A present the results for the rental market as a whole, including all types of rentals. It can clearly be seen that households expect to stay on the rental market to a greater extent in the 2019 survey than in the 2003 survey. Panel B present the results broken down for the private rental market only. The picture becomes even clearer, and we might hypothesize that the temporal changes are driven primarily by this market.

What has been presented here could be an indicator that the market is stabilizing as a long-term solution for a larger group of households. The explanation could entail that they are trapped on the rental market, i.e. they cannot for some reason enter the ownership market. That would mean we have a larger group of households who do not qualify for subsidized housing, but at the same time cannot enter the ownership market. This argument gains further strength if we look at the fact that it has become increasingly more difficult to save the own equity required to buy an apartment. This difficulty is likely driven both by the increasing burden of housing cost for renters and increasing prices of housing.

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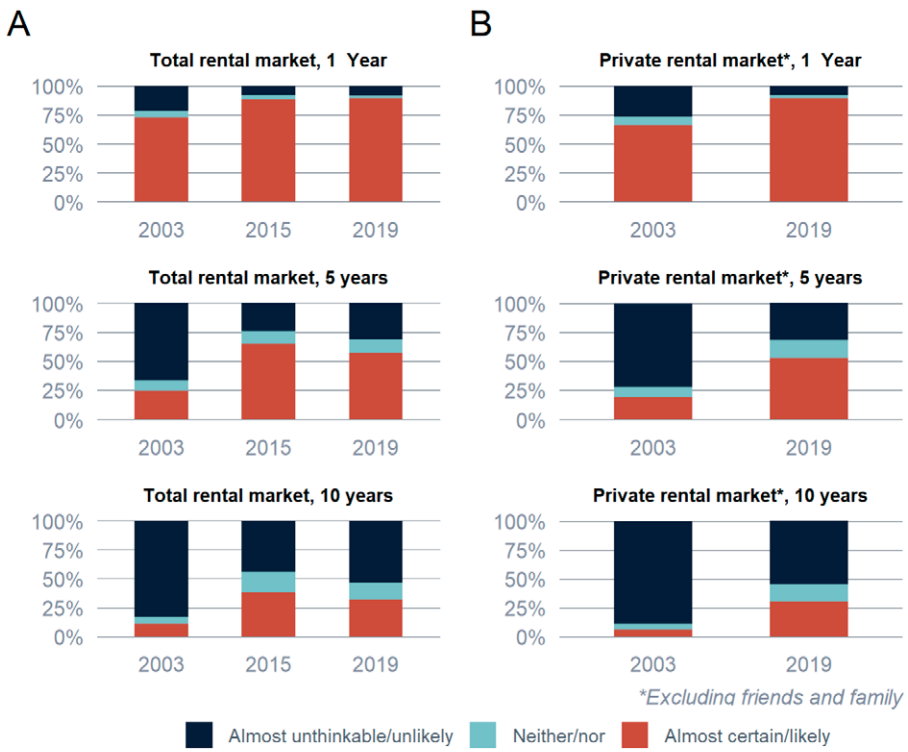


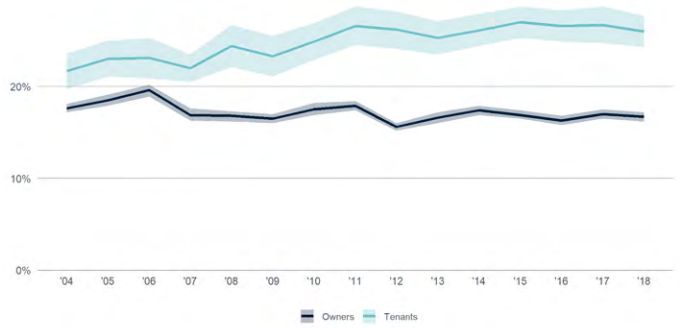
Figure 6. *How likely households perceive it to be they will continue renting. Source: Gallup 2003 and 2015, Zenter research 2017–2019.*

Panel A of figure 7 depicts the share of households on the rental market and homeowners living with housing costs that exceed the overburden rate. The overburden rate is the share of housing costs of 40% or more of disposable income, as defined by Eurostat. Panel B depicts the median housing cost burden borne by households. The housing cost burden is the average share of disposable income spent on housing. The share of households on the rental market with housing costs of 40% or more of their disposable income increased from 12.6% in 2007 to 26.4% in 2015. However, in recent years the cost burden has stabilized, or even trended downwards due to a rapid rise in purchasing power. According to Statistics Iceland's income accounts, between 2007 and 2015, purchasing power of disposable income per capita declined by 11.5%, from 2015 to 2018 it increased by 13.2%.

That more households have fewer options is an obvious case in favor of changing legislation. As we will get into in the next section, having the option to move is a factor that affects the bargaining power between renters and landlords. One purpose of legislation on the rental market is to balance such bargaining powers.

Seventh, the types of households who reside on the rental market have

Panel A



Panel B

Figure 7. *Housing cost overburden rate and cost burden, by tenure, 2004–2018. Source: Statistics Iceland EU-SILC survey 2004–2018.*

changed. For example, the share of households consisting of a single parent has changed the most. Comparing averages between the two periods 2004 through 2008 on the one hand and 2012 through 2016 on the other, the share of single parent households residing on the market has increased from 32% to 50%, meaning half of such households are renters. The number of two-parent households with children is also increasing, from 9% in the pre-financial crisis years to 17% in the later period.

There is also a difference between the genders. The share of households consisting of a single adult male have increased by over 14 percentage points, from 35% to 50%, while the share of households consisting of a single adult female has slightly increased from 26% to 30%.

From 2004 to 2016 there is also a clear increase in the share of individuals in the lower income brackets who reside on the rental market, see figure 8. In 2004, 24.9% of individuals with income in the lowest 20% of the income distribution were on the rental market. By 2016 this share had increased to 44.2%. This is for the total rental market, however if only the general rental market is taken into consideration, there is a 98% increase in the number of individuals in the lowest 20% of the income distribution who reside on the general rental market, from 9.6% in 2004 to 19% in 2016.

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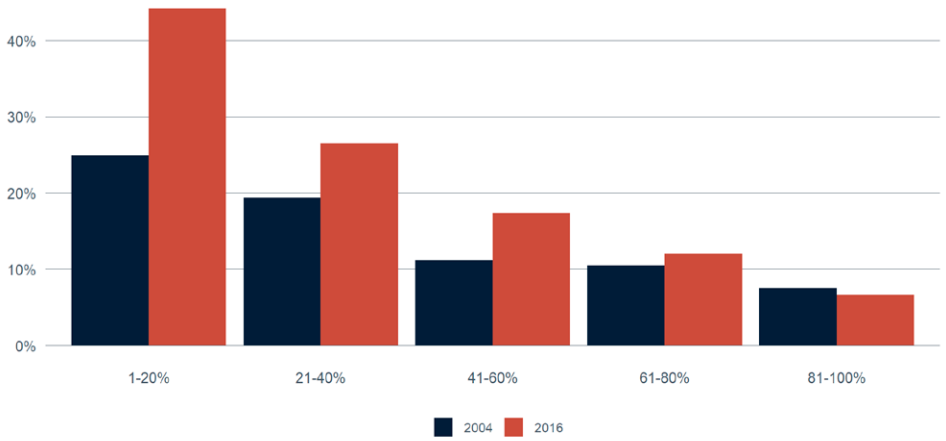

Figure 8. *Share of individuals on the rental market by income distribution. Source: Statistics Iceland EU-SILC survey 2004–2016.*

Summing up, there is vast evidence of an Icelandic rental market undergoing structural change. Most notably from a perspective of legislation may be the rise of professional companies devoted at renting out apartments, coupled with an increase in the number of households, and types of households, and the share of lower income individuals residing on the rental market. Such changes may warrant corresponding changes in legislation.

4 The Icelandic legislation and possible motives for changes

In the following section we will provide a brief description of the current legislation on the Icelandic rental market, Rent Act, No. 36/1994, in the three dimensions previously described.[10] The discussion will be paired with what changes may be motivated, taking the previous discussions of the role of rental markets, and the argued structural changes of the Icelandic rental market, into account.

Tenant security

In Iceland, rental agreements can either be fixed-term or valid until further notice (§9). A contract is regarded as valid until further notice unless otherwise stated. According to §10, if a written contract has not been made, the agreement is regarded to be valid until further notice. The rent is then the amount that the landlord can prove that the tenant has agreed upon.

As stated in §55, both parties can terminate a contract valid until further notice. Termination should be done in writing and sent in a verifiable manner. According to §56, the notice period for termination of contracts of this type is equal for both parties, six months. However, if the tenant has lived in the apartment for over twelve months and is renting from a professional for-profit company then

[10] The Rent Act, No. 36/1994 was ammended by Act No. 65/2006, Act No. 66/2010, Act No. 162/2010, Act No. 77/2011, Act No. 126/2011 and Act No. 63/2016.

the landlord must give a twelve month's notice. The notice period for single rooms is three months for both parties.

Fixed-term or temporary contracts end at the agreed date and cannot be terminated during the time of contract unless certain pre-agreed circumstances apply which have to be stated clearly in the contract (§58). In which case both the tenant and the landlord have a three month's notice. There is no minimum period for temporary contracts, however, in the case of a tenant renting from his employer the period of tenancy cannot be less than the period of employment (§50).

According to §59, if eight weeks pass from the point the tenancy ends according to the termination of either a contract valid until further notice or fixed-term contract, but the tenant continues renting the residence and otherwise fulfills the requirements of the contract, the contract will be automatically renewed as a contract valid until further notice, as long as the landlord hasn't specifically asked the tenant to vacate the property after the contract ended.

A landlord can terminate a contract without notice under certain circumstances stated in §61, for example if the tenant fails to pay rent for some time or due to other breaches of contract. The tenant has also the right to do the same if the landlord for example hasn't fulfilled his duties regarding the rental property (§60).

During 2020 discussions has been ongoing regarding changes in tenant security. Among discussed changes are the possibilities for landlords to terminate rental contracts. In practice, the law will demand landlords to show reason for termination of contracts valid until further notice. Among the suggestions are that landlords can only terminate a rental agreement if the rented property is within the same premises as the landlord resides, if the apartment is rented out furnished or if the landlord needs the apartment for herself, a relative or if she intends to sell it or carry out large renovations.

Moving towards a stronger tenant security may very well be warranted given the above presented information of changes on the rental market. We have argued that rental legislation should cater to both households who see the rental market as a transitional solution and to those who see it as a long-term solution. The latter group has been growing in Iceland. More households are on the rental market, they stay longer and they expect do so in the future. At the same time, proposing possibilities for the landlord to terminate a contract to use the premises herself ensures a difference between private landlords and professional for-profit rental companies, as the latter will have difficulties arguing for the need of a specific apartment.

