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**Economic Performance of U.S. Multinational Manufacturing Firms: The Linkages between Foreign Direct Investment and Firm Strategy**

**Pablo A. Garcia-Fuentes**

Research Associate

Dept. of Agr. Economics and Agribusiness, Louisiana State University AgCenter  
Baton Rouge, LA 70803  
207 Martin D. Woodin Hall  
Phone: 225-578-2728  
E-mail: [pgarci2@tigers.lsu.edu](mailto:pgarci2@tigers.lsu.edu)

**Gustavo F. C. Ferreira**

Instructor and Extension Economist

Dept. of Agricultural & Applied Economics  
Virginia Polytechnic Institute and State University  
316 Hutcheson Hall Blacksburg, VA 24061  
Phone: 540-231-4730  
E-mail: [gferre3@vt.edu](mailto:gferre3@vt.edu)

**P. Lynn Kennedy**

Crescent City Tigers Alumni Professor  
Dept. of Agricultural Economics and Agribusiness  
Louisiana State University  
181 Agricultural Administration Building  
Baton Rouge, LA 70803-5604  
Phone: (225) 578-2726  
E-mail: [LKennedy@agcenter.lsu.edu](mailto:LKennedy@agcenter.lsu.edu)

**Felipe Perez**

Associate Professor  
INCAE Business School  
Campus Francisco de Sola, Sur Managua, Nicaragua  
Phone: 505-2248-9853  
Email: [Felipe.Perez@incae.edu](mailto:Felipe.Perez@incae.edu)

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## **Abstract**

This study assesses the sequential relationships between firm strategic factors, foreign direct investment (FDI) activity, and financial performance for a sample of U.S.-based multinational manufacturers. After using hierarchical regressions and path analysis, this study finds an unambiguously positive direct effect of FDI on performance, and a complementary effect between FDI and firm strategy on performance. Specifically, this study provides insights about the direct effect of FDI on performance, as well as about the joint effect of firm size and FDI, marketing intensity and FDI, and capital intensity and FDI on performance. Finally, these findings present evidence that FDI activity is an important factor for U.S. manufacturers' financial strength.

**Key words:** U.S. manufacturers, foreign direct investment, firm strategies, profitability; hierarchical regressions and path analysis.

## **1. Introduction**

Over the past decades there has been a very important increase in international capital flows and a trend toward a more integrated world economy. The impressive growth in foreign direct investment (FDI) activity has been a reflection of this new global business environment.

According to Dunning (1998), FDI flows grew at rates more than twice as great as those of exports in the 1980s, and by the early 1990s, the sales of foreign affiliates of multinational firms considerably exceeded those of world wide exports. Interestingly, the United States is both the largest investor abroad and the largest recipient of direct investment in the world. Furthermore, and despite the domestic economic downturn in 2009, the U.S. direct investment abroad was twice as much the amount foreigners invested in U.S. businesses and real estate (Jackson, 2011).

Various reasons are behind this accelerating internationalization of businesses, but overall firms have been diversifying the geographic scope of their business activities in order to achieve competitive advantages (Porter 1990; Ramaswamy, 1995). More specifically, companies naturally seek access to larger markets and/or to increase their market power in fast growing international markets. In the case of U.S. firms, on the whole, they invest abroad to serve foreign markets, rather than to produce goods to export to the U.S. (Jackson, 2011). In other cases, some firms may be searching for scarce resources available abroad such as raw materials, research capabilities, finance and skilled labor. Firms producing goods or offering services with international brand recognition may also use FDI to better capture foreign markets. This may be done via establishment of production operations in those markets, joint ventures with domestic firms, or through franchising. Lastly, many firms attempt to increase their efficiency by seeking to reduce the costs of their inputs (especially labor) or by establishing their activities in countries that offer better technical and legal business environments (UNCTAD, 2008). As Table 1 shows, the U.S. manufacturing sector has been an active part of this movement and it accounted for 16

percent of all U.S. direct investment abroad in 2009—only surpassed by investments from finance and holding companies.

Although FDI is typically regarded as a profit-maximizing strategy, this organizational form is also associated with increased managerial costs due to large geographic distances or high demands on information processing. The important increase in cross-border investment activity by U.S. manufactures coupled with inconclusive empirical evidence on the relationship between FDI, firm's strategic factors and economic performance warrants additional investigation. This study uses hierarchical regressions and path analysis to analyze the following issues: (1) the effects of firm's strategic factors and FDI activity on firm's economic performance using two performance measures; (2) the identification of firm's strategic factors impacting FDI activity; (3) the direct and indirect relationships between strategic factors, FDI activity, and economic performance; and (4) the moderating effect of FDI activity on the relationships between firm's strategic factors and firm performance. In summary, this study contributes to the international business literature, by investigating the direct and indirect relationships between FDI activity of U.S. manufactures and firm strategic factors for different performance measures. The rest of the paper is organized as follows. Section 2 presents the theoretical background and section 3 describes the empirical design and methodology. The empirical analysis and the discussion of the results are presented in section 4. Section 5 concludes.

