Report on Bachelor/Master Thesis

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

Student:	**Bc. Boril Šopov, MSc**
Advisor:	**PhDr. Jakub Seidler**
Title of the thesis:	Alternative Yield Curve Modelling Approach

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

The thesis presents technically demanding work on yield curve modeling. Methodology used is consistent with state of the art in this field. Author performs independent scientific piece of work while estimating the proposed models on the real-world data.

Author pays lot of attention to estimation, but methodology and model description is not so clear and straightforward from the text. There are also several issues resulting from quite unorganized text. Thus author should be able to explain and comment on these during the defense:

- How would the results change if other than MATLAB fminsearch function would be used, choice of starting values is also crucial, how does the author know that algorithm converge to optimal solution? As the problem is quite complex and author claims to optimize under 31 variables, I wonder why author does not pay more attention to optimization technique?
- Author is surprised to see only diagonal elements significant (estimation results (5.1)), but is not estimation procedure constrained only on diagonal T (in estimation procedure), thus others should really be indistinguishable from zero? Or is this different T (I did not find it in text)?
- Author claims that non-stationary process is not problem for the model (p.39). How does author prove this claim?
- Explain the intuition of AR(1) versus Random Walk driving the factors. Why parameter equaling to 1 implies Random Walk which implies predictable dynamics (p.45)? Should not Random Walk imply unpredictable dynamics? In fact author need to test for random walk to carry on such conclusions.
- What is the interpretation of latent factors?
- What is the interpretation of principal component analysis? I miss comments on the factors chosen by the PCA. Finally, which factors where used for PCA? More attention should be paid to this discussion as it is crucial for the results.

Overall, the presented thesis is computationally and technically demanding exercise which has been performed with high precision. On the other hand, proper motivation for the results and methods used is lacking (see my comments above). In case of successful defense, I recommend grade 2.

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

CATEGORY		**POINTS**
Literature	*(max. 20 points)*	20
Methods	*(max. 30 points)*	25
Contribution	*(max. 30 points)*	20
Manuscript Form	*(max. 20 points)*	15
TOTAL POINTS	*(max. 100 points)*	
GRADE	**(1 – 2 – 3 – 4)**	**80**

NAME OF THE REFEREE:
Jozef Barunik
DATE OF EVALUATION: 25.1.2010

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Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

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

Strong	*Average*	*Weak*
20	*10*	*0*

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.*

Strong	*Average*	*Weak*
30	*15*	*0*

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.*

Strong	*Average*	*Weak*
30	*15*	*0*

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.*

Strong	*Average*	*Weak*
20	*10*	*0*

Overall grading:

TOTAL POINTS	**GRADE**		
81 – 100	**1**	= excellent	= výborně
61 – 80	**2**	= good	= velmi dobře
41 – 60	**3**	= satisfactory	= dobře
0 – 40	**4**	= fail	= nedoporučuji k obhajobě