Changes to rents under contract

Icelandic legislation gives a high degree of freedom of contract both regarding the initial rent and rent increases under contract. According to §37, the landlord and the tenant are free to negotiate how the rent changes during the time of contract. It is, however, common practice in Iceland that rent under contract follow changes in the consumer price index. However, the law requires the rent to be considered fair and reasonable with respect to both parties and the housing complaints committee can decide whether it is or not.

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The definition of fair is rather vague. According to explanations given in the statement with the original law proposal of the current rental legislation what should be considered fair should always depend on location, circumstances and the current state of the rental market.[11] The main reference should be the market rate of comparable rentals but other factors can be taken into account, such as: operating costs, interest expenses, taxes, type and condition of the property and cost of maintenance. A complaint can be filed with the housing complaints committee if for example the tenant wants to dispute the rent increase.

In contracts valid until further notice, conditions for rent changes have to be clearly stated at the beginning. The landlord can however terminate such a contract, with appropriate notice period, to renegotiate the rent. The same applies with fixed-term contracts except they cannot be terminated before they expire unless it is clearly stated in the contract under which circumstances they can be terminated.

This latter possibility, termination of rental agreements in order to increase rents is an aspect that may warrant changes, specifically if the legislator wants to move in a direction of larger tenant security. As has been discussed above, there is a case to restrict possibilities to terminate rental agreements from the landlord side. The current legislation, that leads to incentives to terminate contracts to increase rents can however be taken as evidence that such problems may be solved by restricting termination possibilities. However, the arguments for structural change of the Icelandic rental market shows that new types of households enter the market, specifically households with children. At the same time, households fail to see any options to renting. This implies that there might be a case for restrictions of rent increases within contracts as well. This is a difficult topic though, as such restrictions will become a re-distributional policy, and such policies have other substitutes that may be more accurate in terms of what households receive help. For example, the legislator could choose to not restricts rents within contracts and instead help households with housing allowances or subsidize construction of rental housing for lower income households.

Changes to rents between contracts

There are not many restrictions on rents for new contracts in Iceland. As with changes to rents within contracts, the same limitation holds, rents should be fair (§37 and §53). When a contract expires and the landlord wishes to offer the apartment for rent again (for at least a year), the tenant has priority (§51). However, under certain circumstances which are clearly stated in the legislation the priority does not apply, for example if the landlord intends to sell the apartment within 6 months after the contract expires or make it available for relatives.

When a contract is renewed the conditions of the new contract should be the same as in the original as long as those conditions can be considered fair. The law assumes that it is likely that the level of rent in the original contract is fair and the party that disputes the current level has the burden of proof.

[11] https://www.althingi.is/altext/117/s/0160.html

5 Discussion and conclusions

With this paper, we have aimed at discussing the legislation governing the Icelandic rental market. In particular, we have been interested in structural changes to the Icelandic rental market and how such changes may warrant changes to the current legislation. It should be stressed that the conclusions we will draw are based on the historical changes of the rental market up to date. Changing economic conditions, such as globally falling interest rates or increased unemployment in Iceland, may warrant other conclusions.

In our argumentation of a structurally changing rental market in Iceland we put particular emphasis on certain changes. For one, the traditional Icelandic rental market based on individual households subletting a second home has begun to transform into a market where professional rental companies plays a larger role. Such companies do offer tenants greater security when it comes to length of tenure, but they offer on average less security in terms of changes to rents within tenure. Since more households are on the rental market for longer, with the expectancy of staying there, it may be warranted to implement corresponding changes to the Icelandic legislation of tenant security.

In terms of transaction costs, there is growing tendency for households to stay on the rental market for a longer period of time. This implies that there is a possible argument to protect them from the necessity to move, thus restricting landlord's possibilities to terminate contracts. There is also a need for a discussion of restrictions to rent increases within contracts. This can be motivated partly as way of ensuring that tenant security becomes stronger. It may also be motivated by changes in what types of households reside on the rental market. There has been a shift resulting in families with children, particularly single-parent households, residing on the rental market to a larger extent than previously. There is also a shift in perceived options, households on the rental market see fewer options than before. This implies there might be more households on the rental market today in need of financial help. Such financial help can be provided through legislation directed at restricting rents, or through monetary re-distribution via housing allowances.

In summary. The changing structure of the Icelandic rental market can at least be argued to demand changes in tenant security. It may however be warranted to differentiate between types of landlords, where landlords who are private individuals with one extra home are more likely to exit the market if restrictions become too harsh, compared to private for profit companies who can bear a larger financial risk. However, it is possible that some companies might sell their properties if legislation becomes unfavorable.

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Impact of Shopping Malls on Apartment Prices: the Case of Stockholm

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Abstract. *The number of shopping malls, as an important type of commercial facility, is growing dramatically. They have gradually become one of the most dominant factors that can influence people's daily lives as well as a city's economic development. The willingness to pay for dwellings is also primarily associated with the surrounding commercial layout. Hence, it is of interest to apply a quantitative perspective to further investigate the relationship between shopping malls and housing prices. This study aims to analyse how the prices of condominiums are affected by proximity to shopping malls. Two aspects are considered and examined in the empirical research, namely proximity to a shopping mall and the number of shopping malls within a one-kilometre radius. We try to determine if there is any price premium for those apartments near a shopping mall or with more shopping malls in the neighbourhood. In this empirical study, 39 shopping malls in different locations in the county of Stockholm, Sweden, are utilised. The sample of transactions consists of more than 300,000 apartments. By using the traditional hedonic expansion model, the results show that there is an inverse relationship between apartment prices and distance to a shopping mall. Moreover, the number of shopping malls is positively correlated with apartment prices. However, the impact has declined over time. The results also suggest that the impact is highly localised and is larger for small apartments.*

JEL-code: *R21, R23, R31*

Keywords: *hedonic, shopping mall, spillover effect*

1 Introduction

The term shopping mall refers to one or more buildings composed of a complex of shops or other facilities. Shopping malls can exist as the hub of urban structure and the foundation of retail economies. The concept originated in the U.S. and has now become a widespread modern retail format. In recent years, there has been a quite rapid increase in the development of shopping malls worldwide, as is demonstrated in the number and size of shopping malls.

However, shopping malls have been challenged by the rise in online shopping in recent years. The form and content of shopping malls are also expected to change in the future. Hence, global trends have caused malls to change the role they play in people's daily lives. In order to adapt to all of these changes and meet the needs of consumers, shopping malls are no longer focused solely on shopping. The idea of shopping has gradually evolved from being purely represented by unavoidable errands to becoming the main segment of the urban recreational lifestyle (Fasli et al., 2016). When people choose to pay a visit to shopping malls today, they are expecting experiences that go way beyond simply buying the goods they need and going back home. Thus, developers behind shopping malls are seeking ways to make shopping and purchasing more of a leisure pursuit (Howard, 2007). Accordingly, recently developed shopping centres try to meet these new demands using a variety of methods. These new shopping complexes are viewed as facilities that can provide the general public with both convenience and amusement. Therefore, it is reasonable to assume that living closer to a shopping mall provides people with better consumption flexibility as well as enjoyment. Thus, proximity to a shopping mall would theoretically have a positive effect on housing prices.

Seago (2013) argues that when it comes to the effects of commercial amenities, such as shopping malls, the relationship can still be unclear. Some previous studies have been done to investigate this topic. However, most of the earlier findings focus mainly on other aspects. For example, Carter (2009) discussed rents and location, while other studies primarily examined the role that the shopping mall plays in society as a whole as well as its role in urban development (Ozuduru, 2013; Fasli et al., 2016). Moreover, studies also investigate how the mall has become the catalyst of the urban lifestyle (Erkip, 2005).

There is no question that shopping malls have the potential to generate externalities. However, there are only limited studies on how the externalities of a shopping mall would influence the nearby housing market. Researchers have found both positive and negative effects of proximity to a shopping mall (see, e.g. Colwell et al., 1985; Sirpar, 1994; Des Rosiers et al., 1996; Pope and Pope, 2015; Zhang et al., 2018; Kurvinen and Wiley, 2019).

The impact of shopping malls on surrounding property values was examined by Des Rosiers et al. (1996), which mainly focused on proximity and the secondary effects. This study analysed the impact of 87 shopping malls of different sizes on the prices of approximately 4,000 residential properties. The results indicated a positive relationship between the size of a shopping mall and residential housing prices. Pope and Pope (2015) analysed the effect on property values after a Walmart location opens in the immediate area. They note that resistance to establishing a Walmart is usually high, but their study shows that the impact on property values is positive and relatively significant.

Two more recent articles include Zhang et al. (2019) and Kurvinen and Wiley (2019). Zhang et al. (2019) analyse the capitalisation rate of shopping malls in property values in Hangzhou, China, between the period 2011–2015. They investigated the effect before construction, during construction and after the mall had opened. They find that there is a substantial effect after a shopping mall

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opens, but the effect is minimal before opening. In a recently published article by Kurvinen and Wiley (2019), they analyse the impact of a newly established retail development on housing values. By analysing 130,000 observations over 15 years in Helsinki, Finland, they find that the establishment has a relatively local effect within a radius of 500 metres and that the effect decreases at a radius of 500–1,000 metres.

This study aims to investigate how the prices of condominiums will be affected by the proximity of shopping malls. Two aspects are considered and examined in the empirical research, namely proximity to a shopping mall and the number of shopping malls. We attempt to determine whether there is a price premium for apartments near a shopping mall or with more shopping malls in the neighbourhood within a 400-metre radius. Other studies have revealed an inverse relationship between housing prices and distance to a shopping mall. We will compare our results and contribute with further discussion.

This study contributes to the body of research in the field. Determining the precise effect of shopping malls on apartment values will assist authorities and developers in making better decisions. Schulz (2004) asserted that this type of housing information could be significantly beneficial for real estate developers, banks and policymakers. For instance, this would provide policymakers with clear insight when they are designing the urban structure. It would also be highly beneficial for real estate developers so they may examine their development strategies as they seek financial gain in the volatile commercial real estate market. Both private and institutional investors may also be interested in the potential findings of this study since these purchasers could use this information to compare their potential targets better.

As discussed above, the impact of shopping malls on property prices has not yet been thoroughly examined. The purpose of this paper is to fill the gap in this knowledge by conducting various kinds of regression analysis to examine the relationship between shopping malls and property prices.

The structure of the remainder of the paper is as follows. Section 2 elaborates on the methodology and the model used in this study. Section 3 presents the data and the study area. Sections 4 and 5 present the empirical analysis and test for parameter heterogeneity. Finally, Section 6 presents our conclusions.

