Do Investment Agreements Necessarily Cause Offshoring? The Canada-Peru Case *

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Abstract

This paper studies firm offshoring behaviour following the Canada-Peru Foreign Investment Protection Agreement (FIPA) enactment in 2007. This is achieved by using confidential Statistics Canada firm tax filing microdata merged with raw firm-level import microdata. While in the aggregate data, there is a large increase in Foreign Direct Investment (FDI) by Canadian firms and a change in the composition of Canadian firm imports from Peru from raw unprocessed ore to manufactured metals, the microdata show that the change is not simply offshoring by individual firms. FDI into Peru was in mining as opposed to manufacturing. Moreover, firms that increased their Peru investment did not reduce their Canadian employment, nor were they the same firms with large increases in imports. Hence, these findings in the microdata show that the large increase in investment to Peru was not associated with offshoring of Canadian firms.

Keywords: Investment Agreements, Multinational Firms, Offshoring, Foreign Direct Investment

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1 Introduction

There is lack of a worldwide accepted framework for resolving legal disputes across countries. This leaves the need to form bilateral and multilateral legal international agreements to deal with institutional differences in matters such as taxation, labour rules and environmental regulations. The potential blurriness between the different legal frameworks is intensified for developed and developing countries, particularly for countries who have incomplete legal institutions. An investment agreement can help establish a reliable contracting environment and may foster foreign investment.

The use of Foreign Direct Investment (FDI) by firms, can provide potential costs savings. First, vertical integration with foreign input suppliers can lower the marginal cost of inputs, as in Antras and Helpman [2004]. Second, horizontal integration with a foreign distributer can lower the marginal cost of selling to a new market, as in Helpman et al. [2004].

Figure 1 shows the cumulative count of all International Investment Agreements (IIA) Canada has signed over the years.[1] These IIAs are separated by whether they were signed with a high income country, or a low to middle income country, at the time of enforcement. The cut-offs for income levels are determined using the World Bank income classification method.[2] Forty-one of Canada's IIAs were signed with low to middle income countries. A salient characteristic of direct investment between a developed and an emerging country, as reported in Antras and Yeaple [2014], is that investment tends to flow in larger proportions from the developed country to the emerging country.

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[1]The types of agreements considered are Free Trade Agreements (FTA), Foreign Investment Protection Agreements (FIPA) and Trade and Economic Cooperation Agreements (TECA). Both FTAs and TECAs normally include clauses regarding investment provisions, or build on pre-existing FIPAs to incorporate investment provisions.

[2]The World Bank classifies countries according to GNI per capita, calculated using the World Bank Atlas method.

Figure 1: Canadian International Investment Agreements

Source: UNCTAD Division on Investment and Enterprise
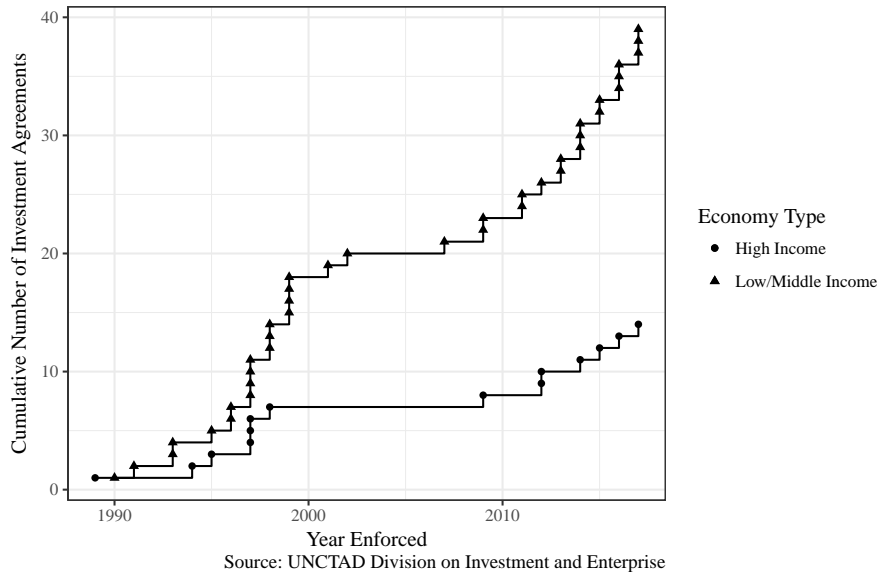
There are two reasons why this paper focuses on the Canada-Peru FIPA[3]. First, when this research was conducted in 2017, the availability of dependable firm-level Canadian import registry data begin in 2002 and ended in 2012. Most of Canada's agreements with low or middle income countries were signed in the 1990s, with only three agreements signed after 2002 and before 2011, the Canada-Peru FIPA enforced in 2007, the Canada-Jordan FIPA enforced in 2009 and the Canada-Peru FTA put into force in 2009. Second, Figure 2 shows there was a three-fold increase in aggregate FDI from Canada to Peru within three years of the FIPA being implemented. The year of enforcement in the Figure 2 is denoted by the gray vertical line in 2007. In contrast, even the values of aggregate FDI following the Canada-Jordan FIPA are suppressed to meet the confidentiality requirements of the Canada's Statistics Act. Hence, it would not be practical to analyse this agreement at the firm level. The goal is not necessarily to explain what caused the increase in investment in the Peru case or why the agreement was signed, but rather to document the characteristics of this FDI surge and how it may be associated with offshoring.

