

INTERRELATION OF LARGE-SCALE PROPERTY DEVELOPMENT PROJECT AND THE LOCAL REAL ESTATE MARKET. EVIDENCE FROM HUNGARY

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Abstract: *The Hungarian real estate market has gone through a widely fluctuating phase in the new millennium, which has not missed periods of surge, crisis-driven gloom and recovery. Amidst these conditions, an international developer engaged in a large-scale, long-timeframe residential property building project (Sasad Liget Residential Complex) in District XI of the Hungarian capital. The article examines the exposures and impacts of the development project to the external factors. The deployed quantitative statistical methods reveal that despite the considerable weight of the project, the in-market performance of SLRC has been the function of the general swings of the sector. Further, although the project generated higher demand than the bulk of other properties in the vicinity, its weight has not been enough to impact the property market of District XI at a statistically significant degree.*

Keywords: *Residential property development, quantitative, real estate market conditions*
(JEL Classification: *E31, R31*)

INTRODUCTION

The development of Sasad Liget Residential Complex (SLRC) was launched in 2005 by Biggeorge Property Zrt. (Biggeorge) in District XI in Budapest. Amidst fierce competition among the potential buyers for the property development area in the booming real estate sector, the company had to pay 5 billion HUF (over 18.1 million USD at current exchange rate) for the spot of land, which was considerably higher than the budgeted 3 billion HUF cost of acquisition. The development project of 800 – 1200 flats was scheduled to be completed by 2019 in six stages. The development of the property has been completed by and large according to plan and selling the homes has followed with a natural lag.

The SLRC development (be it as large scale as it is) has not taken place in isolation. It is embedded in the widely fluctuating global, Hungarian and District XI of Budapest property market, where the prices are determined by multifaceted factors (Fernandez-Duran et al., 2011). From the global perspective, several sources (e.g. Bhardan & Kroll, 2007; Jacobides, 2007; Edge, 2001) call attention to the internationalization of the value

chain of the real estate industry, while the Norges Bank (2015) recognize the effects of globalization, technological evolution, sustainability concerns, demography and urbanization that fundamentally impact the local property markets. To supplement the megatrends, empirical studies underscore the relevance of local transportation infrastructure (So et al., 1997; Lewis-Workman & Brod, 1997), environmental qualities (Ridker & Hanning, 1967), availability of quality education (Hayes et al. 1996), criminal safety (Gibbons & Machin, 2008), the legal framework and policy (Karanikolas et al., 2011) in shaping the segment. Further, certain empirical studies provide evidence that large-scale development projects tend to impact the local property market by shifting prices. Wiley (2015) and Rusert (2017) describe such effects regarding commercial property developments, and Zahirovich-Herbert & Gibler (2014) report a positive influence of large-scale residential investments on local home prices. At the same time, while certain data seems to support a long-term positive influence of real estate FDI on local home prices (e.g. Kim and &, 2011), Gholipour et al. (2014) fail to isolate such price-distorting effect in the framework of OECD countries.

The SLRC homes compete with the community of private sellers in this composite space. With the assumption that the vast array of dimensions of the external conditions exert a uniform impact on the local real estate sector, the investigation uses the national and Budapest home price indices as proxies of the external conditions. The article seeks to place the SLRC project in the local property market and observe how it performed against and impacted the scattered competition of local sellers of existing homes.

MATERIALS AND METHODS

The investigation relies solely on quantitative data from professional sources to apply statistical methods to deliver quantified measures of the subject. Since the quality of the analysis (and consequently that of the outcome) is the function of the credibility of the sources, great emphasis is placed on the selection of data supply. Official data sources (the Hungarian Tax Authority, financial institutions in the primary and secondary levels) as well as first-hand sources (Biggeorge Property ZRT) are preferred.

The research approach involves the standard steps, which includes data cleaning, outlier detection, compatibility checks, with the aim of generating a bias and foul-free starting stage. Missing, incomplete and erroneous data, as well as not-relevant data are cleansed listwise, which resulted a palpably truncated but integral dataset.

The analysis utilizes the following structure:

- Descriptive assessment of the SLRC project, which primarily constitutes the observation of means and the patterns of outliers of the most relevant attributes (carpet area, selling prices, sqm selling prices).
- Descriptive analysis of the evolution of the local (i.e. District XI residential property market) in terms of the attributes relevant for comparison with the SLRC project.
- Identification of the relevant markers (i.e. home price indices) of the conditions of the real estate market in Hungary.
- Exploring the quantitative proxy of the macroeconomic conditions. Through correlation analysis of District IX and SLRC performance against a set of home price indices, it is feasible to pinpoint the index that most closely describes the state of the local real estate market.
- Removing the time component of the timely evolution of selling prices by adjusting the selling price with the proxy of the macroeconomic conditions. Through the exercise, the real demand for SLRC flats and for flats in District IX are established. As the adjusting index is the same, the comparison of real demands becomes feasible.
- Identifying periods of similar and dissimilar periods in real demands and quantifying the impact of extra high SLRC real demand periods on the real demand of its immediate competitive space (District IX).

