

The Hong Kong University of Science and Technology  
Dept of Information Systems, Business Statistics  
and Operations Management  
Frontiers in Operations Management Workshop



**Farsighted Stability in Competition Between On-Demand Service Platforms**

by

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**Date** : **2 December 2022 (Friday)**  
**Time** : **2:45 – 3:30 PM**  
**Venue** : **Room G012, LSK Business Building, HKUST**



**Abstract:**

We consider service competition between two platforms, who are assumed to be farsighted, i.e., they consider the chains of reactions following their initial deviation. We first investigate the one-sided competition where the supply-side capacities of two platforms are fixed and then proceed to the two-sided competition where the two platforms are competing on both the supply and demand sides. We aim to derive farsightedly stable outcomes referred as the *von Neumann-Morgenstern farsighted stable set (vNM FSS)*, a problem boiling down to finding the Pareto efficient strategies which indirectly dominate other strategies. To that end, we construct auxiliary decision problems for each platform where they make price decisions for the customers and wage decisions for the workers, subject to a subgame workers-customers equilibrium. We obtain each platform's price and wage decisions by analyzing the Karush-Kuhn-Tucker conditions. We show that, in sharp contrast to the "winner-take-all" outcome predicted by the Nash equilibrium (myopic) solution concept, both platforms can survive competition under the farsightedly stable outcomes. We also find that, in contrast to the myopic solution which may leave either customers or workers a positive surplus, farsightedness behaviour of platforms fully extracts the surplus from both customers and workers. Our analysis reveals that, in the one-sided competition, myopic stable outcome (i.e., Nash equilibrium) is consistent with the farsighted stable outcome in most of cases. However, in the two-sided competition, they are totally different. We also demonstrate that even though platforms are farsighted, the stable outcome cannot yield the monopolistic profit for the two platforms.

**Bio:**

Prof Pengfei Guo is Chair Professor of Supply Chain Management of City University of Hong Kong. He received his PhD in Business Administration from Duke University. Before that, he obtained his BS degree and MS degree from Xi'an Jiaotong University and Shanghai Jiao Tong University, respectively. Prior to joining CityU, he was a faculty member at the Department of Logistics and Maritime Studies, the Hong Kong Polytechnic University. Prof Guo has broad research interests, including service operations, queuing economics, healthcare policy, and supply chain management. He is an Associate Editor of *Manufacturing & Service Operations Management* and a Senior Editor of *Production and Operations Management*.

All interested are welcome!  
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