

# Report on Master Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University

<b>Student:</b>	<b>Bc. Daniel Matoušek</b>
<b>Advisor:</b>	<b>PhDr. Michal Hlaváček, Ph.D.</b>
<b>Title of the thesis:</b>	<b>Inflation hedging properties of investment into real estate: evidence from countries of Visegrad Group</b>

## **OVERALL ASSESSMENT** (provided in English, Czech, or Slovak):

*Please provide a short summary of the thesis, your assessment of each of the four key categories, and an overall evaluation and suggested questions for the discussion. The minimum length of the report is 300 words.*

### **Short summary**

In his thesis, Daniel Matoušek seeks to analyze the inflation-hedging properties of real estate investments in the Visegrad Group (V4) countries. The analysis is rather simple by looking at the relation between real estate returns and inflation.

### **Contribution**

The thesis tries to fill in the gap of the existing literature by focusing on V4 countries, but if a reader would want to seek what is the evidence in other regions, it is rather hard. The findings are inconclusive and not related to existing literature at all.

### **Methods**

The methodological framework employed is based on the pioneering work of Fama and Schwert (1977), which is appropriate given the focus on inflation-hedging. The inclusion of an Autoregressive Distributed Lag (ARDL) model to capture short-term and long-term relationships between real estate returns and inflation is a sound choice. However the way the thesis does that and the results are interpreted is puzzling for me to say at least. Starting with the data, these are presented in a very raw form and different aggregations (inflation plotted as index, quarterly, yearly), but the model is based on returns. How do returns look like, any description of the key variable is missing. When interpreting the result in Chapter 7, several times the results form appendix tables with no reference to the exact table are shown. That is very confusing.

### **Literature**

The work with the literature is proper and follows academic standards, when working with primary sources. The thesis demonstrates a sound understanding of theoretical frameworks and the review is rather extensive. Yet for the master thesis level, the literature used in chapter 3 is not taken with too much of a critical perspective and counter arguments could be found easily. Also, when looking at real estate as inflationary hedge, one should look at the bigger picture and start with Jordó et. Al (2019), „The Rate of Return on Everything, 1870–2015“ and look at long-term inflation. That is not done. Literature review in chapter 4 focuses on methods, strenghts and weaknesses of previous studies, but it is unclear, what the evidence is so far.

### **Manuscript form**

The thesis is nicely written and easy to follow. The structure is also clear and a standardized LaTeX template is used. Figures could benefit from full labelling and description below them. There are several text-encoding errors in the final thesis (mostly with € sign, e.g. page 23 or 50). Some sections, particularly the results chapter, could benefit from deeper interpretation and discussion. While the statistical outputs are presented clearly, the economic implications of these findings need further elaboration.

### **Overall evaluation and suggested questions for the discussion during the defense**

The thesis itself is rather extensive, but mainly from the historical perspective – the author devotes large part to describe the evolution of real estate markets in researched countries, but the analysis itself is short, simple and mainly raises too many questions and does not build upon the previous

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chapters too much – why discuss all possible aspects of real estates and then do nothing about estimate the real return?

## Suggested Questions for Defense:

- The thesis empirically test the relation between inflation and real estate returns. But as measure of inflation is HICP, it also includes real-estate prices indirectly. The thesis is silent about that. Can you elaborate about possible drawbacks and whether is that a problem for your analysis?
- Model 6.2 implies that there would be negative changes in inflation, does it make sense in the context of central banking with inflationary targeting? Could you elaborate about the meaning of the formula above model 6.2? Seems rather strange and the provided explanation is not sufficient
- You provided model 6.3 to work with structural breaks, but why to first identify the breaks and then do the analysis on different time periods?
- The results of the ARDL models are not presented and hence it is unknown, what the „optimal lags“ are. What are those? Do they make sense from theoretical perspective?
- You assume that the return of real estates is just the change in price according to the eurostat. Is it really the best guess? Why not make some reasonable adjustments at least for the sake of robustness check?
- You interpret the results of tables 7.1, 7.2 etc. But these are not statistically significant from zero. Can you interpret it anyway like you do?
- You claim that „inclusion of additional variables into the regressions might be a solution of low R-squared of presented models and may lead to an increase of statistical power. However, as the goal of the thesis was to examine pure relationship between real estate and inflation, we decided not to included into the thesis scope“. Can you disuss this in the context of omitted variable bias?
- For the inflation hedging study, what not use rooling window of like 10 years?
- This year, CSZO shortened the expected lifespan of a real estates from 90 to 70 years. In the light of such information, what can you say about your results
- In Appendix D, all the Zivot Andrews p-values are „-4.8“. is that correct?
- What is the intepretation of D.5 and D.6 tables and what are the implications for the analysis? /page 48 at the end in the thesis is rather general – was is applied for every model? Why? /
- The results for new dwellings (e.g. E.1) are significant, but does it make sense to use such data when analysing if real-estate can be used and inflation hedge?
- The prices of real estates in capitals seem to drive the overall level; can that cause any bias in the analysis?

*The results of the Urkund analysis do not indicate significant text similarity with other available sources.*

*In my view, the thesis fulfills the requirements for a master thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a grade E.*

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## **SUMMARY OF POINTS AWARDED** (for details, see below):

<b>CATEGORY</b>	<b>POINTS</b>
<i>Contribution</i> (max. 30 points)	20
<i>Methods</i> (max. 30 points)	10
<i>Literature</i> (max. 20 points)	15
<i>Manuscript Form</i> (max. 20 points)	15
<b>TOTAL POINTS</b> (max. 100 points)	<b>60</b>
<b>GRADE</b> (A – B – C – D – E – F)	<b>E</b>

**NAME OF THE REFEREE:** Petr Polák

**DATE OF EVALUATION:** 11. 9. 2024

*Digitally signed (11. 9. 2024)*  
*Petr Polák*

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**Referee Signature**

**EXPLANATION OF CATEGORIES AND SCALE:**

**CONTRIBUTION:** *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

**METHODS:** *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

**LITERATURE REVIEW:** *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

**MANUSCRIPT FORM:** *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

**Overall grading:**

TOTAL	GRADE
91 – 100	A
81 - 90	B
71 - 80	C
61 – 70	D
51 – 60	E
0 – 50	F