

technology, which can be readily brought home, thus helping the parent firm be up-to-date with technological advances and production processes. It may also help stimulate exports of machinery and other capital goods (particularly if the parent firm has developed unique machinery involved in the production process), and increase demand for intermediary products, know-how, and specialised services. In addition, seeking returns on capital abroad rather than at home allows Canadian firms to repatriate profits, intellectual property royalties, and other similar payments.

#### **Linkages between exports and CDIA: causality tests and gravity models**

Exports and outward foreign direct investment have often been characterized as alternative strategies. Firms may either produce at home and export, or produce abroad and substitute local sales of foreign affiliates for exports. It is thus not surprising that concerns have been raised that outward direct investment may lead to loss of investment, exports, and employment from the Canada. Recent economic research, however, suggests that outward direct investment is beneficial to the home economy under certain conditions. For example, by enabling multinationals and their domestic suppliers to expand into new markets and to gain access to new technologies, outward foreign direct investment can secure well-paid jobs in the Canada. Alternatively, outward foreign direct investment can help facilitate a restructuring of industry in Canada by moving companies up the value chain. This is achieved by shifting some labour intensive production processes overseas to more cost competitive locations, allowing the domestic operations to concentrate on strategic high value-added activities that pay higher wages.

Results from empirical studies on the link between FDI and home country exports are mixed but recent studies point to a complementary relationship between outward FDI and exports. Studies by

Mundell (1957) and Svensson (1996), found FDI had a negative effect on home country exports. However, others have found outward FDI had a positive effect on exports [Lipsey and Weiss (1981), Helpman (1984), Grossman and Helpman (1989), and Hejazi and Safarian (2001)]. More recently, Head and Ries (2004) found that FDI increases as foreign markets expand. FDI and exports can be complementary even if FDI consists of vertical specialization or branching. Most recently, Hejazi (2007) showed that CDIA that moves through offshore financial centres results in increased Canadian exports.

To shed light on the issue, the relationship between outward FDI stock and exports for Canada is investigated. We begin by testing for evidence of causality between direct investment and exports. This is followed by a more direct test of the nature of the link using panel data for 44 countries in a Gravity model.

#### **Granger Causality**

Correlation does not necessarily imply causation. There is abundance of correlations, which are simply spurious or meaningless. The Granger (1969) approach to the question of whether, say, CDIA causes exports (X) or imports (M) is to see how much of the current X can be explained by past values of CDIA and then to see whether adding lagged values of CDIA can improve the explanation. X is said to be Granger-caused by CDIA if helps in the prediction of X, or equivalently if the coefficients on the lagged CDIAs are statistically significant. Note that two-way causation is frequently the case; CDIA Granger causes X and X Granger causes CDIA.

It is important to note that the statement "CDIA Granger causes X" does not imply that X is the effect or the result of CDIA. Granger causality measures precedence and information content but does not by itself indicate causality in the more common use of the term.