## **2. Theoretical background: Strategic factors, FDI, and economic performance**

This study borrows the theoretical framework developed by Lee and Habte-Giorgis (2004) and the empirical work from Garcia-Fuentes, Ferreira, and Kennedy (2012) to analyze the linkages between organizational strategies, FDI activity, and a firm's financial performance. These interactions are depicted in a modified conceptual framework in Figure 1. This figure also

illustrates how specific strategic factors such as firm size, marketing intensity and capital intensity may be directly and/or indirectly linked to FDI which, in turn, can improve a firm's economic performance. A direct link between FDI and firm economic performance is also hypothesized. Finally, a more detailed discussion of the hypothesized linkages in Figure 1 is presented in the following section.

## ***2.1 Firm's strategy and performance***

There is a vast amount of literature that has studied the linkages between management strategies adopted by firms and their performance (Porter, 1980; Montgomery, 1985; Hitt, Hoskisson, and Kim, 1997; Geringer, Tallman, and Olsen, 2000). In one study, Beard and Dess (1981) present empirical evidence that corporate-level strategy (Diversification) and business-level strategies (Firm size, R&D and capital intensity) have positive and significant effects on firm profitability. The following management strategies are included in this study: Firm size; marketing intensity, and capital intensity.

### ***2.1.1 Firm Size***

A large body of literature has identified a positive influence of firm size on firm profitability and has indicated that variance in firm performance is partly explained by firm size (Ravenscraft, 1983; Buzzell & Gale, 1987; Samiee & Walters, 1990; DeCarolis and Deeds, 1999; Geringer et al., 2000; Lee and Xiao, 2011). Arguably, only larger firms can achieve certain levels of economies of scales— if a firm increases the scale of its output, this will reduce its average cost per unit. Additionally, larger firms often have a degree of market power that allows them to negotiate more favorable terms and reduce the cost of raw materials and capital.

On the other hand, other studies have shown that firm size is greater for multinationals relative to domestic firms. Adenauer and Heckelei (2011) analyzed the relationship between

FDI and performance of European agribusiness firms, and their results show that size and productivity indicators are significantly larger for FDI oriented agribusinesses compared to domestic agribusinesses. Furthermore, U.S. multinational corporations typically rank among the largest U.S. firms (Jackson, 2011). In summary, firm size is regarded as an important determinant of firm performance and it should be positively related to FDI activity. Therefore, we define the following hypothesis:

**Hypothesis 1a:** Firm size is expected to have a positive direct impact on a firm's financial performance.

**Hypothesis 2a:** Firm size is expected to have a positive and direct effect on FDI activity and also a positive indirect causal effect on a firm's financial performance.

### ***2.1.2 Capital intensity***

Capital intensity is normally defined as a measure of the use of capital relative to other production factors such as labor. In a broader sense, it represents a firm's long-term commitment to the modernization and upgrading of its productive capacity. From a strict accounting-based perspective, short-term capital expenditures can potentially have a negative impact on a firm's profits. However, capital expenditures typically pay off in the long run and have a positive impact on performance (Commanor & Wilson, 1967; Ravenscraft, 1983; Lee & Blevins, 1990; Lee and Xiao, 2011). Hence, a positive relationship between capital expenditures and performance is hypothesized, and companies with larger capital intensity are expected to be more engaged in FDI activities.

**Hypothesis 1b:** Capital intensity is expected to have a positive impact on the firm's financial performance.

**Hypothesis 2b:** Capital intensity is expected to have a positive and direct effect on FDI activity and also a positive indirect effect on firm's financial performance.

### ***2.1.3 Marketing intensity***

Marketing intensity can be interpreted as a firm's ability to differentiate its products and services from competitors and build successful brands. Previous studies show that firms that emphasize product differentiation via heavy advertising and marketing activities are more likely to succeed in diverse markets than those that do not (For a comprehensive literature review on see Sin *et al.*, 2005). The basic premise here is that firms that allocate more resources to advertising and promotion activities may increase their sales either by an expansion of sales of a product category or by getting customers to switch to their brands. Furthermore, these firms will likely build strong brand names and develop brand equity. Consequently, these companies will be in a position in where they can charge premium prices in domestic and foreign markets and thus increase profitability (Helsen, Je-didi and DeSarbo, 1993). In another study, Kotabe, Srinivasan and Aulakh (2002) show that the impact of a firm's internationalization on financial performance is moderated by firm marketing capabilities. Interestingly, Morck and Yeung (1991, 2001) found empirical evidence that cross-industry diversification, geographic diversification, and firm size add value in the presence of intangibles related to R&D or advertising, but destroy value in their absence, arguably due to agency problems. This is because diversification may exacerbate agency problems between shareholders and managers and for instance, more diversified firms are harder to control than one-industry firms, and management may be less transparent to investors. Furthermore, diversification makes it harder for the board and investors to identify incompetent managements. Finally, Krasnikov and Jayachandran (2011) show that a firm's marketing capability has a stronger impact on its performance than R&D and operations

capabilities. The present study hypothesizes that higher marketing intensity will support FDI activities and enhance financial gains.

