

Economics

Dear reviewers and editors:

Thank you for your comments on our manuscript entitled “How agglomeration in the financial services industry influences economic growth: Evidence from Chinese cities” that we submitted to *Economics*.

We will revise the paper according to the referees’ reports, which have been helpful for us to improve the original manuscript. The explanations and modifications in terms of the reviewers’ comments are described in the following:

Report by Referee 1

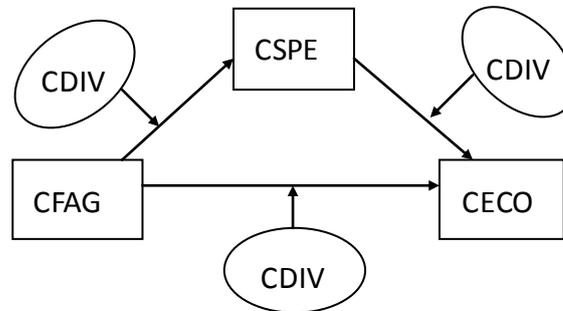
1. The application of the Hierarchical Linear Model (HLM)

In this paper, we select 279 Chinese cities to comprise the test sample. We recognize that the fact that these cities belong to different provinces leads to a large difference in administrative management, policies, natural conditions, and so on for the vast territory of China. By contrast, cities in the same province share policies, have a unified approach to administrative management, and have similar cultural traditions and climatic conditions. In the general regression, all the variables are analyzed at the same level (i.e., all sample cities are assumed to be independent of each other). Because city-level and province-level variables are used in this study, we select the HLM in order to deal with multilayered nested data. This statistical method has been used to research the industrial economy in general and the banking sector in particular in recent years, and the application and analysis of cross-sectional data are scientifically proven. For example, Krasnikov, Jayachandran, and Kumar (2009) used the HLM to examine how the implementation of customer relationship management influences cost and profit efficiencies in the U.S. commercial banking industry. Gu (2010) also selected cross-sectional data to test how the degree of industrial investment affects industrial added value and productivity by using the HLM.

We accept that using panel data, time-series techniques based on Granger-type causality tests, and VAR procedures in general regressions are traditional methods of identifying causality. However, we apply the HLM and use cross-sectional data owing to the multilayer nested characteristic of the sample, which offers a new perspective on the relations among agglomeration in the financial services industry, financial knowledge spillovers, and the city’s economic growth.

2. The internal mechanism and causality

In this paper, we test and explain the correlation and causality among the following four main variables in our sample of Chinese cities: agglomeration in the financial services industry (CFAG), financial knowledge spillovers (CSPE), diversified Jacobs spillovers (CDIV), and the city's economic growth (CECO) (see the diagram below).



As you comment in the report, we assume that agglomeration in the financial services industry promotes financial knowledge spillovers and that both have a direct and indirect (through financial knowledge spillovers) effect on a city's economic growth.

Following your comments, we will rearrange the literature review and modify the four hypotheses to explicate more clearly the relations tested. We will also consider adding an explanation paragraph about them in the revised version of the manuscript.

3. The construction of the agglomeration (CFAG) index

This paper uses the comprehensive index evaluation method to measure the agglomeration of the financial services industry in China (Table 1). The indexes are classified into five groups by function (Table 2). In particular, the deposits-to-income ratio and loan-to-deposits ratio measure the city's financial reserves capacity and financial capital supply, which are necessary to promote the local agglomeration of the financial services industry and are both related to local financial deepening.

We use the Weaver index method to calculate the sequence and key elements of these indexes. Unfortunately, as you point out, the Weaver index method is not reported in the paper. We will thus add the calculation process into Appendix 1 in the revised version of the manuscript.

