
Letter of Compliance

Letter of Compliance with the IOSCO Principles for Financial Benchmarks – Version 2023*
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Letter of Compliance

On April 20 2018, Fahländer Partner AG Raumentwicklung (FPRE) publicly announced its compliance with the International Organisation of Securities Commission's (IOSCO) Principles for Financial Benchmarks¹ for the FPRE real estate Benchmarks, real estate valuation models and FPRE real estate indices².

The objective of the IOSCO Principles for Financial Benchmarks is to create an overarching regulatory framework for Benchmarks used in global financial markets. The internationally valid guidelines focus on the methodology, transparency and overall quality of Benchmarks, as well as the overall governance arrangements and accountability for index providers and other relevant bodies.

Having completed a thorough assessment and updated its working instructions and control framework, FPRE ensures the administration of the FPRE Benchmarks is complying with the recommendations and in line with the principle of proportionality set forth in the IOSCO principles.

The list below presents each principle and how FPRE ensures its compliance with them.

IOSCO Principle	FPRE Compliance
Governance	
1. Overall Responsibility of the Administrator	<p>FPRE retains responsibility for all aspects of the Benchmark determination process, such as:</p> <ul style="list-style-type: none"> - Definition and maintenance of the Benchmark methodologies; - Compilation, publication and distribution of Benchmarks; - Ensuring appropriate transparency over significant decisions affecting the compilation of Benchmarks and related determination process; - Establishing appropriate governance, oversight and accountability procedures for the Benchmark determination process.
2. Oversight of Third Parties	<p>The data for the FPRE Benchmarks originates from the Swiss Real Estate Datapool (SRED), the Real Estate Investment Data Association (REIDA), leading banking, insurance and real estate companies, who deliver standardized quarterly real estate arm's length transaction data to FPRE. These are then checked and processed by FPRE to serve as the basis for FPRE Benchmarks.</p> <p>Contracts with data suppliers regulate the roles and obligations of both parties and set the quality standards for the data deliveries.</p> <p>Internal policies regulate the preparation and import of the data received.</p> <p>FPRE receives well described transaction data from professional sources, which results in a very high data quality. This can also be guaranteed if certain data suppliers, for whatever reason, would no longer be able to supply data.</p> <p>FPRE has not outsourced any activities relating to the Benchmark calculation process.</p>

¹ Hereinafter referred to as 'IOSCO Principle'.

² Hereinafter referred to as 'FPRE Benchmarks'.

3. Conflicts of interest for Administrators	<p>FPRE is a privately-owned independent research and consultancy company.</p> <p>FPRE has not identified any conflicts of interest, be it material or immaterial, arising from its business relationships or ownership structure. FPRE is committed to disclose such conflicts of interests should they arise.</p> <p>FPREs commitment to dealing with potential conflict of interests:</p> <ul style="list-style-type: none"> - FPRE ensures that personal interests and connections or business connections do not compromise the Administrator's performance of its functions; - FPRE ensures that adequate supervision and sign-off by authorised or qualified employees prior to releasing Benchmark determinations are in place (refer to article 4, 5, 6, 10, 16, 17, 18, 20 in this letter of compliance); - FPRE ensures that adequate remuneration policies are in place that all staff who participate in the Benchmark determination are not directly or indirectly rewarded or incentivised by the levels of FPRE Benchmarks.
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4. Control Framework for Administration	<p>FPRE has a formalized internal control framework in place which substantially covers the stages of the Benchmark administration. This relates to infrastructure used for calculation of Benchmarks as well as the dissemination of FPRE Benchmarks.</p> <p>The internal control framework for Benchmark administration is subject to periodical internal review by the partners of FPRE.</p>
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5. Internal and External Oversight	<p>All aspects of the FPRE Benchmark determination process is reviewed and challenged by Dr. Stefan Fahrländer (Partner / Chairman of the Board of Directors of FPRE) and Jaron Schlesinger (Partner of FPRE).</p> <p>In the past, the main FPRE-models, i.e. the hedonic pricing models and the index construction, have been reviewed by external experts and have been challenged in various research projects. In 2019 FPRE set up an Advisory Board to have the models discussed and challenged. The aim of the expert assessment is to ensure that methodologies applied by FPRE are the latest state of the art methods to determine such real estate Benchmarks. The experts' most recent expertise dates from 2018 and can be made available to stakeholders on request. In the expertise the professors confirm: that the hedonic approach by FPRE to price real estate reflects the actual state-of-the-art and takes current scientific economic literature into account. This holds in particular with respect to the hedonic price regressions and the consequent construction of price indices."</p> <p>Please refer to 2. Oversight of Third Parties for oversight and scrutiny details of data inputs by third parties.</p>

