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**FACTORS INFLUENCING HOUSING PRICES,  
WITH PARTICULAR REGARD TO THE URBAN  
DEVELOPMENT DECISIONS THROUGH THE  
EXAMPLE OF SOPRON**

Theses of the Doctoral (PhD) Dissertation

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## 1. Background and goals

The real property market constitutes an important part of national economies, as a significant part of national wealth is given by real properties. Within the category of real properties residential housing (flats) have a special role, as the issue of housing affects every household. Based on estimates the value of the Hungarian housing properties constitutes ca. half of the total assets of Hungarian households, that is ca. 30-40 billion Hungarian Forints. The market price of real estates, and also within this category the prices of flats are influenced by several factors. Due to the fixed location of flats these prices are largely influenced by factors present in the town where the given flat is located; and also the characteristics of urban development in that particular town; it can especially be felt in towns and cities that these factors can influence the local housing market to a great extent.

At the same time the connection between urban development and the residential properties – contrary to international trends – has so far been quite an under-researched area in Hungary, and this is also supported by experiences shared in literature. Based on the author's almost twenty-five years of experience in real property appraisal and teaching in the field of real property industry – certain town-level factors are not, or are not sufficiently taken into consideration by professionals working in the industry when making decisions in connection with real properties or during an appraisal – this is also supported by the results of the questionnaire survey conducted among real estate agents.

The overwhelming majority of international research on real properties mainly focusses on the housing market of big cities with a population in the millions-range. The Hungarian literature is mainly limited to the capital city and its housing market, and this contributed to the fact that this time I chose a smaller Hungarian town as the example in my research. I chose Sopron mainly because – unlike in the case of other areas in the country – primarily due to employment abroad, its housing market started to grow already during the years of the economic crisis, and it has shown a very intense and dynamic growth since then, and therefore the available time series were also longer.

The main aim of the dissertation was to find out how, among other factors influencing housing prices, urban development decisions taken at the local level influence the value of residential properties located in the given town, especially in the case of Sopron.

Based on the address register of the Central Office for Administrative and Electronic Public Services of the Ministry of Interior on 1 January 2018 the number of inhabitants in Sopron was 58,458 people. As a result of the changes in the Austrian labour regulations which took effect on 1 May 2011 Hungarian citizens can work in Austria even more freely compared to any previous regulations. This change entailed an acceleration of internal migration: a great number of people moved to Sopron from other towns within the country, in order to work in Austria. According to non-official estimates – which during the course of the research were also confirmed by real estate agents as well as the chief architect of the municipality – the population living in the town might already be as high as 80 thousand, but there are also other estimates according to which this number is already around 100 thousand. The reason for this significant difference is that at the beginning the majority of those moving to the town only rent a flat, and those who rent out their flats usually do not allow for tenants to register this flat as their home address – therefore in the address register the majority of those living in Sopron are not registered as inhabitants of the town. Due to this internal migration – after the initial downturn following the economic crisis in 2008, in 2012 the housing market in Sopron (the sales as well as the rental of flats) started to grow again; this makes it possible to analyse Sopron's housing market in detail.

In the course of the research the author posed the following general hypotheses in connection with the relationship between the housing market and decisions of urban development.

1. Housing prices are influenced by urban development decisions, however, the effect of short-term community investments affects the price of flats more compared to long-term decisions taken in the field of urban development.

2. Individual factors connected to urban development and influencing the demand for flats are evaluated differently by buyers and real estate agents.

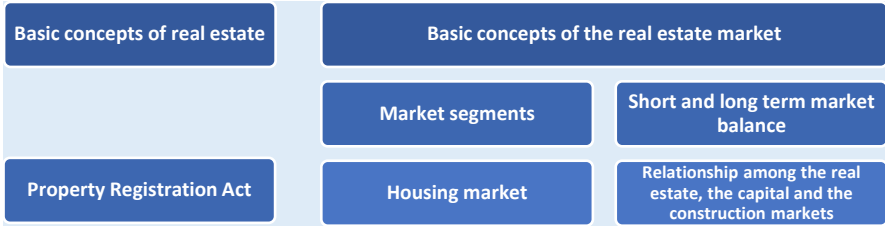
In connection with Sopron, which serves as an example in the dissertation, the author set up the following hypotheses:

3. When choosing a real property, compared to other towns of the country, buyers in Sopron take into consideration the factors of urban development in connection with the neighbourhood of the flats to a lesser extent. What is more, the role played by these factors in purchases is also different in different parts of the town.
4. The development of the inner city may result in the increase of pedestrian traffic, as well as a decrease in the number of parking places – this may reduce the market value of flats in the neighbourhood.
5. The development of sports facilities does not significantly influence the market value of flats in the area.
6. The development of community spaces in residential areas improves the market value of flats in close proximity to these community spaces.

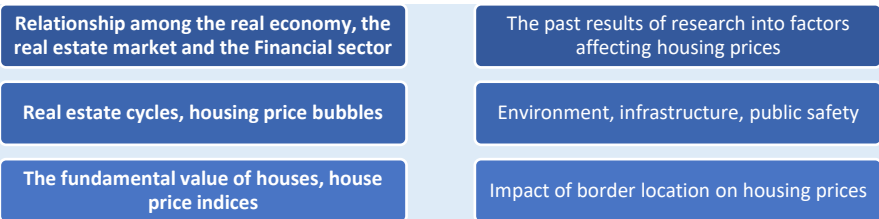
## **2. The content, methodology and justification of the research**

My research consists of a theoretical and an empirical part. When discussing the theoretical background, the author strived to examine regularities underpinning the operation of the housing market and the factors influencing the value of flats, and then to establish a connection between these and the criteria of urban development. The theoretical background of the study was prepared based on library research and the examination and analysis of statistical data. The statistical data were primarily taken from the publications of the Hungarian Central Statistical Office and the Hungarian National Bank, as well as the time series of GKI Economic Research Co. and FHB Jelzálogbank Nyrt. (FHB Mortgage Bank) on the housing prices and also the duties' office database of the Hungarian National Tax and Customs Administration (Figure 1).

