Foreign direct investment outflows in the forest products industry: the case of the United States and Japan

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SUMMARY

This paper investigates the determinants of foreign direct investment (FDI) outflows from two major forest product importing countries: the U.S. and Japan. Exchange rate, per capita income, cost of capital, and cost of labour in host countries have significant impacts on the FDI outflows from these two countries. A complementary relationship is found between forest products exports and FDI outflows for the forest product importing countries. Market-seeking as well as resource-seeking motives for the FDI outflows from these countries are evident.

Keywords: foreign direct investment, outflows, resource-seeking, market-seeking, forest products industry

Fuite des investissements directs étrangers dans l'industrie des produits forestiers: le cas des Etats-Unis et du Japon

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Cet article examine les aspects déterminants des fuites de l'investissement étranger direct (FDI) en provenance de deux pays importateurs majeurs de produits forestiers: les Etats-unis et le Japon. Le taux de l'échange, le revenu par individu, le coût du capital et le coût de la main d'oeuvre dans les pays hôtes on un impact significatif sur les fuites du FDI de ces deux pays. Une relation complémentaire est découverte entre l'exportation des produits forestiers et les fuites des FDI pour les produits importateurs de produits forestiers. Les motivations vers la recherche de marché et de ressource des fuites du FDI de ces pays son évidentes.

Salidas de inversiones directas del extranjero en la industria de productos forestales: los casos de Estados Unidos y Japón

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Este estudio investiga los factores determinantes de la salida de inversiones directas (ID) del extranjero de dos importantes países importadores de productos forestales: Estados Unidos y Japón. El tipo de cambio, los ingresos per capita, y el coste del capital y de la mano de obra en los países anfitriones tienen un impacto significativo sobre la salida de IDEs de estos dos países. Se establece una relación complementaria entre la exportación de productos forestales y la salida de IDEs para los países importadores de productos forestales. Queda claro que detrás de la salida de IDEs de estos países está el motivo de búsqueda de mercados, además de una simple búsqueda de recursos.

INTRODUCTION

International Monetary Fund defines foreign direct investment (FDI) as an investment by a resident entity in one economy in an enterprise in another country with the objective of obtaining a lasting interest in the enterprise and an effective voice in its management. For statistical purpose, an investment is classified as direct investment if the resident entity owns 10% or more of the shares of voting power of the foreign enterprise. Most countries adopt this definition in their reporting of FDI.

There are several advantages of foreign direct investment. FDI transfers not only financial resources, but also technology and managerial skills from home countries to host countries (Kiyota and Urata 2004). FDI also brings in various sales and procurement networks to expand business opportunities. FDI increases competitive pressure on local firms to improve technical and allocative efficiency in the host countries, and enables efficient use of resources in the home countries. Economic analysis of FDI is important for assessing the changing patterns of FDI, its determinants, and changing comparative advantages of various countries.

FDI in forest products industry, along with forest products trade, has increased steadily in the past 25 years. Between 1982 and 2004, the net total FDI outflows in the forest products industry totalled, respectively, US$23.4 billion and

US$6.8 billion from the U.S. and Japan (UNCTAD 2006). The total forest products trade more than tripled from US$15 billion to US$49 billion in the U.S., while that of Japan increased from US$10.5 billion to US$15.4 billion between 1980 to 2005 (FAOSTAT 2006). However, both the U.S. and Japan are net forest product importers. Recent studies on foreign direct investment in forest industry (Pearse *et al.* 1994, Zhang 1997) focus on the trends and explanation of FDI in Canada and the U.S. Uusivuori and Laaksonen-Craig (2001) and Laaksonen-Craig (2004) look at the impact of exports and the exchange rates on FDI from the U.S., Finnish, and Swedish forest industries, and between developed and developing countries.

However, it is unclear what drives forest industry firms investing in a foreign country. There can be many motives for FDI (Lahiri 2008). It can be resource-seeking: exploiting cheap labor and natural resource in the host country. It can be market-seeking: avoiding high transportation costs, avoiding trade restrictions, acquiring more information about markets etc. in the host country. Finally, it can be efficiency-seeking: exploiting economies of scale. If the FDI outflows from a home country result in boosting the imports from the host country to that home country, and the host countries have absolute and/or comparative advantage in the resources, then the purpose of the FDI outflows could be resource-seeking. On the other hand, if the FDI outflows from home country to host country lead to increased exports to the host country markets or as a springboard for the exports to other countries' markets, then the objective of the FDI outflows could be market-seeking or market-serving.