4. Explanation of the financial knowledge spillovers (CSPE) index

Based on the methods presented by Glaeser et al. (1992) and Feldman and Audretsch

(1999), this paper uses employment distribution in order to measure the characteristics of financial specialization (CSPE). From the perspective of the traditional production function, the spillovers caused by specialized characteristics can be seen as the external revenue derived from conventional inputs. Rosenthal and Strange (2004) summarized the general research framework for measuring the city-level externalities of economic activity as $y = g(A)f(x)$, where y is the output vector, x is the input vector, and $f(x)$ can be set to constant returns to scale by using the Hicks-neutral change, which can be regarded as 1. Moreover, $g(A)$ can be used to measure externalities, which include industrial, geographical, and temporal dimensions. Financial knowledge spillovers come from the specialized characteristics of the financial industry, including the industrial, geographical, and temporal dimensions for 2011. Therefore, in this paper, we use numerical values for financial specialization to represent financial knowledge spillovers.

Following your comments, we will further explain this variable in the revised version of the manuscript.

5. The conclusion and policy implications

We draw our conclusion according to the test results and current Chinese financial policy. Following your comments, we will modify the conclusions in order to further clarify the correlations among the tested variables and policy implications.

Report by Referee 2

Major issues

- A. We accept that the English writing in the original manuscript needed to be improved. Hence, we will modify the abstract, hypotheses, and conclusions in order to clarify the correlation and causality among the tested variables according to the test results.
- B. Please refer to Section 4 above.
- C. We will modify the hypotheses and use cities' GNP to measure the level of economic development rather than measuring economic growth.
- D. Please refer to Section 2 above. First, the Model A (Table 5) test results show that CFAG and CDIV influence CSPE, while the Model B (Table 6) test results show that CFAG, CSPE, and CDIV influence CECO. Second, in order to calculate the agglomeration index, we use total employment in the financial sector in one city divided by national financial employment as the contribution rate. Meanwhile, in

order to calculate the specialization index, we use the city's financial employment as a proportion of its total employment compared with the national financial industry employment as a proportion of total employment. As you point out, however, this could lead to reverse causality. We will thus reconsider the financial knowledge spillovers (CSPE) index according to comments B and D.

- E. As you point out, we will reconsider the financial knowledge spillovers (CSPE) index and refresh the test results.
- F. The regression results presented in Table 5 and Table 6 are derived from equations 5.1 and 5.2 in subsection 5.2. These results can be divided into random effects (chi-square value, p-test, degrees of freedom) and fixed effects (intercept, slope coefficient, standard error, p-test). Therefore, by showing the intercept and the slope coefficient (i.e., fixed effects results), the value of *tan* is reasonable.
- G. As per your comment, the relationship between agglomeration and growth could be non-linear. Thus, a non-linear research method will be considered in the next stage.

Minor issues

1. We will consider a more suitable title in the revised version.
2. There are 279 cities in the research. We will correct this issue.
3. We will add a discussion on the characteristics of the Chinese financial sector in the revised version.
4. We will provide a map of financial agglomeration in China in 2011 in the revised version.
5. We will clarify the variables in the text, especially in subsection 3.2.
6. Thank you for providing the citation referring to the measures that can identify financial centers in a city. We constructed the agglomeration index by considering data availability and integrity and found that the securities industry could not be included in the calculation because the city-level data are deficient.
7. Yes, the index is higher than 1. We will correct this issue.
8. We will provide the “null model” results in the revised version.
9. Yes, we will check and correct this issue.
10. We added CFAG×CDIV as the interaction term in an earlier test, but the result was not significant. Therefore, we did not consider the interaction term in the test and discussion and Table 5 and Table 6 do not report it.
11. The mistake is the last issue: Ma-4 is the result considering the interaction term. We will correct this issue.
12. Yes, we will check and correct this issue.

13. We will enlist the help of Editage, an editing company, to edit and proofread the revised version of the manuscript. We will also recheck the entire manuscript ourselves.

Major revisions

1. Reconsidering the financial knowledge spillovers (CSPE) index

From the input-output views, we will reconsider using annual R&D expenses in one city as knowledge spillovers. In addition, we will extend the financial specialization index to an industry specialization index in one city as an explanatory variable in the new test.

2. Explanation of the internal mechanism and causality

3. The discussion on the characteristics of the Chinese financial sector and the Chinese financial agglomeration map of 2011

4. Paper writing and editing

We hope we have correctly understood all your comments and explained them sufficiently in this reply. Thank you again for your comments and suggestions.

Best regards,

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