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Review Report on the Ph.D. Thesis

„Essays of China's international trade – Focus on One-Belt-One-Road initiative"

by Yuxin Lu, submitted to Politechnika Gdańska

1. Legitimacy of the choice of problem and research purpose

I consider the choice of the research problem to be the most justified and current. China plays a key role in the world economy, especially in the global trade. In the introduction, several important arguments are mentioned that justify the choice of the research problem (China as a world manufacturing factory, absorption of advanced technology, the escalation of China-US trade tensions, and others). The One-Belt-One-Road's (OBOR) significance is a strong argument for researching its consequences. It represents not only an immense economic but also politically important strategy, with global consequences. The OBOR initiative has its extensions in many fields, so the Author concludes that it is difficult to accurately define it.

Reading the introduction, from the beginning I had a strong conviction that Mr Yuxin Lu is very well-oriented in the facts, nuances as well and political background of the economic processes in China. This aspect is one of the strengths of the dissertation and also contributes to its originality.

The PhD thesis consists of three sub-themes, related to the (1) impact of the OBOR on international trade, (2) China and GVCs, and (3) determinants of export diversification. In my opinion, the formulation of these themes is clear; and so are the purposes defined in the Ph.D. dissertation chapters.

The 9 hypotheses in the introduction (pages 11 and 12) are understandable and clear. They are nuanced and relate to various aspects of the OBOR consequences, as well as to GVC, the labour

market, and the role of different company assets. The novelty brought by the PhD thesis is well explained.

2. The structure of the Ph.D. dissertation and substantive assessment

The title of the dissertation itself informs the reader, that one shall expect a collection of essays. It bears consequences for the structure and consistency of the PhD dissertation. Generally, the choice is between the preparation of a Ph.D. as a comprehensive presentation of the research flow, usually starting with the theory, literature review, research gap, stylised facts, and directing into empirical strategy, methodology, results, discussion, and policy implications. Alternatively, the dissertation could be designed as a collection of essays, published or not-yet-published papers. The latter, recently is becoming the more and more often chosen way of presenting the research results, which however has pros and cons.

Chapter I focuses on the impact of China's OBOR initiative on international trade. The introduction is clear, well structured, and effectively guides the reader through the Author's intentions. We can see that the Author has much flexibility in using and working through the various sources of data and facts. It is important, as it firmly roots the research in the proper societal and global-economic context.

Here I would like to refer to some cons of the choice made by the Author, as regards the structure of the PhD dissertation. Point 1.2. is "Literature Review", and point 1.2.1 presents the literature about international trade and the gravity model. It is 23 lines of text, that synthesize the trade theory, starting from Antoine de Montchrestien, and ending with Melitz, Antras, and Helpman. I have to admit, that it is rather an unusual way of dealing with the theoretical and conceptual layers in a Ph.D. dissertation. The author puts much more emphasis on presenting literature related to the ASEAN-China Free Trade Area. In point 1.2.3 on page 21 there is again the literature review on the OBOR, and the research of Besides, Yu C. et al. (2020) is mentioned, as it analyses the impact of cultural and institutional distance on trade. Thus, various measures of distance are mentioned in point 1.2.3, but not in point 1.2.1 which is designed as a place/room that presents the concepts of international trade, incl. gravity.

Point 1.4. presents the empirical analysis. It is well constructed and, synthetically depicts the challenges of the gravity models and the solutions thereof. The usage of the HDFEPPML method is correct and justified. The content of points 1.4 and 1.5 reveals what is the strength,

the comparative advantage of Mr Yuxin Lu; these are empirical and econometric expertise and work.

Looking at the estimation results (Table 1.1 and 1.2), I have some doubts about the estimation strategy chosen by the Ph.D. Candidate. In Table 1.1, as I understand, the OLS estimator is used, in estimations 1,2,4,5. In estimations 3 and 6, is it OLS with fixed effects or REGHDFE? In FE versions of estimations in Table 1.1. the distance variable is omitted; can we still call this model a gravity approach? I would like to ask the Author about the strategy of econometric estimation here. Please explain why the distance variable is eliminated/omitted. I understand it might be due to the absorption of all bilateral time-invariant covariates. But, would not the usage of REGHDFE, solve the problem? Or using dummy, 0-1, variables? Also, I would like to ask the Author to explain Table 1.2 which presents the results of the estimation model results. It is a gravity model, again without variables typical for gravity models. Shall it be understood that only the selected independent variables are included in the table, as suggested by the table title "… among independent variables…"?

