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Innovation Resilience in Cities



COLLABORATIVE EFFORT BY CHAN-YUAN WONG, I-KIM WANG, JEFFREY SHEU, AND MEI-CHIH HU

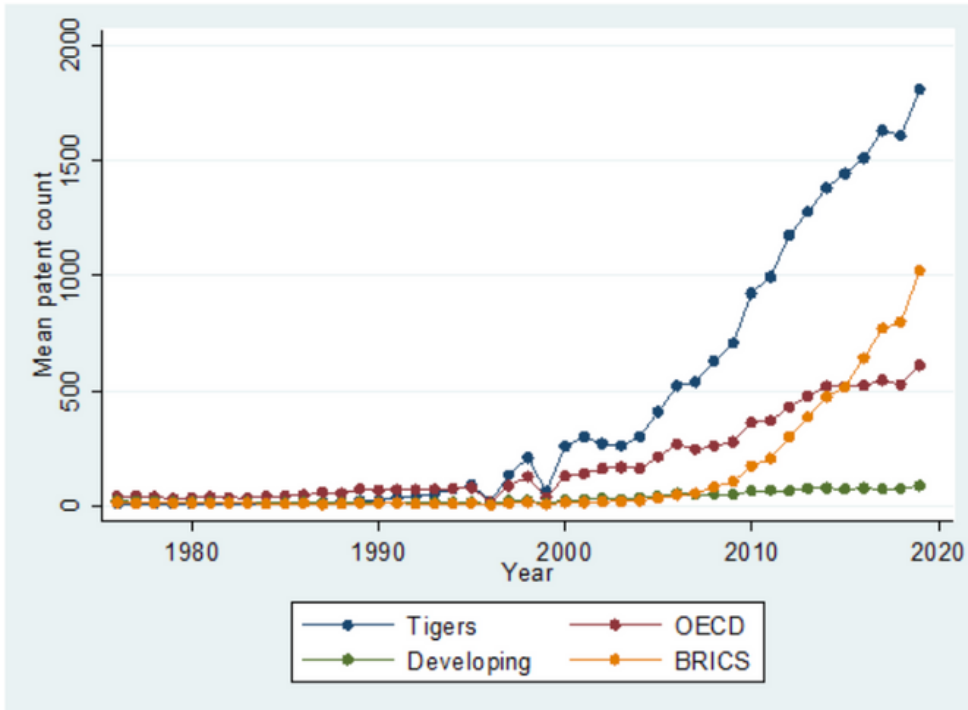
Achieving innovation has been a challenging task, as maintaining its momentum is akin to landing on the moon. What are the key ingredients that innovative cities need to possess to sustain their momentum, especially after experiencing economic setbacks?

INTRODUCTION

Some cities may not be able to recover from unforeseen economic crises like major stock market crashes. By examining patent data from 87 innovative cities across the globe, we can gain insight into how to regain technological momentum and bolster resilience following economic setbacks. Patents are a key indicator of technology and knowledge related to industrial techniques.

We examine cities' resilience by utilizing the framework of regional innovation systems. Characteristics of a network that the city is embedded in have an impact on the ongoing technological activities following economic shocks. Regional innovation systems are credited with innovation-related successes such as R&D collaborations and industrial upgrading.

Since not all cities share the same level of economic development, we cluster cities into four groups to capture the divergence in their patenting performance: the Tiger economies (the Four Asian Tigers: Korea, Taiwan, Hong Kong, and Singapore, plus Israel), Developing, OECD, and BRICS (Brazil, Russian, India, China, and South Africa).



FINDINGS

We use the difference-in-differences analysis on cities according to their group and RISs' characteristics.

Cities worldwide show different levels of innovation performance after experiencing economic crises. Resilient cities, often found in emerging economies like Tigers economies and BRICS countries, have the ability to quickly recover from economic downturns. These cities have strong local networks that anchor them to the regional level, providing some protection from major global crises. However, compared to their peers in the OECD countries,

Local entities in cities from Tigers and BRICS countries collaborate with each other, even on a small scale, to continuously scale up their operations and take advantage of market rebounds.

these cities may lag behind in terms of building local knowledge and commanding regional and interregional networks. Nevertheless, these cities are able to combine growth with entrepreneurial

t activities to diversify their knowledge stock. Local entities in cities from Tigers and BRICS countries collaborate with each other, even on a small scale, to continuously scale up their operations and take advantage of market rebounds.

Cities in OECD countries present a significantly different picture. Constituents in developed cities are linked to more sophisticated financial economies. Many of these cities place a dual emphasis on the local knowledge base and inter-regional collaboration. However, despite their orientation towards investing in efforts to enhance knowledge bases, the interdependency between cities in OECD countries hinders their ability to pursue their own technological ventures.

Access to capital resources is particularly limited during and following crises. Highly specialized and rigidly concentrated industrial regions make these cities vulnerable to crises.

Simply put, a shortage of capital prevents cities from leveraging their local knowledge base and commanding cross-regional

knowledge networks. In our analysis of data from 87 cities, we have observed significant resilience among cities in developing economies and BRICS during economic crises. These cities have shown an unwavering commitment to pursuing technological innovation. It was previously assumed in international business that multinational corporations set up operations in developing economies solely for short-term gains. However, the

technological development. In contrast, there is a clear downward trend in the innovation performance of OECD cities in terms of maintaining local knowledge bases and engaging local entities.

CONCLUSION

We conclude innovation characteristics for resilient cities following economic crises:

- Cities in BRICS countries demonstrated resilience by relying on local knowledge bases and intra-regional networks. Their key to persist innovation performance relied on mobilizing resources and find a suitable direction to advance development during the crisis. It is expected that these cities will continue to follow a similar path to remain resilient in future crises.

The interdependency between cities in OECD countries hinders their ability to pursue their own technological ventures.

innovation performance of cities in developing economies and BRICS tells a different story. Some Asian cities that were once considered on the periphery or semi-periphery have emerged as thriving hubs with new high-tech firms, thanks to their strong local knowledge bases. This contradicts the former belief that multinationals in developing economies are only interested in short-term gains, as they have shown a commitment to long-term

- Cities in developing countries, where multinational corporations are the major source of patenting activity, gained resilience through inter-regional collaboration during the economic crisis, while still maintaining a local knowledge base.

- Cities in OECD countries that rely heavily on a local knowledge base demonstrated a clear decline following the crisis. We attribute this decline to the narrow industrial activities and closed networks within these cities, as their resilience is found to depend more on inter-regional networks.

Finally, while many cities maintained their innovation characteristics,

This contradicts the former belief that multinationals in developing economies are only interested in short-term gains, as they have shown a commitment to long-term technological development.



those in developing economies exhibited more diversity in innovation performance. Initially, Shenzhen and Hangzhou shared similar characteristics with Penang and Bangkok in 2000. However, over time, Shenzhen and Hangzhou morphed into the group of cities in Tiger economies, which includes Hsinchu, Taipei (Taiwan), Seoul, and Suwon (South Korea). Meanwhile, Singapore experienced a decline in its innovation performance and now shares similarities with its Southeast Asian counterparts, such as Penang, Hong Kong, and Bangkok.

ABOUT THE AUTHOR(S)

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