**Hypothesis 1c:** Marketing intensity is expected to have a positive and direct impact on the firm's financial performance.

**Hypothesis 2c:** Marketing intensity is expected to have a positive and direct effect on FDI activity and also a positive indirect causal effect on the firm's financial performance.

## ***2.2 FDI and performance***

Although FDI is commonly regarded as a profit maximizing strategy, there still is an ongoing discussion on the nature and size of the impacts that FDI has on corporate growth and financial performance. In a study of German manufacturers, Arnold and Hussinger (2010) concluded that only the top performing firms find it profitable to set up foreign establishments to be closer to their foreign customers. Numerous studies have found a positive relation between international diversification and a firm's value (Morck and Yeung 1991; Bodnar *et al.*, 1999; Morck and Yeung 2001). Similarly, Love et al. (2009) identifies strong theoretical and empirical evidence of a positive relation between foreign ownership and business performance. Furthermore, foreign owned firms tend to be more productive and technologically more advanced than their domestic counterparts (Singh and Montgomery, 1987). In a recent study, Chang and Rhee (2011) demonstrate that for companies with superior internal resources and capabilities, FDI expansion enhances their performance. Ecer, Ulutagay, and Nasiboglu (2011) analyze FDI and financial performance for different industries in Turkey. Their results show a positive effect of FDI on financial performance in the "food, beverages and tobacco", "clothing", "other manufacturing" and "electrical equipment." Interestingly, FDI has a negative effect on financial performance on

the remaining industries. In another study, Garcia-Fuentes, Ferreira and Kennedy (2012) used hierarchical regression and path analysis and found a positive and direct effect of FDI on performance of U.S. agribusiness and a complementary effect between FDI and firm strategic factors.

Other studies have contradicted the hypothesis of a positive relationship between FDI and financial performance. Christophe and Pfeiffer (1998) and Click and Harrison (2000) show that multi-national firms trade at a discount relative to domestic firms, and Denis et al. (2002) suggest that global diversification reduced shareholder value by 18 percent, and that industrial diversification resulted in 20 percent shareholder loss. Finally, Doukas (1995) argues that firms that diversify production around their core resources are more profitable than those diversifying more broadly. Despite mixed evidence, it is hypothesized that U.S. manufacturers engaged in FDI activities should achieved a higher economic performance due to direct and indirect effects.

**Hypothesis 1d:** FDI activity is expected to have a positive direct effect on the firm's financial performance with respect to accounting-based performance.

**Hypothesis 2d:** FDI activity is expected to have a positive indirect effect on the firm's financial performance with respect to accounting-based performance.

**Hypothesis 3d:** The relationship between strategy and the firm's financial performance is expected to be positively moderated by FDI activity.

### **3. Empirical design and methodology**

#### ***3.1. Sample and data collection***

The original sample is comprised of 7,889 publicly traded U.S.-based manufacturing firms, and only those firms that have data on foreign assets and total assets were chosen. Consequently,

the sample size was reduced to 518 firms. Finally, and based on data availability, a sample of 382 firms was used for the after-tax return on assets (ROA) analysis while a sample of 375 firms was used for the after-tax return on sales (ROS) analysis. Data for all variables was obtained from COMPUSTAT for the period from 2003 to 2010. Different business segments for each firm were also obtained from COMPUSTAT Industry Segment files (see Table 2). All financial figures are expressed in 2005 US\$ using U.S. Department of Commerce, Bureau of Economic Analysis GDP deflator. The final sample of U.S. manufacturers used in this study is an unbalanced panel, and outlier values for all variables were removed from the sample after a careful examination of the dataset.

### ***3.2 Description of variables***

Three firm-level strategic factors were selected to evaluate the effects of strategies on FDI activity: (1) firm size, (2) marketing intensity, and (3) capital intensity. As a proxy for firm size, this study uses the log value of total assets (COMPUSTAT Item 6). Marketing intensity variable is measured by selling, general and administrative expenditures divided by total sales (COMPUSTAT Item 189). Capital intensity is represented by the ratio of a firm's net amount of plant & equipment (COMPUSTAT Item 8) to its total assets.

It has been argued that leverage can affect firm value (Buhner, 1987; Hitt & Smart, 1994). Thus, firm leverage is also included in the analysis as a control variable and to mitigate the variation in firm performance due to differences in capital structure. The argument here is that a firm with higher leverage will likely have more difficulties raising funds to finance its projects, and thus will incur more unfavorable valuation (Lang, Ofek, and Stulz, 1996). In this study leverage is measured as the ratio of long-term debt to total assets (COMPUSTAT Item 9), and it is expected to have a negative effect on firm performance.