Generally, I would expect the Author to elaborate further on the econometric estimation strategy for gravity models that has been chosen. What are the pros and cons of the method chosen?

An inconsistency I would like to mention, probably also stemming from the "collection of essays" structure of the dissertation, is that Chapter 1 does not include the hypothesis/hypotheses. They are included however in Chapter 3. The Introduction to the Ph.D. dissertation overall, on page 11 comprises H1 and H2 and assigns them to Chapter 1. But they are not repeated and deliberated in the very Chapter 1, which stays in contrast to Chapter 3.

Summing up, despite the drawbacks I have underlined above, in Chapter 1 Ph.D. Candidate proves his analytical and econometric competence, which is also depicted in point 1.5, where the extensions and robustness are presented/tested. Conclusions (point 1.6) leave no doubt that the Author can synthetically communicate the research results to the reader, as well as describe the novelty, limitations, and possible extensions. The list of references for Chapter 1 comprises 7 pages of literature positions, in a small font, which proves the Author's profound orientation in the literature.

Chapter 2 consists of the research results on the various aspects of China's participation in GVCs. There are three aims declared (page 50), (1) investigating the role of the OBOR initiative on value-added trade, and global value chains, (2) examining the different roles of corridors in value-added exports and GVC, (3) describing the trend of China's domestic value-added absorbed aboard.

The research performed in Chapter 2 is based on various data sources, which again proves the ability of Ph.D. Candidate to find, collect, merge, and effectively use the data. This capability makes the research presented, unique. This shall be regarded as a strong side of the dissertation. In Chapter 2 one can also see the enormous flexibility of the Ph.D. Candidate, who uses databases related to labour market, input-output tables, and interprovincial value chains. It is a value-added, as in my opinion there is not much research so comprehensive, as the one under the inquiry.

In point 2.2.1. there is a presentation of the theoretical background related to GVCs. It takes 2 pages; in my opinion, it should be more detailed, and longer and comprise important trends that recently affected the shape of GVCs. First of all, I am thinking about changing the nature of globalisation, which is becoming more regionalised. In particular, Covid-19 has contributed to a shift towards regionalisation of GVCs. This is well depicted in UNCTAD publications (World Investment Report series), as well as in Transnational Corporations Journal (https://ssrn.com/abstract=3692317). Reading the Chapter 2 content leaves no doubt that the Ph.D. Candidate is an empirically oriented person, perfectly using available databases and applying econometric methods, able to show nuances – all these contribute to the strengths of the PhD dissertation. Also important is the fact, that Mr Yuxin Lu can identify the deficiencies of particular research methods or measures.

On pages 61 and 62, the Author states that "…OBOR is not a simple trade agreement but a multi-level cooperation strategy..". And then formulates a tentative conclusion that "…I expect that the OBOR will reduce the political contradictions, trade costs, investment resistance, etc., among its members, thus promoting industrial transfer, deepening the industrial links, and finally having an effect on value-added trade and GVCs". My question is if this statement still holds, as we see that there are more and more controversies about the OBOR. On page 64 an interesting issue is mentioned, which is the imitation of public behaviour of MNEs. I would like to ask the Ph.D. Candidate to elaborate further on this issue, how this public behaviour is understood, and how it is (or can be) imitated.

On pages 75-92, there is a presentation of research results related to the nexus between regional/provincial (Chinese) economics and GVCs. I regard it as a very interesting, valuable contribution by the Author, deeply rooted in the profound knowledge about the realities and nuances of the Chinese economy and available databases. Point 2.6 comprises very interesting, high-level conclusions related to the OBOR consequences, which I treat as an important contribution by the Author to the state of the art.

Again, the list of references for Chapter 2 comprises 9 pages of positions, in a small font, which proves the Author's profound orientation.

In **Chapter 3**, the research on the determinants of export diversification is presented, based on evidence from China and the OBOR. Again, the Author shows his flexibility as regards the subject of the scientific investigation. The necessity to conduct research in multiple dimensions is underlined in the Introduction to the Chapter. Research presented in the Chapter is based on the firm level data, which subscribes to the new, new trade theory and constitutes an important contribution made by the Author to the state of the art, in particular to the research on the OBOR's relationship with export diversity. Contrary, to the previous chapters, Chapter 3 (page 115) includes three hypotheses. As stated in the Introduction to the Ph.D. dissertation (page 12), there are four hypotheses (H 6: 9) allocated to Chapter 3, while on page 115 three hypotheses are mentioned, and they are slightly different, vs. those presented in the Introduction to the Ph.D. dissertation. There is some doubt if the Author treats them as research assumptions, or hypotheses (page 115, line 2).

