OFDI Determinants for Latin American Countries: A TOPSIS Analysis

Henrique Correa da Cunha*, Nelson Hein, Mohamed Amal

Henrique Correa da Cunha, PPGAD/FURB - University of Blumenau, Brazil
henriquecorreadacunha@gmail.com
Nelson Hein, PPGAD/FURB - University of Blumenau, Brazil. hein@furb.br
Mohamed Amal, Research scholar at Columbia University/New York - PPGAD/FURB, USA
mohamedamal.amal@gmail.com

Abstract

Political and economic reforms that took place during the 1990s were characterized by a significant reduction on the foreign ownership restrictions that existed at that moment. These changes created favorable conditions for supporting the internationalization of companies from both developed and developing nations. In that sense, these reforms were important not only for supporting the inward FDI flows towards developing nations, the more stable internal scenario contributed for the growing participation in the outward foreign direct investment (OFDI) from developing countries. Although the implications of home country institutions, economic performance and infrastructure have been extensively explored in the international business literature, there is still a gap regarding the implications of these elements to the internationalization of Latin American companies. In that sense, the present study contributes for increasing the understanding regarding the implications of how these elements interfere in the OFDI intensity of these countries. The study combines two methods, the Technique for Order Preference by Similarity to Ideal Solution(TOPSIS) and regression for evaluating the implications of home county institutional quality, infrastructure andmacroeconomic conditions to the OFDI intensity for the Latin American countries. The results indicate that TOPSIS combined with regression analysis are useful techniques for identifying and validating the determinants of OFDI intensity for Latin American countries.

Keywords: OFDI; Institutions; Infrastructure.

1. Introduction

The global economic changes that took place in the last decade of the 20th century had significant implications to the dynamics of the global market. The reduced barriers for trade among global nations contributed for a rapid growth in international activities (Lu & Beamish, 2001). According to Hallward-Driemeier (2001), the 1990s was characterized by a significant reduction on the foreign ownership restrictions that existed at that moment. According to Hallward-Driemeier (2001), during the entire 1990s decade, the average number of regulatory changes favorable to foreign direct investment that were passed each year averaged 100 and in 1999 alone, there were more than 130 of such changes.

The changes that took place during the period had a significant impact not only for increasing foreign direct investment from developed countries multinationals but also for creating conditions (opportunities and needs) for the emerging markets multinationals to start internationalizing their activities. This trend can be verified in the World Investment Reports from United Nations Conference on Trade and Development (UNCTAD, 2015) which indicates that past the year 2000 there was a significant increase in the OFDI originated in developing countries. The increasing participation of emerging market multinationals (EMNCs) indicates that after the international trade reforms, the emerging market companies started to find their ways to be competitive in a globalized economy.

Although the international trade reforms may have contributed for boosting the world trade, the institutional voids in developing countries imposed significant risks for making financial commitments in these regions. In order to be competitive as a destination for foreign direct investment, developing countries needed to create favorable conditions for multinational companies to invest in these markets. Therefore, during the same period,significant political and the economic reforms took place in several Latin American countries which supported not only FDI (inward) but also contributed for the increasing internationalization and FDI outflows from Latin American companies.

When verifying what elements support the ODFI intensity of nations, the literature indicates that the quality of home country from a institutions (Khanna and Palepu, 2010; Globerman and Shapiro, 2002), the implications of home country macroeconomic conditions (Cantwell 1989, Lall 1992, Narula, 2012) and the quality of infrastructure and access to technology are essential elements required for promoting the international expansion of firms from a specific country. Therefore, although several studies explored the implications of home country institutions, economic development and infrastructureto the internationalization and particularly to the outward FDI (OFDI) flows from developing countries, there is still a gap related to how and to what extent these elements affect the internationalization of Latin American countries. In order to fill this gap, the present study intends to answer the following research question. What are the implications of home country institutional quality, economic development and infrastructureto the internationalization and particularly to the OFDI intensity (OFDI as a percentage of GDP) of Latin American countries?

