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# CERTIFICATE

## VALIDATION CERTIFICATE FOR THE AUTOMATED VALUATION MODELS (HEDONIC PRICE MODELS SWITZERLAND) OF IAZI AG – CIFI SA

To whom it may concern

I hereby certify that I have been instructed by IAZI AG – CIFI SA, Tramstrasse 10, 8050 Zürich, to conduct a critical analysis of the hedonic property pricing models under IAZI license since 1994.

I have no financial interest in IAZI AG, I am not a stakeholder in the company and I am totally independent from its managers and owners. I have known the managing team for a long time, having worked with them in the context of various scientific research projects, as well as in the SFAA's Examination Commission, which I currently chair.

Author of numerous academic publications on the subject, professor of the topics covered by this mandate, having worked as chairman of the banker's expert committee which set the standards leading to the creation of IAZI's hedonic models and having chaired banking and institutional investor groups of property experts on several occasions, I believe to have the adequate knowledge, skills and competences to execute this mandate.

### **Three hedonic price models for Switzerland were subject of this validation process:**

1. A1 – Multi-family houses (residential with up to 30 % of commercial)
2. A2 – Single-family houses
3. A3 – Condominiums

For the proper execution of the mandate, I received a detailed report with a description of the methodology, its evolution through time and the internal testing and validation results of the hedonic price models. The document may be consulted by IAZI's banking clients upon request. This document served as basis for a two-day audit conducted on the 22<sup>nd</sup> and 23<sup>rd</sup> of October 2019 at the IAZI offices in Zurich.

October 2019

The following subjects were critically discussed and reviewed during the two-day audit with the IAZI quantitative model specialists.

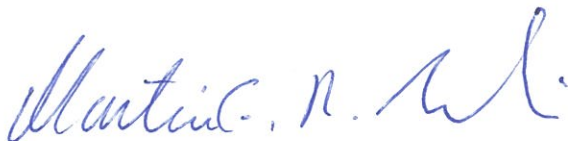
An examination of the data used to calibrate the models, their sources, the way the data are processed and the descriptive analyses enabled me to assess the extent to which the models are representative. IAZI only uses free hand transactions to calibrate its models. After the data are delivered by the clients, IAZI ensures that duplicates or erroneous data are excluded from the analyses. IAZI's database on transactions is estimated to cover around 50% to 70% of the transactions at arm's length carried out each year in Switzerland. This database is complemented with geographically referenced data, that have an impact on property prices in Switzerland and that are available from both public and private sources. The inspection shows that IAZI has sufficient data for the development of reliable valuation models.

The methodology applied to identify the most appropriate models is in line with international academic practices. The model specialists in charge of the calibration, internal validation and improvements have the appropriate technical qualifications.

The model preparation process for the distribution to the clients, the quality control methods employed and the IAZI-internal validation reports are adequate. The IT components (DLL, web services, programs and database) undergo strict controls to identify potential operational dysfunctions. In addition to the appraisal values, IAZI's hedonic price models provide qualitative and quantitative information regarding the applicability and accuracy of each appraisal.

Under the terms of this mandate and in compliance with the confidentiality agreements between IAZI and its clients, I had unrestricted access to all internal information, data and documents relating to the production and distribution of its hedonic price models. I certify that the hedonic price models licensed by IAZI comply with international industry standards in terms of model accuracy, scientific rigor, operational quality controls and qualified personnel. The appropriate use of the models by IAZI's clients was not part of this mandate.

I therefore certify that the use of the IAZI AG hedonic price models within the application limits as recommended by IAZI, enable an unbiased calculation of property values calibrated exclusively on transactions made at arm's length.



**Prof. Dr. Martin Hoesli, FRICS**

Professor University of Geneva and University of Aberdeen