2 The hedonic price method

Hedonic price theory

An individual's residence is one of the most important parts of human life. Thus, the housing sector is essential for the stability of our society as well as for economic development. Therefore, it is of interest to analyse the dominant factors that can affect the housing market. One method used to analyse the relationship between housing values and amenities is the hedonic price method. The hedonic price model is widely used in the housing market to analyse property values (see, e.g., Brunes et al., 2020; Walsh et al., 2011; Zhang et al., 2019; Bayer et al., 2009; Palmquist, 2006; Deaton and Hoehn, 2004).

The idea behind this paper is to investigate the relationship between housing prices and housing characteristics on a micro-level. Monson (2009) states that buildings are comparable to a collection of goods sold on the market, where each building characteristic is considered equally when the overall transaction price is determined. Regression analysis and hedonic modelling are valuable tools that allow real estate professionals to determine that correlation and to predict future transaction prices. Hence, the hedonic price model is the method we apply in our empirical analysis to understand the differences in housing prices caused by proximity to shopping malls.

According to Rosen (1974), the principle is that goods differ in their attributes, which can be confirmed by the observed differences in their prices. The expected value is investigated by the use of structural, locational, and macro characteristics (Wilhelmsson, 2002; Chau & Chin, 2003). Structural characteristics are, for example, size of the dwelling and number of rooms; locational characteristics are, for example, distance to CBD, and proximity to public transportation; and macro characteristics control for aggregate price movement over time.

In a simplified form, the hedonic price equation is as follows:

Price = f (structural attributes, proximity to shopping mall, other locational attributes, macro characteristics)

where proximity to a shopping mall is of primary interest in this study. Rosen (1974) showed that the coefficient of the hedonic price equation can be interpreted as the implicit price of the attribute and that this implicit price is equal to the marginal willingness to pay for the attribute.

Specification of the price equation

The hedonic price model regresses housing price (Y) to a set of observable characteristics (Xs), which can be expressed as $Y = \beta X+\alpha$, where Y is a vector of observations on the apartment price, X is a matrix on the property attributes. β is a vector of parameters concerning the explanatory variables (coefficients, the implicit marginal price of each attribute), and α represents random error terms, which reflects unobserved changes in housing prices.

There are different forms of the hedonic model, such as linear models, semi-log models and double-log models (Morancho, 2003). There is nothing, in theory, to suggest which form of the hedonic price equation is preferable. The functional form you choose is usually an empirical question. We have chosen to use the Box-Cox transformation of all continuous variables that are strictly positive. For the dependent variable, we test whether we need to transform the variable with a natural logarithm transformation. We do the same for the independent variables. This means that we test four different functional forms, namely a linear relation, log-linear, inverted log-linear and a log-log relation.

It is not only the functional form that is important when specifying the hedonic price equation. The choice of dependent and explanatory variables is, of course, at least as important. The transaction price will be used as the dependent variable; that is, we use prices set on the market, not valuations.

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The central research question is does proximity to a shopping mall affect housing values and to what extent. To be able to isolate this effect, all relevant variables must be included in the hedonic price equation. Of course, the question of causality, or the absence of causality, is always an issue that is important to consider and discuss. If we omit important variables in the hedonic price equation, it can create omitted variable bias that makes the model not exogenously given (see Wooldridge, 2006). We have solved this issue by including the most important explanatory variables both in terms of characteristics in the property and the apartment but also in the geographical location by including distance to CBD, proximity to public transportation, dummy variables for the municipality and including the coordinates as explanatory variables. We assess that this has reduced the risk of omitted variable bias and spatial dependency in the form of spatial autocorrelation and spatial heterogeneity (see Wilhelmsson, 2002). For the latter, we have also tried to control by including different forms of interaction variables. That is, we test if there exists parameter heterogeneity. We analyse whether the estimates are constant north and south of the CBD and if the degree of impact is affected by different segments of the housing market, such as the size and value of the apartment. We have also tested whether proximity to a shopping mall has greater significance closer to the shopping mall and whether this value has changed over time.

Both the inclusion of coordinates and the interaction variables can be seen as a variant of the expansion model developed by Cassetti (1972) in general terms and by Jackson (1979) in an intraurban context. This model has been implemented in many articles since it was developed, for example, Can (1992) and Bitter et al. (2006). Bitter et al. (2006) analyse the expansion model and compare it with the geographically weighted regression model. They conclude that the latter is better than the former. Clapp (2004) includes latitude and longitude directly in the hedonic price equation in his benchmark model. This is also done in Walsh et al. (2011), Shimizu (2014) and Hill and Scholz (2018). Clapp et al. (2004), on the other hand, include both latitude, longitude and their product in the price equation. Owusu-Ansah (2018) uses the expansion method in the construction of the property price index. Similar to his analysis, coordinates, square coordinates and the product of the coordinates are also included in our model. Of course, it can be difficult to interpret the different parameter estimates regarding the coordinates individually. Since the main purpose of the analysis is to estimate the impact of proximity to shopping malls on housing prices, this is considered a minor issue.

Rather than including the coordinates directly in the hedonic price equation, Fot et al. (2003) created an interaction variable where the coordinates interact with all included continuous independent variables. A similar analysis can be found in Pavlov (2000). Zhang et al. (2019) do not use the coordinates directly in the hedonic price equation but instead use the coordinates as variables to explain the variation in the residuals. Non-significant estimates are interpreted as lacking spatial dependence. We will use the corresponding method to test for spatial dependence in the residuals.

The lack of good measures of access to public transportation and accessibility can, of course, hamper interpretation or our estimates. Many shopping malls are co-located with public transportation, so the effect we observe may depend more on access to public transportation than access to the shopping mall. Jackson (1979) aimed to find a better, more general way to account for accessibility in housing prices. Since we explicitly lack information on accessibility in our study area, we include coordinates together with distance to the CBD, and proximity to subway stations to capture accessibility in the region. As in Cavailhès et al. (2009), we also include fixed municipal effects to control for missing variables that are fixed between municipalities and constant over time. Ross et al. (2011) also show in their Monte-Carlo simulations that including coordinates and square of the coordinates is recommended over the inclusion of distance variables if there is uncertainty in these variables. However, in addition to the above variables, we have also included a variable that measures whether the apartment is adjacent to a subway station.

There may also be a simultaneity problem. One must consider whether a shopping mall location was chosen where the home values are higher, and thus high potential consumer demand, or are the high housing values a consequence of the proximity to the shopping mall? Here we argue for the latter as most of the shopping malls have been established for many years. Some of the more newly established shopping malls also have a non-central location, which would contradict the hypothesis of reverse causality.

3 Data and the study area

We use Stockholm as a case study to estimate the relationship between housing values and proximity to shopping malls. Stockholm County (Swedish: Stockholms län) is a county (or län in Swedish) on the coast of the Baltic Sea in Sweden, which has 26 municipalities (kommun). Their location is shown in Figure 1 below. In this study, all the data is limited to this specific area, which has a total population of 2,377,081 (SCB, 2019). The population density is 360/km^2, which makes it the densest county in Sweden.

In the estimation of the hedonic price equation, it is important to have a large number of the historical cross-sectional transactions of dwellings with actual transactional prices. The data in this study comes from Svensk Mäklarstatistik AB and covers a period from 2006 to 2019. Mäklarstatistik AB is a private unit that organises real estate agents and collects data on real estate transactions. The data consists of over 95% of the housing transactions that take place via brokers. All nationwide brokerage chains and the absolute majority of others report all housing transactions to Svensk Mäklarstatistik. This transactional database contains information on apartments, including size, monthly fees paid to the co-operative association, floor level, height of the property, number of rooms, municipality codes and latitude as well longitude (coordinates). In total, there are 336,914 observations.

In terms of the shopping malls, we have included 39 shopping malls from across the county to get a reliable and convincing result. All of these malls are

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Figure 1. *The county of Stockholm comprises 26 political municipalities.*

scattered across different zones or regions in our target area. Shopping mall data comes from the Swedish Shopping Center Directory provided by the company Datscha. We have included shopping malls they classify as a city mall, outlet mall, regional mall, regional retail park, super-regional mall and theme centre. We exclude locations the directory classifies as a community centre or neighbourhood centre as our focus is on shopping malls. Table 1 below is a summary table of the malls included with location information, such as longitude and latitude, and opening year. The latter is important since shopping malls that have only recently been opened or sold should not be included when calculating as the crow flies distances between residences and shopping malls.

Descriptive statistics

The final database consists of 325,973 apartment transactions and ten independent variables. Among these ten variables, distance to a shopping mall, the number of shopping malls within a 400-metre radius and binary buffer zone will be our key variables of interest. The variables living space, floor level, height, number of rooms, proximity to a subway station, and distance CBD will be our control variables.

Before presenting the descriptive statistics, we have created two new variables, namely proximity to a shopping mall and the number of shopping malls

Table 1. *Included shopping malls in the county of Stockholm.*

Region	Mall name	Latitude	Longitude	Opening year
1	Barkaby Handelsplats	59.4236	17.8320	1999–2001
2	Bredden	59.4994	17.9275	1985
3	Bromma Blocks	59.3556	17.9531	2010
4	Centralstation	59.3307	18.0579	N/A
5	Farsta Shopping Centre	59.2431	18.0884	1960
6	Fältöversten	59.3396	18.0892	1973
7	Gallerian	59.3308	18.0654	1976
8	Haninge Centrum, Handen	59.2005	17.9839	1964
9	Heron City	59.2671	17.9081	2001
10	Hornstullgallerian	59.1856	18.0202	2013
11	Huddinge Centrum	59.2358	17.9795	1960
12	Jakobsberg centrum	59.4232	17.8367	1959
13	Kista Galleria	59.4023	17.9435	1977
14	Kungens kurva handelsområde	59.1623	17.5456	1965
15	Kungens kurva shoppingcentere	59.2689	17.9171	2014
16	Liljeholmstorget	59.3098	18.0195	2009
17	Lindhagenshuset	59.3372	18.0101	2009
18	MOOD Stockholm	59.3343	18.0671	1978
19	Mörby Centrum, Danderyd	59.3989	18.0333	1961
20	Nacka Forum, Nacka	59.3100	18.1626	1989
21	Nordiska Kompaniet	59.3332	18.0670	1915
22	PK-huset	53.3333	18.0711	1974
23	Ringen Centrum	59.3083	18.0732	1982
24	Sickla Köpkvarter, Nacka	59.3040	18.1228	1994–1995
25	Skrapan	59.3124	18.0717	2007
26	Skärholmen Centrum (SKHLM)	59.2757	17.9057	1968
27	Sollentuna centrum	59.4986	17.7859	1975
28	Solna Centrum, Solna	59.3610	17.9971	1965
29	Stinsen Shopping center	59.4371	17.9349	1989–1991
30	Stockholm Quality Outlet	59.4167	17.8571	1998
31	Sturegallerian	59.3361	18.0712	1989
32	Tyresö Centrum, Tyresö	59.2438	18.2247	1965
33	Täby Centrum, Täby	59.4451	18.0588	1968
34	Westfield Mall of Scandinavia	59.3692	18.0032	2015
35	Vällingby Centrum	59.3463	17.8644	1954
36	Väsby centrum	59.5185	17.9139	1972
37	Västermalmsgallerian	59.3346	18.0301	2002
38	Åhléns City	59.3323	18.0614	1964
39	Åkersberga centrum	59.2720	18.1810	1976

within a one-kilometre radius. These variables are the main variables we analyse here. The proximity to a shopping mall is constructed using Euclidean distance, which can be used to calculate the distance between any two points using their coordinates. The formula is