RESULTS AND DISCUSSION

1 The SLRC project

Table 1 and Table 2 tabulate the timing of SLRC development and the statistics of the sales of homes in the residential complex. At this point it is worth noting the most relevant data cleansing processes and their impact. First, the sales of 2 homes prior to the completion of the first phase of the SLRC project proves to be atypical pre-sales. Omitting these transactions discards the year 2007 from the analysis, which frees the distorting effect of having minimal amount of SLRC data in a sea of information from other data sources. Second, the dataset provided by Biggeorge contains zero transactions in the period 2013 – 2014. To establish comparability, these years are dropped from the input of all other data sources. It is well understood that by doing so, the continuity of the time series data is compromised. This shortcoming is overcome by interpreting the data as individual autocorrelated data points.

Table 1: Timing of SLRC development

	SLRC I	SLRC II	SLRC III	SLRC IV	SLRC V	SLRC VI
Year of completion	2008	2011	2017	2018	2019	2019
Number of flats	215	275	213	299	217	187
Flat size range (sqm)	31 – 110	28 – 90	42 – 141	28 – 128	28 – 130	28 – 131

Source not disclosed at the request of data owner Biggeorge

Table 2: Statistics of sales of homes in the SLRC project

	Number of transactions	Average sales price (HUF)	Average carpet area (sqm)	Average carpet area price (HUF / sqm)
2007	2	28,793,610	61.61	469,787
2008	50	29,756,748	61.91	482,913
2009	78	30,340,883	65.86	512,863
2010	58	28,677,109	61.13	477,160
2011	31	25,341,053	61.39	413,713
2012	22	26,548,597	59.15	445,980
2013	N/A	N/A	N/A	N/A
2014	N/A	N/A	N/A	N/A
2015	3	49,249,433	68.60	709,620
2016	566	37,715,451	60.56	625,378
2017	260	41,198,764	55.05	745,481

Source not disclosed at the request of data owner Biggeorge Holding

Interpreting the raw data reveals that after the years of relatively sluggish in-market performance, Biggeorge has been able to break out of the narrow range of HUF / sqm selling prices (410,000 - 510,000 HUF), and arrived to the much more lucrative 620,000 – 750,000 range (~+50 percent).

The spur of demand is reflected in the triple-digit number of transactions in the period.

2 District XI real estate market

Table 3 tabulates the home sales statistics of the immediate vicinity (District XI of Budapest) of the SLRC project. The data is compiled from the Hungarian Tax Authority (NAV) database of property sales in the district. For the sake of comparability, only those sales transactions are included in Table 3 that match the year that Biggeorge reported home sales in (i.e. 2008 – 2017, excluding 2013 and 2014). In addition, the database is cleansed to contain only residential property transactions. The latter condition is approximated by filtering out all items that fall out of the carpet area boundaries (i.e. between 8 and 150 sqm) reported in the SLRC project. So cleansed, the District XI database is made up of 4,496 fully classified and relevant transactions.

Table 3: Statistics of sales of homes in District XI in Budapest

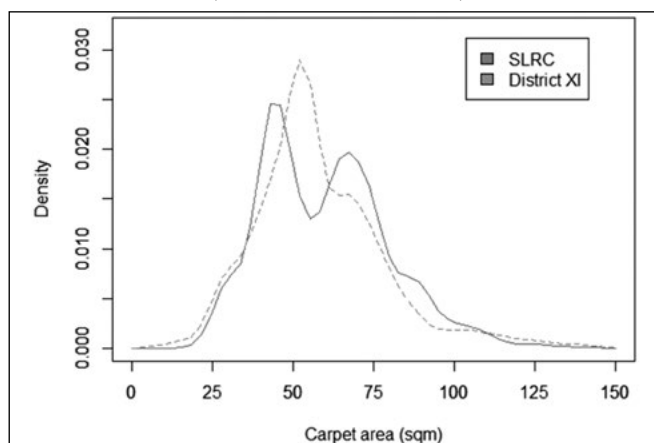
	Number of transactions	Average sales price (HUF)	Average carpet area (sqm)	Average carpet area price (HUF / sqm)
2007	omitted	omitted	omitted	omitted
2008	920	19,451,808	59.40	319.264
2009	1,562	20,764,517	59.13	349.067
2010	426	17,281,435	59.91	283.910
2011	494	16,853,608	58.70	278.996
2012	416	12,941,262	52.72	237.021
2013	omitted	omitted	omitted	omitted
2014	omitted	omitted	omitted	omitted
2015	273	18,816,398	54.89	337.239
2016	101	25,455,792	56.08	458.487
2017	304	27,353,396	54.82	484.624

Source not disclosed at the request of data owner AXA Bank

The data reveals that although the number of completed transactions remained subdued and the size of flats sold slightly shifted south, the price per average carpet area received a healthy boost. Albeit the number of closed deals did not, the pace of price increase (+60 percent) surpassed that of SLRC flats.