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[3]Signed on November 14, 2006 and put into force on June 20, 2007. Following the signing of the Canada-Peru FIPA, a Free Trade Agreement between the two countries was proposed on June 7, 2007, signed on May 29, 2008 and brought into force on August 1, 2009.

Figure 2: Canada's outward FDI position with Peru
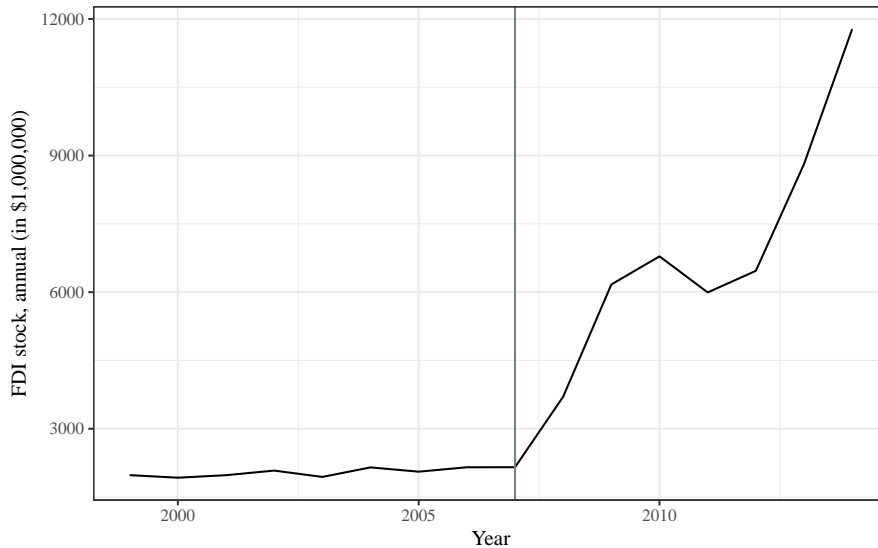
Source: CANSIM Table 376–0051 provided by Statistics Canada, 1999–2014

2 Literature

There are many theoretical models explaining either vertical FDI (offshoring) or horizontal FDI. This paper focuses on the offshoring model of Antras and Helpman [2004]. Their heterogenous firm model follows from the model of firm ownership by Helpman [1984] and Antras [2003]. Other monopolistic competition models have examined the trade-off between FDI and outsourcing at home, Grossman and Helpman [2002], and outsourcing abroad, Grossman and Helpman [2003].

Another class of models studies horizontal FDI. In Helpman et al. [2004], heterogenous firms of varying productivity can sell their goods domestically, export them to sell to another country or sell them in foreign markets using subsidiaries abroad. This model, in standard form, would predict that a fall in fixed costs of investing in Peru would lead to an increase in exports from Canada to Peru. As we shall see, specifically in Figure 4, the increase in total trade between the two countries was driven by an increase in imports from Peru to Canada, while exports remained low and constant.

