Information Bulletin

NUMBER 77 • APRIL 2004

CANADIAN FDI IN THE U.S.: GEOGRAPHIC DISPERSION, INDUSTRY CHARACTERISTICS AND ECONOMIC IMPACT

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The Western Centre for Economic Research gratefully acknowledges the support of Alberta International and Intergovernmental Relations.



Western Centre for Economic Research University of Alberta Edmonton, Alberta www.bus.ualberta.ca/CIBS-WCER with support from: The George M. Cormie Endowment **Canadian FDI in the U.S.: Geographic Dispersion, Industry Characteristics and Economic Impact** by Joe Haizhou Huang and Rolf Mirus in collaboration with Jean Frost

National Library of Canada Cataloguing in Publication

Huang, Haizhou, 1973-

Canadian FDI in the U.S.: geographic dispersion, industry characteristics and economic impact/Haizhou Huang and Rolf Mirus.

(Information bulletin; no. 77) ISBN 1-55195-088-X

1. Investments, Canadian--United States. 2. Corporations, Canadian--United States. I. Mirus, Rolf II. University of Alberta. Western Centre for Economic Research III. Title. IV. Series: Information bulletin (University of Alberta. Western Centre for Economic Research); no. 77.

HG4910.H82 2004

332.67'371073

C2004-902042-0

The Western Centre for Economic Research gratefully acknowledges the financial support of Alberta International and Intergovernmental Relations. For more information, visit our Web site at: www.bus.ualberta.ca/CIBS-WCER/

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Abstract

This paper uses an up-to-date database on the Foreign Direct Investment in the U.S. from the U.S. Department of Commerce to analyze the geographic dispersion, industry characteristics and economic impact of Canadian FDI in the U.S. On average, Canadian establishments are found to be smaller than those from other industrialized countries, such as Germany, the U.K. or Japan. The five states that host the most number of Canadian FDI establishments were: California, Illinois, Ohio, Texas, and New York. In addition, Canadian clusters are identified in the Mining and Construction Sectors, and in Printing and Related Services within the manufacturing Sector. The simplified model used here to determine the locations of Canadian manufacturing FDI in the U.S. revealed that Canadian manufacturing FDI was sensitive to wage costs and the tax burden. In 1997, total FDI in the U.S. had a significant impact, with an employment of over \$5.2 million and payroll of over \$202 billion dollars.¹

¹ Unless otherwise stated, all dollar values are in current U.S. dollars.

Introduction

The objective of this report is to describe the locations of Canadian firms in the U.S. and to compare the characteristics of the Canadian Foreign Direct Investment (FDI) in the U.S. to FDI in the U.S. by other industrialized countries.

It is commonly believed that FDI is important to the economic growth and technology transfer of a country. The links between FDI and trade are thought to be significant and are a topic of extensive research, (see Feils & Manzur 2003; Feinberg *et al* 1998; Mirus and Scholnick 1999; O'Hagan and Anderson 2000; Shaver *et al* 1998). Yet it is difficult to obtain reliable data on FDI.

Much of the previous research has used relatively crude data to investigate Canadian FDI in the U.S. By examining in detail the disaggregated data set as a result of the Foreign Direct Investment and International Financial Data Improvement Act of 1990, it is possible to increase our understanding of the context of Canadian FDI in the U.S. and the factors determining the locations of Canadian FDI in the U.S. Major new databases capturing FDI into the U.S. were released by the U.S. Department of Commerce in 1997 and 2003. The Bureau of Economic Analysis (BEA) data on FDI at the company or enterprise level were linked with Census Bureau data at the plant or establishment level for all U.S. companies, resulting in comprehensive information on FDI by country of origin, state of destination, and by SIC classification at the three or four digit levels. This data is now available for 1987, 1992 and 1997, and allows a detailed analysis of the geographic dispersion and industry distribution of Canadian FDI in the U.S. Based on this new data base and the historical data base, this paper provides detailed information about Canadian FDI in the U.S. and the changes over the 1987-97 period. Comparisons of Canadian FDI in the U.S. with that from Germany, the U.K., and Japan, *i.e.*, other industrialized countries with the largest number of FDI establishments in the U.S., are therefore possible.

