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Are buyers of apartments superstitious? Evidence from the Russian real estate market

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Abstract

We study the influence of numerological superstitions on people's buying behavior in the apartment market using unique actual sales data. Based on the dataset from Saint-Petersburg primary real estate market we compare the share of sold apartments on floor 7 with that on floors 6 and 8, whereas floor 13 is benchmarked to floors 12 and 14. As floor plans are absolutely identical we manage to isolate the effects of the "lucky" and "unlucky" floors. The data we use allows clean identification of superstition effects, while being publicly available. We have found a clear negative effect of the 13th floor on demand for apartments, and a significant effect of preference towards the 7th floor compared to the two neighboring floors. Possible applications of our approach to other areas of consumer research are discussed.

Keywords: superstitions, jinx number, lucky number, real estate, apartments.

1 Introduction

Studies dedicated to analyzing the impact of superstitions on people's everyday and business decisions are rather scarce. However, they systematically show that various astrological and numerological superstitions influence economic decisions. Research into so-called Astronomics has proved that many astrological beliefs related to marriage and childbirth, especially common in Asian countries, appear to be self-fulfilling, thanks to which people born in different years and months can pursue different careers and achieve different levels of success in life (Akabayashi, 2008; Bennett & Barth, 1973; Bruckner, Subbaraman & Catalano, 2011; Johnson & Nye, 2011; Wong & Yung, 2005).

Other researchers studied the impact of jinx numbers on everyday decisions and consumer behavior. It was shown that individuals tend to be more risk-averse on Friday the 13th (Kramer & Block, 2008), which results in serious losses for certain industries (e.g., airlines) caused by the unwillingness of people to travel and do business on that day (Palazzolo, 2005). The influence of numerological superstitions on real estate price was supported by several studies (Bourassa & Peng, 1999; Fortin, Hill & Huang, 2014; Shum, Sun & Ye, 2014).

Even though many studies have found a significant effect of superstitions, recent research on the precious metals markets (Auer, 2015) and Asian stock markets (Auer & Rottmann, 2014) identified no systematic superstitious seasonality related to the Friday the 13th effect. Less pronounced superstition effects on commodity and stock markets might be explained by the correction caused by rational people taking advantage of the superstitious ones in these markets, which may not be the case on residential real estate markets.

We have found neither research on the role of these numbers in real estate markets, nor economic studies of superstitious behavior based on Russian data. Papers related to superstitious behavior in real estate markets were inspired mainly by Chinese numerology. Superstitions common in Russia are, on the contrary, closer to those widespread in western countries than to Asian beliefs: in particular, the number 7 is considered lucky, whereas the number 13 is associated with bad luck (Block & Kramer, 2009). The reluctance of buyers to the 13th floor would imply that having a 13th floor in a building may be considered economically inefficient: for the seller, the apartment on the 13th floor takes longer to sell and the buyer might have hard times reselling the apartment in the future. The fact that it is not common at all to omit "13" in the numbering of floors or buildings in Russia as it is done in some western countries gives us an opportunity to identify the role of numerological superstitions in the marketplace. In addition, our identification strategy differs from that used in any other study. First, whereas most researchers analyzed the influence of certain indicators of good or bad luck on real estate prices, we analyze actual consumer choice made in the primary market for apartments. Second, we manage to isolate the effect of the numbers 7 and 13 from the effects of other features (price, view from the window, etc.) by comparing identically planned and priced floors: floor 13 is compared to floors 12 and 14, while floor 7 is benchmarked to floors 6

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and 8. Because of the active residential real estate development in Saint-Petersburg, the second largest city in Russia, it was possible to collect data on a sufficient number of apartment houses that are being constructed and to look at how successfully apartments located on different floors are sold.

In Section 2 we describe our dataset and methods. In Section 3 we present the results of our statistical analysis. Section 4 concludes and outlines some directions for future research.