Related empirical work includes Nunn [2007] who shows empirically that having a reliable contracting environment can serve as a comparative advantage for countries in attracting relationship-specific investment. Also, work on the determinants of vertical FDI includes Antras [2003] and Yeaple [2006] using industry-level analysis. Nunn and Trefler [2011] use U.S. firm-level cross-sectional data to study the determinants of FDI and find supporting evidence for the theory of Antras and Helpman [2004]. Bernard et al. [2010] also use

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cross-sectional firm-level data to determine the product and country characteristics that are associated with more intrafirm trade. They both use countries of all income levels in their analysis. Finally, on the Canadian side, Baldwin and Gu [2003] look at export-market participation and productivity performance in Canadian manufacturing plants.

This paper contributes to this literature in the following way. It uses Canadian firm-level microdata to examine how a specific International Investment Agreement between a developed and an emerging economy, the Canada-Peru FIPA, impacted Canadian firms' foreign investment, imports, offshoring and employment.

3 Data

While aggregate Global Affairs Canada [1989-2016] data, Statistics Canada [1999-2014] data, World Bank [2002-2014] data and United Nations Division [2002-2014] data are used to produce some of the aggregate results, the microdata sets used for this study are a combination of three different firm-level data sets, spanning from 2002 to 2012.

The first data set used is the National Accounts Longitudinal Microdata File, containing firm information on Sales, Individual Labour Units (ILU), Revenue, Expenses and industry North American Industry Classification System (NAICS) code.

The second data set is the Canadian Direct Investment Abroad (CDIA) with information on firm investment to and from other countries (FDI flow) and the corresponding NAICS industry code for that investment. Both previously mentioned data sets were collected from firms' Canadian tax filing data.

The final data set used is Raw Import data for research purposes provided by the Canada Border Services Agency. It specifies firm imports classified according to the Harmonized System at the six-digit level. All firms can be matched across data sets using an enterprise ID code identifier. The data are confidential and can only be accessed at the Centre for Data Development and Economic Research in Ottawa, Canada. To preserve anonymity of individual firms, Statistics Canada will only permit the disclosures of results that contain a sufficient number of firms. This has restricted the results that may be reported in this study.

4 Empirical Findings

The empirical findings are presented in the following manner. The first and second sections break down the main results related to FDI and International Trade data independently. The third section discusses firm-level offshoring results. It is found that the firms that increased FDI did not use it to offshore production. As a check, the fourth part of these empirical results

Figure 3: Composition of FDI
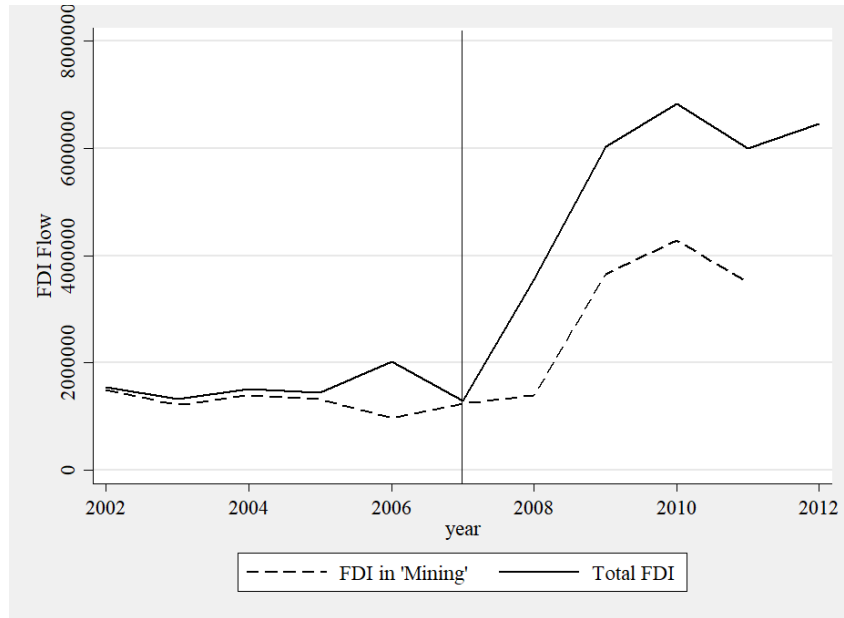
Source: Author's calculation on CDIA data set (Statistics Canada), 2002-2012

presents a regression analysis demonstrating that Canadian firms that increased investment in Peru did not significantly change their employment in Canada.