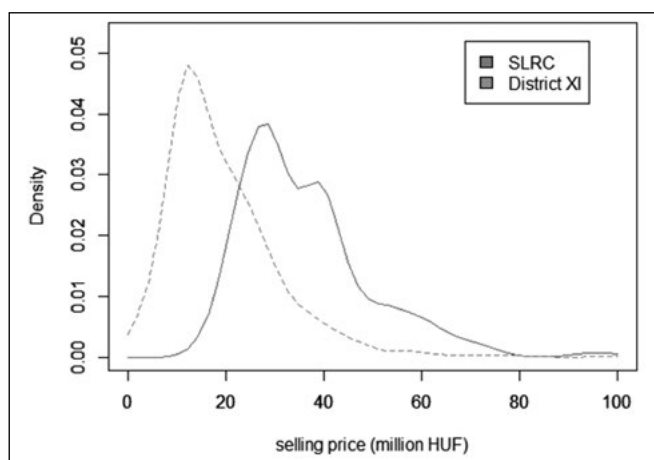
The graphical representation of the distribution of characteristics of the flat transactions in Figure 3 through Figure 5 aid the recognition that while the typical size of the residential property only marginally differs in SLRC (mean: 59.76 sqm) and in District XI (58.00 sqm), the flats in SLRC have been sold on considerably higher prices (mean: 36,611,454 HUF) than in the district in general (mean: 19,444,911 HUF), which translates to 618,313 HUF / sqm and 329,634 HUF / sqm (in SLRC and District XI, respectively).

Figure 1: Distribution of carpet area of property sold (SLRC vs. District XI)



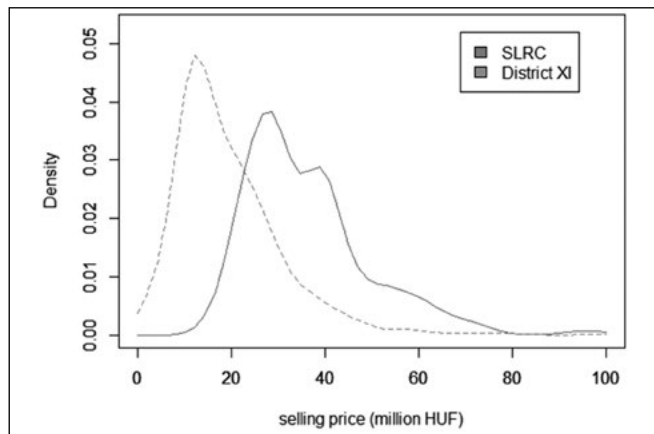
Source not disclosed at the request of data owners AXA Bank and Biggeorge Holding

Figure 2: Distribution of selling price of property sold (SLRC vs. District XI)



Source not disclosed at the request of data owners AXA Bank and Biggeorge Holding

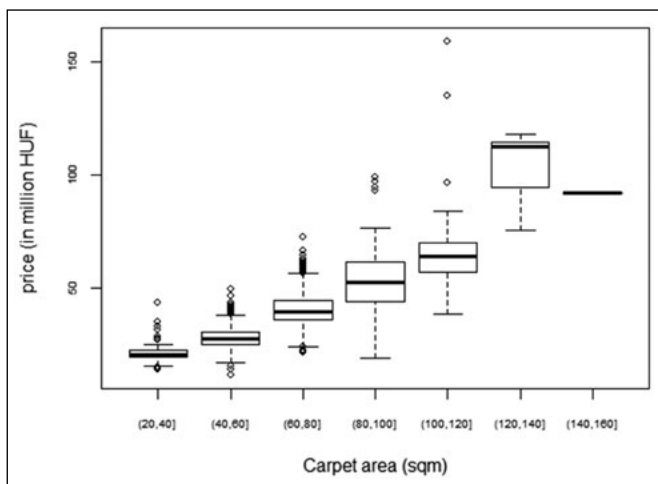
Figure 3: Distribution of price / sqm of property sold (SLRC vs. District XI)



Source not disclosed at the request of data owners AXA Bank and Biggeorge Holding

Throughout the now-completed phases of the SLRC project, the correlation between carpet area and sales price (0.7897) is stronger than in the greater District XI (0.6588), which conceivably can be attributed to the fact that the flats available in SLRC are relatively homogeneous compared to those sold in the rest of the district in terms of non-tested properties such as quality, location or used / new. In addition to depicting the close to linear relationship between carpet area and sales price, Figure 6 also shows that outlier ratios have been habitually on the positive side, which adds evidence for the higher demand for SLRC real estate.