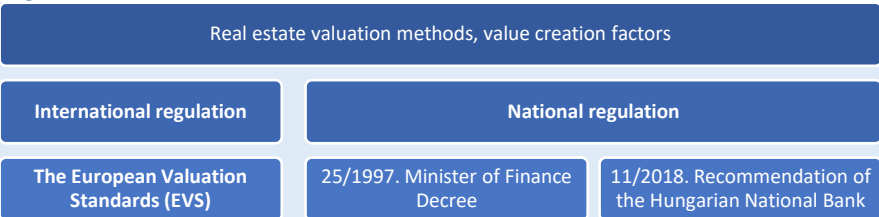
**Concepts**



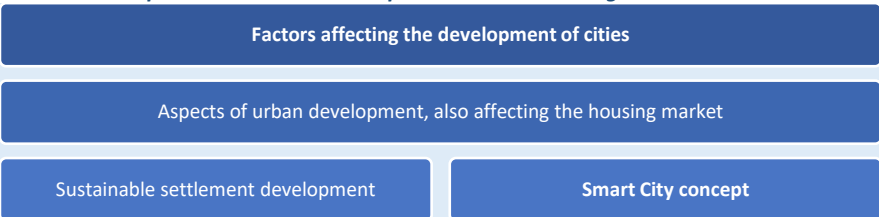
**Previous research results**



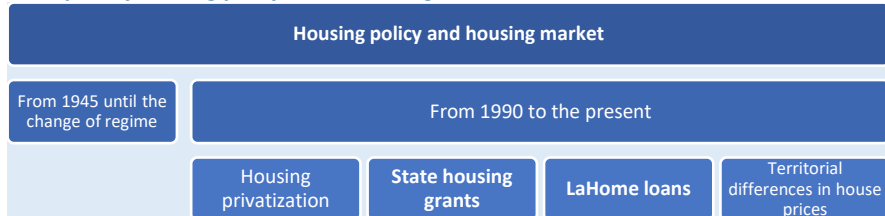
**Regulation**



**The relationship between urban development and the housing market**



**The impact of housing policy on the housing market**

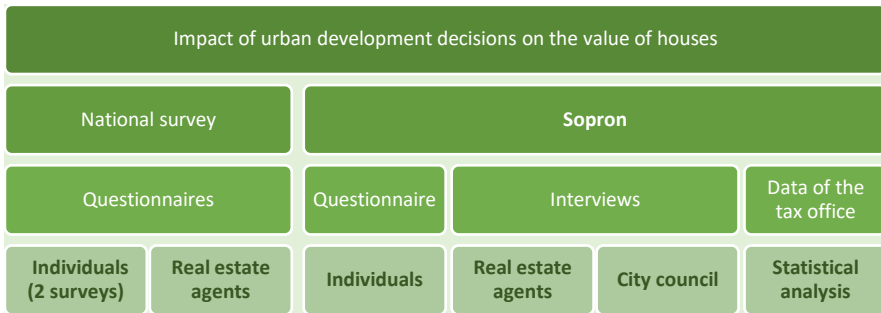


**Figure 1:** Theoretical framework of the foundation research

Source: own editing

During the empirical research the author conducted altogether four online questionnaire surveys, individual interviews, as well as a field research. At the initial phase of the research I used separate national surveys asking home buyers and real estate agents, in order to measure what factors played a role in making decisions on buying a flat.

After that – also on a national level – I conducted a questionnaire survey in order to find out how home buyers evaluated the future benefits resulting from urban development decisions. Finally, I conducted a questionnaire survey in the chosen town of Sopron, which is the location of my detailed research (Figure 2).



**Figure 2:** Elements of the empirical research

*Source: own editing*

The first part of the survey for those living in Sopron included questions from the previous national survey on preferences when buying a flat, while the second part asked questions in connection with urban development in Sopron. The subjects participating in the interviews were representatives of the 12 biggest real estate agencies in Sopron, as well as the chief architect of Sopron and the head of the municipality's urban development department. The field research performed in Sopron included those locations, which were pointed out by the subjects of the interviews as being affected by urban development decisions considered to be the most significant in the past years. In the opinion of the author this multi-faceted methodological approach has significantly contributed to the successful accomplishment of the research

goals, and it also helped to prove that decisions of urban development also affect housing prices.

### **3. Results**

The author summarised the main results and conclusions in connection with the hypotheses set up at the beginning of the research in five theses.

#### **3.1. The theses of the research**

Hypothesis no.1 deals with the connection between urban development decisions and housing prices, proposing that the strength of such connection also depends on the expected date of completing a given development.

The author proved the existence of a connection between the value of flats and urban development through the results of the questionnaire surveys conducted among home buyers and real estate agents, as well as the analysis of data on the inner city of Sopron – received from the duties' office. The strength of the above connection could be shown through the questionnaire surveys dealing with population's preferences in connection with urban development, and also the interviews made with the representatives of Sopron's real estate agencies. Based on the results of proving the first hypothesis the following conclusions can be drawn:

#### **THESIS 1:**

Concerning the development of the public roads of a town inhabitants attribute a higher value to short-term improvements compared to long-term ones.

In the national survey on the population's preferences 60.8% of respondents preferred works which could be performed within maximum 3 years – this means that only some of the roads can be renovated in the town, those, which are currently in the worst condition.



According to the municipality the most significant public road investment affecting Sopron will be the extension of motorway M85, to reach the border of the country. This development is expected to be finished by the year of 2022. During the interviews the representatives of real estate agencies told that the opening of this motorway is already within sight, and this development is already starting to appear among the aspects taken into consideration by home buyers. It is already seen which parts of the town will be less crowded thanks to this development, and also which are those parts of the agglomeration from where the border crossings will be accessible more easily.