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$$d(q,p) = \sqrt{\left(q_1 - p_1\right)^2 + \left(q_2 - p_2\right)^2},$$

where q_1, q_2 are the coordinates for the shopping malls, and p_1, p_2 are the coordinates for all the individual properties. Hence, the distance from each apartment to all the shopping malls can be calculated. The shortest distance to any of those gives us the closest proximity to a shopping mall from that specific dwelling. In terms of the variable number of shopping malls, it is the number of shopping malls around the apartment within a certain proximity. A 400-metre radius is chosen in this case. Here, we assume that this distance is considered to be close proximity.

Several other factors can influence housing prices. As mentioned above, we need to include those variables to get a more accurate analysis. Here, we divide the housing characteristics into three groups: structural characteristics, location characteristics, and macro characteristics. Structural characteristics are the intrinsic characteristics the property itself possesses, such as the size of the dwelling. Location characteristics measure the accessibility of the property relative to its location, such as accessibility to public transportation. Neighbourhood characteristics are equally important in terms of the determination of housing prices. A good neighbourhood can be a price catalyst. For example, the view of the housing or surrounding facilities can be important.

Structural characteristics are essential since the condition of the properties can have direct effects on how people perceive the property and how much they are willing to pay for, for example, size, floor level and the number of rooms. All of these attributes must be controlled for in the model. Locational characteristics refer to the different locations of housing within a city or a municipality. Different locations can differ significantly in housing prices because of their degrees of accessibility to the most frequently visited places. Stockholm has a relatively distinct geographical pattern. The distance to central locations, i.e., the Central Business District (CBD), refers to Sergels Torg here, which represents the most central public space in Stockholm. Accessibility is also an essential variable that can add value to an apartment. In addition to distance to CBD, we have also included proximity to a subway station (measured as a buffer zone of a 400-metre radius around the subway station). In Table 2, we present descriptive statistics regarding the variables we use in the analysis.

The number of observations that will be used in the analysis is 325,973. Some observations have been dropped due to lack of information and sometimes because the observations are outliers. The total housing price ranges from SEK 595,000 to 9,400,000 with a mean of SEK 2,729,766. The average housing price per square metre is from SEK 8,666 to SEK 110,000 with a mean of 43,890 SEK. Thus, the variation is relatively high in the dependent variable. The size and monthly fee of the properties also show a relatively high variation. The average size of the dwelling is 65 square metres, with a standard deviation of 24 square metres. The average number of rooms is around 2.5 rooms, but not surprisingly, the variable is highly correlated to the size of the apartment (see the correlation matrix in the appendix). The average monthly fee is almost SEK 3,500 with a variation

Table 2. *Descriptive statistics (mean and standard deviation).*

Variable	Abbre-viation	Average	Standard deviation
Price	Price	2,729,766	1,644,259
Size	Size	64.56	23.77
No. of rooms	Room	2.45	0.99
Monthly fee	Fee	3444.90	2490.01
Height	Height	4.16	2.74
Floor level	Floor	2.58	1.97
Distance to CBD	CBD	9.15	8.09
Within 400 metres from Subway	Subway	0.39	0.49
Distance to a Shopping mall	Shop	2.49	3.96
No. of shopping malls	#Shop	0.08	0.29
Within 400 metres from a shopping mall	Bshop	0.0696	0.25
No. of observations		325,973	

of SEK 2,500. The average distance to the CBD is 10 kilometres, which is also the standard deviation. Around 40% of the dwellings are located in the 400-metre buffer zone around a subway station. That is, a large portion of the dwellings are located within walking distance to a subway station. Yang and Diez-Roux (2012) have shown that 400 metres is considered an acceptable walking distance.

The distance to the nearest shopping mall amounts to about 2.5 kilometres, but the variation is substantial. The standard deviation is almost 4 kilometres. The number of shopping malls within a 400-metre radius amounts to just under 0.8. Around 7% are located in the buffer zone of 400 metres from a shopping mall. The correlation between the distance to a shopping mall and the number of shopping malls within 400 metres is relatively low (–0.14). The same is true when it comes to the correlation between distance to a shopping mall and the variable buffer zone around the shopping mall. However, the correlation between the buffer zone and the number of shopping malls is very high (0.9). The correlation between proximity to a subway station and distance to a shopping mall is small (–0.2).

More problematic is the fact that the correlation between distance to the CBD and distance to a shopping mall is high (0.7). The high correlation may make it difficult to separate the economic effect between these variables. Hence, we use Variance-of-Influence (VIF) to detect severe problems of multicollinearity.

4 Regression results

The estimation of the hedonic price equation has been carried out using Stata version 15.1. The results from Box-Cox transformation show that a log-log (double log) relationship is preferred, i.e., we have taken the natural logarithm of the dependent variable as well as the strictly positive and continuous variables. In this case, this means that the size of the apartment, the number of rooms, the monthly fee, the distance to the CBD and the distance to a shopping mall are all transformed. The interpretation of the implicit prices will then be in the form of price elasticity.

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Thre models have been estimated where we assume that all estimated parameters are constant in space and over time. In addition to apartment attributes such as size, monthly fee, and floor plan, Model A1 also includes property attributes such as the number of floors in the property. Included locational attributes are the distance to the CBD and the coordinates as well as dummy variables regarding the municipalities in Stockholm County. The intention here is, of course, to capture the spatial dimension. Since we analyse transactions over time, we have also included annual effects. We have also included seasonal effects through the fixed monthly effect. Both the fixed time effect and the seasonal effect are included to control for macro-economic changes over time. The distance to a shopping mall measures the proximity to the nearest of the 39 included shopping malls.

In model A2, the same variables are included as in model A1. However, instead of the distance to the nearest shopping mall, we have included a variable that indicates how many shopping malls the dwelling has access to within a radius of 400 metres. In model A3, we use buffer zones around the shopping malls. Here, we use 400 metres as the buffer zone. The reason we do not estimate a model where all variables are included is that there is a relatively high correlation between the variables as they are both approximations for proximity to a shopping mall. The results are presented in Table 3. All estimated models take into account outliers using the same method as in Wilhelmsson (2019).[1]

Parameter estimates regarding the fixed municipality effects and the fixed year effects are not presented in the table, nor are the estimates regarding the coordinates. We can see that explanatory power is high in both models. The explanatory variables can explain about 85% of the variation in price. This can be considered a high degree of explanation and is comparable to other studies. It may also indicate that omitting variables is smaller. The maximum VIF value for the variable distance to the CBD is 14 in Model A1 and 7 in Model A2, which is not surprising. The VIF value for distance to a shopping mall is 2.8 and for the number of shopping malls, is the value is 1. None of these numbers can be considered excessive, and the risk for multicollinearity should be considered low.

In model A1, we have included proximity to a shopping mall as a distance variable to the nearest shopping mall. Estimates of the size and number of rooms are as expected both in terms of the sign and magnitude of the coefficients. The interpretation is that if the size of the apartment increases by 1%, then the value of the apartment is expected to increase by 0.78%. If the monthly fee increases by 1%, the price is expected to fall by 0.14%. Furthermore, we can see that the height of the property has a negative price effect and that the floor level where the apartment is located has a positive impact. The distance to the CBD has an expected negative sign, and the interpretation of the estimate implies that if the distance from the

[1] The impact of outliers on estimated parameters is a complex issue. We follow the process laid out in Rousseeuw (1987) concerning detecting outliers. We estimate a hedonic price equation and detect outliers with Cook's D and then analyse the absolute residuals. The most influential observations are excluded, and observations with large absolute residuals are weighted down by an iterative process where observation weights are recalculated until convergence. Berk (1990) provides a full description of the methodology.

Table 3. *Empirical results (default model).*

Variable	Model A1 Coefficients	Model A2 Coefficients	Model A3 Coefficients
Ln(Size)	0.7301	0.7322	0.7317
	(297.15)	(297.25)	(296.99)
Ln(Room)	0.0751	0.0746	0.0747
	(40.51)	(40.15)	(40.20)
Ln(Fee)	–0.1368	–0.1386	–0.1380
	(–87.40)	(–88.33)	(87.90)
Height	–0.0045	–0.0040	–0.040
	(–26.90)	(–23.73)	(–23.96)
Floor	0.0146	0.0148	0.0148
	(63.27)	(64.31)	(64.22)
Ln(CBD)	–0.4217	–0.4328	–0.4326
	(–382.29)	(–411.80)	(–412.06)
Subway	–0.0042	–0.0006	–0.0012
	(–4.58)	(–0.65)	(–1.35)
Ln(Shop)	–0.0204	–	–
	(–33.72)		
#shop	–	0.0032	–
		(2.59)	
Bshop	–	–	0.0114
			(7.77)
$\mathbf{R^2_{adj}}$	0.8539	0.8534	0.8535

Note. The fixed municipality, year effects and seasonal effects are included in the model as well as coordinates – t-values within brackets.

CBD increases by 1%, the apartment's value is expected to fall by 0.43%. The impact of proximity to a subway station is negative. There are several reasons why this may be the case. First, being close to a metro station increases accessibility in the region but being too close means that the negative effects outweigh the positives. These can be effects in the form of vibrations in nearby buildings or that the presence of a subway station makes the environment noisy. Secondly, it may be the case that this variable correlates with other variables that aim to pick up the effects of accessibility, such as the municipal effect, distance to the CBD and the coordinates.