Figure 4: Relationship between carpet area and sales price in SLRC (2008 - 2017 aggregate)

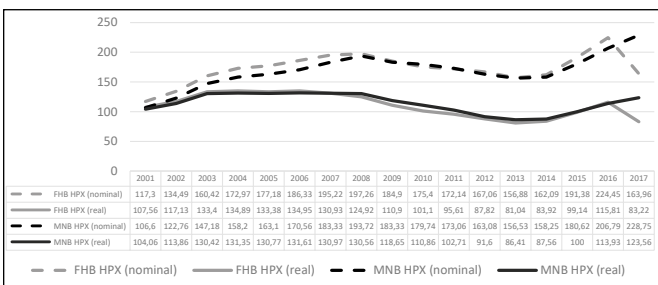


Source not disclosed at the request of data owners AXA Bank and Biggeorge Holding

1.3 Development of the real estate market

The ambitious SLRC development project was kicked off in a prospering Hungarian real estate market in 2005. Throughout the course of the 14-year span of the project, the sector has undergone considerably fluctuating market conditions, which has been faithfully captured by the price indices. (Figure 1)

Figure 5: Notable national level house price indices

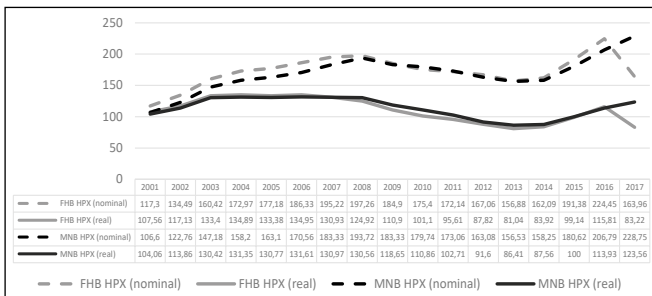


Source: MNB (2018a), FHB (2018)

Both the real and the nominal house price indices of the FHB Bank and the Hungarian Central Bank (MNB) clearly reflect the negative impact of the international financial crisis of 2008 and the fast recovery of the segment since 2013. Discounting

the opening gap in the publishers' data in 2017, the indices depict a uniform pattern in the observation timeframe. Breaking down the markers by settlement type evince that each section of the market has experienced similar fluctuations on the grand scale, although the external impact has been relatively muted in municipalities, while property prices have reacted more positively to recovery in urban areas, especially in the capital.

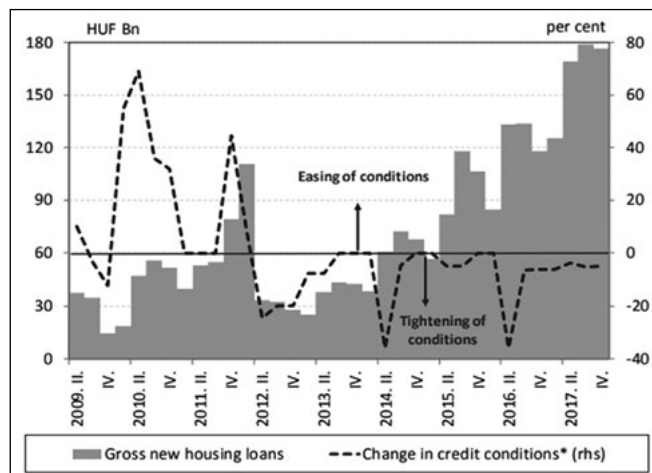
Figure 6: Aggregate nominal home price index



Source: MNB (2018a)

The evolution of the Hungarian real estate market has been subject to policy amendments by monetary and political governance. To aid the post-crisis recovery, policy makers launched initiatives to spur both demand and supply. Among the most relevant initiatives were (1) subsidizing home purchases of families with the CSOK program (Tóth and Kőkény, 2018); (2) through easing home purchase credit conditions (MNB, 2018b); and (3) to increase supply through reducing the value added tax for home builders (Hegedűs, 2015). Per the qualitative assessment of Plöchl (2018), the CSOK program was successful in expanding the buyer's financial means by extending access to loans in the populace and by channeling non-refundable funds to the buyers. This resulted in growing demand throughout the quality and price scales of homes. The positive impact of adjusting the credit conditions is captured quantitatively by MNB (2018b), establishing that easing credit conditions has given an initial impetus to the growth in gross housing loans (Figure 7)

Figure 7: Gross volume of housing loans and change in lending conditions

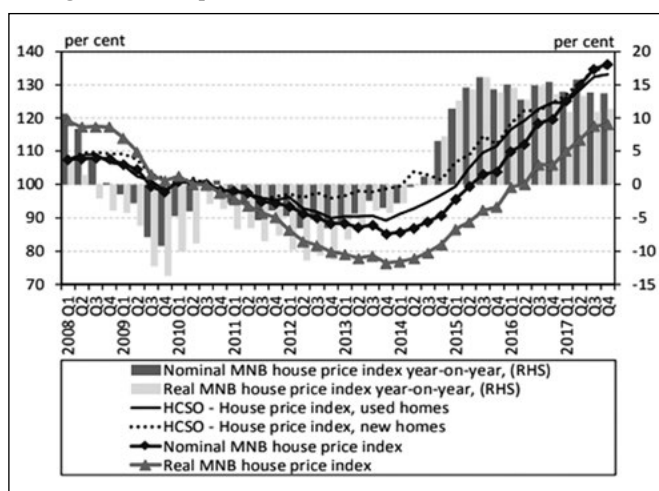


Source: MNB (2018b) pp.7

The evolution of the market conditions hints about the empirical performance of SLRC and District XI real estate sector. The listless post-crisis years have been replaced by the rapid increase of prices in all settlement niches, which (coinciding with the movements reported in SLRC and District XI) provides a plausible hypothesis to explain the local uptrend.

