

Report on Bachelor Thesis

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

Student:	Yixiang Huang
Advisor:	Mgr. Soňa Sivá
Title of the thesis:	Analysis of the Chinese green bond market and factors influencing issuance interest rates

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

The presented paper provides a brief overview of the issues related to the role of ESG bonds (more specifically, green bonds) in China as well as a regression-analysis-based attempt at analysis of the bonds issuance interest rates.

Both the literature review and description-focused sections of the papers, as well as the methodology of the empirical part, leave something to be desired (more details below), but the resulting text is still at a level relatively typical for undergraduate texts. The most significant omissions are, in my opinion, the absence of a deeper discussion of the specific features of the Chinese bond market and the rather ad hoc selection of the econometric specification (I would prefer a deeper discussion of the role of the variables and forms of their inclusion into the model too).

Contribution

The author presents basic facts on the decarbonization policies in the PRC, describes the status of China's green bond market, provides a basic (but not complete) literature review of the literature on bond valuation and, specifically, green bonds, and finally – attempts a regression-based analysis of determinants of bonds issuance interest rates.

In my opinion, section 3 of the text ("Status of China's Green Bond Market") had the biggest potential to bring newer facts (and critical evaluation of the facts) on recent developments in Chinese bond markets. This market is very specific; many of its features are confusing even for trained professionals and experts from Western universities and deserve to be analyzed. Unfortunately, the author opted for a relatively brief and general description which does not attempt to go deeper below the surface. Specifically, the following topics might have been at least mentioned in detail:

- Is there also greenwashing in China that might be relevant for the motivation for green bond issuance? Or is there a chance that some of the bonds might have been used for different purposes, too? The author does mention, for example, the very interesting case of the issuance of Hungarian green sovereign bonds in China but does not discuss details (or perhaps accepts them at face value).
- How reliable is the rating? Not only were ratings of China-issued financial instruments by Chinese rating agencies typically more positive than independent foreign ratings, but there was also a corruption scandal with one of the rating agencies (the Dagong rating agency), which happened during the analyzed period and which have had some effects on ratings issued by other agencies during the period.
- Is it possible to obtain data on who the typical buyers of the bonds are (besides the fact that they appear to be issued mainly on the interbank market (p. 8). The reason for this question is simple: in the past, a significant share of bonds issued by state-linked entities was bought again by state-linked entities (the same is true also for selected other financial instruments, e.g. shares in some IPOs).
- Which other relevant events and factors might have influenced the interest rate during the Covid period other than Covid? There, in fact, not only happened to be quite a few changes in financial regulation during the period (with possible effects on the relative attractiveness of

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different financial instruments), but also some other interesting changes (e.g. the attempts of Russian entities to rely on RMB bonds).

Something similar can be claimed about the econometric part: while the regression results appear logical, the design of econometric specification causes that the regression coefficients should be understood more like descriptive statistics than credible measures of the effects of the explanatory variables on the issuance interest rates of green bonds in Chinese market. Most importantly, the design does not enable the author to test whether the results are really green-bond-specific or whether similar results would have been obtained on a wider sample of all bonds. The results of the role of Covid are also very likely influenced by additional factors and events that occurred during the period.

Similar problems are not unusual in undergraduate texts, but the aforementioned factors still reduce the contribution of the presented text. On the other hand, I highly appreciate the fact that the author managed to get access to the Wind database with data on the Chinese financial market.

Methods

The empirical part is based on a relatively simple econometric model where the relationship between the interest rates and a set of macroeconomic variables and selected microeconomic indicators (mainly the ownership type and rating) are tested. The model appears to be estimated with a simple OLS estimator; the specification is relatively basic. However, on the positive side - the author attempts to provide simple sensitivity testing, too.

Possible problems with the econometric method and data:

1. The author focuses only on green bonds only. It might be more interesting to include a wider set of bonds (not only the green ones) and estimate the green bond premiums and test the factors that influence the premium.
2. The form of inclusion of variables and their description. GDP is an interesting and illustrative example. The author uses an absolute quarterly GDP in billions of RMB in the baseline specification. The subsequent sensitivity analysis uses a much more logical form (GDP growth) rate, but the author does not provide too much information about it (did he deal with seasonality which might be present in the q-o-q growth rates)? Similarly, the baseline specification relies on CPI, and does not discuss in which form it was used. Given that the author then expresses some surprise at the different results obtained with a modified specification which relies on "inflation", some additional details might have been provided.
3. Rating is treated as more or less a cardinal variable with four levels (0, 1, 2, 3). This might have imposed a too rigid structure on the role of rating; replacing the variable with multiple dummies might have led to more convincing results.

Summary: The methodology is relatively basic but at a level that is still acceptable in IES undergraduate papers. A more careful approach to the description of variables would be advisable, though.

Literature

The literature review starts with green bonds, then turns to the literature on bonds in general (going all the way back to fairly general issues such as the role of asymmetric information in the pricing of financial instruments), and then returns back to green bonds. It might have been more logical to start

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at the general level and then proceed to the specific issue (green bonds); this might have made the review a bit more logically structured.

There is, however, also another issue – the literature review on green bonds does not include some rather relevant texts that might have been quite important and that might have helped the author too. For instance, a paper titled “Estimation of green bond premium on the Chinese secondary market” was published by several IES-related authors (Janda et al) in 2022. While the focus is slightly different (secondary market rather than primary issuance), the paper provides a nice overview of the literature on the topic. Similarly, a text by Mac Askill et al (2021) on green bond premia etc.

Manuscript form

The manuscript form can be described as quite decent. Similarly, languagewise, there are only occasional typos or cumbersome grammar structures. The charts and tables are also adequate in general. Two minor issues I noticed: formatting of the right axis of figures 1 & 2, and some inconsistencies in the formatting of the list of references.

Overall evaluation and suggested questions for the discussion during the defense

The results of the Turnitin analysis indicate a slightly higher similarity score (36%), but a more detailed look suggests that the text is original.

In my view, the thesis fulfils the requirements for a bachelor thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a grade C.

Questions for the defence:

1. Your results describe the development of interest rates on green bonds and the factors beyond them. But how would you test whether there are “green bond premia” and is there some evidence that investors might prefer green bonds to normal bonds in the Chinese market?
2. Is it possible to find some evidence on the investors who buy/own the green bonds? How can the structure of ownership matter for your analysis?
3. Did you hear about the Dagong rating agency and its problems? Could these problems have influence on (i) valuation published by other rating agencies (such as Anrong which you used) after the scandal was revealed or on (ii) the role of the ratings in the investors’ decision-making processes?

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

CATEGORY	POINTS
Contribution (max. 30 points)	18
Methods (max. 30 points)	22
Literature (max. 20 points)	15
Manuscript Form (max. 20 points)	18
TOTAL POINTS (max. 100 points)	73
GRADE (A – B – C – D – E – F)	C

NAME OF THE REFEREE:

Vilém Semerák, Ph.D.

DATE OF EVALUATION:

January 18th, 2024

**Digitally signed by Vilém
Semerák, January 18th, 2024**

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