As in the previous chapters, the literature review is actual and presents various aspects of export diversification and export diversification measures. Again, the Author does not inquire deeper into the theoretical considerations, which is rather not typical for a Ph.D. dissertation.

A key aspect that Chapter 3 refers to, is the intensive and extensive margin, which is a measure of the diversity of enterprises' exports. I agree with the Author, that literature does not provide a consistent definition and measurement methods on the extensive and intensive margin. The author, therefore, operationalizes these concepts (page 119) and applies them in the empirical research in Chapter 3, with the usage of the unique database.

In point 3.5 there is the description of extensions and robustness of the research. The findings are important and shed an interesting light on the consequences of the OBOR. The Author

concludes, that participation in the OBOR adversely affects the variety of export markets. Also, the activity of Chinese corporations and commodities in countries situated along the route exerts a restraining influence on their specific domestic sectors. I would like to ask the Ph.D. Candidate about the consequences of it, in particular on the willingness of other nations to cooperate with China in a longer perspective, while globalization is changing and turning into competing blocs.

3. Originality of the research

One of the three key elements of PhD that shall be assessed, with reference to Ustawa z dnia 20 lipca 2018 r. "Prawo o szkolnictwie wyższym i nauce" (Dz. U. z 2023 r., poz. 742, 1088, 1234, 1672, 1872), is the **originality**. The detailed assessment of the particular aspects of the research, that constitute a base for the originality inspection, is included in point 2 of this review. These are the originality aspects of the reviewed PhD, I would like to mention:

- the dissertation is prepared as a collection of essays, which goes beyond the traditional way of writing PhDs. The art. 187.1 of Ustawa z dnia 20 lipca 2018 r. "Prawo o szkolnictwie wyższym i nauce" indicates the collection of the already published and thematically interlinked scientific papers as one of the solutions. The collection of essays is however not often chosen strategy, which I see as an element of originality,

- Author analyses the consequences of the OBOR from a variety of perspectives, with the use of various methods. Originally, it enables to capture the sophistication and nuances of the inquired topic(s),

- the variety of perspectives, just mentioned, proves Author's flexibility in the research performed,

- an important element of the originality is the access to, selection, and usage of the unique databases, which constitute strengths of this PhD dissertation,

- the econometric models performed are also an original contribution of the Author to the state of the art. An econometric model is always an original contribution, as is the preparation of the analytical procedures in Stata. The preparation of databases for the models (a so-called back-office work with data finding, preparation, selection, and merging), as well as choice of the econometric estimation techniques – are also an element of originality.

4. An ability to independently conduct scientific work

Another element of the review, indicated by the Ustawa z dnia 20 lipca 2018 r. "Prawo o szkolnictwie wyższym i nauce", is an ability to **independently conduct scientific work** by the Ph.D. Candidate. This ability, in my opinion, comprises several steps of the scientific process, that lead to the achievement of the research results, their discussion, confrontation with other researchers' findings, as well as (usually) formulation of policy implications.

Introduction to the Ph.D. guides us, what are Author's intentions, research perspective, how the research flow is designed, what are hypotheses, and goals. It also sketches the theoretical/conceptual framework (Figure 1), which is however provided in a very synthetic manner. I understand, that in the Introduction, the theory is presented in an abbreviated way, which makes the reviewer expect a more in-depth theoretical inquiry in the other parts of the dissertation. Another question is if the theoretical aspects are included and presented in the dissertation with the proper attention.

Each Chapter of the dissertation is an independent research, that has its workflow. A strength of the dissertation, is the literature review, in particular the literature on trade agreements, the state, and the evolution of the economic situation in China, incl. nuances, that are interesting for a non-Chinese reader. The author provides the content in the form of figures and graphs, which prove his analytical competence. Econometric modeling is the fundamental component of this dissertation; in each of the Chapters, various models were designed and estimated, which – as I have already mentioned – shows PhD Candidate's flexibility and expertise. The author presents the possible extensions as well as robustness checks. What I miss, is the serious discussion of the results, and their confrontation with other researchers' findings, which I treat as an important part of the research process. I do not quite understand why this aspect has been somehow neglected, especially since the literature review has been done in depth. I understand of course that the choice made by the Author, which is the selection of essays, results in an overall synthetic approach. However, discussion of results is important.