For example, the U.S. and Japan are net forest product importing countries with insufficient or unavailable forest resources, and Canada and Brazil are net forest product exporting countries with abundant forest resources. The major share of Japan's cumulative FDI outflows in the forest products sector between 1989 and 2004 is mainly directed towards Canada (30.7%), Brazil (15.8%), and the U.S. (15.6%), while these countries have directed 8.3%, 18.8%, and 13.2%, respectively, of their forest products exports to Japan in 2004. Similarly, the major share of FDI outward investment from the U.S.,[1] on an average, amounted to 41.1% in Canada, and 9% in Brazil between 1989 and 2004, whereas Canada and Brazil, respectively, exported 73.8%, and 18.2% of their total exports to the U.S. in 2004. These trends in the FDI, imports, and exports may indicate some evidence for the resource-seeking and/or market-seeking nature of the relationships between them, but it is not clear which is the dominant nature of the FDI.

Further, it is unclear whether exports and FDI induced foreign production in forest industry are substitutes or complements, i.e., to what extent production and affiliate sales in a foreign market replace or help increase exports to the same market. Current theoretical studies have shown that trade and FDI are complements rather than substitutes if trade between two countries is based on comparative advantages, while they are substitutes if the trade is based on absolute advantages, since businesses decide to supply products or services through exports or FDI (Chaisrisawatsuk and Chaisrisawatsuk 2007).

For instance, the cumulative FDI outflows for the U.S. forestry sector totalled to about US$ 23.4 billions, while the value of its forest products imports have increased by 288% from US$ 8.1 to US$ 31.4 trillions and the value of its forest products exports also have increased by 164% from US$ 6.0 to US$ 15.9 trillions between 1982 and 2004. Likewise, while the cumulative FDI outflows from Japanese forestry sector amounted to US$ 6.8 billions, the value of its imports have increased by 97% from US$ 6.6 to US$ 12.9 trillions and exports have increased by 204% from US$ 0.8 to US$ 2.5 trillions between 1982 and 2004.

Initially, Canada and the U.S. have been the hosts for a major share of Japan's FDI outflows, currently Japan has been focussing its FDI outflows towards Brazil, and Asian countries, particularly, China. There is a clear lack of information and clear analysis to understand the policy implications of these changes in the FDI outflows and its relationship with the imports and/or exports. This study may contribute to the debate on enhancing our understanding of the policy implications of these relationships to the forest resource sustainability in this era of globalization and liberalization in respect of trade and investment in the forest products sector.

The objective of this study is to identify the determinants of foreign direct investment outflows from the U.S., and Japan. We want to investigate whether FDI from these countries is market seeking (helping exports from these countries) or resource seeking (getting access to the cheaper resources in raw materials and labour), and whether the relationship between FDI, and imports and exports is one of substitutes or complements or both. The next section provides some theoretical background and literature review, followed by a discussion of the empirical methods and data. The remaining sections present empirical results and conclusions.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

Economists have been using the framework of *eclectic paradigm of international production* to analyze FDI (Rugman 1980, Dunning 1988). The eclectic paradigm posits that the propensity of a firm to engage in outbound FDI and the ability of a country to attract inbound FDI is a function of (a) the firm's unique competitive advantages vs. foreign owned firms, (b) competitive advantages of the host country's location-bound assets, vis-à-vis other countries competing for the same FDI, (c) actions taken by governments affecting (a) and (b).

[1] Due to unavailability of the data on country-wise FDI outflows from the U.S., we provide the shares in the annual average of FDI outward stock during the period 1989-2004.

The eclectic paradigm suggests that three sets of variables influence the extent and form of foreign-owned production. These three sets of variables in the decision of investing abroad are possession of ownership advantages, ability to internalize operations, and access to locational advantages. Dunning (1988) synthesizes these into what is known as ownership-location-internalization (OLI) paradigm. To a large extent, the O and I advantages are firm-specific, and the L advantages are country specific. Previous studies (e.g., Culem 1988) find the appropriate L determinants depend on the motivation and type of investment (e.g., resource-based FDI vs. market-seeking FDI), nature of the products produced, physical and psychic distance between home and host countries, and the role played by national governments in affecting the relative profitability of FDI. Here, exchange rate and country-specific differences in effective taxation are often hypothesized as key determinants of the "where" of FDI (Froot and Stein 1991).