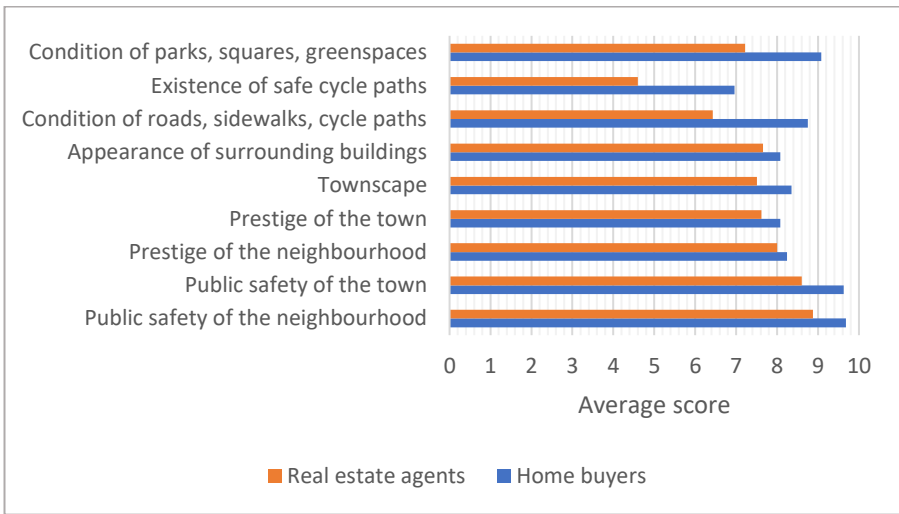


The hypothesis no. 2 was set up as a result of the experience of the author based on which professionals dealing with residential housing (real estate agents and appraisers) do not exactly know those criteria based on which buyers decide to buy one flat or the other, and they do not know it either to what extent each of these factors play a role in their decisions. A lot of them are trying to compensate for this lack of information with their own previous experiences when buying a flat, as well as their knowledge obtained during their education. As a result, during an appraisal the change of these value-influencing factors over time might not be taken into consideration enough, or it might not be taken into consideration at all.

The hypothesis was supported by comparing the results of a questionnaire survey conducted on a national level among private individuals intending to purchase a flat, and real estate agents. On a 10-item Likert-scale respondents could evaluate that in their opinion how important the role of certain urban development factors was, when making a decision in connection with buying a flat. The results can be summarised in the following thesis:

## **THESIS 2:**

Individual factors connected to the demand for flats are evaluated differently by buyers and real estate agents (Figure 3).



**Figure 3:** The role of some of the factors related to urban development in choosing housing for real estate agents and home buyers

Source: *Questionnaire surveys, 2016*

Compared to real estate agents, private individuals intending to purchase a flat attributed more value to each of the urban development factors examined during the research. The most significant difference can be seen in the state of public spaces and the road network.



When setting up hypothesis no. 3 the author assumed that a significant part of the demand for flats in Sopron comes from families who move to the town from other regions of the country, in the hope of working in the neighbouring Austria. However, due to the fact that people are commuting to Burgenland and the area of Vienna on a daily basis, those parts of the town are appreciated from where the border is easily accessible. At the same time this also means that the rest of the factors influencing the demand for flats are becoming secondary when making a buying decision.

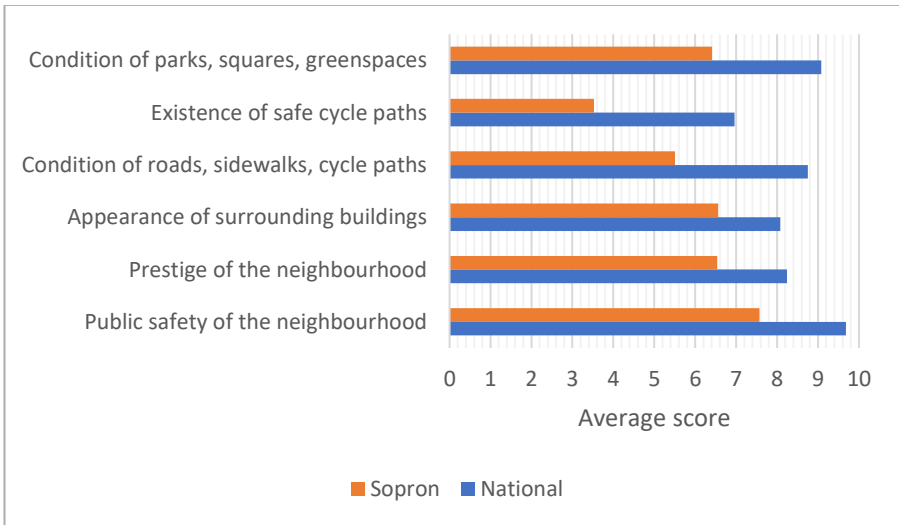
In the questionnaire surveys conducted among the citizens of Sopron and on a national level private individuals received a 10-item Likert-scale to evaluate the importance of individual urban development factors based on how important their role was when they chose to buy their current flat. Through