2. Literature Review and Hypothesis

2.2 Home Country Institutional Environment

Scott (1995) identifies three dimensions (pillars) of the institutional environment of a country that imply the quality and safety related to the control mechanisms and governance procedures of these regions. In that sense, Scott (1995) indicates that the regulatory pillar represents the quality of the laws and regulations and to what extent these rules are monitored and enforced. The cognitive pillar relates to the cultural and shared values embedded in the society, that is, how people understand and relate to things. The normative pillar refers to beliefs and values which create expectations regarding the behavior of the individuals in the society.

In order to measure the quality of the formal institutional environment, several studies have employed the indicators of world governance (Kaufmann, Kraay & Mastrazzi, 2009). The World Governance Indicators (WGI) approach has been employed to measure the impact of governance on economic development (Kaufman et al., 2009). WGI has also been employed to explain the institutional changes in developing countries, and their effects on attracting FDI from developed nations (Daude & Stein, 2007). More recently, the WGI have been employed to estimate the effects of institutions on OFDI, like Globerman and Shapiro (2002) addressing the case of USA-OFDI.

When considering the implications of the institutional environment to the internationalization of EMNCs, Khanna and Palepu (2010) indicate that weak institutions creates "institutional voids" which play a major role in the internationalization process of firms from developing countries. In that sense, the turbulent institutional environment in Latin American countries should have a negative impact regarding the continuity of OFDI commitment for the companies in the region.

In order to verify the implications of the quality of home country institutions to the OFDI intensity of Latin American countries, we present the following hypothesis:

H1: The quality of formal home country institutions supports the OFDI intensity of Latin American countries.

2.3 Home Country Macroeconomic Conditions

Home country macroeconomic conditions play an important role for supporting the foreign expansion of firms. In the last couple of decades, the increased competition created by the reduction of foreign trade barriers demanded companies to find alternatives to keep competitive.

Alon, Molodtsova & Zhang (2012) explored the implications of home country macroeconomic performance as supporting conditions for promoting OFDI from Chinese companies. Similarly, authors (Cantwell 1989, Lall 1992, Narula, 2012) suggest that the competitiveness of companies derive from the competitiveness of their home economy. That could indicate that home country macroeconomic performance could be associated not only with generating the resources needed to support the foreign investments (expansion) of local firms, but also that internal competition from foreign players, forces indigenous companies to adopt strategies that increase their performance and competitiveness.

In that sense, we present the following hypothesis which indicates that home country economic performance supports the OFDI intensity in Latin American companies.

H2: Home country economic performance supports the OFDI intensity from Latin American countries.

2.4 Home Country Infrastructure and Technology

Another important consideration when it comes to supporting the international expansion of Latin American firms is the quality of infrastructure and access to technology. According to Curien (2005), infrastructure represents a set of technical components in a physical network required for a company to access and service its customers. In that sense, infrastructure becomes an important link not only for connecting the company to its business partners but also for connecting the different resources and activities included in the organization`s value chain.

Besides the implications of infrastructure, the access to technology becomes crucial for enabling the international expansion of firms in a sense that coordinating the activities in an efficient manner demands the adoption of sophisticated systems and technologies.

Some authors (Samiee, 1998; Hamill, 1999) indicate that technology wjhich include the internet provides invaluable resource for promoting the internationalization of firms. According to the authors, internet access or even a website can provide instant global reach to a company. Accordingly, Kobrin (2001: 688) indicates that, "cyberspace and e-commerce are intrinsically international".

Technology infrastructure which includes the access to the Internet creates the possibility of developing and maintaining relationships with clients, business partners, suppliers throughout the business value chain (Cuneo, 1995). Migliarese and Paolucci (1995) suggest that the Internet facilitates the coordination of firm`s resources and activities across national borders.

