Mapping Canadian Tech Companies in International Markets:

Wrap-up Report to CDO 2019

The original research for this project was begun in 2014 as part of the Munk School's CanAsiaFootprint mapping project. This project tracked Canada's presence in Asia by collecting publicly-available Canadian company-level data. For the purposes of the mapping project, a sample group of countries (the "A-16") was chosen that includes the six major Asian economies—China, Hong Kong, India, Japan, Taiwan and South Korea—in addition to the ten member-states of the Association of Southeast Asian Nations (ASEAN). The interactive map was updated in early 2019, with 762 companies and organizations in 2476 locations in the A-16. The map can be viewed on the site of Business Council of Canada, the Munk School of Global Affairs and Public Policy and the Asia-Pacific Foundation.

https://munkschool.utoronto.ca/canasiafootprint/

The research devoted to the Creating Digital Opportunity (CDO) project began later in 2014, taking the location data of the CanAsia database as the initial basis for further research, focusing on digital economy firms.

One of the objectives of the CDO project is to *"identify strengths in current and emerging digital sectors, by examining the place of Canadian corporations, products and services in global production networks."* The research undertaken by the mapping project attempted to meet this objective by using locations as evidence of Canada's participation in the global digital economy, initially in Asia, but then adding the USA, the EU and other markets as more data was acquired.

Industry classifications were initially created by dividing companies by their three-digit NAICS codes**.** However, NAICS code classifications are not ideally suited to companies in the innovation economy. Instead, we have classified the firms in the dataset by modifying a PWC data map, then adding advanced manufacturing to capture the automotive sector, and cleantech. The resulting categories, while arbitrary, do a much better job of capturing the types of high-tech companies that have located in Asia and beyond.

The mapping project's CDO dataset has continually evolved since its inception. Some of the companies that were initially located in Asia have since been acquired by foreign firms, or have merged with others, or have

disappeared, not surprising in the tech world. More research on this evolution is warranted.

In the latest snapshot of Asia CDO data, which incorporates new data, especially on India, we have 350 Canada-based companies with 677 subsidiaries in 1143 locations across Asia. China continues to lead as an investment destination, with India close behind. Advanced manufacturing followed by software are the top sectors.

China and Hong Kong

For the 2018-19 academic year we have zeroed in on China and Hong Kong given greater China's role as a tech hub and the top location in Asia for Canadian firms. Based on the Asia map update there are a total of 249 tech firms with 447 locations in China/HK, with over 18% having locations in in both China and HK. We have further focused on Ontario firms, as that is where the data is likely most complete, with 131 companies in 213 locations. As was the case with location data in previous years, advanced manufacturing is the largest sector group, incorporating the automotive sector. Services and analytics, electronic peripherals and software make up a significant chunk of the locations along with cleantech.

Over half (56%) of the Ontario firms are SMEs. Based on public information related to the locations, we have determined that about 70% are in China/HK as part of a global/regional value chain, 17% serving only the China/HK market, and the remainder serving Asian markets. We also investigated the date of entry into China/HK: one third entered in the 2011-2015 period; one quarter in 2006-2010. Since 2016 market entry has dropped off (and this is likely to continue in the current geopolitical climate). Finally, we determined what kind of business entity the companies had established (and in some cases, companies may have more than one location with varying business models). Surprisingly, only 21% are joint ventures. The largest percentage is of locally-owned subsidiaries (32%), followed by rep offices at 28%.