the comparison of the results of the questionnaires, as well as based on the interviews with the representatives of real estate agencies with the biggest turnover the hypothesis was fully supported.

The results received after proving hypothesis no. 3 can be summarized in the following thesis:

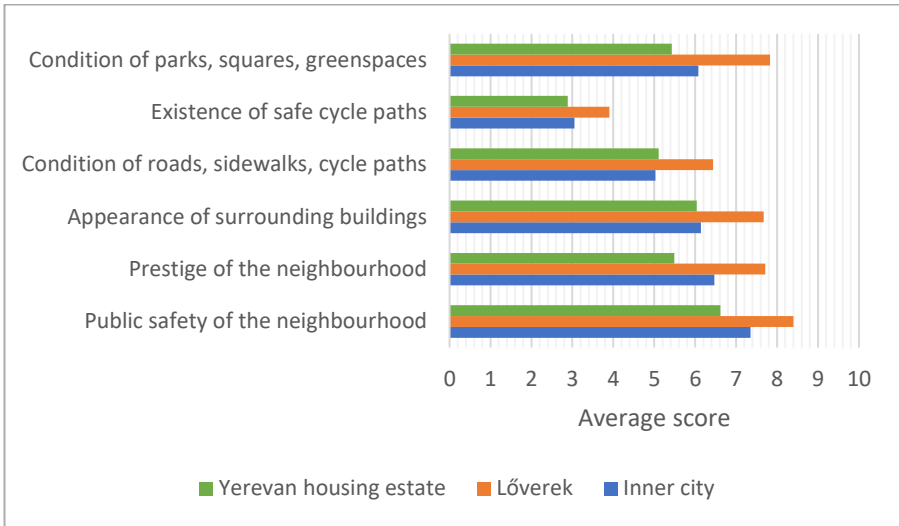
**THESIS 3:**

Those moving to Sopron from other regions of the country in order to work in Austria mainly would like to purchase flats in areas from where the border crossing is easily accessible. Therefore, buyers in Sopron take into consideration factors connected to urban development less than buyers who purchase in other regions of Hungary (Figure 4). Furthermore, the role played by these factors is different even between different parts of the same town (Figure 5.).



**Figure 4:** The role of some of the factors related to urban development in choosing housing nationally (2016) and in Sopron (2018)

Source: Questionnaire surveys



**Figure 5:** The role of some of the factors related to urban development in choosing housing in the inner city of Sopron, in Lőverek and in the Yerevan housing estate