Regarding the macroeconomic conditions' affecting the trend in prices, the net impact is debated. While Plöchl (2018) claims that due to administrative and conditional constraints, CSOK beneficial demand impacts primarily manifested in the new home market, this claim is only partially supported by MNB data (2018). As Figure 8 depicts, the price gap between new and used homes has not had a clear direction; it opened in the 2012 – 2014 period and closed since. In this complex framework, the empirically higher prices attained by the SLRC project through its selling years vis á vis its neighboring local market is unlikely to be fully attributed to CSOK or its position in the new home segment.

Figure 8: Home price indices - incl. new and used



Source: MNB (2018b) pp.11

4 Correlation of Home Price Indices and Realized Sales

The goodness of fit between the SLRC and District XI home prices and the available home price indices are summarized in a correlation matrix. Perhaps not surprisingly, the MNB HPX with a Budapest focus demonstrates higher correlation with the sales prices than the FHB HPX that has a broader scope. At the same time, it is curious that the realized flat prices both in the district and in the SLRC project are more strongly correlated with the nominal indices than the CPI-adjusted real indices. The reason behind this phenomenon is out of the scope of this paper; the current relevance of the correlation matrix is that the nominal HPX of MNB is the most suitable for decomposing the time series of the sales prices in SLRC and in the district.

Table 5: Correlation matrix between selling price and home price

	Average selling price in SLRC	Average selling price / sqm in SLRC
	SLRC	SLRC
FHB nominal HPX (national level)	.2886	.1868
FHB real HPX (national level)	- .1112 -	.2373 .2373
MNB nominal HPX (Budapest)	.6600	.8500
MNB real HPX (Budapest)	.0529	.1763
	District XI	District XI
FHB nominal HPX (national level)	.3670	.3755
FHB real HPX (national level)	.1251	.0495
MNB nominal HPX (Budapest)	.9368	.9686
MNB real HPX (Budapest)	.6621	.5535

Source not disclosed at the request of data owners AXA Bank and Biggeorge Holding

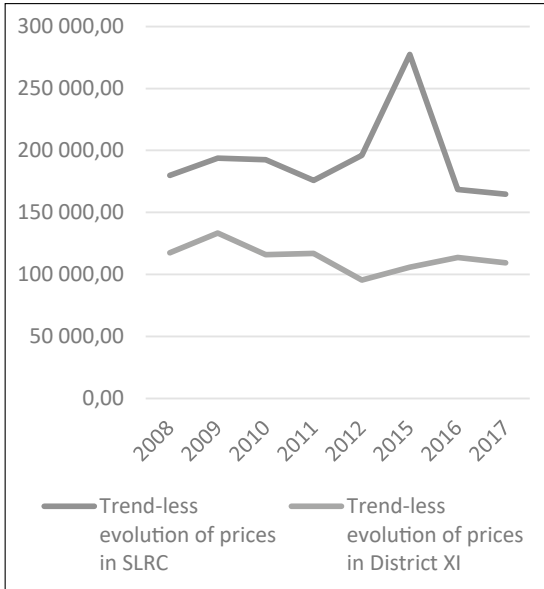
1.5 Net Price Evolution of Residential Real Estate in SLRC and District XI

In order to establish the potential impact of the SLRC project on the local residential property market, it is due to strip off the price evolution time series of the known external factors, because the impactful universal conditions would introduce distorting multicollinearity to the assessment. The conventional approach to identifying the stationary information in a time series is not applicable for the current data about the evolution of the prices, fundamentally because the relevant series of data does not contain enough elements to recognize trends and seasonality. At the same time, it has been established above that the MNB nominal home price index is strongly correlated with the home prices of the realized sales in both SLRC and District XI. Since the MNB nominal HPX captures the overall home price trend of a bigger radius, it seems safe to establish that it reveals the grand scale sectoral trend. Therefore, by removing this trend from the sales prices, the analysis can pinpoint the residual pattern in the annum-to-annum price changes.

It is worth noting that the resulting stationary time series of prices lose their natural scales. Thus, the series cannot be interpreted as the annual average monetary value of property transactions.