4.1 Foreign Direct Investment

As Figure 2 previously showed, there is a 3 fold increase in FDI stock from Canada to Peru within 3 years of the introduction of their FIPA in 2007. Figure 3 shows the aggregate flow of FDI, and also breaks down the amount of this FDI that went specifically into NAICS industry code 21. NAICS code 21 denotes all mining, quarrying, and oil and gas extraction related enterprises. It is the largest recipient of Canadian investment in Peru, both in sheer amount and in the number of firms investing under that industry code. Any other NAICS code that received FDI cannot be reported for confidentiality reasons, as the reporting number of firms is too small.[4]

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[4]In fact, the observation for FDI flow into the mining industry for 2014 had to be suppressed to maintain confidentiality

4.2 International Trade

Figure 4 shows the total trade as a percentage of Canada's nominal GDP, to control for exchange rate fluctuations, between Canada and Peru, from 2002 to 2012. It shows a large increase in total trade after 2004 that was driven mainly by imports from Peru to Canada. Aggregate Canadian exports to Peru are small and show no sharp change in trend.

Figure 4: Canada's Trade with Peru

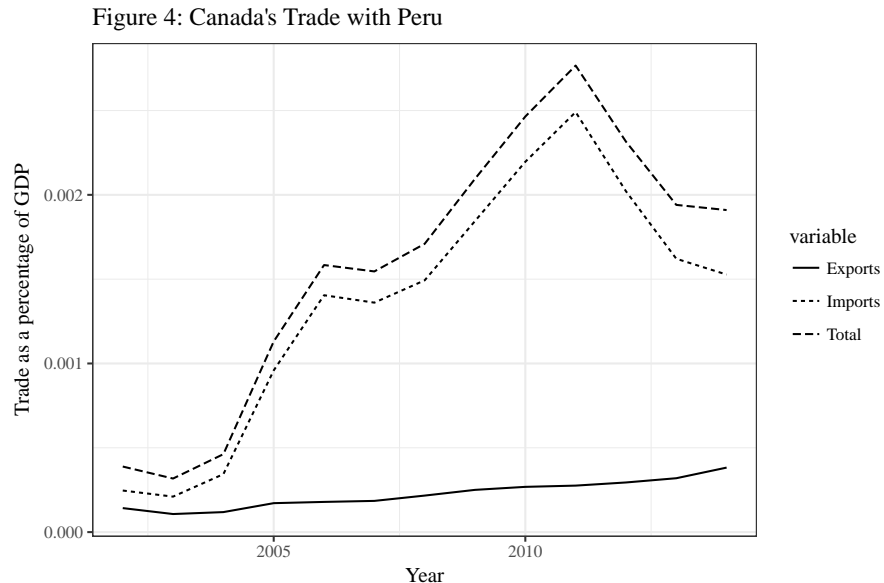Source: UN Comtrade data provided by World Integrated Trade Solution, 2002–2014

Figure 5 shows the change in the composition of Canadian imports from Peru, following the Harmonized System categorization. Within the top two import categories, HS code 26, ores, slag and ash, represented the largest share of imports prior to 2004 whereas, HS code 71, pearls, precious stones, metals, coins, etc., jumped to over 60% share of imports post 2004. HS category 26 commonly represents a rawer form of the mining material than HS category 71. This would be an indication that Peru has shifted to processing the raw mineral ores within its borders to export more of the processed metals. Mineral ores are heavier to ship and less valuable than the processed metals they produce. This processing stage for mineral ores can be chemically intensive and requires the development of manufacturing processing plants.

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Figure 5: Main HS import categories

Year

UN Comtrade data provided by World Integrated Trade Solution, 2002–2014

Figure 6 shows the top NAICS Sector 2-digit industry codes of the Canadian firms importing from Peru as a share of total imports. This confirms that there is a switch from the largest share of imports being done by firms listed under NAICS Sector code 21, which designates the mining sector, to the largest share of importing firms listed under NAICS Sector code 33, which is one of the codes designating the manufacturing sector.

