

UNIVERSITY OF INSURANCE AND FINANCE

REVIEW

by Prof. Evgeni Evgeniev, D.Sc., professional field 3.8 “Economics,” Department of
“Business Administration and Marketing,” University of Insurance and Finance
of a dissertation thesis for the award of the scientific degree “Doctor of Science” in the
field of higher education 3. Social, Economic and Legal Sciences, professional field 3.8.
Economics

Author: Prof. Andrey Boyanov Zahariev, PhD

Title: “Dwellings Revalorization in Bulgaria: Factors, Models, Trends”

1. General description of the materials received

By Order No. 322 of 24.07.2026 of the Rector of the University of Insurance and Finance, Corresponding Member Prof. Boris Velchev, D.Sc. of Law, I have been included as a member of the scientific jury for the defense procedure of a dissertation thesis titled “Dwelling Revalorization in Bulgaria: Factors, Models, Trends” for the acquisition of the scientific degree “Doctor of Science” in the field of higher education 3. Social, Economic and Legal Sciences, professional field 3.8. Economics. The author of the dissertation thesis is Prof. Andrey Boyanov Zahariev, PhD – a candidate from the Department of “Finance and Insurance” at the University of Insurance and Finance (UIF). By decision of the first meeting of the scientific jury, I was assigned the preparation of this review. At an earlier stage, on the basis of Art. 5, para. 2 of the Rules on the Conditions and Procedure for Acquiring the Scientific Degree “Doctor of Science” at UIF, by Decision of the Department Council of 23.06.2026 of the Department of “Finance and Insurance,” I was appointed internal reviewer of the candidate’s dissertation thesis for the acquisition of the scientific degree “Doctor of Science,” where I gave a positive conclusion for launching the procedure.

For review, I received electronic copies of the dissertation, 390 pages in volume, and an abstract, 50 pages in volume, in Bulgarian, entitled “Dwellings Revalorization in Bulgaria: Factors, Models, Trends.” The dissertation thesis comprises 390 pages, including 328 pages of main text, 30 pages of appendices, and 32 pages of references and title matter. The main text contains 42 figures and 47 tables. The literature used covers a total of 316 sources, of which 47 in Cyrillic and 269 in Latin script. The abstract also

includes a declaration of originality, a list of the candidate's author publications on the topic of the dissertation, a reference regarding compliance with the requirements of the Regulations for the Implementation of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), and scientometric indicators. I also received copies of the candidate's curriculum vitae and a copy of the diploma for the scientific degree "Doctor." The candidate has also submitted 32 publications on the topic of the dissertation, published by him between 2012 and 2026 inclusive, which attests to a sustained, in-depth pursuit of the subject under study. These 32 publications are distributed by indicator as follows: under indicator 6 – four articles in journals referenced and indexed in Scopus & Web of Science; under indicator 7 – twenty-two articles and papers in non-refereed publications; under indicator 8 – two studies in Scopus & Web of Science; and under indicator 9 – four studies in non-refereed publications.

At this stage I note the exceptionally good structuring and organization of the documents, which facilitates their review and analysis.

2. Brief biographical data on the candidate

Based on publicly available information from the department's website, I present the following brief biographical data on the candidate. Prof. Andrey Boyanov Zahariev, PhD, was born on 19.03.1971. He completed his higher education in economics, obtaining a Master's degree, at the D. A. Tsenov Academy of Economics – Svishtov, majoring in "Economics and Management of Industry" (1989–1994). He was a full-time doctoral student and part-time lecturer at the Department of "Finance and Credit" at the Svishtov Academy from 1995 to 1998. In 1999 he obtained the educational and scientific degree "Doctor of Economics" at the Higher Attestation Commission of the Council of Ministers of the Republic of Bulgaria, with a dissertation in the scientific specialty 05.02.05 "Finance, Money Circulation, Credit and Insurance." This satisfies the requirement of Art. 12, para. 1 of ADASRB. Prof. Zahariev's academic career, in terms of the hierarchy of academic positions, began in 1999 as an assistant at the Finance Department of the D. A. Tsenov Academy of Economics – Svishtov, and he was subsequently elected, following competitions, senior assistant (2000), associate professor (2001), and full professor (as of 10.12.2012). Since November 2024 he has been a visiting professor, and since June 2025 a full professor at the University of Insurance and Finance (UIF), Sofia. At UIF, Prof. Zahariev teaches the disciplines "Fundamentals of Finance and Economic Theories," "Financial Risk Management," "Portfolio Management," "Business

Planning,” and “European Projects and Investments.” He also serves as scientific supervisor of three doctoral students from Bulgaria and abroad enrolled at UIF. Prior to joining UIF, Prof. Zahariev successfully supervised a total of 18 doctoral students to defense, including a doctoral student from Japan.