I. FDI in the U.S.: Overview and Canadian Share

An overview of FDI in the U.S. in 1992 and 1997 is provided in Table 1 and Table 2 below. The Tables focus on four subsections of data: number of establishments with ultimate beneficial ownership of 10.0% or more in foreign hands, the number of employees, the payroll, and the shipments/sales value. The respective growth rates during this 5-year period are also reported.

In 1997, the total number of foreign owned establishments was 105,673, an increase of 2.6% over 1992. These firms employed 5.2 million Americans, an increase of 5.1% over 1992, had a payroll of \$202.9 billion, an increase of 30.9% over 1992, and had sales/shipments of \$1.93 trillion, an increase of 42.4% over 1992. The biggest increase in the number of establishments was noted in the transportation, communication and utilities sector, where the number more than doubled, from 3,905 to 8,401 (a 105.9% increase). The largest decrease was noted in the mining sector, where the number of establishments dropped from 1,604 to 1,122 (a 30.0% decrease). The mining sector also experienced the largest decline in the rate of growth of employees and payroll, and the smallest, yet still positive, rate of growth in shipments/sales value.

	Numb	er of Establ	ishments	Number of Employees			
	1992	1997	Growth Rate 1992-1997	1992	1997	Growth Rate 1992-1997	
Mining	1,604	1,122	-30.0%	120,782	85,829	-28.9%	
Construction	1,220	1,241	1.7%	93,322	100,534	7.7%	
Manufacturing	12,781	12,907	1.0%	2,004,947	2,082,463	3.9%	
Transportation Communication &							
Utilities	3,905	8,041	105.9%	231,638	301,430	30.1%	
Wholesale	18,791	18,318	-2.5%	513,012	545,654	6.4%	
Retail	37,892	35,100	-7.4%	853,190	873,432	2.4%	
Finance,							
Insurance and							
Real Estate	11,541	11,491	-0.4%	401,018	407,648	1.7%	
Services	15,194	17,449	14.8%	722,775	798,875	10.5%	
Total	102,928	105,673	2.7%	4,944,157	5,195,900	5.1%	

Table 1. FDI in the U.S.: Number of Establishments and Number of Employees in 1992 and 1997

		Payroll		Sales			
	Millions \$	Millions \$	Growth Rate	Millions \$	Millions \$	Growth Rate	
	1992	1997	1992-1997	1992	1997	1992-1997	
Mining	5,407	4,577	-15.4%	30,509	31,282	2.5%	
Construction	3,509	4,330	23.4%	19,870	25,788	29.8%	
Manufacturing	69,628	84,119	20.8%	435,809	616,988	41.6%	
Transportation							
Communication &							
Utilities	7,208	11,663	61.8%	23,579	74,090	214.2%	
Wholesale	21,084	27,325	29.6%	513,278	697,578	35.9%	
Retail	12,284	15,859	29.1%	91,657	112,967	23.2%	
Finance, Insurance							
and Real Estate	18,467	28,922	56.6%	190,691	288,599	51.3%	
Services	17,360	26,118	50.5%	49,647	81,823	64.8%	
Total	155,032	202,915	30.9%	1,354,724	1,929,118	42.4%	

Table 2. FDI in the U.S.: Payroll and Sales in 1992 and 1997 in Current Dollars

* The source for all the tables and data quoted in the text is "Foreign Direct Investment in the United States: Establishment Data for 1992 and 1997," U.S. Department of Commerce, Bureau of Economic Analysis and Bureau of the Census, Release Date June 1997 and March 2003 respectively.

Table 3 (below) presents Canadian shares of total FDI based on number of establishments, shipments/sales value, and employment, along with the shares of other developed countries. In 1997, Canada accounted for 13.3% of all FDI establishments in the U.S., a decrease of 0.4% from 1992. The share of shipments/sales value of the Canadian-owned establishments decreased by 2.4% to 7.3%, however, the share of employment remained unchanged at 12.2%.