Seemingly, this data indicates that the increase in FDI might be associated with an increase in offshoring of Canadian intermediate inputs, developing these manufacturing processing plants in Peru and allowing them to import the more valuable refined mining product. If we were to observe this result at the firm level, then the firms that are importing more of the manufacturing good from Peru will also be the ones conducting FDI. The firm-level results of this analysis will be discussed in further detail in the next section.

4.3 Offshoring

Now the key premise of this paper is examined. Did the observed increase in FDI lead to Canadian firms offshoring their production of the intermediate mining input? Using firm-level data, it is possible to identify firms that both invested and imported goods from Peru to answer this. As such, it is feasible to disentangled if the shift from importing the primary resource to importing more of its manufactured product, was due to the offshoring of the intermediate stage of production from Canada to Peru. As mentioned previously, minerals in their ore form, are much heavier and less valuable, in terms of dollar per pound, than their more refined versions. This creates an incentive for Canadian firms that were importing the mineral ore from Peru to want to locate this intermediate processing stage

Figure 6: Composition of imports from Peru
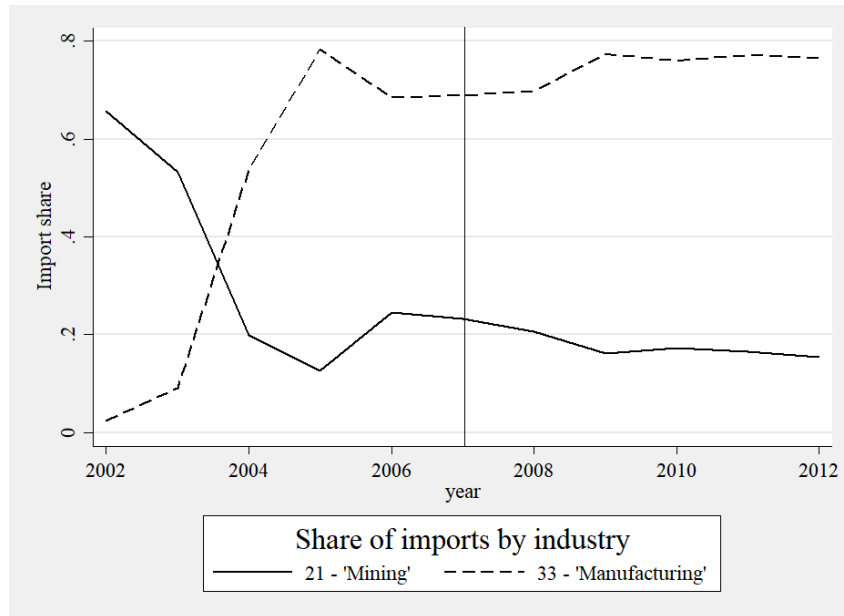
Source: Author's calculation on Raw Import microdata (Statistics Canada), 2002-2012

closer to the extraction site in Peru, rather than in Canada.

The microdata however, tell a different story, perhaps foretold by the import shift beginning around 2004, before the Canada-Peru agreement. Only 14 firms are reported to have both invested and imported goods from Peru for the whole 2002 to 2012 period. Overall, these dual firms' share of investment was 8.55 fold higher than their share of imports.

The majority of the investment these dual firms reported under was the industry NAICS code 21, mining, and none of their imports were listed under NAICS code 33, manufacturing. This sub-sample of firms does not follow the results from the previous section, where aggregate imports show a reversal from industry NAICS code 21 to NAICS code 33. Hence, the bulk of Canadian FDI done in Peru was not for the purpose of offshoring since these firms were not importing the manufactured product and they were investing in the mining sector, not the manufacturing sector. These 14 dual firms are present in such a small number that Statistics Canada restrictions do not permit any more detailed analysis to be conducted on them.

