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Research interest:

My research is about complex systems in societies. I utilize network science, large-scale data, high performance computers (such as supercomputer Kei and Fugaku), and simulations so that I can replicate complex societal behaviors as much as possible. My project in Japan Science and Technology Agency (JST) aims to estimate how anti-pandemic measures affect the economy. In particular, I build a model in which many agents interact in complex networks, and I run simulations on large-scale parallel computers, incorporating multilateral large-scale micro data regarding supply chains, final consumption, and firm activities. In addition, I replicate demand and supply in the service sectors and improve the accuracy of daily estimations of firm production, which have been difficult for prior research. In the past, I was a visiting professor at the Center for Complex Network Research at Northeastern University in the U.S. from 2011 to 2012 to study network science. I was also a visiting professor at Kiel University in Germany from 2018 to 2019 to study micro-founded macro economic simulation. I was awarded Evolutionary Economics Prize in 2017 and NISTEP Selection from National Institute of Science and Technology Policy in MEXT in 2021.

Publications:

1. H. Inoue, and Y. Todo: “Firm-level propagation of shocks through supply-chain networks”, *Nature Sustainability*, Vol.2, pp.841-847, 2019.
2. H. Inoue, “Co-patenting: An Analytic Tool for Cooperative Research and Development”, Springer Japan, 2020.
3. Y. Fujiwara, et al. Money flow network among firms’ accounts in a regional bank of Japan”, *EPJ Data Science*, 2021.
4. H. Inoue, et al. “Do economic effects of the anti-COVID-19 lockdowns in different regions interact through supply chains?”, *PLOS ONE*, 16(7), e0255031, 2021.
5. Y. Todo and H. Inoue, “Geographic Diversification of the Supply Chains of Japanese Firms”, *Asian Economic Policy Review*, 2021.
6. H. Inoue, and Y. Todo, “The propagation of the economic impact through supply chains: The case of a mega-city lockdown to prevent the spread of COVID-19”, *PLOS ONE*, 15(9): e0239251, 2020.
7. T. Iino, H. Inoue, Y. Saito, and Y. Todo: “How does the global network of research collaboration affect the quality of innovation?”, *The Japanese Economic Review*, 2020.

8. H. Inoue, and Y. Todo: "Firm-level propagation of shocks through supply-chain networks", *Nature Sustainability*, Vol.2, pp.841-847, 2019.
9. H. Inoue, K. Nakajima, and Y. U. Saito: "Localization of Collaborations in Knowledge Creation", *The Annals of Regional Science*, 62(1), pp.119-140, 2019.
- 10.H. Inoue and Y. Todo: "Propagation of negative shocks across nation-wide firm networks", *PLoS ONE* 14(3): e0213648, 2019.