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# CAIRN POLICY BRIEF

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## GOING MULTINATIONAL: EXPLORING THE INTERACTIONS BETWEEN INNOVATION AND FDI IN THE FOOD PROCESSING SECTOR

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### Issue

Multinational Enterprises (MNEs) are generally characterized by their continuous engagement in extensive private Research and Development (R&D) activities. The outcomes from these R&D activities are innovations that confer MNEs with their proprietary assets and enhance their superior performance in international markets. Innovated products, technologies, organizational structures, and marketing strategies of MNEs can be transferred abroad through Foreign Direct Investment (FDI). The presence of FDI in the host countries is expected to have important implications on the innovation performance of domestic firms. The geographical proximity between foreign affiliates of MNEs and the domestic firms of the FDI host country promotes the transfer of

innovation from the former to the latter. This “spillover effect” is expected to have important implications on the performance of the domestic firms, not only at the national level, but at the international level as well. Conversely, foreign affiliates would increase the level of competition in the FDI host country, resulting in decreases in market shares of domestic firms. This could eventually lower the level of innovation activities of domestic firms due to lower returns to innovation. Understanding these counteracting effects is essential in developing both innovation and FDI policies at the governmental level.

FDI can be selected by MNEs as a strategy to derive essential information from foreign markets and/or from foreign firms. These various information inputs would



eventually assist MNEs to develop innovated products tailored to the FDI host market. MNEs can also rely on FDI to realize a reverse spillover effect, especially when undertaken in regions characterized by significant industrial agglomeration levels and prominent innovation activities.

These aforementioned effects are expected to significantly prevail in the food processing sector. Statistical figures from the Bureau of Economic Analysis (BEA) - Operation of Multinational Companies datasets show significant sales of foreign affiliates of Canadian food processing firms in the United States (US) that increased from \$US 4,033 million in 1999 to \$US 7,793 million in 2007. Furthermore, BEA datasets highlight prominent aggregate levels of private R&D expenditure by food processing foreign affiliates in the US, reaching \$US 457 million in 2007. Meanwhile, sales of US food processing foreign affiliates in Canada increased from \$US 10,674 million in 1999 to \$US 19,054 million in 2007. Private R&D expenditure by affiliates of US food processing enterprises abroad attained \$US 428 million in 2007. Also, private R&D expenditure by the parent

enterprises of these US affiliates reached \$US 1,852 million in 2007. These illustrative statistics warrant a thorough understanding of the relationship between innovation and FDI in the food processing sector. The objective of this policy brief is to present the different aspects of interactions between innovation and FDI in the food processing sector and to discuss the resulting policy implications.

### **Concluding Remarks and Policy Implications**

Food processing firms can increase the returns to innovation by undertaking outward FDI. Inward FDI has two offsetting effects on the innovation activities of domestic firms. It compels them to get further engaged in innovation activities through the competition effect in order to maintain their market shares. However, it can also cause reductions in their market shares as a result of increased competition and, hence, adversely affects their economies of scale associated with innovation.

Innovation can be transferred from foreign affiliates of MNEs to domestic food processing firms through the spillover effect. Conversely, MNEs can undertake FDI in regions characterized by

prominent innovation activities in order to benefit from a reversed spillover effect. The spillover effect can vertically prevail for primary agricultural producers when they establish business relationships with food processing MNEs. The pace and extent of the spillover effect depend on the IPR protection levels as well as on the absorption capacity of domestic firms.

Innovation that is realized in the primary agricultural sector can attract inward FDI in the food processing sector. In many other cases, such innovation can induce outward FDI. This is mainly because many countries restrict the access of innovated primary agricultural products to their markets (e.g., the case of the European Union (EU) restrictions on Genetically-Modified (GM) products). Sourcing alternative types of innovated (or non-innovated) primary agricultural products that are not restricted by these countries would be a natural alternative for food processing firms to maintain opportunities in foreign market. In such cases, outward FDI in locations with abundant supply of such alternative products could become an optimal strategy.