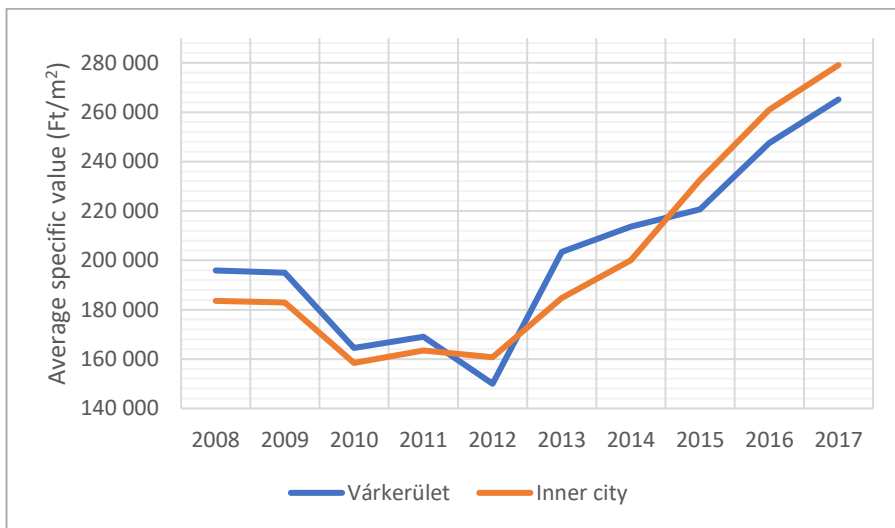
Source: *Questionnaire survey, 2018*



Hypothesis no. 4 is based on the assumption that parking opportunities are a factor which influences the demand for flats significantly. Urban development measures taken to increase pedestrian traffic, e.g. the establishment of pedestrian areas, decrease the number of parking places to a great extent; concerning the function of the area in question this is something negative, even if at the same time this entails a reduction of car traffic, as in this case the disturbing aspects of the traffic (noise, air pollution) is substituted by new disturbing factors due to an increase in the number of restaurants and clubs, as well as an increased number of pedestrians.

This hypothesis is supported not only by the interviews with representatives of the biggest Sopron-based real estate agencies and the results of the questionnaire survey conducted among the residents of Sopron, but also by figures, resulting from the analysis of market value data of the inner city of Sopron, taken from the regional duties' database of the National Tax and Customs Administration (the Hungarian tax authority).

The hypothesis was only examined through the developments implemented in the inner city of Sopron. However, in the author's opinion these conclusions could also be generalised for other, similar developments, as the parking issue and the intense traffic in restaurants and clubs are factors which affect the comfort and peace of a flat in a negative way, therefore these aspects also influence the demand for flats (Figure 6).



**Figure 6:** The average specific value of the flats sold in the inner city of Sopron and on the Várkerület boulevard, 2008-2017

Source: Calculation by the author based on the county tax office data

The results drawn from proving hypothesis no. 4 can be summarised in the following thesis:

#### **THESIS 4:**

Developments aiming at alleviating the traffic of the inner city, increasing pedestrian traffic and increasing the number of restaurants and clubs decrease the market value of residential housing directly affected by these measures, due to the aggravated parking situation, as well as the noise resulting from

the more intense pedestrian traffic and the increasing number of restaurants and nightclubs. It is especially true if a given development affects also the microclimate of the area in a negative way – because of the "heat islands" generated by the great surface of paved areas and the lack of green areas with an appropriate quality and size – especially the lack of trees providing a shadow.



Hypothesis no. 5 was mainly set up in view of the great sports facility developments implemented in Hungary in the past couple of years. The assumption of the author was that out of the factors in the neighbourhood of a given flat it is mainly those which influence demand, which also significantly influence the everyday lives of people: transportation, shopping possibilities, or the distance of the workplace or educational institutions from the location of the flat. However, in the case of sports facilities like a stadium or a swimming pool, which are visited by the majority of people only occasionally, the distance from the flat matters less, therefore the implementation of such investments in an area influences the market value of flats to a lesser extent. This hypothesis was supported only partly in my research.

The results of the survey conducted among home buyers and real estate agents show that almost 30% of home buyers are indifferent about whether there is a cultural or sports facility in the neighbourhood. However, more than two thirds of them consider it acceptable if there is such a facility in a 5 km radius.

In connection with the extension of the Lővér Bath and the Csik Ferenc Swimming Pool when analysing the data from the duties' office on the market value of flats, no correlation was shown between the aforementioned sports facility development and the market value of flats in the area; however, due to the fact that the time series available are quite short, the hypothesis cannot be supported without any doubt.

Hypothesis no. 6 was set up based on the assumption that the urban development decisions connected to the energetic and cityscape renovations resulting from the so-called "Panelprogramme" (renovation of the residential blocks built during the Socialist era) contribute to the revitalisation of the given residential area, thereby positively influencing the market value of residential housing there. During the research this hypothesis was not proven without any doubt.