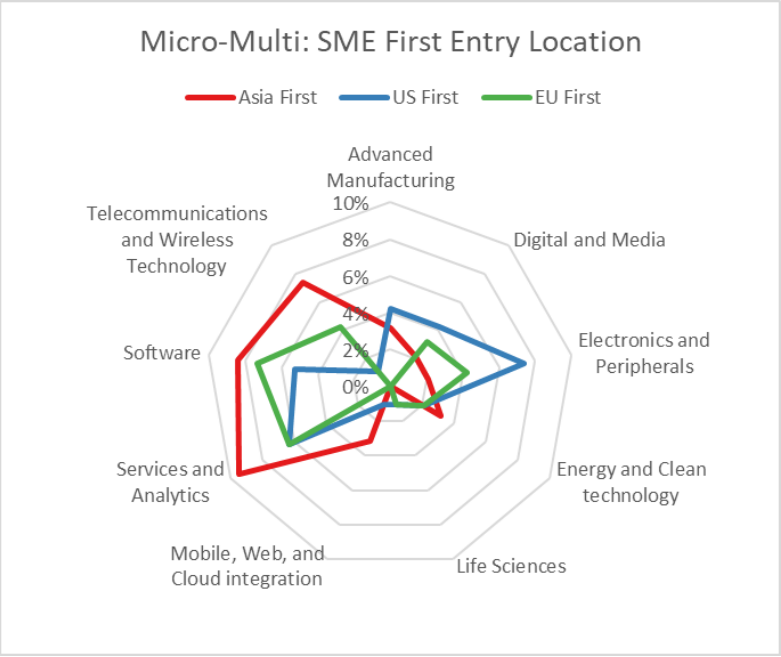
Research Conclusions

There are several conclusions that can be drawn from over four years of research:

- Canadian tech companies with locations abroad are as likely to be services-related as to be manufacturers. [The phrase "global production networks" is misleading, because it implies manufacturing. Global value

chains or networks would be preferred.] The ratio of manufacturing vs services has varied over time, but services has represented more than 45% and up to 67% of the total companies abroad.

- Canadian tech companies with locations abroad are more likely to be SMEs (defined as 499 employees or less) than large firms.
- China and Hong Kong are the largest markets of interest in Asia for Canadian tech companies. Not surprisingly, Hong Kong is almost exclusively services-related.
- There are three sectors of note where, judging by location numbers, Canadian companies appear to have an edge: advanced manufacturing, which incorporates the automotive sector and electronics OEM where a good percentage of the firms are large; then software and services and analytics where the companies tend to be small.
- Ontario takes the lead as the province of origin for tech companies with locations abroad. This result has been consistent throughout the research. Next, Quebec and British Columbia.
- Of particular interest are the "micro-multinationals", i.e. companies that, apart from Asia, have locations in the USA and Europe. This cohort of firms deserves further study, because it is these firms that have a proven capacity to compete for a place in global value chains.
- The USA is not automatically the first choice of international market location: in a limited study conducted in 2017, we determined that over one third of the micro-multinational SMEs actually went to Asia first.



Policy implications

The research conducted by the mapping project for CDO has implications for the policy-making community, particularly with respect to the globalization of Canadian tech companies.

- The activity captured by the location data is often not reflected in official services or investment data, especially in terms of how it relates to SMEs. Policy-makers should take location data into account when collecting information on their client base. While a great deal of public policy discussion is devoted to manufacturing, the predominance of services-related tech SMEs in international markets should induce the public policy dialogue to shift further into the tradable services realm.

- The international investment patterns of tech companies should be studied by policy-makers, particularly for micro-multinationals. These companies have proven that company size is not a prerequisite for fruitful participation in key markets of the global digital economy. Some of these firms may have been "born global", embarking on global activity soon after inception. Applying a sector filter to the location data reveals the patterns—further research is warranted on how Canadian firms are fitting into tech ecosystems abroad, including the mix of large and SME's in dates of market entry. Based on this analysis, policy-makers will be in a better position to promote and facilitate international market entry.

- In order to achieve the scale necessary for growth and expansion, Canadian tech companies are capitalizing on international market opportunities. Trade negotiators and commissioners should make every effort to ensure that Canadian tech companies are well informed re existing international networks and opportunity and do not face barriers to entry and location in markets of interest, and that intellectual property is protected.

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