Evaluating the determinants of FDI location is complicated by the fact that FDI is generally heterogeneous in nature and undertaken for different reasons (Kucera 2002). Most important is the recognition of the distinction between vertical and horizontal FDI. Vertical FDI is argued to result from multinationals taking advantage of differences in factor of production costs among countries, while the horizontal FDI occurs when firms locate investment abroad in order to facilitate sales to those countries or regions in which they are investing because it provides an alternative to exporting as a means of selling in foreign markets.

Under neoclassical Heckscher-Ohlin-Samuelson assumptions (international trade driven by differences in factor endowments and factor prices for homogeneous products), Mundell (1957) finds a substitution relationship between FDI and trade. However, following the Ricardian tradition, Kemp (1966), Jones (1967), and Markusen (1983) propose a complementary relationship between FDI and trade. Kojima (1975) explains that the FDI is complementary to trade if FDI outflows create or expand the opportunity to export products. Lipsey and Weiss (1981) and Rugman (1990) state that the production of one product by foreign affiliates may increase total demand for their entire product lines, thus implying a complementary relationship between FDI and exports. However, it is also reasoned that FDI is a substitute for exports to a host country as exports involve lower fixed costs and higher variable costs of transportation and trade barriers, whereas servicing the same market with affiliate sales from FDI will involve higher fixed costs in the form of buildings or plants and substantially lower variable costs. This suggests a natural progression from exports to FDI once the foreign market's demand for multinational enterprises' (MNEs) products reach a large enough scale or size.

Blonigen (2005) sees that the interconnectedness of FDI with trade flows and the underlying motivation of the MNE behaviour complicates the analysis and suggests that the empirical literature on the determinants of FDI is still young that most hypotheses are still up for grabs. Although the standard theory of MNEs assumes that the relationship between foreign production and exports is one of substitution, previous empirical work has generally found strong evidence of complementarity (Blonigen (2001). However, he finds substantial evidence for both substitution and complementarity effects between affiliate production and exports for product-level data of Japanese auto-parts in the U.S. market, and for substitution for product-level data on a set of Japanese-produced final consumer goods.

In the food manufacturing sector, evidence of relationship between FDI and trade is mixed. Gopinath *et al.* (1999) find a small substitution effect between foreign sales (production) and exports between 1982 and 1994 in the U.S. food industry exports to ten high-income countries. Overend *et al.* (1997), using firm level data from 1978 to 1983, find both substitution and complementarity and categorize the development of relationship between trade and FDI as being exports alone in the first stage, complementary exports and FDI in the second stage, and a final stage of substitution at higher levels of FDI. However, Marchant *et al.* (2002) find a complementary relationship between the U.S. exports and FDI for the processed foods into five East Asian countries during 1989-98. For the developed vs. developing countries, Gopinath *et al.* (1999) find a substitution relationship between FDI and exports among developed countries, and Carter and Yilmaz (1999) and Bolling and Somwaru (2000) find a complementary relationship between developed and developing countries. Thus, the relationship between FDI and trade depends on the type of trade and FDI under investigation and is country-, industry-, firm-, and even product-specific (Li 2003).

Chen *et al.* (2006) find that while depreciation of a host country's currency tends to stimulate FDI activity of cost-oriented firms, the depreciation tends to deter FDI activity for market-oriented firms. On the other hand, an appreciation of host country's currency will stimulate FDI activity of market-oriented firms but deter that of the cost-oriented firms. Large factor endowment differences increase FDI for industries that intensively use the factor in which the host country has the comparative advantage (vertical FDI) (Yeaple 2003). Carr *et al.* (2001) conjecture an empirical specification where affiliate sales in a host country is a function of GDP of the two countries, trade costs of the two countries, FDI costs, and differences in factor endowments between home and host countries.