2 Materials and methods

The dataset collected in November, 2014, consists of 201 observations and contains data on the share of apartments sold on floors 6–8 (34 apartment buildings) and 12–14 (33 apartment buildings) for all residential buildings being constructed in Saint-Petersburg, Russia with floor plans available online[1] that meet the following requirements:

1. All buildings have no fewer than 15 floors (if a building has 14 floors, then for many people the 14th floor would be preferable, because there are no neighbors upstairs).
2. The price of an apartment is independent of the floor on which it is located. This is typical of apartments sold on the primary residential real estate market in Russia by the construction company. Initial prices are not typically negotiated.
3. Plans of floors 6–8 and 12–14 are identical so that floors 6 and 8 can be used as counterfactuals for floor 7, while floors 12 and 14 can be used for floor 13.
4. The house is under construction and will be finished within 1–2 years from the date of data collection. If apartments in a certain object have been on the market for a long time, they are usually eventually bought by someone. That is why as time goes by the share of sold apartments converges to the 100% for all floors. Therefore, the differences among the floors are likely to be negligible if residential real estate objects whose sales started long ago prevail in the sample.
5. The percentage share of sold apartments on floors 6–8 or floors 12–14 is larger than 0, but smaller than 100.
6. There are no fewer than 10 apartments on each floor (the aggregate number of apartments across all sections of the building).

Criteria 1–3 ensure the exogeneity of the floor number, which is extremely important as we want to isolate the effect of the floor on the demand for apartments. Criteria 4–6 help us to avoid major problems with data sufficiency and representativeness.

The following hypotheses were tested:

[1]The apartments on the Russian primary market are sold by the developers under shared ownership terms (new build construction of apartment buildings financed by the future owners). Only initial purchases of apartments from the developers are considered in our study.

Table 1: Mean percentage shares of sold apartments.

Floor	Mean, %	s.d. %
6	65.8	30.7
7	68.6	28.1
8	66.5	27.0
12	64.8	28.7
13	54.9	30.1
14	61.8	28.5

Table 2: The results of the paired samples t-tests.

Difference tested	t	p (one-tailed)
floor7 vs. (floor6+floor8)/2	1.962	0.029
floor13 vs. (floor12+floor14)/2	4.884	0.000

H1. The share of sold apartments is higher for the 7th floor than for the 6th and 8th floors.

H2. The share of sold apartments is lower for the 13th floor than for the 12th and 14th floor.

In order to test these hypotheses we compared the percentage of apartments sold on the 7th (13th floor) with the average percentage sold on the 6th (12th) and 8th (14th) floors using the one-tailed t-tests and the Wilcoxon signed ranks tests. Both parametric and nonparametric tests were used for a robustness check.

3 Results

Mean percentage shares of sold apartments are presented in Table 1. Among the six floors that were analyzed the sample proportion of sold apartments is the lowest for floor 13 (54.9%) and the highest for floor 7 (68.6%).

The results of the one-tailed t-tests are presented in Table 2. The null hypotheses are that the $floor_7$ is not greater than than the average of $floor_6$ and $floor_8$, and that $floor_{13}$ is not less than the average of $floor_{12}$ and $floor_{14}$, is zero.

The results of the Wilcoxon signed rank tests are presented in Table 3 ($floor_j$ corresponds to the percentage of apartments sold on floor j). The null hypotheses are that the distribution of $floor_7$ is not greater than the distribution of the average between $floor_6$ and $floor_8$, while the distribution of $floor_{13}$ is not less than the distribution of the average between $floor_{12}$ and $floor_{14}$.

The results of both tests support the proposition that the share of sold apartments tends to be significantly lower

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Table 3: The results of the Wilcoxon signed ranks tests.

Difference tested	Z	p (one-tailed)
floor7 vs. (floor6+floor8)/2	1.940	0.026
floor13 vs. (floor12+floor14)/2	4.213	0.000

on the 13th floor than on the 2 neighboring floors (p-value<0.001), while sales on floor 7 are significantly higher than on the 6th and the 8th floors (p-value<0.03).

