

# Sales Comparison Approach Indicating Heterogeneity of Particular Type of Real Estate and Corresponding Valuation Accuracy

Martin Cupal

Expert Engineering Department, Institute of Lifelong Learning, Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czech Republic

The article focuses on heterogeneity of goods, namely real estate and consequently deals with market valuation accuracy. The heterogeneity of real estate property is, in particular, that every unit is unique in terms of its construction, condition, financing and mainly location and thus assessing the value must necessarily be difficult. This research also indicates the rate of efficiency of markets across the types based on their level of variability.

The research is based on two databases consisting of various types of real estate with specific market parameters. These parameters determine the differences across the types and reveal heterogeneity. The first database has been set on valuations by sales comparison approach and the second one on data of real properties offered on the market. The methodology is based on univariate and multivariate statistics of key variables of those databases. The multivariate analysis is performed by Hotelling  $T^2$  control chart and statistics with appropriate numerical characteristics. The results of both databases were joint by weights with regard to the dependence criterion of the variables. The final results indicate potential valuation accuracy across the types.

The main contribution of the research is that the evaluation was not only derived from the price deviation or distribution, but it also draws from causes of real property heterogeneity as a whole.

**Keywords:** sales comparison approach, heterogeneity, price adjustment, real estate, Hotelling  $T^2$  control chart, valuation accuracy, offering

Prepublished online: July 3, 2017; Published: May 1, 2017



[Open full article](#)

## References

1. COLWELL, P. F., CANNADAY R. E. and WU, C. 1983. The Analytical Foundations of Adjustment Grid Methods. Journal of the American Real Estate and Urban Economics Association, 11(1): 11-29. DOI: 10.1111/1540-6229.00277 [Go to original source...](#)
2. CUPAL, M. 2015a. Historical Perspective of Residential Development and its Impact on the Current Market Prices of Apartments on the Czech Real Estate Market. Procedia Economics and Finance, 26: 144 - 151. DOI: 10.1016/S2212-5671(15)00902-8 [Go to original source...](#)
3. CUPAL, M. 2015b. Flood Risk as a Price-setting Factor in The Market Value of Real Property. Procedia Economics and Finance, 23: 658 - 664. DOI: 10.1016/S2212-5671(15)00447-5 [Go to original source...](#)
4. CUPAL, M. 2014. The Comparative Approach theory for real estate valuation. Procedia - Social and Behavioral Sciences, 109: 19 - 23. DOI: 10.1016/j.sbspro.2013.12.414 [Go to original source...](#)
5. CUPAL, M. 2010. Bid prices and market prices relation of real estate modelling. Journal of International Scientific Publications: Economy & Business, 4: 213 - 220.
6. DUNSE, N., JONES, C. and WHITE, M. 2010. Valuation accuracy and spatial variations in the efficiency of the property market, Journal of European Real Estate Research, 3(1): 24-45. DOI: 10.1108/17539261011040523\_ [Go to original source...](#)

7. HOTELLING, H. 1947. Multivariate Quality Control. In: EISENHART, C., HASTAY, M.W. AND WALLIS, W. A. (Eds.) Techniques of Statistical Analysis. New York: McGraw-Hill.
  8. ISAKSON, H. R. 2002. The linear algebra of the sales comparison approach. Journal of real estate research, 24(2): 117 - 128. [doi>Go to original source...](#)
  9. JOWSEY, E. 2011. Real Estate Economics. New York: Palgrave Macmillan.
  10. MANASTER, M. S. 1991. Sales Comparison Approach: A Comparative Analysis of Three Appraisal Reports on the Same Property. The Real Estate Appraiser, 5: 12-26.
  11. MESZEK, W. 2013. Property valuation under uncertainty. Simulation vs strategic model. International Journal of Strategic Property Management, 17(1): 79 - 92. DOI: 10.3846/1648715X.2013.782165. [doi>Go to original source...](#)
  12. MONTES-ITURRIZAGA, R. and HEREDIA-ZAVONI, E. 2016. Multivariate environmental contours using C-vine copulas. Ocean engineering, 118: 68 - 82. DOI: 10.1016/j.oceaneng.2016.03.011. [doi>Go to original source...](#)
  13. MOVABLE TYPE LTD. 2016. Calculate distance, bearing and more between Latitude/Longitude points. MTL Movable Type Scripts. [Online]. Available at: <http://www.movable-type.co.uk/scripts/latlong.html> [Accessed: 2016, August 15].
  14. NELSEN, R. B. 2006. An Introduction to Copulas. Berlin/Heidelberg: Springer.
  15. NIST/SEMATECH. 2013. Engineering Statistics Handbook. [Online]. Available at: <http://www.itl.nist.gov/div898/handbook/pmc/section5/pmc543.htm>. [Accessed: 2016, August 1].
  16. RATTERMANN, M. R. 2007. Valuation by Comparison, Residential Analysis and Logic. Chicago: Appraisal Institute.
  17. RHODES, G. 2014. Qualitative analyses in the sales comparison approach revisited. The Appraisal Journal, 82(4): 281 - 294.
  18. SHAPIRO, E., MACKMIN, D. and SAMS, G. 2012. Modern methods of valuation. 11th Edition. Oxford: Estates Gazette. [doi>Go to original source...](#)
  19. SPEARMAN, C. 1906. "Footrule" for measuring correlation. British Journal of Psychology, (2)1: 89-108. [doi>Go to original source...](#)
  20. STATSOFT. 2013. Statistica 12: Electronic Statistics Textbook. Tulsa, OK: StatSoft.
  21. THE EUROPEAN GROUP OF VALUER'S ASSOCIATIONS - TEGOVA. 2012. The european valuation standards. 7th Deition. Brussels: TEGOVA.
  22. THE INTERNATIONAL VALUATION STANDARDS COMMITTEE - IVSC. 2011. The international valuation standards IVS. London: IVSC.Contact information
- 

This is an open access article distributed under the terms of the [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License \(CC BY NC ND 4.0\)](#), which permits non-commercial use, distribution, and reproduction in any medium, provided the original publication is properly cited. No use, distribution or reproduction is permitted which does not comply with these terms.

---

[Return to the content](#)