Since forest industry is a resource-based industry, firms from a country with relatively low forest resource endowment and relatively large domestic market could be primarily motivated to secure raw materials (timber) and low labour cost when they invest in a foreign country. Tariff level, exchange rate and its risk, and psychic distance (represented by distance, cultural compatibility, and language) between host and home countries are also the variables that need to be controlled for. These firms, after supplying its domestic market for many years, could have the knowledge (or O advantage) in domestic market and intend to secure this market. This O advantage, combined with the L advantage (location-bound resource endowment) that the host country offers, could generate FDI. The trade impact of this resource-

based FDI could be an increase in imports from the host country to the home country. On the other hand, FDI could also open up new markets or expand the existing markets, thus enhancing exports.

Uusivuori and Laaksonen-Craig (2001) find that FDI and exports from the U.S. might have become full substitutes in the 1990s. For the Finnish and Swedish forest product industries, they find that FDI is affected negatively by exports, while changes in FDI do not affect exports. They find that both exports and FDI by the U.S. forest industry are unaffected by dollar variability and the strengthening of the U.S. dollar in the 1980s increased FDI from U.S. forest industry. The study by Farrell *et al.* (2004) indicates that the Japanese outward FDI in lumber, wood, and furniture industry is positively affected by the host country's market size, its own exports, and the host country's tariff and non-tariff barriers, and negatively by it own imports during the period 1984-98.

EMPIRICAL SPECIFICATION AND DATA

Resource scarcity (or endowment), labour and capital costs, net trade deficit (or surplus) in forest products, exchange rate, exchange rate variability, and distance to host countries are hypothesized as the determinants of foreign direct investment. When FDI from a net forest product importer is motivated by securing raw materials and low labour costs (backward vertical integration), the direct trade impact of such FDI is an increase in imports of forest products from host countries. When the FDI is market seeking, the direct trade impact is an increase in exports from home countries.

The above discussion presents us a model of determinants of resource-seeking FDI and market-seeking FDI in forest industry:

$$(1)\ FDIOF = f(REX, RCV, FPI, FPX, PGD, IR, DWG, RWP) + e$$

Where, FDIOF is FDI outflows from a home country to all host countries. REX is the trade-weighted real exchange rate index (2000=100) defined as local currency per US dollar weighted by the share of total forest products trade (imports + exports), RCV is the trade-weighted coefficient of variation (%) in the monthly real exchange rates in a year, PGD is the trade-weighted real per capita GDP, FPI is the real value of forest product imports, FPX is the real value of forest product exports, IR is the trade-weighted interest rate as the cost of capital, DWG is the trade-weighted dollar-converted real labor manufacturing wages in the forest product sector in the trading-partner countries, RWP is the trade-weighted per capita roundwood production in cubic meters as an indicator of resource endowment, and e is the stochastic error term.

The variables used in this analysis, their sources, and descriptive statistics, for each of the two importing countries, are presented in Table 1. According to the FAOSTAT, for 2004, 70% of the U.S. forest products imports are from Canada, and its main exports are to Canada (23%), China (14%), Japan (13%) and Mexico (14%); Japan's imports are mainly from Canada (20%), the U.S. (19%), Indonesia and Malaysia (10% each) and its main exports are to China (37%) and the U.S. (21%).

FDIOF consists of net sales of shares to the parent company plus the parent firm's share of the affiliate's reinvested earnings plus total net intra-company loans provided by parent company (UNCTAD 2007a). Data are obtained from UNCTAD (2006). Sometimes, FDIOF may have negative values, indicating that at least one of the components in the above definition is negative and not offset by positive amounts of the remaining components. We had to restrict our analysis to the FDI outflows since no data are available for FDI inflows, and both inward and outward FDI stocks for Japan.

The trade-weighted exchange rate (REX) is constructed in such a way that an increase in host countries' currency per US dollar indicates depreciation of host countries' currency against US dollar. Hence, an increase in REX of the host countries is expected to have a positive effect on FDI outflows. On the other hand, uncertainty in the exchange rates may make firms pursue a strategy of "wait and see" (Jeanneret 2005). The trade-weighted RCV of the host countries' currency is expected to have a negative impact on FDI outflows.

If the relationship between the FDIOF from the home country and imports of forest products to the home country is positive, it can be concluded that FDI outflows and imports are substitutes and that the objective of FDI outflow may be resource seeking. On the other hand, a positive relationship between FDIOF and exports indicates that the FDI outflows enhance exports and the motivation of FDI is market-seeking.