The variable of primary interest is, of course, the distance to the nearest shopping mall. The effect is in line with expectations, i.e., negative. The farther away from a shopping mall a property is located, the lower the expected property value, all other things being equal. The interpretation is that if the distance increases by 1%, the price is expected to decrease by 0.02%, which corresponds to a decrease of approximately SEK 600. This can be considered a relatively low implicit price. For example, Zhang et al. (2018) results indicate that if the distance increased by 1%, the value of the dwelling will decrease by 0.11%. Interpretation of these results should be made in light of the fact that we have included the distance to the CBD

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in the model together with fixed municipal effects as well as the coordinates. For all estimates, we can reject the null hypothesis that the variable does not affect the price, i.e., all t-values are higher than the critical value of 1.96.

Model A2 includes the same variables as in the previous model. However, instead of the closest distance to a shopping mall, the variable number of shopping malls within one kilometre from the apartment is included. The explanation rate is as high as in the earlier model, and all parameter estimates have the same sign, magnitude and statistical significance. As expected, the coefficient on the number of shopping malls has a positive sign. The variable is not in the logarithmic form as the variable is not strictly positive. The interpretation of the coefficient is, therefore, if the number of shopping malls increases by one, then the expected price of the property will rise by 1.8%. Since the average price is SEK 2.6 million, this corresponds to an increase in value of about SEK 50,000. Here, we have assumed that the increase is the same whether we go from 0 to 1 shopping malls or from 10 to 11. Here, one should expect a diminishing marginal benefit of access to a shopping mall.

Instead, model A3 includes a binary variable equal to 1 if the residence is within a radius of 400 metres from a shopping mall; otherwise, it is equal to zero. As before, the degree of explanation is high, and all coefficient estimates are at the same level as previous models. The results presented in model A3 can be compared relatively easily with the results of Kurvinen and Wiley (2019). Within 400 metres of a shopping mall, the capitalisation effect is estimated at 1.6%, which can be compared to 1.5% within a 500-metre radius in Helsinki. Pope and Pope (2015) estimated the effect of the establishment of a Walmart location to be about 2–3% within a distance of 800 metres and then to decrease to about 1–2% in the interval 800–1,600 metres. This means that their results are slightly higher than both our results and Kurvinen and Wiley's (2019) results.

5 Parameter heterogeneity

This study aims to determine how the distance to a shopping mall as well as the number of shopping malls would affect surrounding property prices. Based on the regression analysis, the results show that there is a negative relationship between distance and housing prices while there is a positive relationship between quantity and housing prices. These findings are consistent with the existing body of knowledge.

Apart from the above observations, some interesting discoveries can be discussed further to provide a more in-depth perspective on this topic. Thus far, we have estimated a model that covers the entire Stockholm housing market and assumed that all parameters are constant in, for example, space. Of course, this is not the case. In this section, our intention is to investigate whether the estimates vary across different dimensions, i.e., we investigate whether there is any parameter heterogeneity. We will utilise several interaction variables to test whether the effect of proximity to shopping malls varies in four different dimensions, namely, space, size of the dwelling, year over year, and whether the effect is localised or not. The results of these tests can be found in Table 4 of model B1-4.

Table 4. *Parameter heterogeneity.*

Variable	Model B1	Model B2	Model B3	Model B4
Ln(Size)	0.7300	0.7299	0.7326	0.7304
	(297.08)	(298.52)	(299.79)	(297.36)
Ln(Room)	0.0751	0.0764	0.0885	0.0748
	(40.51)	(41.41)	(47.76)	(40.41)
Ln(Fee)	–0.1366	–0.1384	–0.1377	–0.1368
	(–87.29)	(–88.91)	(–88.56)	(–87.43)
Height	–0.0045	–0.0044	–0.0047	–0.0045
	(–26.84)	(–26.42)	(–28.31)	(–26.81)
Floor	0.0146	0.0147	0.0146	0.0146
	(63.25)	(63.94)	(63.56)	(63.30)
Ln(CBD)	–0.4213	–0.4183	–0.4238	–0.4202
	(–381.91)	(–381.03)	(386.43)	(–379.90)
Subway	–0.0041	–0.0050	–0.0037	–0.0037
	(–4.51)	(–5.48)	(–4.11)	(–4.13)
Ln(Shop)	–0.0658	–0.0491	–0.0452	–0.0270
	(–7.74)	(–66.88)	(–65.93)	(–33.72)
I_shop_dist	0.0450	–	–	–
	(5.35)			
I_year	–	0.0467	–	–
		(64.69)		
I_size	–	–	0.0455	–
			(67.23)	
I_north	–	–	–	0.0128
				(12.30)
Constant	–9734	5.7579	–10023	–9974
	(–3.49)	(6.98)	(–3.62)	(–3.58)
$\mathbf{R^2_{adj}}$	0.8539	0.8554	0.8557	0.8539

Note. The fixed municipality, year effects and seasonal effects are included in the model as well as coordinates – t-values within brackets.

We have also tested whether the relationship between property value and proximity to a shopping mall is constant throughout the price distribution. We do this by estimating quantile regression. The results from these models can be found in Table 5.

The effect of proximity to a shopping mall as measured by distance (Model B1)
In model B1, we have tested the hypothesis that the value of being close to a shopping mall is more local than global. We have created an interaction variable between the distance to the nearest shopping mall and a binary variable indicating if the apartment is within a radius of 6 kilometres from the shopping mall (variable name *I_shop_dist*). If the estimate is significant and negative, it gives a signal that the effect is more localised than global.

The results indicate that the estimated parameter for the interaction variable is statistically significant and positive. It is smaller in size than the shopping mall

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parameter estimate, which indicates that the effect is to a large extent, completely local.

The effect of proximity to a shopping mall over time (Model B2)

In Model B2, we have tested the hypothesis that the value of being close to a shopping mall has diminished over time. Increased online shopping has reduced the importance of being physically close to a shopping mall. (variable name *I_year*) The interaction variable is defined as the distance to the shopping mall for the period 2013–2019, otherwise zero. A positive coefficient indicates that the impact has diminished over time.

The results are clear. With high statistical significance, the parameter estimate is different from zero and positive. This means that the effect of being close to a shopping mall has diminished over time. The parameter estimate is less for the interaction variable than for the variable distance to a shopping mall, which indicates that there is an effect even after 2012 but that it is significantly lower.

The effect of proximity to a shopping mall depending on apartment size (Model B3)

The next discussion is about the effects of different sizes. To test the hypothesis that the effects are the same across different sizes of housing, we divide all the apartments into two different size groups and create an interaction variable (variable name I_size). It is equal to 1 if it is the distance to a shopping mall for apartments larger than 62 square metres (the median size), otherwise it is zero.

The results for Model B3 are also clear. Parameter estimates of interaction variables are positive, which indicates that the effect of being close to a shopping mall is capitalised primarily on smaller apartments. It is reasonable to assume that younger people live in these apartments and that proximity to a shopping mall is more important for these households. However, this can be an effect of the fact that smaller apartments are mainly located in central locations within Stockholm, and the results can, therefore, be an effect of this characteristic.

The effect of proximity to a shopping mall based on orientation to the CBD (Model B4)

The third discussion is about the orientation to the CBD. Is there any difference in the effect of an 'apartment's location north of the CBD or south of the CBD? Such an effect can be motivated by socio-economic differences in the Stockholm area. We divide apartments into south (0) and north (1) using Sergels Torg as the reference point. Interaction variables are thus between the apartment located north of Stockholm multiplied by the distance to a shopping mall. If the apartment is south of Stockholm centre, the value of the interaction variable will be zero (variable name I_north).

Again, the results are clear. The estimate has a positive sign and is statistically significant. This indicates that the value of being close to a shopping mall is greater south of Stockholm centre than north of Stockholm centre. However, the size of the parameter estimate is smaller than the coefficient regarding the distance to a

shopping mall, which indicates that there is a positive effect of being close to a shopping mall even north of the city but that this effect is lower than it is south of the CBD.

The effect of proximity to a shopping mall across price distribution

Finally, we have also tested whether the parameter regarding proximity to a shopping mall varies with the price of the apartment when we keep all other attributes constant. This means that we estimate a so-called quantile regression model. This model has been used, for example, in Brunes et al. (2020) to measure the effect of infill developments. The results from these estimates are shown in Table 5. We have estimated the model for the 25th, 50th, and 75th percentiles.

Table 5. *Quantile regression – coefficient concerning distance to a shopping mall.*

Percentile	Coefficient	t–value
0.25	–0.0317	–36.97
0.50	–0.0195	–27.07
0.75	–0.0092	–11.87

Note. Fixed municipality and year effects are included in the model as well as coordinates and all other variables included earlier.

The results here are interesting. What we see is that the price effect is especially evident in the lower price ranges. The coefficient decreases from –0.04 to –0.01 from the 25th to the 75th percentile. These results are consistent with the results we see, for example, regarding the interaction variable for housing size. It seems plausible that the lower priced apartments are occupied by younger households for which shopping malls are important.

What may be worth noting concerning other independent variables is the effect regarding proximity to a subway station (see Table 2 in the appendix). In the lower price range, proximity to the metro station has a significant price effect. However, the more expensive the apartment is, the less proximity to the metro station has an effect. In the higher price ranges, the effect even becomes negative. Otherwise, it can be noted that the effect of additional housing space increases with the price of housing and that the significance of the monthly fee decreases. Proximity to the CBD is equally capitalised throughout the distribution of prices.

6 Conclusions

This paper aims to examine the effects of shopping malls on residential property values, given samples in the county of Stockholm. By using the hedonic price model, this study analysed the influence of shopping malls on surrounding housing prices from the perspective of both distance and quantity of shopping malls.

The results of the regression show that the explanatory variables have significant effects on the dependent variables. Moreover, the results also reveal an inverse relationship between housing prices and distance to a shopping mall. The increase in proximity to a shopping mall is expected to lead to an increase in the housing price, while the number of shopping malls is positively correlated to housing prices. This is consistent with previous studies. The effects the distance has

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on housing prices are more significant for smaller apartments and less significant for larger apartments. Also, the effects are stronger for the apartments north of the CBD. Moreover, the impact over time is declining.

There are several policy implications based on the empirical results we present here. Amenities and disamenities have an impact on housing values. Knowledge about, for example, the impact of shopping malls on housing values is important when determining the value of an apartment. This may apply, for example, to the taxation of housing, to loan applications and, of course, to the sale of housing. Compared to previous studies, this study broadens the investigation of the different aspects of shopping malls that affect housing prices.

Many questions are appropriate for future research. For example, if more traditional spatial models can clarify how the spatial dependence looks, one could estimate the capitalisation effect continuously over time, and it would be possible to use methods similar to difference-in-difference. Of course, it would also be interesting to measure the quality of the specific shopping malls when it comes to, for example, the type of stores.

