ARTICLE IN PRESS

Q1 # Credit networks and systemic risk of Chinese local financing platforms: Too central or too big to fail? –based on different credit correlations using hierarchical methods

Q2 ## He Fang, Chen Xi *

Department of Construction Management and Real Estate, Tongji University, 200092 Shanghai, China

HIGHLIGHTS

- We first studied the Chinese local financing platforms networked structure from below.
- We used the new credit similarity measure to extract the MSTs and HTs.
- The MSTs and HTs based on different credit correlations are heterogeneous.
- The too-big-to-fail and too-central-to-fail policy were compared.
- Key platforms and regions of systemic importance were revealed by the MSTs and HTs.

ARTICLE INFO

ABSTRACT

The accelerating accumulation and risk concentration of Chinese local financing platforms debts have attracted wide attention throughout the world. Due to the network of financial exposures among institutions, the failure of several platforms or regions of systemic importance will probably trigger systemic risk and destabilize the financial system. However, the complex network of credit relationships in Chinese local financing platforms at the state level remains unknown. To fill this gap, we presented the first complex networks and hierarchical cluster analysis of the credit market of Chinese local financing platforms using the "bottom up" method from firm-level data. Based on balance-sheet channel, we analyzed the topology and taxonomy by applying the analysis paradigm of subdominant ultra-metric space to an empirical data in 2013. It is remarked that we chose to extract the network of co-financed financing platforms in order to evaluate the effect of risk contagion from platforms to bank system. We used the new credit similarity measure by combining the factor of connectivity and size, to extract minimal spanning trees (MSTs) and hierarchical trees (HTs). We found that: (1) the degree distributions of credit correlation backbone structure of Chinese local financing platforms are fat tailed, and the structure is unstable with respect to targeted failures; (2) the backbone is highly hierarchical, and largely explained by the geographic region; (3) the credit correlation backbone structure based on connectivity and size is significantly heterogeneous; (4) key platforms and regions of systemic importance, and contagion path of systemic risk are obtained, which are contributed to preventing systemic risk and regional risk of Chinese local financing platforms and preserving financial stability under the framework of macro prudential supervision. Our approach of credit similarity measure provides a means of recognizing "systemically important" institutions and regions for a targeted policy with

* Corresponding author. Tel.: +86 18018608659.
  E-mail address: chenxi4731@sina.com (X. Chen).