The aforementioned interactions between innovation and FDI

should be taken into consideration when designing innovation policies in the agricultural and agri-food sector. More specifically, these innovation policies should be structured to benefit from the implications associated with inward FDI (e.g., spillover-enhancing policies) and outward FDI (e.g., policies promoting the expansion of market shares in foreign countries).

### **Innovation and FDI in the Food Processing Sector**

Food processing MNEs can increase the return to innovation by building production facilities in foreign markets (i.e., undertaking production-based FDI) or by licensing arm's length contractors to carry out the production process. Food processing MNEs can also increase these returns by establishing distribution and marketing facilities abroad (i.e., undertaking distribution-based FDI) or organizing contractual arrangements with foreign distributors. FDI would be a preferred strategy over licensing when firms opt for internalizing transaction costs.

One likely channel for Canadian food processing firms to exploit the opportunities in large remote markets (e.g., the EU market) is

FDI. The increases in return to innovation associated with FDI are promoted with savings in transportation costs and trade barriers and enhanced marketing and distribution of innovated products in foreign markets. However, opting for the FDI strategy requires the consideration of other factors such as the cost of building plants and distribution facilities, market potentials, and barriers facing foreign investment. Food processing MNEs are also required to ensure an adequate supply of primary agricultural inputs when selecting the FDI location.

Inward FDI has two offsetting effects on the innovation activities of domestic firms in the FDI host countries. It could provoke domestic firms to get further engaged in innovation activities through the competition effect in order to maintain their market shares. However, the competition effect associated with inward FDI would potentially cause reductions in market shares of domestic firms (Harrison, 1994; Aitken and Harrison, 1999). Consequently, the magnitude of economies of scale for conducting innovation activities can be reduced.

The spillover effect from foreign affiliates to domestic firms can occur through many channels. New technologies, innovated products, organizational structures, and marketing strategies brought about by MNEs through FDI can inspire domestic firms through exposure, commonly termed "the demonstration effect" (Wang and Blomström, 1992). Furthermore, turnover of skilled labour from foreign affiliates to domestic firms (Glass and Saggi, 2002) and the engagement of domestic firms in joint ventures with MNEs can accelerate the speed of the spillover effect. However, the empirical evidence indicates that MNEs with important proprietary assets are more likely to get engaged in majority-owned FDI rather than getting engaged in joint ventures with domestic firms (e.g., Javorcik, 2001). This strategy is opted to avoid or limit the dissipation of the proprietary assets. The transfer of innovation from foreign affiliates to domestic firms would eventually stimulate the performance of domestic firms not only at the national level but also at the international level. This effect would increase the economies of scale of domestic firms, by reducing the average cost of production. As a result, domestic firms would have higher ability to undertake innovation

activities. In order for the spillover effect to occur at higher rates, domestic firms are required to maintain a convenient level of learning capacity, commonly termed “the absorptive capacity” (Cohen and Levinthal, 1989).

The rate of spillover is function of the strength of Intellectual Property Rights (IPRs) in the FDI host country. It is expected that lower levels of IPRs would allow a faster materialization of the spillover effect. However, MNEs would opt to undertake limited levels of FDI or low-quality FDI in countries characterized with low IPRs in the first place. Therefore, there exist offsetting effects. On one side, stronger IPR regimes would enhance the inflow of high-quality FDI but would limit the potential spillover effect. On the other side, weaker IPR regimes that facilitate the occurrence of higher levels of spillover would discourage MNEs to undertake FDI. Alternatively, weaker IPR regimes would provoke MNEs to rely more on distribution-based FDI rather than on production-based FDI (Javorcik, 2004).

Food processing MNEs can opt for FDI strategy in order to benefit from a reversed spillover effect from foreign firms,

especially in regions characterized by significant industrial agglomeration and prominent innovation activities. In addition, undertaking FDI allows a better understanding of foreign consumer preferences which would subsequently assist food processing MNEs in innovating foreign-market-tailored food products. This type of innovation would ensure significant market shares in foreign markets.