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Appendix A

Table 1. *Correlation matrix (key variables).*

	Price	**Size**	**Room**	**Fee**	**CBD**	**Subway**	**Shop**	**#shop**	**Bshop**
Price	1								
Size	0.47	1							
Room	0.42	0.91	1						
Fee	0.12	0.43	0.40	1					
CBD	–0.43	0.11	0.09	0.11	1				
Subway	0.21	–0.13	–0.11	–0.42	–0.42	1			
Shop	–0.22	0.04	0.04	0.05	0.72	–0.23	1		
NoShop	0.11	–0.01	–0.02	–0.03	–0.11	0.15	–0.14	1	
Bshop	0.11	–0.01	–0.02	–0.03	–0.12	0.16	–0.15	0.95	1

Table 2. *Quantile regression.*

	0.25 percentile	**0.50 percentile**	**0.75 percentile**
Ln(Size)	0.6621	0.7143	0.7609
	(187.84)	(241.08)	(237.87)
Ln(Room)	0.0804	0.0759	0.0676
	(30.18)	(33.87)	(27.97)
Ln(Fee)	–0.1552	–0.1242	–0.1022
	(–69.15)	(–65.83)	(–50.17)
Height	–0.0044	–0.0042	–0.0044
	(–18.17)	(–20.46)	(–19.88)
Floor	0.0124	0.0141	0.0167
	(37.52)	(50.67)	(55.63)
Ln(CBD)	–0.4109	–0.4215	–0.4421
	(–296.63)	(–362.04)	(–351.67)
Subway	0.0032	0.0003	–0.0067
	(2.47)	(0.26)	(–5.66)
Ln(shop)	–0.0317	–0.0195	–0.0092
	(–36.97)	(–27.07)	(–11.87)

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Managing Stakeholders in a Housing Renovation Project – A Teaching Case on Real Estate Project Management

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Abstract. *Stakeholder management is an important task for project managers in housing renovation. Compared with new construction project, a great challenge is managing the tenants living onsite before or during the renovation. This paper is a teaching case based on a real-life housing renovation of a Swedish real estate company between 2009 to 2016. The project confronted difficult stakeholder management problems. The case provides teaching materials that can be used by instructors for helping students and trainees to analyse and summarise the lessons learned from a troublesome stakeholder management process and to come up with suggestions that will ensure a smooth implementation of the housing renovation project. The case contains two main parts, namely the case description and teaching notes. It can be used by teachers and trainers, as well as university bachelor students and industrial practitioners in courses and training programs about real estate project management.*

Keywords: *housing renovation, project management, stakeholder management, teaching case*

1 Case as a problem-based learning tool in real estate education

Case study as an established problem-based learning tool is considered to be a more effective pedagogical method than conventional lecturing for training students' critical thinking and decision-making skills (Boehrer and Linsky 1990). Teaching case has been used in many different disciplines, such as business and management, law, medicine, engineering, education, sociology, and so forth. It helps students to apply concepts, theories and frameworks learned from books to solve problems and create solutions in a complex and real-world situation. It develops students' skills of team work, facilitates consolidation and integration of learning activities, promotes intrinsic and extrinsic motivation, encourages self-evaluation and critical reflection, trains scientific inquiry and support provision for their conclusions (William 2005). An empirical study by Lam et al. (2020) shows that real estate and construction students' performances were significantly improved by introducing case study to curriculum.

Until the new millennium, real estate education had not incorporated case study in most university curriculums in the US (Anderson et al. 2000). In the UK, it was found that both real estate employers and university graduates considered that practical experience was missing from courses although universities offered alternative simulated work experience for students (Poon and Fuchs 2011). In the Nordic countries, real-life simulating pedagogical tools, such as case study, have been increasingly used in recent years. However, it has not been enough to meet the need of the industry and the students. For improving the real estate education quality, it is important to introduce more case studies into our curriculums. Developing a teaching case based on real-life events and challenges in real estate business is the first step for doing so.

A well-designed teaching case is the foundation of a successful problem-based teaching and learning process. A good case presents a challenging issue and promotes empathy with the case characters. "The importance of the compelling issue and the empathetic character reflects the fact that cases typically focus on the intersection between organizational or situational dynamics and individual perception, judgment, and action" (Boehrer and Linsky 1990, p. 45).

This teaching case is based on our research project entitled *Innovation and Sustainability in The Real Estate Industry: Processes of Housing Renovation* (2017.01 – 2019.12). It has been used in the course Construction Process in the undergraduate program of real estate management in the Department of Urban Studies, Malmö University, Sweden since 2017. Over 120 second-year students studied this case in the past three years. Each class had 40 to 45 students. They had previously studied project management basics, organisational behaviour, service management, and some basic knowledge of law and finance. The three authors, including teachers and the case company's chief manager, were all involved in developing and teaching the case. The student engagement was great and the student performances reached the standard of the course intended learning outcomes. The course teacher considered that using this teaching case increased the students' awareness, exercised the students' skills, and sharpened the students' critical thinking of stakeholder management. Many students thought that if the case study module was skipped in the course, their understanding of stakeholder management would have been much shallower and they would not have been able to independently discuss the strategy of stakeholder management.

2 Introduction of the teaching case

Housing renovation project presents great challenges to real estate companies. It is not only because of the complex technology and engineering issues entailed, but also the great number and diversity of stakeholders involved.

However, conventional project management of housing renovation projects mainly focuses on the technology and engineering issues of renovation, leaving the stakeholder issue ignored. The stakeholders have various interests directly or indirectly involved in the project and can exert significant influence—positive or negative—on the project. An effective project manager will have a good

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understanding of the stakeholders' needs and influences and try to find ways to engage stakeholders to achieve the success of a project.

This case is based on a Swedish real estate company's renovation project between 2009 and 2016. After reading this case, students will analyse and summarise the lessons learned from the troublesome project management process (from a stakeholder management perspective) and asked to provide suggestions that will ensure a smooth implementation of the project.

This teaching case contains two parts. Part 1 is the case description. It introduces the background information of the company, the history of the building, the process and the challenges of the renovation project. Part 2 comprises the teaching notes which helps the instructors to use the case for teaching and training.

The major topic areas of the teaching case are: 1) Stakeholder analysis in real estate project management, and 2) Stakeholder management strategies in real estate project management.

3 Case description

In the spring of 2012, Katharina Alfredsson[1], a project manager for HSB Sundsfastigheter in Malmö, Sweden, had just been assigned to a major renovation project for Peterstorp, a culturally significant apartment building located in the city centre. Her employer was a subsidiary of a regional division of Sweden's largest cooperative housing company.

The project to renovate Peterstorp had been initiated by HSB in 2009, but tenant resistance to the project had delayed it for over two years. When she was assigned to the project, Alfredsson was asked to prepare a report summarising lessons learned from the previous project management process.

More importantly, she was assigned to develop a project management plan that would ensure a smooth implementation of the project. Her plan would be presented to the HSB board, which was composed of experienced real estate managers.

3.1 HSB Malmö

HSB Malmö is a regional division of HSB, Sweden's largest cooperative housing company for savings, planning, financing, construction and management of real estate. HSB Malmö was registered in 1955 in the southern Swedish city of Malmö. The company's revenue in 2017 was SEK 344 million (Swedish kronor).

HSB Malmö had a wholly-owned subsidiary, HSB Sundsfastigheter, which specialised in the development and management of rental housing. HSB Sundsfastigheter started its operations in 1998 and had 24 employees in 2017. It managed more than 2200 rental departments. (For simplicity, HSB Malmö including HSB Sundsfastigheter will be referred to as HSB.)

3.2 Peterstorp

Peterstorp was a residential apartment building situated in the centre of Malmö. It was built in 1938 by the famous functionalist architect and builder Erik Sigfrid

[1] This is a pseudonym.

Figure 1. *Exterior and interior of Peterstorp (photo from www.hsb.se and private tenant).*

Persson. The design was inspired by the work of the famous Swiss-French architect Le Corbusier and was one of the first functionalist houses in Malmö.

The nine-floor building consisted of 61 apartments totaling about 7000 square meters, making the apartments much larger than apartments built later. For example, a building in Hyllie Malmö built by HSB in 2017 with the same 7000 square meters of rental space consisted of 128 apartments, meaning the average apartment was only half as big as in Peterstorp.

Each apartment in Peterstorp had a unique design (See Figure 1). The large apartments, which consisted of five or six rooms, had majestic views of the sea or the city.

Most tenants in 2012 had lived in the building for long periods, often decades. Tenants had been hand-picked by the previous landlord after being interviewed. In Sweden,the security of tenure in renting is well-protected (see for example Andersson et al 2007; Grander et al 2018). The rental contracts are for an unlimited of time and this is regardless of whether they are for private or public rented dwellings. At the same time, the tenants are also protected for not motivated rental increase. Peterstorp, with lower rent than surrounding buildings and no major renovation to increase the rent, made it possible for tenants to stay long and grow old in the building.

3.3 The Swedish rental housing system

The Swedish rent-setting system is based on collective negotiations in combination with so-called use-value comparisons. Almost all rents are set in yearly collective negotiations between owners (public and private) and the uniquely strong Tenant Associations (Hyresgästföreningen). If negotiations are unsuccessful, rents are decided in state rent tribunals (Hyresnämnden[2]) based on a comparison with rent

[2] A court-like committee in Sweden, which has the task of intervening in rent disputes and to investigate certain disputes between tenant and landlord.

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levels in similar buildings where rents had previously been set through collective bargaining.

Major renovations that affect the use value or relative size of the dwellings need to be accepted by all tenants unless they were necessary for raising the quality of non-modern dwellings to the so-called "lowest acceptable standard". If one or more tenants does not accept a renovation, the landlord has the option to take the case to the Rent Tribunal, which decides after weighing the respective interests of the owner and the tenants.

3.4 Renovations in Peterstorp

Renovations in Peterstorp were not systematically organised before HSB acquired the building; the previous owner had let the tenants make their own renovations on their apartments. When the building was put up for sale, the tenants had tried to buy it but did not succeed.

Window replacement

After acquiring Peterstorp in 1999, HSB decided to replace the original windows with modern windows. Many tenants objected to this decision, since the original windows were specifically designed by Eric Sigfrid Persson, a famous Swedish functionalist architect, and were considered to have high architectural value. Despite their objections, HSB ultimately replaced the windows in 2000 (See Figure 2).