Prof. Zahariev, PhD, possesses impressive managerial and organizational experience. He has served as coordinator of a distance-learning center (1999–2003), director of a center for master’s and distance education (2003–2007), Vice-Rector for “Master’s Education and Doctoral Studies” (2007–2010), head of the Department of “Finance and Credit” (2012–2015 and 2016–2020), and Dean of the Faculty of “Finance” (2020–2024) at the D. A. Tsenov Academy of Economics. He has received international recognition as a Doctor Honoris Causa of Vasyl’ Stus Donetsk National University, Ukraine (2017), and Professor Honorificus of Artifex University in Bucharest (2024). He has participated in 37 national and international projects, including under the TEMPUS, PHARE, USAID, ERASMUS+, and IMREG programs. He has 281 publications registered in NACID, and 460 publications, presentations, posters, and book chapters on ResearchGate. In SCOPUS he is indexed with an h-index of 8, based on 12 articles and 100 citations, and in Web of Science with an h-index of 5, based on 9 articles and 49 citations. He has chaired and served as a member of editorial boards. Twice, in 2025 and 2026, he was appointed guest editor of special thematic issues of a scientific journal indexed in Scopus Q1.

3. Relevance of the topic and appropriateness of the objectives and tasks set

I assess the topic of the dissertation thesis as exceptionally relevant and significant. The study examines the process of dwellings revalorization in Bulgaria at the time of the country’s accession to the eurozone on 1 January 2026. This event marks the completion of a long process of currency convergence that began with the introduction of the currency board in 1997. The author precisely substantiates the uniqueness of the Bulgarian case, expressed in almost three decades of fixed exchange rates against the German mark and the euro, which creates a specific institutional environment for studying the effects of monetary integration on the housing market.

Through the research carried out in the dissertation thesis, the author identifies and fills a significant research gap arising from the lack of empirical models that systematically test which of the potential determinants of housing prices retain explanatory power under conditions of prolonged currency convergence. Filling this gap is particularly important,

as it expands the ability of policymakers and central bankers to identify reference indicators for monitoring the housing market under changing institutional conditions.

The main objective of the dissertation is to study the process of dwellings revalorization in Bulgaria as an EU member state through analysis and evaluation of growth factors, modeling the dynamics of change, and the acceleration of price adjustments. The time span (2015–2025) is methodologically justified, as it covers the phase of intensive preparation for eurozone membership, the pandemic shock, and the approval for accession to the eurozone. Three working hypotheses and three main research tasks are formulated, corresponding to the three chapters of the dissertation. I consider that the objectives and tasks have been set correctly and appropriately.

4. Knowledge of the problem

As evidenced by the dissertation thesis, the abstract, and the publications submitted within the procedure, Prof. Andrey Zahariev, PhD, possesses an in-depth knowledge of the researched subject matter. This is confirmed by the 316 literary sources used (269 in Latin script and 47 in Cyrillic), covering leading indexed publications in the fields of finance, the housing market, macroeconomic modeling, and spatial econometrics. Particularly impressive is the critical review of the scientific periodicals, which is systematized into five thematically focused groups and covers a chronological period from 1990 to the present.

Alongside the literary sources, extensive empirical data from Eurostat, the National Statistical Institute, the Bulgarian National Bank, and the World Steel Association have been used. Knowledge of the subject matter is also established from the conducted research itself, which is thorough and has been carried out using an appropriately selected scientific instrumentarium comprising 54 predictors in five thematic groups. I have no doubt as to the author's knowledge of the problem, nor as to his personal participation in the research conducted. In my opinion, Prof. Zahariev is one of the leading scholars in this field of scientific knowledge in Bulgaria.