The biggest residential area built in the Socialist era in Sopron is the Jereván. The renovation of the service house on Kodály Zoltán square finished in 2017 was a municipal investment connected to the rehabilitation of this residential area – this investment added to making the centre of this part of the town more liveable, and it further improved its public safety. The national surveys performed among home buyers and real estate agents show that when choosing a flat home buyers consider the condition and appearance of the buildings in the area to be very important, and also the public safety of the close neighbourhood is quite important for them. In the survey performed in Sopron these factors are slightly less important, but the results still show that also these home buyers take them into consideration when making a decision.

Based on the data from the duties' offices, contrary to previous trends the average price of flats sold on Kodály square in 2017 was already higher compared to average flat prices in residential blocks built during the Socialist era. This increase in prices might be in connection with the aforementioned development, but in order to prove such connection longer time series would be needed, therefore hypothesis no. 5 cannot be considered to be fully proven.

### **3.2. New results of the research**

In the international literature there are only few, and in the Hungarian literature there have been no works so far researching the price of flats from the point of view of urban development decisions. The multi-faceted methodology I used for mapping the connections between urban development and housing prices can also be considered quite new.

Experiences written about in literature show that previous studies on the operation of the housing market and factors influencing the prices of residential housing have almost exclusively dealt with some metropolises abroad or Budapest. My dissertation also offers a new aspect because instead of studying a metropolis, I studied a medium-sized town the population of which, even based on non-official data, is only around maximum 80-100 thousand. Thanks to its location close to the border, Sopron has several special characteristics, such as the big internal migration to the town, or the huge number of people commuting across the border.

One of the most important new results of the study is that this was the first instance when in Hungary the effect of a concrete urban development decision on the prices of affected residential housing could be measured in concrete numbers. Another important result of this research is that it could show with empirical data that when choosing a flat, in different towns or even different parts the same town home buyers take urban development factors into consideration with a different weight.

It is also a new result of the dissertation that it maps the connection between the large scale internal migration targeting Sopron and its housing market. Although initially it was not among the goals of the research to study the effects of such internal migration, the results of the empirical examinations showed how this process influences the structure and spatial concentration of the housing market.

#### **4. Conclusions and suggestions**

In my thesis I focussed on a Hungarian town next to the border whose housing market is greatly impacted by the large scale internal migration targeting the town, with the aim of taking jobs in the neighbouring Austria, as well as an intense cross-border commuting. This way the study examined several concrete urban development decisions from the point of view of how they affected the housing market prices of the affected part of the town. Therefore, it would be worth extending this research to towns in other regions of the country, as well, and to continue it to other directions, too. Out of these the author would like to highlight two concrete areas:



1. In Hungary for example the correlation between the reputation and education level of primary and secondary educational institutions, the test result of their students, and the demand for the flats in their neighbourhood is still an unresearched area, and also the issue of how the presence of institutions of higher education influence the prices of flats in the neighbourhood.
2. In Hungary significant automotive industry developments took place in the past years, mainly in the area of the manufacturing of passenger cars, and currently this trend is still continuing. If a car manufacturing plant is set up, it creates a lot of new jobs in the affected city, however, we should also bear in mind the fact that the manufacturing of passenger cars is quite exposed to the fluctuations of the economic cycle, therefore it would also be quite important to study how such an industrial investment transforms the structure of the housing market in the affected areas.

The dissertation also showed that through the housing prices urban developmental decisions indirectly affect the wealth of real estate owners – therefore in the future during urban planning and the preparation of developmental decisions it would be useful to also evaluate the effects of such decisions on the housing market, and to make these decisions also in view of these factors. However, in order to be able to realise this, or maybe also include it into the regulations of urban development, we need methodological research, because at the moment real estate appraisers in Hungary do not have any modern, group-based real estate appraising methods supported by geoinformatic tools.