Previous studies have selected different measures of a firm's multinationality and FDI activity. The current study selected the ratio of foreign assets to total assets as a proxy for FDI activity (Hennart, 2011). As measures for accounting-based performance this study uses ROA and ROS. More specifically, ROA is the ratio of after tax income to a firm's total assets (COMPUSTAT Item 172), and it measures profitability relative to the total amount of assets the owners have invested in the business. ROA is also used to examine the efficiency with which a company uses its resources. ROS is the ratio of after tax income to a firm's total sales (COMPUSTAT Item 12), and it is often used as a measure of a firm's operational efficiency as well as its profitability.

#### **4. Empirical analysis and discussion**

##### ***4.1 Unidirectional relationships between firm strategic factors, FDI activity, and performance***

Hierarchical multiple regression analysis is first used to analyze direct and indirect effects of FDI activity on performance of U.S. manufactures as depicted in Figure 1. Path analysis is also employed to examine the relationships between strategic factors, FDI activity and financial performance. Path analysis is recommended in the absence of a well-developed theoretical framework and it can be helpful in the refinement of the theoretical model (Zahra & Das, 1993).

Because this study uses an unbalanced panel data set, we test for serial correlation and heteroskedasticity after the pooled OLS estimations using the procedure outlined by Wooldridge (2002, p.176). The test for serial correlation assumes a first-order autoregressive error process  $u_{it} = \rho_1 u_{i,t-1} + e_{it}$ . The null hypothesis of no serial correlation suggests that  $\rho_1 = 0$ . To test this null hypothesis, we run the regression  $y_{it} = X_{it}\beta + \rho_1 u_{i,t-1} + e_{it}$ , where  $t = 1, \dots, T$ ,  $i = 1, \dots, N$ , and  $u_{it}$  is replaced by the residuals from the pooled OLS regressions.

Then, we do a robust  $t$ -test on the coefficient of  $u_{i,t-1}$ . An advantage of this test is that it can be applied whether or not  $X_{it}$  is strictly exogenous. The next step is to run the regression  $u_{it}^2 = \omega_0 + \omega_1 y_{it} + \omega_2 y_{it}^2 + a_{it}$ , where  $t = 1, \dots, T, i = 1, \dots, N$ . Finally,  $u_{it}$  is replaced by the residuals from the pooled OLS regressions, while  $y_{it}$  is replaced by the fitted values from the pooled OLS regressions. To test the null hypothesis of no heteroskedasticity, we do a robust  $F$ -test for joint significance of  $y_{it}$  and  $y_{it}^2$ .

Given the above procedure, for both ROA's model 3 and ROS's model 6 in Table 3, we rejected the null hypothesis of no heteroskedasticity and no serial correlation at the 1 percent level. Therefore, because of the presence of heteroskedasticity and serial correlation, and following Wooldridge (2002, p.175), all the regressions use robust estimators of the asymptotic variance of  $\hat{\beta}$ . These estimators are fully robust to arbitrary heteroskedasticity and arbitrary serial correlation.

Step 1 in the hierarchical multiple regression analysis (see table 3) estimates the direct relationships between firm's strategic factors and the measures of performance. In Step 2, the proxy for FDI activity is added to the regression along with the different strategic factors. Finally, in Step 3, the interactions of FDI activity with all strategic factors are simultaneously added to the model in order to study the moderating effect of FDI activity on linkages between strategy and performance. To determine whether or not industry dummy variables (defined by two-digit SIC codes) should be included, we tested for their joint significance. As suggested by the  $F$ -statistic, industry dummies are included in each regression model. Moreover, a yearly time variable was also included in all models. Finally, the estimated coefficients of both industry and time dummy variables were not included in the tables due to space considerations.

As shown in table 3, the estimated models explained between 16 and 22 percent of the variance of the dependent variables. Firm size has a positive and significant effect on all estimated models, which strongly confirms hypothesis 1a. In the case of capital intensity, the results show that this strategy has a positive and significant effect in models 3 and 6. More specifically, the effect of capital intensity becomes relevant when the interactions between FDI and the different strategies are included in the regression. The results for marketing intensity reveal some inconsistencies in terms of signs and statistical significance. While marketing intensity appears to have a significant and positive impact on ROA and ROS when the interactions with FDI are included, this relationship becomes negative and significant in the absence of those same interactions. Interestingly, the leverage variable is very significant and it is associated with lower returns in all six models.

The addition of the FDI variable and the interaction terms (in models 3 and 6) increased the multiple-squared correlation coefficient ( $R^2$ ), which indicates improvements in the explanatory power of the models. The effect of FDI on performance is negative and non significant for both measures in model 2 and 5, but it becomes positive and significant in models 3 and 6. Importantly, and with the exception of firm size, the interactions between FDI and firm-level strategies have the expected positive and very significant impact on both measures of performance. In summary, these findings suggest a direct positive impact of FDI on the financial performance (Step 2) and complementary synergies with some strategic factors (Step 3).