A part of an ability to independently conduct scientific work also is the selection of the method(s). In this respect, the Author performs very well, which is not only documented by an econometric estimation done, but also in the other parts of the dissertation, for instance in Chapter 2 (p. 57-61) in which product output decomposition is performed, or on pages 75-79, where data are integrated. Data integration is often a difficult and lengthy process. The author

can however clearly guide a reader through its logic (i.e. page 125, fig. 3.1), which is not a common competence, and as such is quite often missing in Ph.D. dissertations.

An element of conducting research work is also the presentation and selection of the theoretical background. I consider this aspect as a sort of "rooting" the research in the proper context, as well as the fundament, from which hypotheses are formulated from. The theoretical background in the Ph.D. dissertation under inspection is presented in an abbreviated way. I will elaborate further on this in point 5 of this review.

Summing up, despite some drawbacks, predominantly related to a missing comprehensive discussion of results and not enough focus on the theoretical aspects, I highly rate the Ph.D. Candidate's ability to independently conduct scientific work.

5. Assessment of a presentation of the general, theoretical knowledge

The third element of the review, indicated by the Ustawa z dnia 20 lipca 2018 r. "Prawo o szkolnictwie wyższym i nauce", is **whether a dissertation presents a general, theoretical knowledge** of the PhD Candidate. I treat this element as a fundament of any scientific work. In particular, it is important for the formulation of hypotheses. Hypotheses can be derived from theory, and can also stem from the analysis of stylised facts. The overall consistency of the research work, in my opinion, is highly dependent on the clear, consequently carried-on – formulation of hypotheses.

The presentation of the theoretical layer of the Ph.D. dissertation under review is not its strongest attribute. The theory is present in the dissertation, but not in an explicit way, but rather in an abbreviated manner, with the use of graphs (i.e. Figure 1, p. 11). Although the literature review – as I have already mentioned – that has been prepared and depicted immensely, is focused on showing other researchers' findings; not so much effort has been put into the theory. This stays in contrast to other Ph.D. dissertations, but also to a good practice of the scientific research work, in which theoretical content occupies more space. If theory is included, for instance in point 2.2.1, it is referred to in a concise form. In particular in Chapter 3, when the literature on export diversification is inspected, in my opinion much more focus on theory would be required. It seems that Heckscher-Ohlin is mentioned here first of all, as a conceptual framework in which the research is rooted. I could advise to the Author, also look into other theoretical strands, such as new, new trade theory which underlines the role of firms, that are

heterogeneous, and the biggest "few", dominate in exports. New, new trade theory resonates with the theory of FDI. On the other hand, in the context of export concentration/diversification, I also miss two, somehow contradictory theoretical paths, which are intra-industry trade (IIT) and the New Economic Geography (NEG).

Summing up, the presentation of theoretical aspects, framework, and nuances is not the strongest side of the dissertation under review. The theories are presented concisely. Undoubtedly, the research presented in the dissertation is oriented towards the empirical side. In the dissertation, the Author presents serious scientific inquiry, with the use of econometric modeling. My perception is that the PhD Candidate is well-oriented in the theory, however, the decision was to present it in a concise way.

6. Some minor technical and editorial changes and suggestions

I also would like to mention some minor editing and styling issues, that if corrected, would increase the quality of the dissertation and the comfort of reading:

- some figures are not treated as figures and are not numbered (page 73),
- black and white figures are hard to read,
- a list of abbreviations would be useful, at the beginning of the Ph.D.,
- the OBOR abbreviation is not used consequently, sometimes the full term is utilised,
- hypotheses in the introduction to the PhD dissertation are differently formulated, than in Chapter 3.

7. Final conclusion

Yuxin Lu's doctoral thesis is an interesting study, based on various data sources, in which the research flexibility and fluency are proved, with intensive use of econometric modeling. Yuxin Lu has proved his ability to design, perform, and achieve scientific results and contribute to the state of the art. I recommend the doctoral dissertation for presentation, with the purpose of receiving the Ph.D. degree (Ustawa z dnia 20 lipca 2018 r. "Prawo o szkolnictwie wyższym i nauce").

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