4.4 Employment

In order to confirm that firms investing in Peru did not offshore production, an analysis is conducted on domestic employment. A simple regression analysis reveals there was

no significant change in the domestic employment of Canadian firms conducting foreign investment in Peru. The following regressions test for a structural break in Canadian employment in 2007:

1. Basic:

$$\ln ILU_{i,t} = \alpha + \beta_1 \ln CDIA_{i,t} + \beta_2 D_{07} + \beta_3 (\ln CDIA_{i,t} * D_{07}) + \epsilon_{i,t}$$

2. With control for the mining industry:

$$\ln ILU_{i,t} = \alpha + \beta_1 \ln CDIA_{i,t} + \beta_2 D_{07} + \beta_3 MIN + \beta_4 (\ln CDIA_{i,t} * D_{07}) + \beta_5 (\ln CDIA_{i,t} * MIN)$$
$$+ \beta_6 (MIN * D_{07}) + \beta_7 (\ln CDIA_{i,t} * MIN * D_{07}) + \epsilon_{i,t}$$

ILU is the Individual Labour Units[5] employed by firm i in year t. $\ln CDIA$ is the logarithm of a firm's FDI flow per year. D_{07} is a dummy variable indicating the year is 2007 or later, after the FIPA was implemented. MIN is another dummy variable indicating if the firm's industry code designates NAICS code 21, mining.

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[5] For a particular business, it measures every individual who appears on the T4 file. They are counted as one ILU if this was their only employer. If an individual received more than one T4 slip, the micro-data files are split between firms on the basis of their share of wages in different firms.

Table 1

VARIABLES	lnILU	lnILU
lnCDIA	−0.136	0.0121
.	(0.0992)	(0.116)
D07	−1.491	−2.098
.	(1.154)	(1.213)
lnCDIA*D07	0.161	0.216
.	(0.13)	(0.159)
MIN	.	−5.611***
.	.	(1.373)
MIN*lnCDIA	.	0.129
.	.	(0.163)
MIN*lnCDIA*D07	.	−0.0642
.	.	(0.217)
MIN*D07	.	0.853
.	.	(1.897)
Constant	6.339***	7.499***
.	(0.843)	(0.876)
Observations 224		

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Table 1 shows the interaction terms containing $\ln CDIA$ and the 2007 dummy are not significant. Hence, firms investing more in Peru did not significantly decrease their Canadian employment after the enactment of the FIPA. This supports the argument that the FDI was not used for offshoring production by Canadian firms.

More variations of the regression analysis were conducted. These robustness exercises include controlling for the exchange and tariff rate in both a linear and semi-parametric method. The year of the structural break was also tested to be 2006 and 2008. Finally, since the occurrence of the Great Recession falls within this time frame, employment of each firm was divided by total annual employment and firm FDI by total annual FDI, to smooth out any aggregate changes due to the recession and not the agreement. None of these robustness checks yielded results that varied significantly from the results reported in Table 1.

5 Concluding Remarks

This paper has demonstrated, using firm-level data, that the Canada-Peru FIPA did not lead to more offshoring by Canadian firms, even if the aggregate data seem to indicate such an

increase. There is however, no indication that the model of Antras and Helpman [2004] is contradicted in this exercise. Peru only represents 0.5% of Canada's world imports and the distance separating them is fairly significant, making trading costs higher. Higher trading costs are predicted to lead to lower offshoring in their model. As well, Peru is a country that mainly produces natural resources and most of the FDI into Peru went into the mining sector. The mining sector is not very R&D or headquarter intensive sector which also tends to be associated with low offshoring in Antras and Helpman [2004].

There are however two potential outcomes of this agreement that cannot be measured with the data sets available. First, firms may have been using horizontal FDI in Peru indirectly by using Peru as a production platform, specifically in mining-derived goods, in order to then export them to nearby markets, such as in other South American countries, Oceania or Asia. These data do not measure Canadian firms' exports from Peru to other countries. Second, contracting done by firms is not recorded in the data. It cannot be observed to what extent firms contracted out some of their activity to Peruvian firms.

Overall, the observed changes following the implementation of the Canada-Peru FIPA include an increase in investment, mainly in the mining sector. There was also an increase and change in the composition of imports that is not found to be related to this particular investment agreement or the subsequent increase in investment. Finally, the signing of the agreement did not lead to any statistically significant change in employment for Canadian firms investing in Peru. All these findings combined lead to the conclusion that the Canada-Peru FIPA did not produce an increase in offshoring.

6 Acknowledgement

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