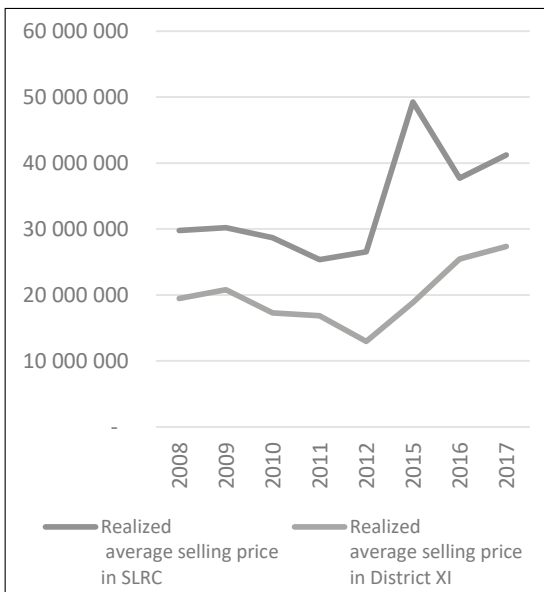
As shown in Figure 7 through Figure 8, the trend-removed evolution of prices visually reveals a flat demand for residential property in District XI, while removal of the trend does not smooth out the exceptional peak of demand for SLRC properties after 2011.

Figure 9: Trend-less evolution of selling prices



Source: own calculation (2018)

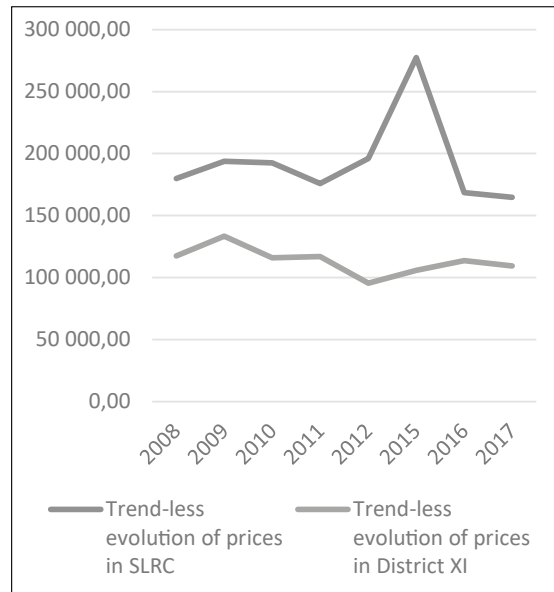
Figure 10: Realized evolution of selling price



Source: own calculation (2018)

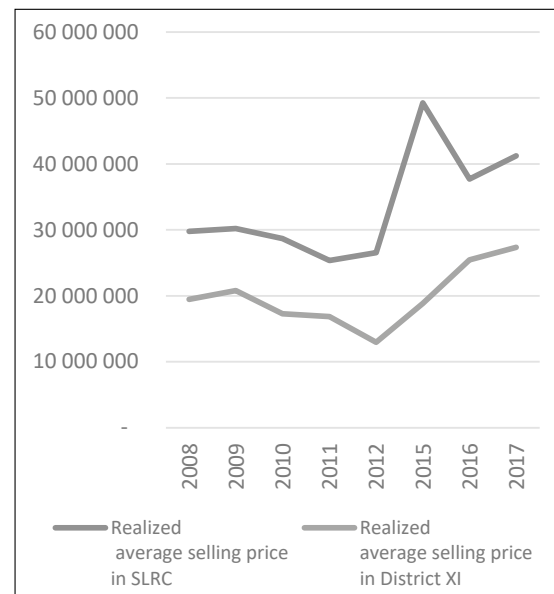
The exercise repeated on the carpet area price paints a very similar picture. The sqm prices in District XI seem to have been purely aligned with the larger market trends, but Biggeorge met a considerable positive deviation from the trends after 2011.

Figure 11: Trend-less evolution of sqm prices



Source: own calculation (2018)

Figure 12: Realized evolution of sqm prices



Source: own calculation (2018)

Whether the opening scissor of prices between the SLRC and the District XI residential properties in the post 2011 period denote a statistically verified effect of SLRC, is tested via multivariate analysis of variance. The trend-less evolution of the price of properties sold (SLRC and District XI) and the trend-less evolution of sqm prices of properties sold (SLRC and District XI) are assessed in pairs as dependent variables in the MANOVA exercise. The independent variable is uniformly a dummy variable (arbitrarily named spot) that separates years through 2012 from the post-2012 period.

1.5.1 Selling prices

Terms:

	spot	Residuals
Resp 1	114789293	8877418033
Resp 2	365763857	460286116
Deg. of Freedom	1	6
Residual standard errors:	38465.17	8758.673

Estimated effects may be unbalanced

Source: own calculation (2018)

Neither the post-hoc Pillai nor the Wilks test confirm ($p < 0.2287$) the significance of the difference in means between the tested periods.

Pillai test

	Df	Pillai	Approx. F num	Df den	Df	Pr(>F)
Spot	1	0.55429	2.0103	2	5	0.2287
Residuals	6					

Wilks test

	Df	Wilks	Approx. F num	Df den	Df	Pr(>F)
Spot	1	0.55429	2.0103	2	5	0.2287
Residuals	6					

Source: own calculation (2018)

1.5.2 Price / sqm

Terms:

	spot	Residuals
Resp 1	55141.1	1014025.9
Resp 2	23094.5	117027.4
Deg. of Freedom	1	6
Residual standard	411.1013	139.6587

Estimated effects may

Source: own calculation (2018)

Similar to the outcome of the MANOVA test regarding the selling price of the properties, the difference in the price / carpet area proves fail the significance test.

