

**Paper's title:** "How agglomeration in the financial services industry influences economic growth: Evidence from Chinese cities"

### **Summary of the paper**

The paper attempts to contribute to the literature on industry agglomeration, by focusing on the impact of financial clustering both on financial knowledge spillovers and on economic development. This paper uses cross-section data, for (a sample of) 279 Chinese cities (and 25 provinces) in 2011, and the Hierarchical Linear Model, that allows to take into account the two levels of analysis: the cities nested in the province. It finds that: (i) agglomeration in the financial industry promotes both financial knowledge spillovers, measured in terms of industry specialization, and economic development, measured by the level of GNP; (ii) industry diversification promotes financial knowledge spillovers and, to some extent, economic development; and (iii) financial knowledge spillovers have a negative impact on economic development.

### **Major issues**

- A. The paper writing needs to be improved. Many statements in the abstract, as well as throughout the paper, do not correspond to what is done in the empirical analysis. In particular, the first sentence in the abstract is in contrast with hypotheses tested and results commented. The same applies to the sentences "the tendency towards agglomeration in the financial services industry in a few major cities is clear and the clustering significantly influences city's boundaries" and "what role does the Chinese government play in financial agglomeration and financial spillovers?", that did not find an answer in the empirical analysis. In Subsection 4.2, both cities' and provinces' control variables are mentioned as determinants of industry agglomeration, while in the econometric analysis they are used as determinants of financial specialization and economic development. Finally, the main conclusions (Section 7) lacks homogeneity with the rest of the paper, and the entire paragraph seems to be an attachment to the core results of the paper. A theoretical analysis is also mentioned in the conclusions, but this is not effectively presented in the paper.
- B. As argued by most part of the literature (see, for instance, Pandit and Cook (2003)), from the point of view of clustered firms, there are several benefits (and costs) related to the forces at work within spatial agglomeration. In particular, mechanism for knowledge spillovers include (among others) social interaction and diffusion via clients and suppliers. In this paper financial knowledge spillovers are measured by an index of specialization on the financial sector, calculated as the proportion of financial industry employment compared to the national average. To the best of my knowledge, it is not clear whether this measure is adequate to measure financial knowledge spillovers. The interpretation of the related results is also questionable. In my opinion, they simply confirm that a higher spatial concentration of financial services leads to a more specialized city (in terms of employment) in the financial sector. Leaving aside the way to measure financial knowledge spillovers, its role in financial agglomeration is not clear as well. Zhao et al. (2004, p. 579) state indeed that "financial services rely on information as an input and produce it as an output".
- C. One of the main hypotheses of the paper is that financial agglomeration is a determinant of economic growth, that is measured by the level of cities' GNP in 2011. However, this is not a measure of economic growth, but a measure of the level of economic development.
- D. There could be some spurious correlation as well as reverse causality issues in the paper. First, in Table 5 a positive impact of the agglomeration index on financial specialization is found and

in model Mb-6 of Table 6 both variables are included as determinants of economic growth. Second, the financial employment contribution rate ( $B2$ ), used to calculate the agglomeration index, is also included in the specialization index: there could be spurious correlation between these two variables. Third, as argued by Martin and Ottaviano (2001), geographic agglomeration of activities and growth are “mutually self-reinforcing processes” and, therefore, this could lead to a reverse causality issue.

- E. As argued in the paper, the relationship between financial specialization and economic development, is motivated by the literature on finance and growth. It is therefore surprising that a negative relations between the specialization index and economic development is found in Table 6: this means that the higher the city’s specialization in the financial sector, the lower the level of GNP. The arguments provided in the paper are not convincing, since they would motivate a non-significant coefficient, but not a negative one. This anomalous result may possibly depend on model misspecification, in the sense that financial specialization is capturing some other effect (previous comment).
- F. The description and testing of the Hierarchical Linear Model used in the empirical analysis should be improved. In particular, in Subsection 5.2 a random slope and intercept model is presented, while a random intercept model is effectively estimated. In addition, the variation of the intercepts ( $\tau$ ) is not sizeable. How could it be explained? Moreover,  $LR$  tests should be reported in order to evaluate whether the null hypothesis that the intercept is the same across all of the cities, as it is assumed in the regression (null) model.
- G. Brulhart and Sbergami (2009) find evidence that supports the “Williamson hypothesis” (1965) that agglomeration spurs GDP growth up to a certain level of economic development. In other words, the relationship between agglomeration and growth could be non-linear. Some tests on non-linearity between financial agglomeration and economic development would be useful also in this paper.

### **Minor issues**

1. The title of the paper is not (completely) consistent with the content of the paper.
2. How many cities does the sample include? 276 cities are mentioned in the abstract and 279 in the text and tables.
3. More discussion on the characteristics of the Chinese financial sector should be provided in order to justify the focus on this particular country.
4. It would be interesting to analyze in which particular locations financial activities tend to cluster in the Chinese economy. In other words, it would be interesting to provide a picture of which financial centers raised in China in 2011, according to the agglomeration index adopted.
5. It is not clear in the text which are dependent and independent variables used in the analysis. More clarification on this is needed, especially in Subsection 3.2.
6. Zhao et al. (2004, p. 579) argue that several measures could be used to identify financial centers in a city and that “these measures include employment in the financial sector relative to the total employment, assets of financial institutions, the proportion of cheques cashed, the turnover value of stock exchange, the volume of communications (especially express mails and telecommunications), and the presence of foreign banks and head offices of large

multinationals non-financial corporations”. Why are not foreign banks and non-financial multinationals included in the agglomeration index? Why are the security industry services described in Table 1 and not included in the calculation of the agglomeration index (according to the note in the Table)?

7. I am not convinced about the statement that the value of the specialization index ranges between 0 and 1. If the city’s proportion of financial industry employment is higher than the national average, then this index is higher than 1.
8. What does “null model”, mentioned in Subsection 6.1, mean? I suppose it provides the results that include only the explanatory variables at the city level and considers a constant intercept. Results should be provided and compared to those of the random intercept model.
9. The sentence in Subsection 5.2 “Although the intercept and slope of the regression equation are not assumed to be constant, they act as explanatory variables of in L2 regression equation (Gu, 2010)” need to be checked. It should be “dependent variables” instead of “explanatory variables”.
10. In Subsection 6.1 “interaction terms” are mentioned, but neither Table 5 nor Table 6 report them.
11. Which is the difference between Ma-3 and Ma-4 models in Table 5?
12. Cainelli and Leoncini (1999) is reversed in the bibliography.
13. Typos and editing of the paper should be revised.

#### **References** (not cited in the paper)

Brühlhart, M., & Sbergami, F. (2009). Agglomeration and growth: Cross-country evidence. *Journal of Urban Economics*, 65(1), 48-63.

Martin, P., & Ottaviano, G. I. (2001). Growth and agglomeration. *International Economic Review*, 42(4), 947-968.

Pandit, N. R., & Cook, G. (2003). The benefits of industrial clustering: Insights from the British financial services industry at three locations. *Journal of Financial Services Marketing*, 7(3), 230-245.