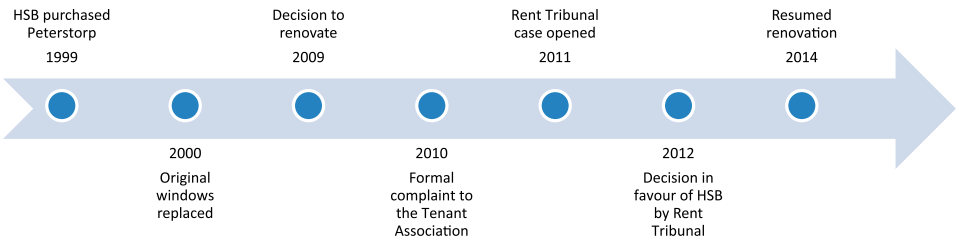

Figure 2. *Key events in the renovation process of Peterstorp.*

Plans for complete renovation

In the summer of 2009, HSB decided to conduct a complete renovation of Peterstorp building. Inspections revealed that most of the apartments in the 70-year-old building needed considerable work, such as modernizing kitchens, replacing waste water pipes, replacing radiators, installing safe doors, and repairing balconies. The budget for the renovation was SEK 80 million.

The rents of the apartments in Peterstorp had not been raised since the acquisition, even after the windows were replaced. By 2009, the average rent was SEK 980 per square meter per year, which was relatively low for the local market. Since the scale and scope of the renovation significantly exceeded normal maintenance, HSB planned to increase rents 50% to 60% once the project was complete.

Tenant reaction

After the inspection, HSB sent a letter to the tenants to inform them about the renovation. The letter provoked strong reactions. After living in their apartments for many years, many of the tenants had developed strong attachments to the building; they felt more like owners than renters. Some of them had already invested their own money to renovate their apartments, which included painting the walls and windows and even restructuring the kitchens to better suit their personal tastes and preferences. Those that had done their own renovations planned to live in their apartments for a long time and ultimately to buy them.

HSB soon held a meeting with the tenants to share more details about the plan. The meeting was held at a venue nearby and was hosted by the chief real estate manager and project manager from HSB. He was known to the tenants because previously he had worked as a rent negotiator representing the landlord association Fastighetsägarna[3]. In that position, he initiated market rents for apartment buildings such as Peterstorp, since the rent did not properly reflect the value of location and the prestige of the building.

As the meeting began, the two HSB managers stood at a podium in front of dozens of angry Peterstorp tenants. "The meeting was chaotic" one of the HSB managers recalled, "If they had tomatoes, they would have had thrown them at us. The meeting was emotional […] We felt it was not going to be easy." The tenant union also took part in the meeting.

Negotiations

After the meeting, HSB continued to negotiate with the tenants while it worked on the project plan. The company hired consultants and developed project documents by the end of 2009 and finalized the design in the first quarter of 2010. It expected to evacuate tenants and start work on the project soon afterwards.

At the same time HSB was busy planning for the renovation, the tenants were organising to block it. Swedish law[4] stipulates that the landlord must obtain written approval from each tenant in order to proceed with major interior renovations if they raised the standard of the apartment. The tenants hired a consultancy company that provided a report stating that such major renovations were not necessary. The tenants complained to the Tenant Association (Hyresgästföreningen[5]) in 2010 and further appealed to the Rent Tribunal in 2011. The tenant representative, who lived in the building by the time, was a judge. The tenants also complained to the municipality that the renovation would damage the building's cultural value in hopes that the municipality would stop the project.

The dispute over the renovations attracted media interest. Local newspapers and TV programs released a series of news reports, column, and interviews with headlines such as "Tenants angrily against luxurious renovation;" "93-year-old woman has to leave home after 67 years;" "It doesn't feel like my home anymore;"

[3] Rents in Sweden are set through negotiations between the landlord and the tenant union.

[4] Jordabalken(1970:994) 12 kap 18d§.

[5] A democratic member organization and an association for tenants in Sweden.

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"HSB wants to raise rents by 67%;" and "Tenants will fight for their apartment till the end."

Resolution
The dispute lasted for two years. In the spring of 2012, HSB finally was granted permission by the Rent Tribunal to renovate Peterstorp. However, because so much time had passed, the entire project had to be restarted from pre-study and programing to design, procurement and production. The chief real estate manager of HSB Malmö resigned and a new chief was hired.

3.5 Next steps
The new project manager Katharina Alfredsson reported to the new chief real estate manager of HSB Malmö. She understood the importance of the project and knew it was essential to avoid the difficulties HSB encountered during the previous process and to develop a plan that will involve the tenants productively and ensure a smooth implementation.

4 Teaching notes
Real estate projects are characterised by the involvement and expenditure of significant amount of physical and financial resources as well as significant influences on people's wellbeing and livelihood. This case is based on a true story of a real estate company's renovation project in Malmö, Sweden.

The case can be used as a *decision-making case*, in which students will be asked to develop a report assessing the previous process and a plan to move forward. It can also be used as an *analytical case*, in which students will be asked to analyse the problem and act as a project manager to develop a solution. Finally, it can be used as a *descriptive case*, in which students do not assume the point of view of the project manager, but rather evaluate the situation/process and suggest alternative approaches.

4.1 Case Synopsis
This case describes a project to renovate a historically and culturally significant building in Malmö, Sweden with many long-term tenants. The tenants objected to the renovation plan based on economic interests, cultural heritage, community belongingness, and attachment to the building. Some of the reaction aimed towards the organisational culture and leadership of HSB. The resulting dispute delayed the project for nearly two years. When the owner finally received permission to restart the project, it needed to examine its past approach to learn from what had gone wrong and formulate a new strategy to manage the project and its stakeholders to a successful conclusion.

4.2 Appropriate Uses
The case is designed for use in project management or real estate management courses. The focus is stakeholder management throughout the project process, including methods for stakeholder analysis and the formulation and implementation

of a stakeholder management strategy. It can be used by teachers and trainers, as well as university bachelor students and industrial practitioners in courses and training programs about real estate project management. This teaching note assumes that students already have some knowledge about stakeholder analysis.

4.3 Learning Objectives

After reading and analyzing the case, students will be able to:

1) Articulate the importance of stakeholder analysis in project management.
2) Identify the stakeholders of a project as well as their interests and needs in the project.
3) Analyse the influence of each stakeholder on the process of the project.
4) Develop strategies to engage all stakeholders in the successful completion of a project.

The case is designed to help the students to gain knowledge and skills related to managing stakeholders in real estate project management. There are four levels of learning objectives based on Bloom's taxonomy (1956).

Level 1

Understanding and applying (Explaining ideas and concepts. Using acquired knowledge, facts, and techniques to identify connections and relationships and solve problems in new situations.)

Learning objectives: 1) Identify the stakeholders of a project as well as their interests and needs; 2) Articulate the importance of stakeholder analysis in project management

Level 2

Analysing (Examining and breaking information into component parts, determining how the parts relate to one another, identifying motives or causes, making inferences.)

Learning objective: Analyse the influence of each stakeholder on the process of the project

To accomplish this objective, students will need to classify stakeholders into different groups as the basis for developing a strategy to involve them productively.

Level 3

Evaluating and creating (Presenting and defending opinions by making judgments about information, the validity of ideas, or quality of work based on a set of criteria. Developing original solutions to solve the problem.

Learning objective: Develop strategies to engage all stakeholders in the successful completion of a project

This objective helps students enhance their skills to critically evaluate the relationship between stakeholders and project success.

For students with entrance level knowledge and experience of project management, Levels 1 and 2 are recommended. For more experienced and knowledgeable students, Level 3 can be added.

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4.4 Assignment questions

The question can be assigned to the students to help them identify the key issues in the initiating process of the project:
What was missing in the initiating process of the Peterstorp project? Who are the stakeholders? What are their interests in the project? How much influence do they have on the project?

Assuming that you are the project manager, develop a strategy to involve the various stakeholders and achieve success of the renovation project.

The following questions also can be assigned to students to help them clarify their understanding of the concept of stakeholder and stakeholder management:
What is the definition of stakeholder? Can a person or an organisation with no direct interest in the project be a stakeholder? What is the purpose of stakeholder management? When is it important to perform stakeholder analysis? When should stakeholders be managed? Who should be responsible for stakeholder management in a project?

4.5 Supplementary Materials

This section includes supplementary materials for both instructors and students.

For instructors

The following materials have been provided with this teaching note to aid instructors in teaching the case:

Video about the history of Peterstorp
– https://www.oppetarkiv.se/video/4441059/k-markts-modarna-avsnitt-1-av-9

Media reports about the dispute over Peterstorp renovation
– https://www.dn.se/insidan/plotsligt-kanns-det-inte-som-ens-hem-langre/
– https://www.expressen.se/kvallsposten/ulla-93-tvingas-flytta-fran-sitt-hem-efter-67-ar/
– https://www.hemhyra.se/nyheter/hsb-vill-hoja-deras-hyror-med-nastan-70-procent/
– https://www.sydsvenskan.se/2010-09-23/hyresgaster-rasar-mot-lyxrenovering

For students

The following may be used as supplemental material to accompany the case in order to introduce students to get familiar with the starting phase and stakeholder management in housing renovation projects.

Literature
– Freeman, R. E. (2001). A stakeholder theory of the modern corporation. Perspectives in Business Ethics Sie, 3(144), 38–48.
– Larson, Erick W., and Clifford F. Gray. “A Guide to the Project Management Body of Knowledge: PMBOK (®) Guide.” Project Management Institute, 2015. Chapter 3-3.3,3.4; Chapter 5-5.3; Chapter 10-10.1.

– Ottosson, H. (2016). Practical project management for building and construction. Auerbach Publications. Chapter2-2.1, 2.2, 2.3; Chapter 4-4.1, 4.2.

Tools and frameworks for stakeholder analysis

The following tools and frameworks for stakeholder analysis can be shared with students, if needed.

1) Stakeholders and their interests in a housing renovation project (see Figure 3).

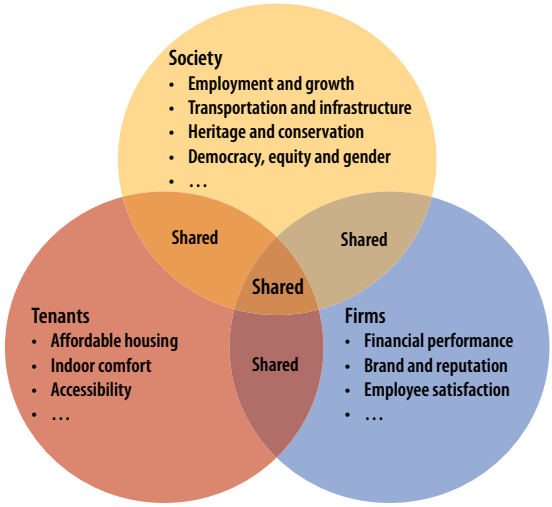

Figure 3. *The relationship of stakeholder interests in a real estate project.*

2) Stakeholder analysis matrix (see Table 1).