Quality of Benchmarks

6. Benchmark-Design	<p>FPRE Benchmarks are calculated and designed to accurately reflect actual market conditions in the real estate market.</p> <p>Bibliography on the hedonic models and Benchmarks of FPPE:</p> <ul style="list-style-type: none"> - Dambon, J. et al. (2022): Examining the vintage effect in hedonic pricing using spatially varying coefficients models: a case study of single-family houses in the Canton of Zurich. In: Swiss J Economics Statistics Vol. 158 (2). - Dambon, J. et al. (2021): Maximum likelihood estimation of spatially varying coefficient models for large data with an application to real estate price prediction. In: Spatial Statistics Vol. 41 (100470). - Fahrländer Partner (2019): Marktindizes für Renditeimmobilien. In: Immobilien-Almanach Schweiz 2020. - Fahrländer Partner (2017): Diskontierung. In: Immobilien-Almanach Schweiz 2018. - Fahrländer, S., M. Gerfin and M. Lehner (2015): The influence of noise on net revenue and values of investment properties: Evidence from Switzerland. Universität Bern, Department of Economics Discussion Paper 15-02. - Fahrländer, S. and M. Lehner (2014): Immobilien-Preisindizes: Sinn und Zweck, Konstruktion. In: Immobilien-Almanach Schweiz 2015. Ed. Fahrländer Partner. Zurich. - Fahrländer, S. and D. Matter (2009): Real Estate Scenario Cockpit. In: IMMO PROG 2009. Ed. Fahrländer Partner and BAK Basel Economics. Basel. - Fahrländer, S. (2008): Indirect Construction of Hedonic Price Indexes for Private Properties. In: Swiss Journal of Economics and Statistics, Vol. 2008 (4), pp. 607-630. - Fahrländer, S. (2007): Hedonische Immobilienbewertung: Eine empirische Untersuchung der Schweizer Märkte für Wohneigentum 1985 bis 2005. Forum Wirtschaft, Martin Maidenbauer Verlag, München, 2007. - Fahrländer, S. (2006): Semiparametric Construction of Spatial Generalized Hedonic Models for Private Properties. In: Swiss Journal of Economics and Statistics, Vol. 2006 (4), pp. 501-528.
7. Data Sufficiency	<p>The data used to construct FPPE Benchmarks are mainly based on arm's length transactions, in particular in urban areas. In rural areas, where data is thin, offered prices and models are used as proxies. The data used are:</p> <ul style="list-style-type: none"> - based on well described transaction data from the SRED, various banks and insurance companies for residential property; - based on extensive tenant registers and property data from REIDA as well as from institutional investors in the rental and investment property sector.
8. Hierarchy of Data Inputs	<p>The valuation models and Benchmarks are based on good structured and verified reported arm's length transactions observed by FPPE's data submitters in the real estate market. FPPE can ensure the quality, integrity, continuity and reliability of its Benchmark determinations based on the input data received.</p> <p>The Submitters transaction data is based on observed arm's-length transactions in the real-estate market, originating from their own mortgage contracts or tenant registers and property data and supplementary offer data from real estate portals.</p> <p>The main variables are compiled from public documents, some expert judgement is used by the data Submitters for certain qualities of the properties (i.e. condition, standard, micro-location) for the collection of the data. For the harmonization of the data some expert judgement is used by the Benchmark Administrator (FPPE).</p> <hr/>

9. Transparency of Benchmark Determinations	<p>FPRE's bibliography on hedonic models and Benchmarks are shown under '5. Benchmark Design'.</p> <p>The data release, the method, the aggregate and the market segments are explained on the 'overview page' of the published indices.</p> <p>No expert judgement was used in establishing the Benchmarks, as explained under '8. Hierarchy of Data Inputs'.</p>
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10. Periodic Review	<p>FPRE has committed to reviewing on a regular basis that the FPRE hedonic price regression and the consequent construction of price indices reflects the actual state-of-the-art and takes the current scientific economic literature into account.</p> <p>FPRE is committed to publish a declaration on their website if material revisions to the FPRE real estate Benchmarks, real estate valuation models or real estate indices have been made.</p> <p>In collaboration with Lucerne University of Applied Sciences and Arts (HSLU), FPRE has challenged the currently used hedonic price regression against predictions produced by state-of-the-art modern machine learning techniques such as tree-boosting or deep learning. Furthermore, FPRE and HSLU are developing novel hybrid machine learning-statistical models that combine modern machine learning methods and spatial models currently used in linear hedonic models. Both research projects are part of the Innosuisse Research Program:</p> <ul style="list-style-type: none"> - NISMO: Novel Interpretable Spatial Machine Learning for Hedonic Real Estate Modeling (57667.1 IP-ICT), 2022-2025; - Space-time machine learning models for valuation and prediction of real estate objects (28408.1 PFES-ES), 2018-2021.
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Quality of the Methodology