The demand factors are represented by the trade-weighted per capita GDP (PGD) of the host countries. An increasing PGD may be an indication of increased market size. Thus, the effect of PGD of the host countries on the FDI outflows of home countries is expected to be positive.

The trade-weighted interest rate variable (IR) of the host countries is expected to have a positive relationship with FDI outflows since an increase in IR in a host country increases the rate of profit for home country firms to invest in host countries. The trade-weighted compensation for employees (DWG) in host countries is expected to have a negative effect on FDI outflows. Forest resource endowment, represented by trade-weighted per capita roundwood production (RWP) of host countries, is expected to have a positive relationship with FDIOF.

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[2] Due to unavailability of the data on country-wise FDI outflows from the U.S., we provide the shares in the annual average of FDI outward stock during the period 1989-2004.

TABLE 1 *Descriptive statistics and sources of variables used in FDI outflows analysis, 1982-2004*

Variable	Description	Source@	U.S.#	Japan
FDIOF	Real aggregate FDI outflows from home country in wood and wood products sector (manufacture of wood products, cork, straw and plaiting materials, and paper and paper products) in billions of 2000 US dollars (Using US GDP deflator 2000=100).	UNCTAD	1.14 (1.31) [-0.37] {5.83}	0.30 (0.22) [0.02] {0.76}
REX	Index of trade-weighted real exchange rate per US dollar for respective countries weighted by forest products shares of up to 20 major forest trading partners for each respective countries (Index 2000=100).	USDA ERS and FAOSTAT	87.61 (10.05) [74.11] {107.30}	98.03 (5.45) [87.76] {111.73}
RCV	Trade-weighted coefficient of variation of real exchange rates as percentage of standard deviation around mean using monthly data weighted by forest products shares of up to 20 major forest trading partners for the respective years.	USDA ERS and FAOSTAT	2.38 (0.76) [1.02] {4.02}	3.13 (1.36) [1.03] {6.74}
FPI	Aggregate imports of forest products in billions of real 2000 US dollars into home country from host countries.	FAOSTAT	20.25 (4.44) [12.92] {28.74}	12.21 (3.58) [6.51] {18.91}
FPX	Aggregate exports of forest products in billions of real 2000 US dollars from home country to host countries.	FAOSTAT	14.19 (3.17) [8.28] {19.82}	1.37 (0.47) [0.61] {2.61}
PGD	Trade-weighted real per capita gross domestic product of the host countries, in thousands of 2000 US dollars.	IMF and FAOSTAT	18.32 (2.28) [14.32] {23.57}	14.58 (1.36) [12.41] {17.82}
IR	Trade-weighted nominal lending rates, in percent per annum, of the host countries.	FRB, BOJ, and FAOSTAT	7.59 (2.51) [3.68] {12.66}	9.76 (1.96) [5.75] {13.59}
DWG	Trade-weighted real compensation per employee per hour converted to 2000 US dollars for ISIC (revision 2) code 341 (paper & paper products), ISIC (revision 3) code 21 (paper & paper products) of the host countries.[5]	ILOSTAT and FAOSTAT	15.14 (1.63) [12.00] {18.20}	5.88 (0.25) [5.40] {6.44}
RWP	Trade-weighted per capita roundwood production in cubic meters of the host countries.	FAOSTAT	3.85 (0.27) [3.15] {4.36}	2.63 (0.15) [2.40] {2.92}

@ UNCTAD = United Nations Conference on Trade and Development; USDA ERS = United States Department of Agriculture, Economic Research Service; FAOSTAT = Food and Agriculture Organization Statistics; FRB = Federal Reserve Board, U.S; BOJ = Bank of Japan; IMF = International Monetary Fund; ILOSTAT = International Labour Organization Statistics.

First number is mean, second number in parentheses is standard deviation, third number in square brackets is minimum, and the last number in curly braces is maximum of the variable.