		Canad	la	Germany		U.K.			Japan			
			%			%			%			%
% Share	1992	1997	Change	1992	1997	Change	1992	1997	Change	1992	1997	Change
All Foreign												
Owned												
Establishments	13.7	13.3	-0.4	7.4	8.6	1.2	21.8	22.3	0.5	16.7	15.2	-1.5
All FDI – Based												
Shipments of												
Sales	9.7	7.3	-2.4	9.9	10.8	0.9	15.5	14.9	-0.6	26.1	26.6	-0.5
Total FDI –												
Based												
Employment	12.2	12.2	0.0	10.8	12.0	1.2	20.0	18.9	-1.1	15.9	15.7	-0.2

Table 3. Canada's Share in Total FDI in the U.S. in 1992

Table 4 (below)presents Canada's share in manufacturing FDI, an important sector for Canadian FDI in terms of employment, payroll, and shipments/sales. From 1992 to 1997, Canada's share in manufacturing FDI was decreasing, which is consistent with the observation that Canada's share in total FDI in the U.S. was decreasing (see Table 3 above). In 1997, Canada's share of establishments had decreased by 4.0% to 7.5%, of employment by 4.2% to 8.3%, of shipments/or sales by 6.0% to 6.6%, and of value-added by 7.4% to 6.2%. One wonders whether Canadian access to the U.S. market due to NAFTA made FDI relatively less important.

	1992	1997	% Change 1992-1997
% of all manufacturing FDI	11.5%	7.5%	-4.0%
Establishments			
% of Employment in	12.5%	8.3%	-4.2%
Manufacturing FDI			
% of Value of Shipments or Sales	12.6%	6.6%	-6.0%
of Foreign Owned Establishments			
in Manufacturing			
% of Value-Added in	13.6%	6.2%	-7.4%
Manufacturing FDI			

Table 4. Canada's Share in Manufacturing – FDI in 1992

There was not much change in the number of employees per FDI-establishment from 1992 to 1997 for Canada and other countries (Table 5 below) with the exception Japan, whose number of employees per FDI-establishment increased by almost 10% from 46 to 51. In terms of average number of employees, Canadian establishments in the U.S. were smaller than those of Germany and Japan. One possible explanation is that Canada's FDI involvement was heavily concentrated in the retail sector which tends to have fewer employees per establishment.

Table 5. Employment per FDI – Establishment in 1992 and 1997

	Overall	Canada	Germany	U.K.	Japan
Employment (1992)	4,944,157	604,722	534,720	992,440	787,561
Number of					
Establishments					
(1992)	102,958	14,133	7,652	22,400	17,178
Employment per					
Establishment					
(Average) (1992)	48	43	70	44	46
Employment (1997)	5,195,900	633,934	624,181	972,173	814,256
Number of					
Establishments					
(1997)	105,673	14,038	9,092	23,583	16,044
Employment per					
Establishment					
(Average) (1997)	49	45	69	41	51

II. Determination of Canadian FDI in the U.S.

It is appropriate to ask what factors affect the distribution of Canadian FDI in the U.S. The OLI-framework (Caves 1982; Dunning 1979; Rugman 1981) uses a combination of state-characteristics, industry characteristics and firm characteristics to explain the location of FDI in the U.S. O'Hagan and Anderson (2000) also use a combination of these characteristics to explain the location of Canadian FDI in the U.S. Given the diverse industry pattern of Canadian FDI, we focus here on the manufacturing sector to see how state characteristics can help to explain the observed location pattern.

Shaver (1998) showed that foreign firms exhibited a different pattern of location than that of U.S. firms. First of all they were likely to be found in coastal locations. As well, he demonstrated that foreign firms were more responsive to unionization and right-to-work laws than indigenous firms, because these attenuated the profitability of the firms through higher operating costs. The wage costs and tax burden have also been hypothesized as two other factors affecting the location of FDI.

Accordingly, we hypothesize the following model for manufacturing Canadian FDI by state.:

$FDI_i = f(taxburden_i, unionization_i, wage costs_i)$

All three variables are hypothesized to have negative effects on the locations of FDI. Some difficulties of data availability arise when attempting to find empirical support for this model. No value of foreign owned investment was given by the data source, so that a proxy had to be used. The first proxy for Canadian FDI was production (value of shipments) of Canadian establishments as a percentage of Gross State Product (GSP). The assumption is that, on average, the value of shipments reflects the value of assets – just as GSP reflects the total capital employed in each state.

The second proxy for Canadian FDI at the state level was employment relative to total employment in the state. It is, however, more problematic to use employment as a proxy for FDI because of the substitutability of labor for capital and *vice versa*. When the cost of labor is relatively more expensive, more capital is employed as a substitute for labor.