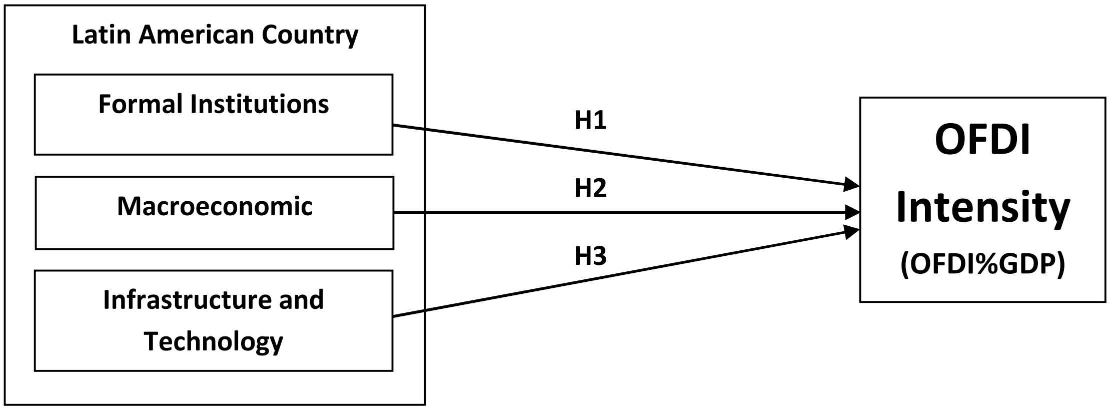
In that sense, access to technology, infrastructure and resources which allow the integration of a global value chain becomes a prerequisite for supporting the international expansion of firms (Borman, 1994; Narendran et al., 1995; Poon and Swatman, 1996, Curien 2005). Therefore, in order to verify the implications of infrastructure and access to technology to the OFDI intensity of Latin American countries, we present the following hypothesis:

H3: Quality of home country infrastructure and technology support the OFDI intensity in Latin American countries.

3. Methodology and Data

The model presented in Figure 1 indicates the hierarchy among the determinants for the internationalization of Latin American countries. For the present study, the DOI for Latin American countries considers the OFDI and exports from these countries.

Figure 1 – Determinants for OFDI in Latin American Countries



Source: Elaborated by the authors.

TOPSIS Method

In order to rank Latin American countries regarding their OFDI status, the present study will employ the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) method which is a toll used for supporting decision-making process based on a set of criteria. In this case, the method will help evaluating the implications and effectiveness of predicting the OFDI potential of Latin American countries based on a set of elements which according to the literature are important elements for creating the conditions for the internationalization of economies.

The TOPSIS method was developed by Hwang and Yoon in 1981 in order to facilitate the comparison and ranking of alternatives based on specific criteria. The method relies on two contrasting alternatives which represent the best and the worst possible scenarios. The method ranks the individuals based on their distances from the best alternative, meaning that the top ranked individual will be selected based on the shortest total distance.

Although TOPSIS is not a frequently used technique for evaluating the OFDI potential of a country, the technique has been employed in the International Business fieldfor indicatingthe country attractiveness as a destination for FDI. Karimi, Yusuf and Hook (2009) used the method for FDI attractiveness among the Association of Southeast Asian Nations (ASEAN) countries and more recently Paul, Popovici and Călin (2014) have employed TOPSIS for ranking the FDI attractiveness Central and Eastern European (CEE) countries. For the present study, TOPSIS will be employed torank the countries in terms of institutional quality, macroeconomic performance, infrastructure and technology.

The database employed in the present study include 170 variables which were obtained from the Enterprise Surveys provided by the World Bank. These variables relate to different aspects included in the 3 dimensions proposed for the present study. Although all these variables could arguably be considered relevant in each of the dimensions, for the present study, in order to focus on the variables with the greatest influence on the OFDI intensity on Latin American countries, we first employed a correlation matrix which allowed to identify the most relevant variables in the database.

After identifying the most relevant variablesit was calculated a TOPSIS for each dimension. The objective of using TOPSIS was to rankthe countries according to the score in terms of quality of institutions, infrastructure and access to technology and home country macroeconomic performance (conditions). The resulting TOPSIS rankings for each dimension will be used as independent variables in a regressions analysis having the OFDI as a percentage of GDP (OFDI intensity) as the dependent variable.

The next step after performing the TOPSIS for each dimension was to run a regressionin order to validate the 3 hypothesis proposed for the present study. The regression permitted to verifyhow (direction) and to what extent (magnitude and significance) the OFDI intensity of Latin American countries is affected by the 3 dimensions included in the proposed model. Besides validating the explanatory capacity of the model (R-Square), the regression analysis also provides important insights regarding which of the dimensions has the greatest impacton the OFDI intensity in the Latin American countries.