$ ISIC = International Standard Industrial Classification; If data for any country for ISIC codes 341 and 21 are unavailable, then data for codes 34 (paper & paper products, printing & publishing), 331 (wood & wood products, except furniture), 33 (wood & wood products, including furniture), or 20 (wood & wood products, except furniture) are used

RESULTS AND DISCUSSION

Equation (1) is estimated using panel data analysis methods and seemingly unrelated regression equation (SURE) system methods. Our initial runs of the pooled OLS model indicate that autocorrelation is not a problem (Durbin-Watson statistics) but multicollinearity does exist. The tests for time series properties of FDIOF for the U.S. and Japan,

using Augmented Dickey-Fuller and Philip-Peron tests, show that the FDI outflow data for both the U.S. and Japan are stationary. Attempts are made to correct for first-order auto-correlation errors using the Parks (1967) method and to correct for errors which have a mixed variance-component moving average error structure using the DaSilva (1975) method, but the results have shown little improvement. Inclusion of one-year lagged values of FDI outflows is also tested, but with little improvement.

Table 2 presents our results. For the panel model, F-test for the null hypothesis of no fixed effects and no intercept is rejected at the 10% level of probability (p-value: 0.09) indicating that there are significant fixed effects in the equations for these two countries; this is also evident by the significant coefficient for Japan. However, Hausman's test indicates that there are no significant differences between random effects and fixed effects estimates (p-value: 0.99); hence the random effects model is more efficient than the fixed effects model; this can also be noted from the same significant signs for the variables, REX, FPX, PGD, IR, and DWG in both fixed and random effects models. The coefficient for Japan in the fixed effects model is significant and negative at 5% level, indicating the levels of FDI outflows from Japan are significantly lower from those of the U.S.

As expected, the REX variable has a significant and positive effect on FDI outflows from the U.S. and Japan indicating an increase in the real exchange rates (i.e. devaluation) of their host currencies has a positive effect on the FDI outflows from these two countries. However, the volatility in the host countries' real exchange rates (RCV) does not matter for the FDI outflows.

According to the panel model, there is no significant evidence of a relationship between a country's imports (FPI) from host countries and FDI outflows to the host countries. However, the coefficient of exports (FPX) is positive and significant, indicating evidence for a complementary

TABLE 2 *The results for FDI outflows for the U.S. and Japan*

Variable@	Panel analysis#		SURE analysis§	
	Fixed	Random	U.S.	Japan
Intercept	-	-9.5221**	-48.967**	-3.0447
		(0.033)	(0.037)	(0.284)
US	-8.1503	-	-	-
	(0.102)			
Japan	-9.2308**	-	-	-
	(0.041)			
REX	0.0368*	0.0367*	0.2032**	0.0139
	(0.096)	(0.094)	(0.037)	(0.331)
RCV	-0.0099	-0.0217	0.0466	-0.0143
	(0.941)	(0.870)	(0.905)	(0.725)
FPI	0.0067	0.0035	-0.2320	0.0344*
	(0.905)	(0.951)	(0.287)	(0.099)
FPX	0.2551**	0.2434**	0.2103	-0.2736
	(0.023)	(0.026)	(0.272)	(0.140)
PGD	0.3320*	0.2827*	0.1802	0.0966
	(0.051)	(0.055)	(0.625)	(0.319)
IR	0.2208**	0.2133**	0.7644**	0.0404
	(0.022)	(0.025)	(0.015)	(0.367)
DWG	-0.5000*	-0.3720**	0.8201	0.1093
	(0.069)	(0.033)	(0.391)	(0.740)
RWP	0.5594	0.7289	3.2190*	-0.1783
	(0.379)	(0.202)	(0.087)	(0.651)
R^2	0.63	0.43	0.44	
TS length	23	23	23	
DFE	36	37	34	

@ TS = Time series; DFE = Effective degrees of freedom.

Figures in parentheses are P-values; and ***, **, and * indicate the significance at the 1%, 5% and 10% levels of confidence.

§ R2 for SURE results is the system-weighted R2

relationship between FDI outflows and exports from home countries to host countries. This implies that there seems to be no evidence for a relationship of substitution between FDI outflows and exports. Since we are dealing with the relationships between aggregates of FDI outflows and exports or imports, there is a possibility that the substitution relationship may have been disguised or out-weighed by the complementary relationship. The magnitude of the coefficient for FPX indicates that, on an average, every U.S. dollar value of exports from the home country could increase about a quarter U.S. dollar of FDI outflows for these two forest product importing countries.