## **5. The author's publications related to the subject of the dissertation**

### *Articles published in scientific journals:*

HARNOS, L. (2018). Cycles of the Housing Market in Hungary from the Economic Crisis until Today. *Naše Gospodartsvo / Our Economy*, 64(2), pp. 3-14. DOI: 10.2478/ngoe-2018-0007

HARNOS, L. (2017). A magyar lakáspiaci trendek alakulása a 2008-ban kirobbant gazdasági válság után [The Run of the Hungarian Housing Market Trends Following the Economic Crisis Exploded in 2008] *Journal of Economy & Society*, 9(3-4), pp. 99-121. DOI: 10.21637/GT.2017.3-4.06

HARNOS, L. (2017). Befektetési célú ingatlanok értékelése magyar és nemzetközi számviteli környezetben [Investment Property Evaluation in Hungarian and International Accounting Environment]. *Prosperitas*, 4(1), pp. 128-144.

***Articles published in conference proceedings:***

HARNOS, L. (2019). A városfejlesztés és a lakáspiac kapcsolata Sopronban [The Relationship between Urban Development and the Housing Market in Sopron]. In: *Unlimited Science: Conference in the Framework of the Celebration of Hungarian Science 20 November 2018 conference proceeding*, Budapest: Tomori Pál College (publication in progress).

HARNOS, L. (2018). Az ingázás hatása Sopron lakáspiacára [The Effect of Commuting on the Housing Market of Sopron]. In: R. Resperger, ed., *Demographic Changes, Changing Economic Challenges International Scientific Conference Sopron, 8 November 2018 conference proceeding*, Sopron: Sopron University Press, pp. 25-39.

HARNOS, L. (2012). A fenntarthatóság mérése a városfejlesztésben [Measuring Sustainability during City-development]. In: *Talent and Creativity in the Science: International Scientific Conference May 22, 2012 conference proceeding*, Sopron: University of West Hungary Faculty of Economics, pp. 430-448.

HARNOS, L. (2009). Hiányzó láncszemek: A magyarországi ingatlanértékelés helyzete az oktatás tükrében [Missing Links: The Situation of Real Estate Evaluation in Hungary in the Light of Education]. In: *National Conference on Property Management and Real Estate Distribution June 8-9, 2009. conference proceeding*, Székesfehérvár: University of West Hungary Faculty of Ceoinformatics, pp. 197-200.

***Book chapter:***

HARNOS, L. (2001). Hitelbiztosítéki értékelés [Assesment of Mortgage Lending Value]. In: Á. Piller, ed., *Az ingatlanforgalmazás kézikönyve*, Budapest: Közgazdasági és Jogi Könyvkiadó, pp. 171-200.

### ***University textbooks:***

HARNOS, L. (2009). *Ingatlanvagyon-értékelés [Real Estate Valuation]*. Székesfehérvár: University of West Hungary Faculty of Geoinformatics.

DIPPONG, M. & HARNOS, L. (2008). *Speciális ingatlanok értékelése [Evaluation of Special Properties]*. Székesfehérvár: University of West Hungary Faculty of Geoinformatics.

HARNOS, L. (2008). *Ingatlanfinanszírozás és befektetés (Real Estate Financing and Investment)*. Székesfehérvár: University of West Hungary Faculty of Geoinformatics.

HARNOS, L. & KERESZTÉLY, D. (2008). *Ingatlangazdálkodás [Real Estate Management]*. Székesfehérvár: University of West Hungary Faculty of Geoinformatics.

### ***Vocational training textbooks:***

HARNOS, L. (2008). Az ingatlan és környezetének elemzése [Analysis of Real Estate and its Environment]. In: K. Netkovszky, ed., *Értékbecslési ismeretek*, Budapest: FÜTI OMEGA, pp. 49-54.

HARNOS, L. (2008). Piaci összehasonlító adatokon alapuló forgalmi értékelés [Direkt Comparison Method]. In: K. Netkovszky, ed., *Értékbecslési ismeretek*, Budapest: FÜTI OMEGA, pp. 55-65.

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HARNOS, L. (2006). Hitelbiztosítéki értékelés [Assesment of Mortgage Lending Value]. In: K. Netkovszky, ed., *Értékbecslési ismeretek I.*, Budapest: FÜTI OMEGA, pp. 153-170.

***The full publication list of the author is available in the Repository of Hungarian Scientific Works (MTMT):***

<https://m2.mtmt.hu/gui2/?type=authors&mode=browse&sel=10032863&view=simpleLis>