### **Innovation, FDI and the Vertically Related Sectors**

The innovated organizational and business structures of foreign affiliates can inspire domestic food processing firms to develop equivalent structures. Such spillover effect can also occur when it comes to the supply chain from the upstream primary agricultural sector to the food processing sector. For example, innovated vertical supply structures that induce reductions in transaction costs and ensure a more efficient supply of primary agricultural inputs would motivate domestic firms to establish equivalent vertical supply structures with domestic and foreign suppliers. Similarly, innovated marketing structures at the wholesale and retail levels can be transferred from foreign

affiliates to domestic firms through the spillover effect.

Spillover effect can vertically occur from MNEs to domestic suppliers, inducing improvements in their productivity (Pack and Saggi, 2001). Along these lines, vertical spillover from food processing MNEs to the domestic primary agricultural sector is anticipated, through technological and organizational diffusion. When food processing MNEs and domestic primary agricultural producers establish a business relationship, MNEs can assist these domestic producers with innovated products, technologies, and/or strategies and transfer updated knowledge to them. This connection would eventually improve the productivity of the domestic producers. Also, domestic producers could be compelled to innovate in order to meet more stringent business conditions imposed by demanding MNEs.

Innovation that is realized in the primary agricultural sector can have important implications on the occurrence of inward and outward FDI in the food processing sector. Food processing MNEs can embrace an FDI strategy in order to benefit from innovation in foreign primary agricultural sectors. For example,

food processing MNEs could undertake outward FDI in locations characterized by abundant supply of innovated lower-cost primary agricultural inputs. This strategy is optimal when the processed food products made from these innovated primary agricultural ingredients have accessibility to larger (and most likely closer) markets. Innovated primary agricultural products may face restrictions in terms of accessibility to foreign markets. A prominent example is the EU restrictions on imports of GM canola. Therefore, sourcing alternative types of innovated primary agricultural products that are not restricted (e.g., non-GM Clearfield canola that was developed through natural breeding techniques) constitutes a natural alternative for food processing firms to maintain opportunities in foreign markets. However, when sourcing non-GM inputs to produce GM-free processed food products is not feasible, undertaking FDI can be considered as an alternative strategy. Hence, food processing firms can strategically establish production affiliates in foreign locations where the supply of non-GM primary agricultural products is relatively abundant.

In summary, this policy brief highlights the various aspects of

interactions between FDI undertaken by MNEs and innovation in the food processing sector. Comprehending these effects is essential for policy makers when designing innovation plans in the agricultural and agri-food sector.

## References

- Aitken, B. and A. Harrison. 1999. Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela. *American Economic Review* 89(3): 605-618.
- Cohen, W. and D. Levinthal. 1989. Innovation and Learning: Two Faces of R&D. *Economic Journal* 99(397): 569-596.
- Glass, A. and K. Saggi. 2002. Multinational Firms and Technology Transfer. *Scandinavian Journal of Economics* 104(4): 495-513.
- Harrison, A. 1994. Productivity, Imperfect Competition and Trade Reform. *Journal of International Economics* 36(1-2): 53-73.
- Javorcik, B.S. 2004. The Composition of Foreign Direct Investment and Protection of Intellectual Property Rights: Evidence from Transition Economies. *European Economic Review*, 48(1): 39-62.
- Javorcik, B.S. and K. Saggi. 2004. Technological Asymmetry among Foreign Investors and Mode of Entry. Policy Research Working Paper Series No. 3196. The World Bank, Washington, D.C.
- Pack, H. and K. Saggi. 2001. Vertical Technology Transfer via International Outsourcing. *Journal of Development Economics* 65(2):389-415.

Wang, J. and M. Blomström. 1992. Foreign Investment and Technology Transfer: a Simple Model. *European Economic Review* 36(1): 137-155.