Other significant variables include trade-weighted real per capita GDP (PGD), trade-weighted interest rates (IR), and trade-weighted labour costs (DWG) in host countries and are in line with theoretical expectations. The results from the random effects model are similar to the above results from the fixed effects model, as implied by the Hausman's test above.

The results from SURE analysis are similar to those from panel data analysis in respect of the real exchange rate and interest rate in the case of the U.S. The exchange rate effect on FDI outflows is positive and significant for the U.S. equation, but not for Japan. The effect of own imports (FPI) on FDI outflows is positive and significant for Japan. This result may suggest some evidence of a substitution relationship between FDI outflows and own imports for Japan, meaning as imports from host countries increase the FDI outflows from home country to host country increase. This could also be interpreted as resource-seeking nature of the FDI outflows from Japan, i.e., by increasing the investment in the host countries Japan is able to increase its imports from the resource rich countries like, Canada and Brazil. The forest products exports have opposite but insignificant effects on the FDI outflows, positive for the U.S. and negative for Japan in the SURE model. The effect of trade-weighted interest rate is positive and significant for the FDI outflows from the U.S., but not for Japan. The FDI outflows are significantly and positively influenced by the trade-weighted roundwood production of the host countries in the case of the U.S., but not Japan. This result suggests the FDI outflows from the U.S. may have resource-seeking motives.

Considering the results from fixed effects and random effects models of panel analysis, in general, exports and FDI outflows are complementary in the case of the forest product importing countries. This result is different from the results of Uusuvuori and Laaksonen-Craig (2001) who find support for full substitution between FDI outflows and exports from the U.S.

However, according to the SURE analysis there is a positive relationship between the FDI outflows and imports for Japan, indicating substitution relationship and resource-seeking motivation for the Japanese forest products industry. The resource-seeking nature of the FDI outflows from Japan is further confirmed by the fact that Japan has the lowest and dwindling per capita roundwood production of 0.12 m^3, as against 6.57, 1.57, and 1.31 for Canada, U.S. and Brazil. The size of the relevant coefficient implies that an U.S. dollar increase in the forest products imports into Japan may result in an increase of 0.03 U.S. dollar of FDI outflows from Japan.

The positive relationship between per capita income of host countries and FDI outflows from the importing countries, in the panel data models, may be an additional indication that the motivation for FDI outflows is market-seeking for these two forest product importing countries. Looking at the significant and positive influence of the trade-weighted roundwood production variable (RWP), as a proxy for forest resource endowment of the host countries, on the FDI outflows from the U.S., there seems to be evidence in favour of our argument that the U.S. forest product industry could be motivated by both resource-seeking as well as market-seeking objectives for the FDI outflows.

CONCLUDING REMARKS

This study looks into the determinants of FDI outflows for the two forest products importing countries (U.S. and Japan). We find evidence for a complementary relationship between forest product exports and FDI outflows for the U.S. and between forest products imports and FDI outflows for Japan. This evidence points to the market-seeking as well as resource-seeking motives of the FDI outflows from the forest product importing countries. The exchange rate depreciation and income level of the host countries appear to have a significant positive effect on FDI outflows from the importing countries to the host countries. The effects of labour wages and the capital costs in the forest products sectors in the host countries on FDI outflows from the home countries are consistent with economic theory.

The U.S. and Japan are the two largest economies in the world demanding forest resources to meet their demand for the various wood products. Recently, the emerging economies, China, India, Russia, Brazil, and other countries, have been experiencing high rates of growth. Consequently, the demand for wood products is expected to rise to unprecedented proportions, raising concerns about forest resource sustainability worldwide. There is a need to devise sensible policies or guidelines for FDI so that the global forest resources can be used in a sustainable fashion.

Further research could look into FDI outflows of net forest products exporters and FDI inflows in forest products importing countries. More understanding could be gained by conducting a destination-wise FDI study in forest industry. Finally, since a strong motive of the MNEs is to maximize the profits to their investment by capturing locational

[3] We cannot strictly compare our results with those of Uusuvuori and Laaksonen (2001) since their SURE models include lagged FDI, and lagged exports for 1980 and 1990.

advantages (cheap resources or growing markets), promoting improved and cost-effective technologies by increasing their ownership-specific advantages like R&D efforts, future research could focus on the impact of forestry-related stock market returns on both outward and inward FDI.

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