Table 1. *Stakeholder analysis and management strategy.*

Stakeholders	Stakeholders' interest	Stakeholder's power	Potential strategies for gaining support or reducing obstacles

3) Stakeholder influence analysis matrix (see Figure 4).

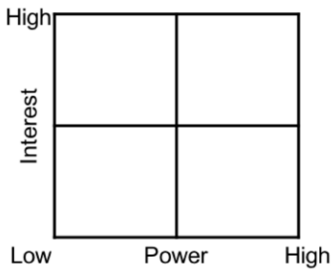

Figure 4. *Stakeholder analysis matrix.*

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4) Generic strategies of stakeholder management (see Figure 5).

Figure 5. *Stakeholder management strategies.*

4.6 Case Analysis

The following are the answers to the assignment questions.

1) What was missing in the initiating process of the Peterstorp renovation project?

The real estate company did not perform stakeholder analysis when initiating the renovation project. Stakeholder analysis is a series of techniques that include systematically gathering and analysing quantitative and qualitative information to determine whose interests should be taken into account throughout the project.

Renovation projects are considered to be more complicated than new construction not only because of the complication of technology and engineering, but also because of the great influence of incumbent tenants. Tenants will experience the impact of the renovation before, during, and after the project. For example, if they stay in the building during renovation, how will they deal with the noise, dust, and chaos? If they move out, how and when will they move out, and where will they live during the renovation? Will a move mean a longer commute to work for parents, or to school for kids? These are typical challenges for tenants, but elderly tenants and others with special needs have additional challenges adapting to a new living environment.

The absence of stakeholder analysis reflects a techno centric approach that is common in many real estate companies which can create big problems in renovation projects, as it did with Peterstorp.

2) Who are the stakeholders? What are their interests in the project? How much influence do they have on the project?

A stakeholder is an individual, group or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity or outcome of the project (Project Management Institute (2013)).

Four groups of stakeholders in a renovation project can be identified based on their position relative to the real estatewas company (internal/external) and

their relation to the project (inside/outside). Each group has different interests and influences on the project.

Group 1: Internal stakeholders inside the project
This group of stakeholders includes the project team members, such as the project manager, the project assistant, and other employees directly involved in the project.

Because this group of stakeholders is highly involved in the project, their income, personal wellbeing, professional reputation, and future career path may be influenced by the project processes and results.

Overall, this group of stakeholders has a great deal of influence on the project, but it may not be evenly distributed among the members. For example, project managers have a relatively high degree of power over the project because they can assign jobs to project team members, monitor and control the progress of the project, etc.

Group 2: Internal stakeholders outside of the project
This group of stakeholders includes other employees in the company who are not directly involved in the project, such as employees in other departments, administrators, and even the company's CEO.

This group of stakeholders are not directly involved in the project, but they can be indirectly influenced by it. For example, although the CEO may not be directly involved in the project, its success or failure may have a major influence on the CEO's reputation and future career.

The influence of this group of stakeholders varies a great deal. Some, such as the CEO, can have a lot of influence over the project, but others have minimal influence or none at all.

Group 3: External stakeholders inside the project
This group of stakeholders includes tenants and their families, contractors and sub-contractors, the planning department of the municipality, etc. For the tenants, the project can have a major influence on such things as their personal and family wellbeing, their daily routines, the convenience of using the facilities in the building, and safety. Future tenants' needs are also important and should be taken into consideration. The planning department of the municipality is involved, but since the department is responsible for the whole city, the magnitude of involvement can be limited.

These stakeholders usually have great influence on the project, but it can vary significantly among stakeholders and from project to project. For example, the tenants can help the real estate company design the future facilities and spaces, but they also can delay or even block the renovation if they are not satisfied. They can choose to share their input, but they also can choose to leave the building and live somewhere else.

Group 4: External stakeholders outside of the project
This group of stakeholders includes people living in the neighbourhood, companies located close by, professional associations, the legal system, competitors, media,

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etc. How a project affects these stakeholders varies from case to case. For example, people living in the neighbourhood may be disturbed by the noise and dust of the construction, but if the renovation improves the quality of the neighbourhood, they may benefit from increasing property values.

The influence of these stakeholders also varies from case to case. For example, the legal system can have great influence over the project if disputes emerge, but it will have no influence when there are no legal issues. Likewise, the media typically are not involved in a project, but they can have great influence if and when there is a reason for them to be involved.

3) Assuming that you are the project manager, develop a strategy to involve the different stakeholders for achieving the success of the renovation project.

Strategy formulation is as much an art as a science, which means the right strategy cannot be precisely calculated. However, generic strategies can generate insights and inspiration. As shown in Figure TN4, there are four generic stakeholder management strategies based on the interests and influence of stakeholder groups.

Strategy 1: Manage closely

This strategy suits the high-interest/high-influence stakeholders, such as tenants living in the building. This is especially true if a project needs the tenants' approval to continue, as Peterstorp did. When executing this strategy, a project manager should have a continuous dialogue with tenants (or other high-interest/high-influence stakeholders) before, during, and after the renovation project to gain and maintain their support. The purpose of the dialogue is to understand the stakeholders' needs and wants and then to use that knowledge to improve the project performance and the stakeholders support.

Strategy 2: Keep informed

This strategy is appropriate for high-interest/low-influence stakeholders. In Sweden, small scope renovation projects, such as changing the windows, did not need to receive tenants' approval, which means that tenants' interest is high but influence is low. In this case, a project manager does not need to have continuous dialogue with the tenants, but should keep tenants informed about such items as when the project will start, why it is necessary, and what will be done in order to reduce their anxiety and gain their cooperation.

Strategy 3: Keep satisfied

This generic strategy is appropriate for low-interest/high-influence stakeholders, such as the media. The media can have an outsize influence by influencing public perception of the project and the company. Maintaining contact and a good relationship with media is important to create a positive environment in which the company can operate.

Strategy 4: Monitor

This strategy suits low-interest/low-influence stakeholders such as the general public. Action is necessary only when unusual things occur.

Table 2. *Suggested detailed teaching plan.*

Session	Sub-session	Steps	Before-and-after work	Facilities and equipment
Session 1 (90 min)	Opening (20 min)	Introduction • Background of the case study • Learning objectives • Case study procedure Expected outcomes • Organising groups with 4–5 students in each group • Spread out evaluation sheet	Before session 1 the students need to review the related chapters of project stakeholder management	• A classroom with moveable tables and chairs • Projector, whiteboard • Papers and pens
	Group-work (60 min)	• Students work in groups • Teacher walks around and clarifies issues related to the case study to facilitate discussion.	After session 1 the students need to • Prepare a 10-minute group presentation • Write individual learning notes about what they have learned during the group discussion	
	Concluding (10 min)	• Summarise the outcome of session 1 • Announce assignments and the expected outcomes		
Session 2 (90 min)	Opening (2 min)	Introduction • Presentation procedure • Distribute evaluation sheet	Before session 2 the students should have • Prepared a group presentation • Handed in the learning notes	A classroom with moveable tables and chairs Projector, whiteboard Papers and pens
	Group presentation and discussion (75 min)	Each group • Presentation (8min) • Comments and discussion (7min)		
	Summarising (5 min)	• Compare different groups' solutions • Summarise take-away messages • Update what actually happened		
	Evaluating and closing (8 min)	• Review the learning objectives and evaluating the learning outcome • Offer a system perspective for understanding the stakeholder management issue in a sustainable renovation project	After session 2 the students need to • Write individual reflection notes about what they learned from other groups' presentations and the discussion	

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4.7 Teaching plan

The case study can be taught in two 90-minute sessions (see Table 2). Session 1 is the opening of the case study and the in-group work on the case. Session 2 is the presentation and discussion of the answers to the case questions across groups and the closing of the case study.

4.8 Evaluation

The evaluation of the student performance is based on groups. It consists of three parts, namely content of presentation, skills of presentation and effectiveness of group work (See Table 3). The evaluation can be done by teacher together with the students. The evaluation sheet should be given to students before the group work so that the students will know what is expected to be evaluated.

4.9 Epilogue

In 2012 HSB hired a new Chief Real Estate Manager and a new project manager. Under their leadership, the renovation project resumed in 2012. They learned their lesson and tried to involve the Peterstorp tenants during the renovation.

Table 3. *Evaluation sheet.*

Criteria	Sub criteria	Breakdown of points	Score
Content of presentation	If the presentation has proper reasoning, logical argument and sound conclusion	All the questions are answered with sound conclusion (1 point)	
		The analysing process is logical and reasonable (1 point)	
	If relevant theories, frameworks, concepts learned in previous session(s) are critically used	The theories, framework, concepts used are relevant to the topic of the presentation (1 point)	
		Theories, framework, concepts used are understood correctly and used properly and critically (1 point)	
	If arguments are supported by evidences (data, facts, observations, etc.)	Evidences are sufficient and relevant (1 point)	
		Evidences are reliable and valid (1 point)	
Skills of presentation and communication	Presentation skills	Use of proper oral and body language to clearly communicate (1 point)	
		Using well-structured slides to organise presentation and graphics, charts, videos, and illustrations to support the arguments (1 point)	
	Communication skills	Interact properly with audiences (1 point)	
Effectiveness of group work	If the group act effectively as a team rather than a series of individuals	Everybody is introduced and everybody is actively and jointly engaged in preparation and presentation (1 point)	
Total score			

They incorporated tenant suggestions, such as building a collective laundry room and also including a reserve electrical outlet and water pipe connector in each apartment that enabled tenants to install their own washers and dryers if they wished. They also regularly met the tenants' representative to inform them of the progress of the renovation. HSB temporarily hired an employee to communicate with the tenants, and to assist the tenants with relocating for the renovation. This person played a big role in smoothing the process of the renovation and was later permanently hired.

During the renovation, one large topic of discussion was to what extent renovations should incorporate the building's cultural heritage. Proponents of incorporating cultural heritage criticised the previous replacement of windows for aesthetic reasons as well as the shorter life-cycles of modern windows. Another topic discussed was whether to keep the original kitchens, which had been tailored by carpenters to each apartment when constructing the building. Other cultural heritage related discussions included handles, water taps, and elevators. Ultimately, the Chief Real Estate Manager was inspired by a TV program about cultural heritage and decided to incorporate the building's cultural heritage and use it to brand the building. By then two parallel quality control programs were installed; one focusing on construction technique and the other on cultural heritage.

The renovation project was completed in the spring of 2016 at a cost 75% higher than the original budget of SEK 80 million. However, after the renovation, 75% of the previous tenants moved out.

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