4 Conclusion and directions for future research

Academic research still provides little empirical evidence on the effect of superstitions on consumer decision making, and research efforts were concentrated mainly on studying Asian superstitions. Our study addresses the issue of the influence of superstitions related to numbers 13 and 7 on people's buying behavior in Russia. A unique feature of our methodology is that we analyze real sales data instead of conducting a survey or a conjoint study that may seem to be appropriate tools. Therefore, we study the actual consumer behavior in natural market conditions. Despite the fact that we use non-experimental data, our explanatory factor, the floor number, is exogenous since we consider only floors 12, 13 and 14, which are almost indistinguishable objectively.

Based on the dataset from the primary real estate market we have found a negative effect of the 13th ("unlucky") floor on demand for apartments in new apartment houses. A premium for the 7th floor is also statistically significant. This implies that in Russia numerological superstitions are likely to influence the choice of residential real estate, even though this is not reflected in primary real estate pricing. Our results imply that the existence of the 13th floor is inefficient and it would be better if the US custom to omit floor 13 were adopted in Russia.

The fact that our dataset contains publicly available data makes our research easily replicable and, in addition, shows the potential of online data in consumer research. For example, similar type of data and methodology can be used to do research on the preferences for floor plans or apartment plans, where survey data still prevail (Gao, Asami, Zhou & Ishikawa, 2013), while high quality observational data can often serve as a good alternative.

References

Akabayashi, H. (2008). Lives of the firehorse cohort: what the statistics show. *Japanese Economy*, *35*(3), 34–54.

Auer, B. R. (2015). Superstitious seasonality in precious metals markets? Evidence from GARCH models with time-varying skewness and kurtosis. *Applied Economics*, *47*(27), 2844–2859. http://dx.doi.org/10.1080/00036846.2015.1011308.

Auer, B. R., & Rottmann, H. (2014). Is there a Friday the 13th effect in emerging Asian stock markets? *Journal of Behavioral and Experimental Finance*, *1*, 17–26. http://dx.doi.org/10.1016/j.jbef.2014.01.001.

Bennett, J. T., & Barth, J. R. (1973). Astronomics: A new approach to economics? *The Journal of Political Economy*, 1473–1475.

Block, L., & Kramer, T. (2009). The effect of superstitious beliefs on performance expectations. *Journal of the Academy of Marketing Science*, *37*(2), 161–169.

Bourassa, S. C., & Peng, V. S. (1999). Hedonic prices and house numbers: The influence of feng shui. *International Real Estate Review*, *2*(1), 79–93.

Bruckner, T. A., Subbaraman, M., & Catalano, R. A. (2011). Transient cultural influences on infant mortality: Firehorse daughters in Japan. *American Journal of Human Biology*, *23*(5), 586–591.

Fortin, N. M., Hill, A. J., & Huang, J. (2014). Superstition in the Housing Market. *Economic Inquiry*, *52*(3), 974–993.

Gao, X., Asami, Y., Zhou, Y., & Ishikawa, T. (2013). Preferences for floor plans of medium-sized apartments: A survey analysis in Beijing, China. *Housing Studies*, *28*(3), 429–452.

Johnson, N. D., & Nye, J. V. C. (2011). Does fortune favor dragons? *Journal of Economic Behavior & Organization*, *78*(1), 85–97.

Kramer, T., & Block, L. (2008). Conscious and nonconscious components of superstitious beliefs in judgment and decision making. *Journal of Consumer Research*, *34*(6), 783–793.

Palazzolo, R. (2005). Is Friday the 13th a reason to stay in bed? *ABC News*.

Shum, M., Sun, W., & Ye, G. (2014). Superstition and "lucky" apartments: Evidence from transaction-level data. *Journal of Comparative Economics*, *42*(1), 109–117.

Wong, K.-F., & Yung, L. (2005). Do dragons have better fate? *Economic Inquiry*, *43*(3), 689–697.

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