## ***4.2 Sequential relationships between firm strategic factors, FDI activity, and performance***

### ***4.2.1 Path analysis results: direct linkages between firm strategy, FDI activity, and performance***

Path analysis is used to describe the direct dependencies among a set of hypothesized explanatory variables, and it involves staging or building the model through several regression stages in order to also discover the indirect effects among the model's variables. This method allows for a better understanding of how the hypothesized relationships might occur and through which paths. The staged model is the same general model used in the hierarchical regression analysis. Although these are two different methodologies, the results from the path analysis, shown in Figure 2 and Table 4, confirm some of the findings from the hierarchical regression analysis. FDI activity has a positive and highly significant direct effect on both measures of financial performance, which supports hypothesis 1d stating that increases in FDI activity will have a positive effect on financial performance of U.S. manufacturers. On the other hand, the strategic factors were found to have some mixed effects on FDI activity. Firm size and capital intensity show positive and highly significant effects on FDI activity, which supports hypothesis 2a and 2b. On the other hand, marketing intensity has a negative impact on FDI activity, thus contradicting hypothesis 2c.

#### ***4.2.2 Path analysis results: direct and indirect effects of strategy and FDI activity on performance***

Path analysis allows for simultaneous analysis of multiple causal relationships among variables, both direct and indirect. While direct effects represent a directional relation between two variables, indirect effects are the effect of an independent variable on a dependent variable through one or more intervening or mediating variables. In the context of this study, FDI is hypothesized to have a direct effect on financial performance, however indirect effects of FDI on financial performance are also suggested in Figure 1 - Firm strategies affect FDI, which in turn affects financial performance. Finally, FDI indirect effects are measured by the interactions

between firm strategies and FDI activity. The indirect effect of FDI on performance, as shown in table 4, is related to hypothesis 2d, and it is represented by the effect of FDI on performance through firm strategic factors (see figure 1). This effect is computed via the sum of the products of the estimates of strategic factors on performance and the estimates of FDI on firm strategic factor for each strategic factor (see table 4).

Table 5 shows the output of the path analysis with the direct and indirect estimates as well as the t-values. Table 5 also includes the computation of sequential and causal effects of firm strategic factors and FDI activity on the two measures of performance. Again, FDI activity has a significant direct and indirect positive effect on both performance measures. Such strong evidence is consistent with hypotheses 1d and 2d, and confirms that FDI is a managerial strategy with significant and positive implications for the U.S. manufactures' overall performance.

While the results from the hierarchical regression (Table 3) and path analysis (Table 4 and 5) present evidence of a positive contribution of FDI to manufacturers' profitability, they also reveal some other important implications. As shown in Table 3, FDI appears to have a detrimental impact on performance before its interactions with all the strategic factors are included in Step 3. On the other hand, a positive and significant relationship is found between several interactions terms and both measures of performance. This leads us to investigate about the existence of some thresholds for firm strategy and their relation to FDI's effect on firm performance. For this purpose, we use hierarchical regression analysis and show them in Table 6. Note that the models include one interaction at a time. The regression models explain between 16 and 21 percent of the variance of the performance variables. Note that FDI is positive in all the models for both ROA and ROS, positive and significant in Models 2 and 3 for ROA, and positive and significant in Model 5 for ROS. Interestingly, the interaction between FDI and

marketing intensity is positive and highly significant for both measures of firm performance. The interaction between FDI and capital intensity is positive, but only significant for ROA. And, even though we expected a positive interaction between FDI and firm size, Table 6 shows that this interaction is negative and insignificant for both measures of performance.

The positive sign on FDI in all the models in Table 6 suggests that there is no threshold<sup>1</sup> for firm's strategy. Therefore, for ROA, in Models 2 and 3, the coefficients on FDI and the interaction terms are positive and significant and suggest that FDI has an unambiguously positive effect on performance. For ROS, Model 5 shows that FDI has an unambiguously positive effect on performance, while Model 6 is only qualitatively similar to model 5 due to the lack of significance of the coefficients on FDI and the interaction term. Additionally, the positive sign and the significance of the interaction term also suggest that FDI and firm strategy have a complementary effect on performance. That is, the positive effect of FDI on performance increases in magnitude with increases in marketing intensity and capital intensity in the case of ROA, and with increases in marketing intensity in the case of ROS. Additionally, each model includes FDI and each firm strategy alongside their products, so the significance of the interaction terms cannot be the result of the omission of any of these factors.

In summary, the results in Table 6 indicate that FDI has an unambiguously positive effect on firm performance and that complements some firm strategies' effect on performance. More specifically, this study suggests that there is evidence that the positive effects of marketing intensity and capital intensity on ROA and of marketing intensity on ROS are reinforced by FDI.

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<sup>1</sup> The appropriate firm strategy threshold is the value of the firm strategy that makes the sum of FDI and the interaction term positive, or  $firm\ strategy \geq (-\frac{\beta_{FDI}}{\beta_{interaction\ term}})$ . But, if both estimates are positive (negative), then FDI has an unambiguously positive (negative) effect on performance.