We use the following three independent variables in our regressions: state tax collection relative to GSP, the percentage of manufacturing employees covered by unions in each state, and the average annual pay by state adjusted for inflation by CPI.

The empirical results are presented in Table 6. Generally, the signs of the coefficients are consistent with our expectations. The tax burden variable is statistically significant at the 1% level when using shipments as the proxy for FDI, but not in the regression using employment as the proxy. In both regressions, the tax burden has a negative effect on the state location of FDI. Wage costs negatively affect the state location of FDI. In the regression using shipments as the proxy, the coefficient is significant at the 10% level. While using employment as the proxy, it is significant at the 1% level. In both regressions, the coefficients associated with unionization are not significant at the 10% level.

	Shipments/GSP	Canadian FDI State Employment/Total State Employment
Constant	7.1808 *** (1.598)	5.1585***(0.8998)
Tax Burden	-0.0783*** (0.0081)	-0.0024(0.0046)
Wage Cost	-0.0161*(0.0096)	-0.0182***(0.0054)
Unionization	-0.0012(0.0205)	0.00095(0.01158)
R-Squared	0.4862	0.1155
Number of Observations	110	110
Test of Overall Significance of the model	F=33.45***	F=4.614***

Table 6. Determinants of Canadian FDI in the U.S., a panel data approach (1987, 1992 and 1997)

Notes: Standard errors are in parentheses. * denotes statistical significance at the 10% level, ** at the 5%, and *** at the 1%.

Data on shipments and state employment of Canadian FDI were obtained from the database of the department of Commerce and is shown in Table 6 (above). All other data were obtained from the Statistical Abstracts of the U.S.: the National Data Book.

As already mentioned, it is more problematic to use employment as a proxy for Canadian FDI and this may explain why the tax variable is not significant when using employment as the proxy. Furthermore, the tax burden variable does not include other fiscal incentives provided by states, nor does it reflect the full extent of business taxation. In future work, state tax rates for manufacturing firms might be used as a proxy.

Despite the weakness of using a proxy for FDI and the further mentioned weakness of the explanatory variables, it can be concluded that Canadian manufacturing FDI appears sensitive to the average wage cost in each state. When using shipments as the proxy for FDI, the tax variable affects the location of FDI significantly. In using either of the two proxies for FDI, unionization does not appear to affect the location of FDI.

Number of Establishments

Not surprisingly, FDI of the countries considered here was concentrated in the most populous states, California, Texas, and New York.² Of the 14,038 Canadian establishments in the U.S. in 1997, most were located in California (1,363), Illinois (1,095), Ohio (853), Texas (814), and New York (767) (see Table 7 below). Compared to 1992, California replaced Texas, which slid to a fourth place ranking, as the state with the highest concentration of Canadian FDI. The highest concentration by state for FDI establishments of other industrialized countries remained unchanged from 1992 to 1997. California, Texas and New York were the top-ranked states for Germany, U.K. and Japan.

Geographical proximity does not appear to be important in location of Canadian FDI. Although Idaho, Montana, North Dakota, Minnesota, Vermont, Maine and New Hampshire border Canada, these states ranked far down the list, as they also did for German, U.K. and Japanese FDI. The bordering states of Michigan (752) and Washington (511) did attract significant numbers of FDI establishments in 1997.

Rank	Canada	Germany	U.K.	Japan
	California	California	California	California
1	(1,363)	(910)	(2,138)	(3,171)
	Illinois	Texas	New York	Texas
2	(1,095)	(664)	(1,818)	(1,205)
	Ohio	New York	Texas	Florida
3	(853)	(608)	(1,489)	(997)
	Texas	Florida	Florida	New York
4	(814)	(471)	(1,358)	(991)
	New York	Illinois	Ohio	Illinois
5	(767)	(456)	(1,323)	(825)

Table 7. Top Five States in Term of Number of FDI Establishments by Country of Origin in the U.S. in 1997

Note: Number of Establishments in parentheses.

Employment

The five states that attracted the largest number of employees as a result of Canadian FDI were California (59,557), Illinois (45,264), New York (42,513), Texas (39,747) and Florida (29,561). Again, these are the most populous states. All together, Canadian FDI establishments in the U.S. had 633,934 employees in 1997.