11. Content of the Methodology	<p>FPRE publishes the methodology for all its Benchmarks on the FPRE website or in special publications and ensures that the contents of the methodology meet the requirements of the IOSCO principles.</p> <p>FPRE's bibliography on hedonic models and Benchmarks are shown under '5. Benchmark Design'.</p> <p>FPRE's commitment for periods of market stress or disruption: The determination of FPRE Benchmarks will not be changed in periods of market stress or disruption.</p> <p>FPRE's commitment to dealing with Benchmark errors or a revision of a Benchmark: If FPRE detects any errors in the calculation or publication of its Benchmarks, FPRE is committed to inform its customers and the public as quickly and transparently as possible. The statement will be published on the FPRE website and announced to customers.</p>
12. Changes to the Methodology	<p>Changes to the methodology of Benchmarks administered by FPRE are disclosed through the FPRE website and announced to customers.</p>
13. Transition	<p>FPRE has no evidence that the calculation of valuation models and/or property price Benchmarks would have to be suspended for any reason in the future. Similarly, FPRE does not plan to discontinue the valuation models and/or property price indices. However, FPRE is committed to inform Benchmark users and take</p>

appropriate action should it be required to suspend such calculation and publication for any reason.

14. Submitter Code of Conduct	FPRE sees no need for further guidelines for data suppliers in the form of a 'Submitter Code of Conduct'. The data deliveries are of high quality and have been working flawlessly for years. The data is provided by leading banks, insurance and real estate companies and is based on contractual agreements between all parties involved.
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15. Internal Controls over Data Collection	The real estate price indices for privately-owned residential property are mainly sourced from arm's length transaction data of various banks and insurance companies and the data of the SRED. In addition, FPPE uses comprehensive tenant registers and property data from institutional investors and the REIDA database for the construction of indices for investment properties.
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These longstanding databases are subject to rigorous checks by FPPE according to our internal 'IMBAS EIG und IMBAS MIET: Ablauf Update' Policy and programmed SPSS- and R-routines.

The data for FPPE Benchmarks is provided exclusively from external companies.

Accountability

16. Complaints Procedures	FPPE has implemented a simple but effective complaints procedure which allows stakeholders to lodge their complaints via the FPPE website contact form or via sf@fppe.ch (Dr. Stefan Fahrländer (Partner / Chairman of the Board of Directors of FPPE))
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17. Audits	FPPE has defined internal and external audits and reviews to ensure the compliance of FPPE Benchmarks with the IOSCO Principles and the current scientific state of the art hedonic real estate valuation models literature.
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As partly described under '5 – Internal and External Oversight', the following FPPE employees and external experts are involved in the audit and review of FPPE Benchmarks:

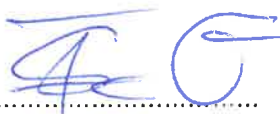
- Dr. Stefan Fahrländer (Partner / Chairman of the Board of Directors of FPPE) and Jaron Schlesinger (Partner of FPPE): Internal Oversight function for the Benchmark determination process;
- Annual Board meeting FPPE: Risk assessment of the Benchmark determination process and scientific review of models applied;
- Advisory Board: External Oversight function for the hedonic price Regression and construction of price Indices from a scientific perspective;

FPPE is committed to an annual internal audit of its 'IOSCO – letter of compliance' and the following responsibilities as a Benchmark Administrator:

- Definition and maintenance of the Benchmark methodologies;
 - Compilation, publication and distribution of Benchmarks;
 - Ensuring appropriate transparency over significant decisions affecting the compilation of Benchmarks and related determination process;
 - Establishing appropriate governance, oversight and accountability procedures for the Benchmark determination process.
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18. Audit Trail FPRE has implemented an internal policy with respect to storage and archiving of data and information that are used in the process of Benchmark administration. This policy complies with the regulatory requirements and the IOSCO Principles. In general, FPRE archives all relevant index information and underlying data for at least five years.
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19. Cooperation with regulatory authority Currently FPRE is not aware of any regulatory authority that is responsible for the supervision of independent real estate consulting and research firms in Switzerland. However, FPRE is committed to comply with such supervision if necessary and take appropriate action should it be subject to national supervision in the future.
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20. IT and Data Security IT and data security is not a predetermined regulatory point in the IOSCO Principles for Financial Benchmarks. Against the background of the immense importance of IT Security for FPRE and its customers, FPRE voluntarily incorporates 'IT Security' into the FPRE IOSCO – letter of compliance. Some of FPRE's services are offered exclusively as an online tool called IMBAS. Because many customers of FPRE are active in intensively regulated sector from an IT Security point of view, such as banking and insurance, FPRE is committed to meet the highest IT Security standards possible and has the following comprehensive internal IT and data security policies in place:
- FPRE internal IT Security Concept Policy;
 - FPRE internal security and data security regulations Policy;
 - FPRE internal VPN access regulations Policy;
 - FPRE Guidelines on Security and Data Security;
 - Personal Security Check for all FPRE employees at all levels of the hierarchy.
- In addition, FPRE regularly conducts web application penetration tests for its online analysis and valuation tools. The results provide an excellent assessment of the environment examined, with an above-average level of security.
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Zürich, September 21, 2023



Dr. Stefan Fahrländer
Partner / Chairman of the Board of Directors



Jaron Schlesinger
Partner

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