5. Research methodology

The research instrumentarium is presented in detail in the introduction and in Chapter Three of the dissertation thesis. To achieve the objectives and tasks set, the methods of induction and deduction, comparative analysis, grouping of predictors, descriptive statistics, regression-correlation modeling, ADF, PP and KPSS stationarity tests,

autoregressive integrated moving average models with exogenous predictors (ARIMAX), Ljung–Box, Shapiro–Wilk, Kolmogorov–Smirnov, and ARCH LM tests, as well as diagnostic checks for normality and model stability, have been applied.

Particularly impressive is the original five-step methodological procedure developed for ARIMAX modeling, specifically adapted for studying the acceleration of revalorization with small samples of quarterly data. The methodology integrates triple stationarity testing with a majority rule, the non-parametric Kruskal–Wallis test for seasonality, an iterative stepwise predictor-selection procedure, parametric estimation, and a full set of diagnostic tests. In my opinion, the methodology used represents a new development in the study of the problem, is correctly selected and described, and fully contributes to the accomplishment of the research tasks set.

6. Characteristics and evaluation of the dissertation thesis

The dissertation thesis is presented in Bulgarian, with a total volume of 390 pages, of which 328 pages are main text. It is structured into three chapters, preceded by an introduction and concluded with a conclusion, appendices, and a bibliography. The thesis contains a rich illustrative component – 42 figures, 47 tables, and 9 appendices.

In the introduction, the relevance, object, subject, leading research thesis, working hypotheses, aim, tasks, methodology, and the limiting framework of the study are correctly defined. The object of the study is housing in Bulgaria as the foundation of household wealth, an accelerator of growth, and an indicator of societal well-being. The subject is the dwellings revalorization in Bulgaria in the period 2015–2025 through the lens of econometric modeling of price adjustments and growth acceleration factors.

Chapter One is titled “Critical Assessment of the Factors for Dwellings Revalorization – Theoretical and Applied Findings.” It has a theoretical-analytical character and develops a thorough critical synthesis of the academic literature in indexed scientific periodicals. The author proposes an original multi-criteria analytical framework for grouping the studies into five thematic areas: sensitivity to interest rate levels, elasticity of supply and demand, credit conditions and mortgage markets, regional disparity, and the effectiveness of market regulation policies. An original five-period chronological periodization of the academic analysis of housing prices (1990–present) is also developed. Particularly valuable is the critical analysis of scientific research on housing prices in Bulgaria, systematizing twelve indexed studies for the period 2003–2026. The content of Chapter One has the character of theoretical generalizations of major scientific and applied

problems, directly linked to household wealth as a core component of the “Wealth of Nations” as conceived by Adam Smith.

Chapter Two is titled “Study of the Factors for Dwellings Housing in Bulgaria” and presents the empirical analysis of 54 predictors, systematized into five thematic groups: macroeconomics and labor market; housing acquisition and construction services; energy supply and utility costs; new construction supply; and credit conditions and investment alternatives. Descriptive statistics, correlation analysis, and an original alpha–beta comparative analysis of the individual regression relationships for 41 quarters (2015Q4–2025Q4) were performed. The scope and precision of the analysis are impressive, covering three dependent variables (GHPI, HPIND, and HPIED) and 54 predictors. A valuable market analysis of global trends in steel production and demand is also included. Chapter Three, “Empirical Study of the Dwellings Revalorization in Bulgaria in the Period 2015–2025,” can be regarded as the core of the dissertation. In it, three independent ARIMAX models are constructed and verified for the three dimensions of the housing price index. The ARIMAX(0,2,1) model for GHPI identifies three key determinants (WSMSRD, TIH, and ICEL), with a stationary R^2 of 0.727 and MAPE of 1.026%. The ARIMAX(1,2,0) model for HPIED includes four predictors, with $R^2 = 0.735$. The ARIMAX(1,1,0) model for HPIND reveals four predictors, with $R^2 = 0.418$. All models successfully pass a full set of diagnostic tests for autocorrelation, normality, and ARCH effects. Particularly significant is the finding that traditional macroeconomic aggregates (GDP, exports, imports, interest rate) do not show statistical significance, with sector-specific factors instead being the leading determinants. The content of Chapter Three has the character of solutions to major scientific and applied problems that correspond to contemporary achievements and represent a significant and original contribution to science.

The conclusion summarizes the main scientific results and formulates nine contributions, as well as ten directions for future research.