## 5. Conclusions

This empirical study analyzed the sequential relationships between firm strategic factors, FDI activity, and financial performance for a sample of U.S.-based multinational manufacturers. The most important findings are: (1) the evidence of an unambiguously positive direct effect of FDI on performance; and (2) the complementary effect between FDI and firm strategic factors on performance (positive and significant interaction terms). These results support the argument of a positive relation between international diversification and a firm's value (Morck and Yeung 1991; Bodnar *et al.*, 1999; Morck and Yeung 2001), and a positive relation between foreign ownership and business performance (Love *et al.*, 2009).

The findings of this study contribute to the understanding of the relationship between FDI and the financial performance of U.S. manufactures. Moreover, these results provide guidance to manufacturers managers interested in increasing multinational activity and understanding the relationship between firm strategic factors and FDI. More specifically, U.S. manufacturing firms can combine FDI activity with some firm strategic factors (marketing and capital intensity) in order to seek improvements in their economic performance. With respect to future research, it would be pertinent to analyze the relationship between FDI, other strategic factors and some other measures of performance.

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## Tables and Figures

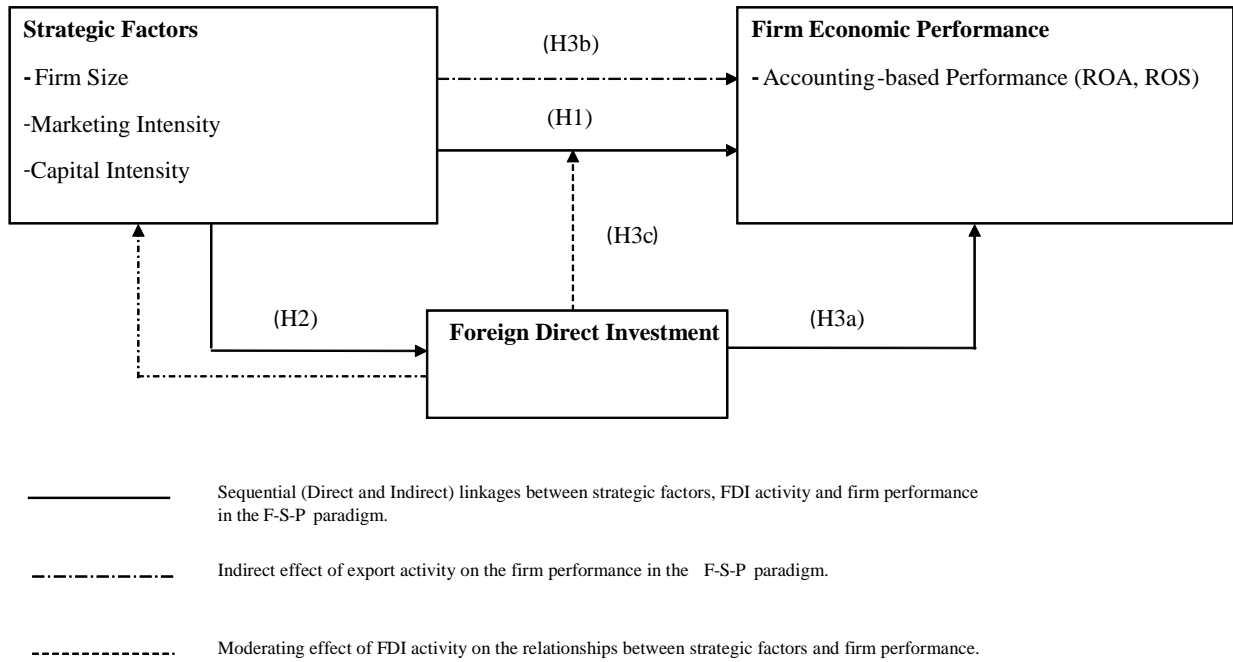
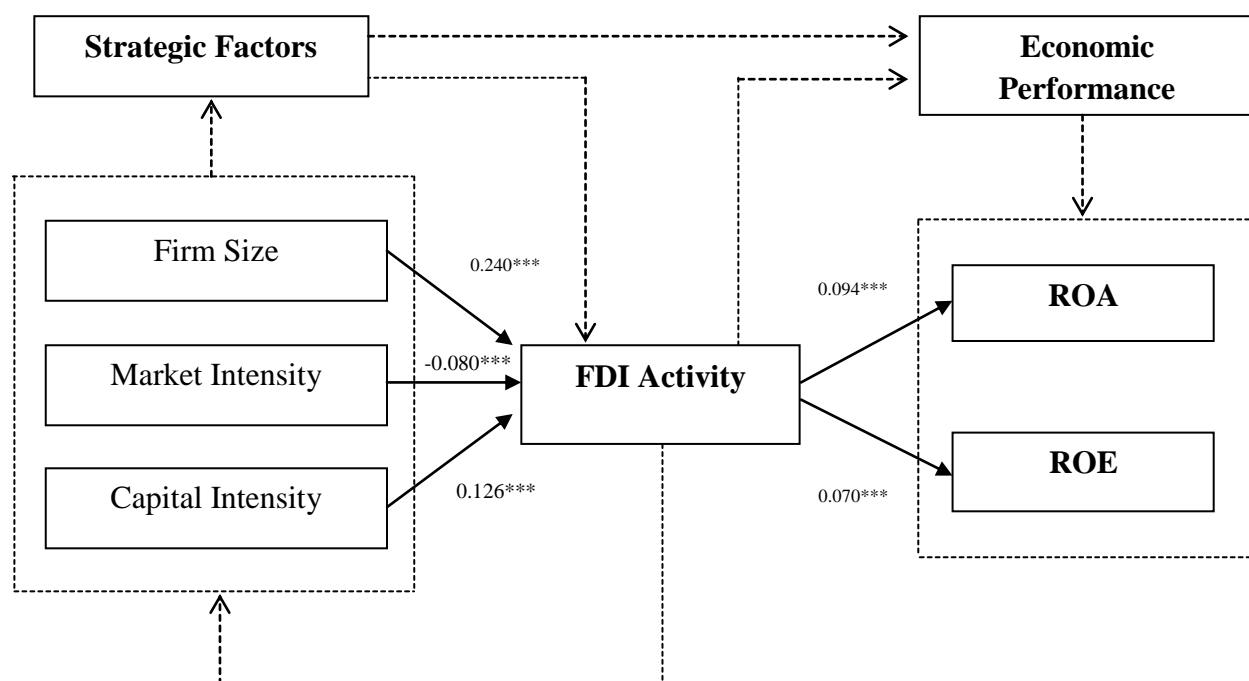