Sample and Data

As indicated by UNCTAD (2012), after the global financial crisis, outward flows from Latin America and the Caribbean have become highly volatile. The OFDI dropped 17 per cent in 2011 after a positive result in 2010, which followed a 44 percent decline in 2009. According to UNCATD (2012), when considering the Latin American and Caribbean region as a whole, the high volatility is partially a consequence of the importance of the region's offshore financial centers which include the British Virgin Islands and Cayman Islands and those two countries alone accounted for roughly 70 per cent of the outflows from Latin America and the Caribbean in 2011.

The data from UNCTAD (2012) also indicates that past 2011, most companies from Latin America slow down their investments abroad in order to focus on rationalizing their investments in the medium term in order to consolidate their purchases and pursue organic growth. In that sense, in order to reduce the implications of the global financial crisis for the present study the countries included in the sample will be from Latin America with data from 2010.

In order to test the implications of home country institutions, economic performance, infrastructure and technology, for the present study, for the present study, data was collected from the Enterprise Surveys from the World Bank. This database contains information from more than 135 thousand companies from different countries.

The Enterprise Surveys provided a database with several criteria measuring different aspects in the 3 dimensions of interest from the present study. The variables measure aspects such as the in the formal institutional environment such as government effectiveness, control of corruption, rule of law and the cost indicated by companies regarding the quality of formal institutions in the Latin American countries. The Enterprise Surveys also measures the implications of the quality of infrastructure and access to technology to the business activities in these countries.

Tests Results and Analysis

The test results presented in Table 1 indicate that the 3 TOPSIS (dimensions) indicate a strong relationship between the variables which is verified by the R-Square value (0.608). According to Martins (2010), the correlation coefficient (R=0.780) is merely a mathematical relation, while the determination coefficient (R-square=0.608) indicates the explanatory capacity of the model. For the present study, it can be concluded that the 3 dimension are capable of explaining 60,8% of the OFDI intensity for the Latin American countries.

Table 1 – Summary of Test Results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3.716	.468		-7.942	.000
	TOPSISECONOMIC	2.115	.428	.263	4.939	.000
	TOPSISINFRASTRUCTURE	1.634	.726	.125	2.250	.026
	TOPSISINSTITUTIONAL	4.467	.379	.657	11.784	.000
	F	72.354				
	R	.780				
	R-Square	.608				
	Significance	.000				

Dependent Variable: OFDI%GDP (OFDI as a percentage of GDP)

Source: Elaborated by the authors.

The results from the regression provides the coefficients for Equation 1 presented next:

Equation 1 – Model Regression Equation

$$OFDI\%GDP = -3.716 + 2.115\ \text{TOPSIS\_ECONOMIC} + 1.634\ \text{TOPSIS\_INFRASTRUCTURE} + 4.467\ \text{TOPSIS\_INSTITUTIONAL} + \epsilon$$

Regarding hypothesis 1, the results indicate a positive and statistically significant relationship between the quality of the institutions in the Latin American countries and the OFDI intensity in these countries. This condition confirms what Khanna and Palepu (2010) indicate regarding the impact of weak institutions which create “institutional voids” in developing nations which in turn have a negative effect on the international expansion of these countries. In that sense, in order to be competitive players in a globalized economy, Latin American countries should work towards improving the formal institutions. The importance of the Institutional can be verified in the magnitude (4.467) and statistical significance of the variable.

The results also confirm hypothesis 2 in a sense that the TOPSIS rank which classifies the Latin American countries in terms of macroeconomic performance has a positive influence promoting the OFDI intensity. In that sense these findings are consistent to what several authors have indicated regarding the implications of home country economy for supporting the internationalization and promoting the competitiveness of indigenous firms (Cantwell 1989, Lall 1992, Narula, 2012).

When considering the implications of infrastructure and access to technology to the OFDI intensity of Latin American countries, the results confirm hypothesis 3 in a sense that the positive and statistically significant results support this condition. The results support what Curien (2005) indicates regarding the role of infrastructure and the importance of technical and technological elements for promoting the integration of the different elements in an organization value chain. In that sense, it can be concluded that infrastructure and technology are essential elements for promoting the integration of Latin American companies to the global economy.

Conclusion

The findings from the present study confirm what the literature recommends regarding the implications of home country institutions, economic development, infrastructure and access to technology as supporting conditions for promoting the OFDI intensity in Latin American countries.