² Ranking of states by 2002 population: 1 California, 2 Texas, 3 New York, 4 Florida, 5 Illinois, 6 Pennsylvania, 7 Ohio, 8 Michigan, 9 New Jersey, 10 Georgia, 15 Washington, 21 Minnesota, 39 Idaho, 40 Maine, 41, New Hampshire, 44 Montana, 48 North Dakota, 49 Vermont (available at http://www.factmonster.com/ipka/A0004986.html March 30, 2004)

Shipments or Sales

Ranking by value of shipments or sales, the five top states were: New York, California, Illinois, Texas, and Georgia.

Employment Costs

Average compensation per employee was generally less for Canadian firms than the average compensation for all countries, except in the state of Georgia (see Table 8 below). German average rates are given as a comparison. The differences in compensation rates are likely a result of the industry composition of Canadian FDI and that of other countries.

Table 8. Average Compensation per Employee (1997)

State	All Countries	Canadian	Germany
New York	61,969	46,550	51,192
California	43,599	30,609	46,885
Illinois	41,796	30,046	38,778
Texas	41,208	37,537	38,983
Georgia	35,557	38,054	36,138

IV. Canadian FDI in the U.S. by Industry

The concentration of Canadian FDI by industry sector is presented in Table 9 (below). When focusing on employment figures, the retail trade sector had the highest concentration of FDI in 1992. However, in 1997 the manufacturing sector became the leading sector, followed by the retail trade, services, transportation, communication and public utilities sectors.

When measured by the number of establishments, a much different scenario emerges. Here, retail trade dominated in both 1992 (18.9%) and 1997 (35.6%). Canadian FDI concentration increased significantly during this time period in the retail trade, wholesale trade, and the service sectors but decreased significantly for the mining, construction, transportation, communication and public utilities sectors. The manufacturing and the finance, insurance and real estate sectors showed moderate FDI declines. Given Canada's proximity and cultural similarities, it is plausible that Canadian FDI is naturally concentrated more on trade and services than that of other countries. The implications are that Canadian firms have relative firm-specific advantages in these sectors.

Table 9. Share of Canada's FDI by Industry in 1997

	% 0	f Establishr	nents	% of all FDI Employment			
			% change			% change	
Industry	1992	1997	1992-1997	1992	1997	1992-1997	
Mining	11.8	1.0	-10.8	19.1	N.A.	N.A.	
Construction	9.3	0.7	-8.6	N.A.	N.A.	N.A.	
Manufacturing	11.6	9.6	-2.0	12.5	32.6	20.1	
Transportation,							
Communication and Public							
Utilities	16.8	9.4	-7.4	N.A.	14.9	N.A.	
Wholesale Trade	8.7	13.1	4.4	7.6	8.8	1.2	
Retail Trade	18.9	35.6	16.7	16.5	18.1	1.6	
Finance, Insurance, and Real							
Estate	10.2	9.7	-0.5	9.3	7.4	-1.9	
Services	11.5	20.8	9.3	9.7	15.4	5.7	
Overall	13.7	13.3	-0.4	12.2	12.2	0	

Concentrations within sectors, again using establishment figures, are as noted:

- Mining: metal mining (53.2%);
- Construction: special trade contractors (45.8%);
- Transportation, Communication and Public Utilities: local and inter-urban passenger transportation (53.8%);
- Wholesale trade: durable goods (52.4%);
- Retail trade: eating and drinking places (34.3%);
- Finance, Insurance, and Real Estate: real estate (31.8%); and
- Services: personal services (37.1%).

Concentrations in these sub-sectors suggest areas where Canadian firms had competitive advantages. It is possible that domestic experience in the mining of metals and in transportation was translated to FDI in the US. Cultural similarities may well explain the Canadian FDI presence in eating and drinking places, personal services and real estate.

Manufacturing

Further study was undertaken for those states with the highest Canadian FDI in terms of shipments/sales. Here, analysis was limited to data for firms that employed more that 100 persons and were in the manufacturing sector. Firms were examined at the two or three digit SIC level.

Significant clusters of printing and related services were noted for California and Illinois. In California, 47 of 1,363 Canadian establishments were in the manufacturing sector. Of these 47, nine were in printing and related support activities, six in computer and electronic product manufacturing, and six in machinery manufacturing. In Illinois, of the 26 of 1,095 the Canadian establishments in manufacturing, 10 were in printing and related support activities, and three were in petroleum and coal products manufacturing.