Pillai test

	Df	Pillai	Approx. F num	Df den	Df	Pr(>F)
Spot	1	0.16874	0.50749	2	5	0.63
Residuals	6					

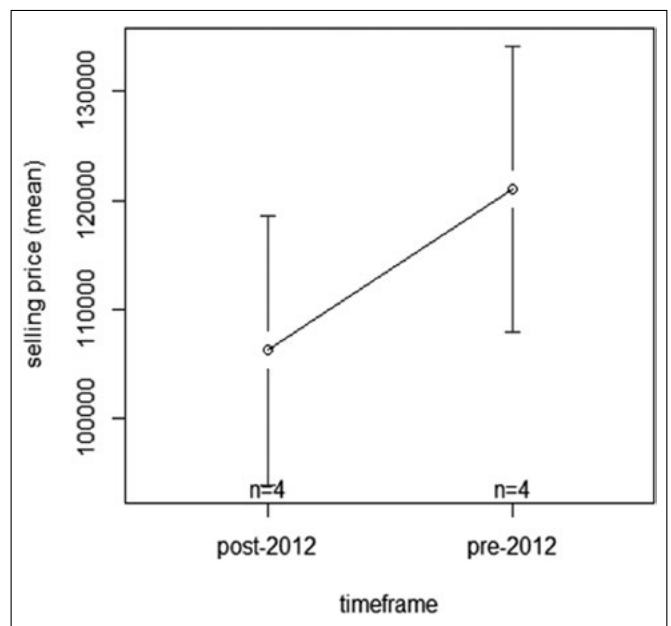
Wilks test

	Df	Wilks	Approx. F num	Df den	Df	Pr(>F)
Spot	1	0.83126	0.50749	2	5	0.63
Residuals	6					

Source: own calculation (2018)

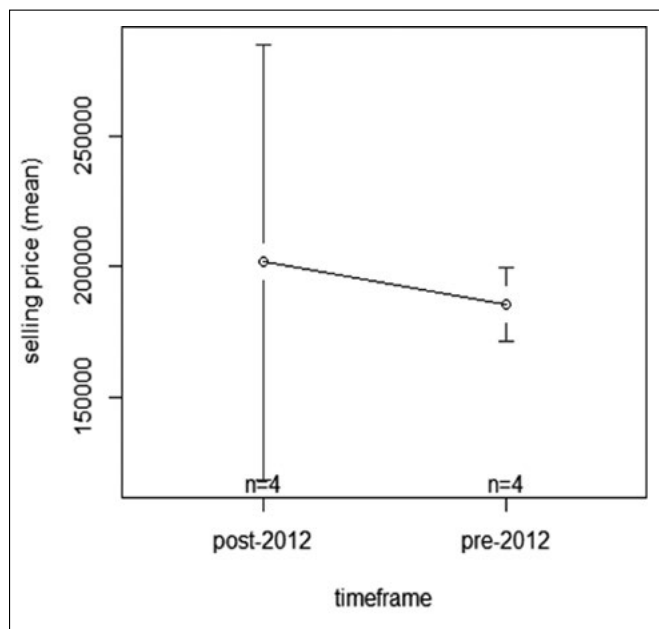
The graphical representation of the means of the selling price in the pre and post 2012 period is telling; it suggests that while the SLRC prices have grown less predictable (Figure 9), sales prices in the local district have lost momentum – albeit not to a degree that would be confirmed with statistical rigor.

Figure 13: Comparison of the means of selling price in distinct timeframes (District XI)



Source: own calculation (2018)

FIGURE 14: COMPARISON OF THE MEANS OF SELLING PRICE IN DISTINCT TIMEFRAMES (SLRC)



SOURCE: OWN CALCULATION (2018)

BRIEF CONCLUSION

The investigation revealed that the multi-year long large-scale Sasad Liget Residential Complex home development project has been more successful in generating demand than the community of sellers in the immediate competitive space, which materialized in higher absolute and sqm prices as well as in more rapidly expanding number of transactions with the sectoral recovery. Higher demand has been consistent through varied market conditions, which has been spackled with crisis and recovery periods as well as policy conditions. By removing the timely effect of the external conditions (that have arguably uniformly impacted SLRC and the rest of the neighboring selling universe), it was established that while real demand for SLRC has been consistently higher than the mean in District IX, particular comparative high-demand prevailed in the post-2012 period. Detecting the impact of the high demand period on the performance of the general real estate market in District IX revealed that the impact did not reach a statistically significant level.

The results suggest that the scale of the Sasad Liget Residential Complex development business project does not surpass the weight of the external conditions of the market. The in-market performance of selling the SLRC properties has largely been in line with the overall market trends captured by home price indices.