Although TOPSIS is not a popular method in International Business research, this study indicates the usefulness of the method for exploring and validating the determinants of OFDI intensity for Latin American countries. The technique is particularly useful for combining multiple criteria into a single variable representing each dimension in the model proposed for the present study.

The results validate the model proposed for the present study in a sense that infrastructure and access to technology, the support of home country institutions and the economic development in the Latin American countries are essential elements for supporting the international expansion of firms from this region. Besides confirming the hypothesis proposed for the present study, the results provide important insights regarding how and to what extent these conditions could affect the competitiveness of different Latin American countries.

In that sense, in order to be competitive in the globalized economy, Latin American countries need to invest in infrastructure, technology, reformulate and improve the institutions creating favorable conditions for the economic prosperity in these nations. In that sense, this paper confirms the importance of these elements and particularly suggests that Latin American countries governments should intensify their efforts towards improving these conditions in order to support the development of the region.

References

Alon, I., Molodtsova, T., & Zhang, J. (2012). Macroeconomic Prospects for China's Outward FDI. Transnational Corporations Review, 4(2), 16-40.

Borman M (1994) Common knowledge, interorganizational networks and the future for the organization of production. J Inf Technol 9:203–212

Cantwell, J. (1989). Technological innovation and multinational corporations.

Cuneo AZ (1995) Internet world show spurs online commerce debate. Adverti Age, April 17, pp 16

Curien, N. (2005), Economiedesréseaux, Paris: La découverte.

Daude, C., & Stein, E. (2007). The quality of institutions and foreign direct investment. Economics&Politics, 19(3), 317-344.

Globerman, S., & Shapiro, D. (2002). Global foreign direct investment flows: The role of governance infrastructure. World development, 30(11), 1899-1919.

Hennart, J. F. (2011). A theoretical assessment of the empirical literature on the impact of multinationality on performance. *Global Strategy Journal*, *1*(1-2), 135-151.

Hallward-Driemeier, M. (2001). Openness, Firms, and Competition. *World Bank, mimeo*.

Hamill J (1999) Internet editorial: Export guides on the net. Intern Market Rev 15(5):434–436.

Kaufmann, D., Kraay, A., &Mastruzzi, M. (2009). Governance matters VIII: aggregate and individual governance indicators, 1996-2008. World bank policy research working paper, (4978).

Karimi, M. S., Yusop, Z., & Hook, L. S. (2009). Location decision for foreign direct investment in ASEAN countries (A TOPSIS Approach).

Kobrin SJ (2001) Territoriality and the governance of Cyberspace. J Intern Bus Stud 32(4):687–704.

Lall, S. (1992). Technological capabilities and industrialization. World development, 20(2), 165-186.

Lu, J.W., Beamish, P.W., 2001. The internationalization and performance of SMEs. Strategic Management Journal 22, 565 – 586.

MARTINS, G. de A.. Estatística geral e aplicada. 3. ed. São Paulo: Atlas 2010.

Migliarese P, Paolucci E (1995) Improved communications and collaborations among tasks induced by groupware. Dec Sup Syst 14:237–250.

Narendran P, Strom J, Whiteley D (1995) An analysis of electronic markets in the context of SMEs. 3rd European Conference on Information Systems, Athens/Greece, 1–3 June, pp 917–929

Narula, R. (2012). Do we need different frameworks to explain infant MNEs from developing countries?. Global Strategy Journal, 2(3), 188-204.

Paul, A., Popovici, O. C., &Calin, C. A. (2014). The attractiveness of CEE countries for FDI. A public policy approach using the TOPSIS method.Transylvanian Review of Administrative Sciences, (42), 156-181.

Poon S, Swatman P (1996) An empirical study on Australian small business use and the internet. Working Paper 96-4, Centre of Information Systems Research, Swinburne University: Australia SPSS Inc. Base 7.0 Application Guide. SPSS Inc, USA.

Samiee S (1998) Exporting and the internet: A conceptual perspective. Intern Market Rev 15(5):413–426.

Scott, W. R. (1995). Institutions and organizations (pp. p-33). Thousand Oaks, CA: Sage.