Figure 1. A Theoretical Framework Explaining the Sequential Linkages between Strategy Factors, FDI Activity and the Manufacturers' Economic Performance.



\*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01

Note 1: Values indicate the standardized estimate of the path coefficient.

Note 2: Indirect effects of strategic factors on the firm's economic performance are exhibit in table three – Decomposition of Path Variance.

Figure 2. Results of Path Analysis Explaining the Sequential Linkages between Strategic Factors, FDI Activity, and the Firm Economic Performance

**Table 1. U.S. Direct Investment Abroad by Industry at Year-End 2009.**

<b>Industry</b>	<b>Total (in billions of dollars)</b>	<b>Share (%)</b>
Holding companies	\$1,280.0	36
Finance	\$747.0	21
Manufacturing	\$541.1	15
Other industries	\$228.7	7
Whole-sale trade	\$199.0	6
Mining	\$171.1	5
Information	\$149.8	4
Banking	\$114.0	3
Services	\$77.5	2
All Industries	\$3,508.2	100

Source: Ibarra-Caton (2010)

**Table 2. Manufacturing Firms by Sample and Major Group.**

Major group name	Major group No.	Firm No.	Firm No.
Food and kindred products	20	19	19
Textile mill products	22	5	5
Apparel and other finished products made from fabrics and similar materials	23	9	8
Lumber and wood products, except furniture	24	1	1
Furniture and fixtures	25	4	4
Paper and allied products	26	7	7
Printing, publishing, and allied industries	27	6	6
Chemicals and allied products	28	53	52
Petroleum refining and related industries	29	2	1
Rubber and miscellaneous plastics products	30	10	9
Leather and leather products	31	4	4
Stone, clay, glass, and concrete products	32	5	5
Primary metal industries	33	4	4
Fabricated metal products, except machinery and transportation equipment	34	15	15
Industrial and commercial machinery and computer equipment	35	65	65
Electronic and other electrical equipment and components, except computer equipment	36	89	85
Transportation equipment	37	8	8
Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks	38	65	66
Miscellaneous manufacturing industries	39	11	11
ROA sample		382	
ROE sample			375

Note: Authors' Calculations using data from COMPUSTAT and the SIC code manual at [www.osha.gov](http://www.osha.gov)

**Table 3. Simultaneous Effects of Strategic Factors and FDI on Firm's Economic Performance**

Variables	ROA			ROS		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	3.4679*	3.4211*	3.5808*	4.9595**	4.7606**	4.8620**
Ln Firm size	0.0751***	0.0758***	0.0756***	0.0889***	0.0922***	0.0900***
Ln Capital int.	0.0099	0.0101	0.0339***	0.0049	0.0059	0.0216***
Ln Marketing int.	-0.0224**	-0.0226**	0.0231**	-0.0126	-0.0134*	0.0204**
Ln Leverage	-0.0096***	-0.0097***	-0.0097***	-0.0395***	-0.0402***	-0.0409***
Ln FDI		-0.0011	0.0701***		-0.0052	0.0486***
Ln Firm size*Ln FDI			-0.0001			-0.0004
Ln Marketing int.*Ln FDI			0.0317***			0.0243***
Ln Capital int.*Ln FDI			0.0155***			0.0104***
Industry Dummy	yes	yes	yes	yes	yes	yes
Time	-0.0018*	-0.0018*	-0.0018*	-0.0026**	-0.0025**	-0.0025**
R-squared	0.1568	0.1569	0.1973	0.1942	0.1969	0.2217
Obs.	1496	1496	1496	1465	1465	1465
F-statistic	2.65	2.63	2.43	4.14	4.00	2.50
p-value	0.0003	0.0003	0.0010	0.0000	0.0000	0.0007

Note: Asterisks indicate significance at the 10 percent (\*), 5 percent (\*\*), and 1 percent (\*\*\*) level respectively. Industry dummies were included but are not displayed to save space. The p-value is for the F-statistic and suggests that industry dummies should be included in the econometric specification. The standards errors are robust to heteroskedasticity and serial correlation.