The language and style of the dissertation thesis are clear and precise, with an adequate academic style employed throughout. Numerous methods of data visualization, using tables and graphs, have been applied, which significantly facilitates the perception of the results. Good logical connections between the individual structural elements have been achieved throughout the main body of the work.

7. Contributions and significance of the work for science and practice

The dissertation thesis contains significant scientific and scientific-applied contributions, which the author has synthesized in a separate structural element. I accept and confirm the nine contributions formulated by the author, as follows:

- 1) An original multi-criteria analytical framework has been developed for the critical synthesis of the academic literature on the factors of housing price formation, UIFying five thematically focused groups for the evaluation of studies.
- 2) An original five-period chronological periodization of the academic analysis of housing prices from 1990 to the present is proposed, together with an original systematization of the scientific contributions to the housing market in Bulgaria.
- 3) An original theoretical framework has been developed and verified, positioning housing simultaneously within the five-component systematization of national wealth by element and within its three-layer structure by economic agents.
- 4) An original methodological approach has been developed and verified for the simultaneous parametric estimation of two alternative individual regression models (alpha–beta comparative analysis), applied to 54 predictors and three dependent variables.
- 5) For the first time in the Bulgarian scientific literature, a comprehensive regression-correlation framework has been built and verified, systematizing 54 predictors into five thematic groups, and the empirical hierarchy of their influence on the three measures of the housing price index in Bulgaria has been established.
- 6) Based on a comparative analysis of the HPI for all 27 EU member states, it has been established that the growth of housing prices in Bulgaria is 2.2 times higher than the EU-27 average, with the specific institutional factors of the accelerated revalorization identified.
- 7) An original five-step methodological procedure for ARIMAX modeling has been developed and applied, specifically adapted for studying the change and acceleration of housing revalorization with small samples of quarterly data.
- 8) For the first time in the Bulgarian scientific literature, three independent ARIMAX models have been constructed and verified for the three dimensions of the housing price index – GHPI, HPIED, and HPIND.
- 9) The sector-specific determinants of the accelerated revalorization of housing in Bulgaria have been identified, and aggregated macroeconomic indicators have been empirically rejected as statistically significant price predictors.

The contributions thus formulated constitute a novelty in scientific research and are of both theoretical and substantial practical-applied significance for institutional policy

development, macroprudential regulation, and the monitoring of financial stability under the new currency regime, related to a core component of wealth and a key collateral in mortgage lending.

8. Assessment of the publications on the dissertation thesis

Within the procedure, Prof. Andrey Zahariev, PhD, has submitted for review a total of 32 publications on the topic of the dissertation, of which: 4 articles and papers in journals referenced and indexed in Scopus & Web of Science (indicator D6 – 25.29 points); 22 articles and papers in non-refereed, peer-reviewed journals or edited collective volumes (indicator D7 – 150.33 points); 2 studies in journals referenced and indexed in Scopus & Web of Science (indicator D8 – 18.75 points); and 4 studies in non-refereed journals (indicator D9 – 40.50 points). In total, under group D, the candidate has accumulated 234.87 points against a requirement of 100. I assess the publications as thematically related to the subject matter of the dissertation thesis, chronologically positioned over 15 publication years, and covering all key aspects of the study. It is notable that among the most recent publications from 2026 are two studies indexed in the first quartile of Scopus & Web of Science.

9. Assessment of compliance with the minimum national requirements

As evidenced by the attached scientometric reference, as well as by the list of publications and citations, the minimum national requirements for the acquisition of the scientific degree “Doctor of Science” have been fully met, with a significant excess in point terms also noted. For this competition, Prof. Andrey Zahariev, PhD, presents scientific output equivalent to 1134.87 points. These are distributed as follows: Group A, indicator 1 – 50 points (required 50); Group B, indicator 2 – 100 points (required 100); Group D, indicators 6, 7, and 8 – 209.36 points (required 100); Group E, indicator 11 – 750 points (required 100, including 50 citations in Scopus & Web of Science). The excess of the requirements in groups D and E is particularly substantial and attests to high publication activity and citation impact. This is further supported by the impressive level of 100 citations in Scopus and an h-index of 8, which is among the highest for scholars in the country in professional field 3.8 Economics. I consider that the candidate fully meets the requirements of Art. 12 of ADASRB. With his dissertation, abstract, and 32 publications on the topic, he decisively achieves compliance with the regulatory requirement that “the dissertation thesis for the acquisition of the scientific degree ‘Doctor of Science’ must

contain theoretical generalizations and solutions to major scientific or scientific-applied problems that correspond to contemporary achievements and represent a significant and original contribution to science” (Art. 12, para. 4 of ADASRB).