Different patterns were noted for New York, Texas and Georgia. In New York, 69 of 767 establishments were in manufacturing. Eight of these 69 were engaged in computer and electronic products manufacturing.

In Texas, 29 of 814 Canadian establishments were in manufacturing and these were distributed quite evenly among the sub-sectors of manufacturing. Four of these firms were in paper manufacturing, four in nonmetallic mineral product manufacturing, and four in machinery manufacturing. Three of the 29 manufacturing establishments were involved in printing and related support activities.

In Georgia, 28 of 331 Canadian establishments were in the manufacturing sector. Of these, five establishments were textile mills and five were involved in primary metal manufacturing. Three of the 28 establishments were involved in printing and related support activities.

V. The Growth and Mode of Canadian FDI in the U.S.

In view of the Free Trade Agreement between Canada and the U.S. (and its successor, NAFTA), the increased volumes of trade between Canada and the U.S. might make Canadian FDI in the U.S. less necessary.

Table 10 (below) presents the growth in the number of Canadian establishments in the U.S., as well as those of the FDI establishments from other countries. While the number of Canadian establishments grew by 14.6% between 1987 and 1997, the comparable growth rates for Germany, the U.K. and Japan were 53.7%, 42.6% and 203.6% respectively. In light of the total growth in number of establishments from all countries of 58.0%, Canadian FDI in the US grew slowly during these 10 years. It was also noted that from 1992 to 1997, the number of Canadian establishments decreased slightly from 14,133 to 14,038. Further work is needed to determine whether the decrease of Canadian establishments was affected by increasing trade volume after the NAFTA and the concomitant increase of the scale of Canadian operations.

Year	All Countries	Canada	Germany	U.K.	Japan
1987	66,878	12,251	5,916	16,542	5,284
1992	102,958	14,133	7,652	22,400	17,178
1997	105,673	14,038	9,092	23,583	16,044
1997/1987	158.0%	114.6%	153.7%	142.6%	303.6%

Table 10. Growth in FDI (Number of Establishments) in the U.S.

VI. Preliminary Conclusions and Further Work

This study uses an extensive and up-to-date database to explore Canadian foreign direct investment in the U.S. Furthermore, data from three specific years (1987, 1992, 1997) were employed to study the trend of Canadian FDI in the U.S. from 1987 to 1997. Much of the previous research has used relatively crude data to investigate Canadian FDI in the U.S. By examining in detail the disaggregated data set as a result of the Foreign Direct Investment and International Financial Data Improvement Act of 1990, it is possible to increase our understanding of the context of Canadian FDI in the U.S. and the factors determining the locations of Canadian FDI in the U.S.

While Canada accounted for 13.3% of all FDI establishments in the U.S. in 1997, it only accounted for 6.6% of shipments/sales of all FDI establishments. This result is likely due to Canada's significant concentration on the retail and services sectors in the U.S., sectors characterized by many small firms.

The new disaggregated data has identified the five largest U.S. host states for Canadian FDI in term of number of establishments– California, Illinois, Ohio, Texas and New York. On the other hand, relatively few Canadian FDI establishments were located in the states adjacent to the Canadian border – for example, Minnesota, Montana, Maine, North Dakota, New Hampshire and Vermont. This implies that population or market size appear to be more important than distance in determining the location of FDI.

Another advantage of this data is that it allows us to determine whether clusters of FDI from individual industries or SIC groups form in certain geographic areas. The data indicates that Canadian FDI concentrated on sectors such as metal mining, construction – special trade contractors, local and inter-urban passenger transportation, wholesale trade – durable goods, eating and drinking places, real estate, as well as personal services. For manufacturing establishments, printing and related support activities also dominated in California and Illinois.

A simple model which relied on shipments and employment as FDI proxies was used to investigate determinant location factors of Canadian manufacturing FDI in the U.S. and some preliminary results were obtained regarding state characteristics. The tax variable has a negative effect on the location of Canadian manufacturing FDI in the U.S. But it is only significant when using shipment as the proxy for Canadian FDI. The wage cost variable has a significant negative effect on the location of Canadian manufacturing FDI in the U.S. However, the unionization variable does not have a significant effect on Canadian manufacturing FDI when using either of the two proxies. Further research needs to be done to give better explanations for the location pattern of Canadian FDI in the U.S.

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