The outcome of the investigation supports the findings of Gholipour et al. (2014) and Kim & Yang (2011), that fail to isolate price distorting effects of large-scale development projects. However, it needs to be stated that the observed SLRC project has taken place in turbulent times real estate market. Thus, it cannot be rejected that the market has been dominated

by commanding external conditions, which superseded the effect of single (however large-scale) development projects. To account for this circumstance, it is recommended either to repeat the investigation in a more stable economic milieu or explore the impact of an even larger scale development project (relative to its surrounding market) that overwrites the macroeconomic conditions.

REFERENCES

- Bhardan, A. & Kroll, C.A. (2007). Globalization and the real estate industry: Issues, implications, opportunities. Proceedings of the Sloan Industry Studies Annual Conference (Cambridge).
- Edge, J. (2001). The globalization of real estate appraisal: A European perspective. *The Appraisal Journal*, 2001.
- Fernandez-Duran, L., Llorca, A., Ruiz, N. & Valero, S. (2011). The impact of location on housing prices: applying the Artificial Neural Network Model as an analytical tool. *ERSA conference papers*.
- FHB (2018). Index values and chart. [Online]. Retrieved 12 December 2018 from <http://www.fhbindex.com/FHB-Index/FHB-House-Price-Index/Index-values-and-chart>.
- Gibbons, S. & Machin, S. (2008). Valuing school quality, better transport and lower crime: evidence from house prices. *Oxford Review of Economic Policy*. 24(1), 99-119
- Gholipour, H.F., Al-mulali, U., Mohammed, M.A.H.B. (2014). Foreign investments in real estate, economic growth and property prices: Evidence from OECD countries. *Journal of Economic Policy Reform*. 14(1), 1-13
- Györgyi, B.M. (2018). Budapest flat prices are low compared to EU average. [Online]. Retrieved 12 September 2019 from <https://dailynewshungary.com/budapest-flat-prices-are-low-compared-to-eu-average/>.
- Hayes, K.J., Lori, L. & Taylor, L.L. (1996). Neighborhood school characteristics: What signals quality to homebuyers? *Economic Review of Federal Reserve Bank of Dallas*.
- Hegedűs, G. (2015). Jön az áfacsökkentés, beindulhat az építőipar. [Online]. Retrieved 12 December 2018 from <https://magyarepitok.hu/jon-az-afacsokkent-es-beindulhat-az-epitoipar>.
- Jacobides, M.G. (2007). Playing football in a soccer field: Value chain structures, institutional modularity and success in foreign expansion. *Managerial and Decision Economics*, 28, 1-20
- Karanikolas, N., Vagiona, D. & Xilifidou, A. (2011). Real estate values and environment: A case study of the effect of the environment on residential real estate values. *International Journal of Academic Research*. 3, 861-868
- Kim, S. & Yang, D.Y. (2011). The impact of capital inflows on asset prices in emerging Asian economies: Is too much money chasing too little good? *Open Economy Review*, 22, 293-315
- Lewis-Workman, S. & Brod, D. (1997). Measuring the neighborhood benefits of rail transit accessibility. *Transportation Research Records*. 1576, 147-153
- MNB (2018a). MNB House price index. [Online]. Retrieved 12 December 2018 from <https://www.mnb.hu/en/statistics/statistical-data-and-information/statistical-time-series/vi-prices/mnb-house-price-index>.
- MNB (2018b). Housing market report. [Online]. Retrieved 12 September 2019 from <https://www.mnb.hu/letoltes/lakaspici>

jelentes-2018-majus-en.pdf.

Norges Bank (2015). Global trends and their impact on real estate – Discussion note. [Online]. Retrieved 12 December 2018 from https://www.nbim.no/contentassets/c199863ae8374916ac15e780662db960/nbim_discussionnotes_2-15.pdf.

Plöchl, K. (2018). The Family Housing Support Program (CSOK) in Sopron. *E-conom*, 2018, VII./1. [Online]. Retrieved 12 September 2019 from http://real.mtak.hu/80245/1/04_PlochIK_e_conom_VII1_u.pdf

Ridker, R.G. & Henning, J.A. (1967). The determinants of residential property values with special reference to air pollution. *Rev.Econ.Stat.* 49(2), 246-257

Rusert, A. (2017). The effects of commercial development on residential property values. [Online]. Retrieved 12, December 2018 from <https://dspace.allegheeny.edu/handle/10456/42818>,

So, H.M., Tse, R.Y.C. & Ganesan, S. (1997). Estimating the influence of transport on house prices: evidence from Hong Kong. *Journal of Property Valuation and Investment.* 15(1), 40-47

Tóth, F. & Dr. Kökény A. (2018). The family housing allowance and the effects expected. *Economica New* 9(2), 55-63

Wiley, J.A. (2015). The impact of commercial development on surrounding residential property values. PhD, Georgia State University.

Zahirovich-Herbert, V. & Gibler, K.M. (2014). The effect of new residential construction on housing prices. *Journal of Housing Economics*, December 2014.

