Report on Bachelor / Master Thesis

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

Student:	Bc. Vladimír Bajer
Advisor:	Mgr. Magda Pečená, Ph.D.
Title of the thesis:	Government Bond Duration? Theory and Evidence

***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
Duration and convexity belong to the basic instruments in the management of the market risk of bond portfolios. The diploma thesis aims to verify the reliability of these quantities on quarterly data for the Czech Republic, Germany and the USA. For this purpose, fixed effects and Two-Stage Least Squares methods are applied. The work concludes that duration remains a generally useful measure of market risk, regardless of fluctuating yields and rising monetary policy rates.

Contribution
The introductory part of the diploma thesis summarizes same basic facts about duration. This section would certainly benefit from embedding this concept, together with convexity, in Taylor series, in which duration is part of the first-order term and convexity is part of the second-order term. Against this backdrop it would be apparent why key regression equations (13) and (14) on p. 39 see the predictive quality of variables in question in proximity of parameters $\beta 1$ and $\beta 2$ to the values -1 and ½.

The clarity of the text is somewhat devalued by the fact that the formula of duration is presented in two different forms with different notations (pp. 5 and 28), while one can have serious doubts about the correctness of the first formula, saying that there is always a principal payment along with the coupon.

It would certainly be an interesting added value if the author described the usual use of duration in the practice of portfolio managers. In the management of foreign exchange reserves at the Czech National Bank, for example, an important issue is shortening or extending the portfolio durations in response to anticipated changes in interest rates. I have not come across the use of duration for direct prediction of price changes of bond portfolios. It is also true, as the author also points out, that duration as a measure of market risk is in practice contaminated by credit risk.

Methods
The diploma thesis has a clear and logical structure. It consistently deals with data sources, demonstrates knowledge of econometric techniques with their advantages and limiting assumptions. The research hypotheses are interesting and the answers to them are supported by correct calculations. A description of the development of bond markets in the selected three economies in the selected time horizon is provided in a clear manner. For the Czech economy, however, I would expect more attention paid to the empirically proven spillover effect of long-term yields of German bonds on the yield curve of Czech bonds.

Literature
The author communicates sufficiently with relevant literature which is quoted in a proper way.

Manuscript form
The thesis is written in good English. Figures and tables form an organic part of the text.

Overall evaluation
In my view, the thesis fulfills the requirements for a master's thesis at IES, Faculty of Social Sciences, Charles University. I recommend it for the defense and suggest a grade B. The results of the Turnitin analysis do not indicate significant text similarity with other available sources.

Suggested questions for the discussion during the defense

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The key model equation (14) on page 39 includes the parameter β_0. Would it be correct to check, analogously to testing the parameters β_1 and β_2 for values of -1 and ½, that β_0 is close to zero?

The diploma thesis is silent about the use of duration when immunizing bond portfolios. Can the author briefly discuss what immunization is all about and what analytical property of duration is exploited in this context?

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

CATEGORY		POINTS
Contribution	(max. 30 points)	23
Methods	(max. 30 points)	25
Literature	(max. 20 points)	20
Manuscript Form	(max. 20 points)	20
TOTAL POINTS	(max. 100 points)	**88**
GRADE	(A – B – C – D – E – F)	**B**

NAME OF THE REFEREE: Prof. Oldřich Dědek

DATE OF EVALUATION: **18 August 2024**

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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**