10. Personal contribution of the candidate

I have no doubt as to the author’s personal participation in carrying out the research and in the scientific and scientific-applied contributions achieved through it. The dissertation thesis has been prepared independently, as confirmed by the submitted declaration of originality. I have not identified plagiarism through the legally established procedure. When the procedure was initiated at the department, a check was carried out through the relevant system, which recorded conclusive indicators of originality. The informational and bibliographic sources are correctly cited. Up-to-date, verified data from recognized international and national statistical institutions have been used.

11. Abstract

The submitted abstract is 50 printed pages in volume (equivalent to 75 standard pages). It successfully presents the main points of the dissertation thesis, including the relevance, object, subject, thesis, working hypotheses, aim, tasks, methodology, and the limiting framework of the study. The abstract also includes the table of contents of the dissertation thesis, a synthesized presentation of the three chapters, a list of the scientific and scientific-applied contributions, directions for future research, a reference to the author’s publications, and scientometric indicators. I consider the abstract to be comprehensive and to accurately reflect the content and contributions of the dissertation thesis.

12. Critical remarks and recommendations

The dissertation thesis is of high scientific quality and does not give rise to any substantial critical remarks. Nevertheless, I would offer a few recommendations of a constructive nature for the author’s future research work:

First, extending the time span of the study beyond 2026 would allow verification of the models under conditions of full eurozone membership and assessment of the long-term effects of monetary integration.

Second, the inclusion of regional data (by statistical region and district center) in future studies would enrich the analysis, given the regional disparity of the housing markets established by the author.

Third, the application of hedonic pricing models, which the author himself has identified as a priority methodological niche, would complement the picture of factor influences. These remarks are recommendatory in nature and do not call into question the quality and contributory character of the dissertation thesis.

13. Personal impressions

I know Prof. Andrey Zahariev, PhD, as an established and respected scholar with extensive academic experience and significant international contacts. His professional path, including leadership positions at a higher education institution, participation in dozens of national and international projects, and extensive publication activity, attest to a high level of academic competence and dedication to science. I consider Prof. Zahariev to be a highly motivated and meticulous researcher, capable of conducting independent scientific research at the highest level. With his joining the team of the Department of “Finance and Insurance,” the University of Insurance and Finance has definitely gained value and achieved improvement in a number of scientometric indicators.

14. Recommendations for the future use of the dissertation contributions and results

I recommend that, following a successful defense, the dissertation thesis be published as a monograph, which would contribute to the international visibility of the results. The constructed ARIMAX models can find direct application in the analytical units of the Bulgarian National Bank and the Financial Supervision Commission for monitoring the housing market and macroprudential regulation under the new currency regime. The author’s alpha–beta comparative-analysis methodology can be used in the educational process, can serve as a basis for future doctoral research, and can act as a desktop reference for intermediaries in the housing transactions sector.

CONCLUSION

The dissertation thesis entitled “Dwellings Revalorization in Bulgaria: Factors, Models, Trends” contains significant scientific and scientific-applied results and meets the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria (ADASRB) and the Regulations for the Implementation of ADASRB. The submitted materials and dissertation results comply with the specific requirements of the

Rules on the Conditions and Procedure for Acquiring the Scientific Degree “Doctor of Science” at the University of Insurance and Finance.

The dissertation thesis demonstrates that the candidate, Prof. Andrey Boyanov Zahariev, PhD, possesses in-depth theoretical knowledge and professional skills in professional field 3.8. Economics, and demonstrates the qualities and abilities required for the independent conduct of scientific research at a high level.

In view of the foregoing, I give a positive evaluation of the research conducted, as presented in the dissertation thesis, abstract, publications, results, and contributions reviewed above, and **I propose to the esteemed scientific jury that the scientific degree “Doctor of Science” be awarded to Prof. Andrey Boyanov Zahariev, PhD, in the field of higher education 3. Social, Economic and Legal Sciences; professional field 3.8. Economics.**

10.08.2026

Reviewer:

Prof. Evgeni Evgeniev, D.Sc.