**Table 4. Causal Linkage Between Strategic Factors and FDI and Firm's Economic Performance.**

Proposed relationship	Estimate
<i>Direct linkages between firm strategic factors and FDI activity</i>	
FDI = 0.2398 (Firm size)*** + 0.1258 (Capital intensity)*** - 0.0796 (Marketing intensity)*** - 0.0298 (firm leverage)	
Firm size on FDI activity	0.2398(9.06)***
Capital intensity on FDI activity	0.1258(4.60)***
Marketing intensity on FDI activity	-0.0796(2.87)***
Firm leverage on FDI activity	-0.0298(1.09)
<i>Direct linkages between FDI activity and firm economic performance</i>	
FDI activity on return on assets (ROA)	0.0937(3.65)***
FDI activity on return on sales (ROS)	0.0691(2.66)***
<i>Direct linkages between firm strategic factors and performance</i>	
Firm size on ROA	0.2997(13.00)***
Capital intensity on ROA	0.0856(3.57)***
Marketing intensity on ROA	-0.0568(2.36)**
Firm leverage on ROA	-0.1972(8.35)***
Firm size on ROS	0.2570(10.87)***
Capital intensity on ROS	0.0433(1.77)*
Marketing intensity on ROS	-0.1225(5.05)***
Firm leverage on ROS	-0.1765(7.35)
<i>Direct linkages between FDI activity and firm strategic factors (ROA case)</i>	
FDI on firm size	0.2910(12.29)***
FDI on capital intensity	0.2093(8.46)***
FDI on marketing intensity	-0.2029(8.18)***
FDI on firm leverage	0.1183(4.64)***
<i>Direct linkages between FDI activity and firm strategic factors (ROS case)</i>	
FDI on firm size	0.2910(12.29)***
FDI on capital intensity	0.2093(8.46)***
FDI on marketing intensity	-0.2029(8.18)***
FDI on firm leverage	0.1183(4.64)***
<i>Indirect linkages between FDI activity and firm economic performance</i>	
FDI activity on return on assets (ROA)	0.0933 (7.04)***
FDI activity on return on sales (ROS)	0.0878 (6.87)***

Note: Asterisks indicate significance at the 10 percent (\*), 5 percent (\*\*), and 1 percent (\*\*\*) level respectively. Values in parenthesis are t-values.

**Table 5. Sequential Effects of Strategic Factors and FDI on Firm's Economic Performance<sup>a</sup>**

Variables	ROA			ROS		
	Direct	Indirect	Total	Direct	Indirect	Total
FDI direct effect <sup>b</sup>	0.0937	-	0.0937***	0.0691	-	0.0691**
FDI Indirect (causal) effect <sup>c</sup>	-	0.0933	0.0933***	-	0.0878	0.0878***
Firm size	-	0.0225	0.0225***	-	0.0182	0.0182**
Capital intensity	-	0.0118	0.0118***	-	0.0094	0.0094**
Marketing intensity	-	-0.0075	-0.0075**	-	-0.0045	-0.0045*
Firm Leverage	-	-0.0028	-0.0028	-	-0.0069	-0.0069**

Note: a. The values are standardized coefficients. b. Direct effect of FDI activity on the firm's performance from Strategy Factors → FDI activity → Performance (S-F-P) paradigm. c. Indirect effect of FDI activity on the firm performance from FDI activity → Strategic Factors → Performance (F-S-P) paradigm.

**Table 6. Effects of Firm Strategic Factors and FDI on Firm's Economic Performance.**

Variables	ROA			ROS		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	3.2036	3.4198*	3.5073*	4.5785**	4.7475**	4.8236**
Ln Firm size	0.0626***	0.0783***	0.0744***	0.0813***	0.0934***	0.0916***
Ln Capital int.	0.0101	0.0100*	0.0219**	0.0059	0.0056	0.0125*
Ln Marketing int.	-0.0230**	0.0107	-0.0219**	-0.0138*	0.0122	-0.0131*
Ln Leverage	-0.0097***	-0.0099***	-0.0095***	-0.0404***	-0.0408***	-0.0401***
Ln FDI	0.0088	0.0278***	0.0147*	0.0031	0.0185**	0.0035
Ln Firm size*Ln FDI	-0.0021			-0.0018		
Ln Marketing int.*Ln FDI		0.0237***			0.0187***	
Ln Capital int.*Ln FDI			0.0077**			0.0042
Industry Dummy	yes	yes	yes	yes	yes	yes
Time	-0.0017*	-0.0018*	-0.0018*	-0.0024**	-0.0024**	-0.0025**
R-squared	0.1582	0.1795	0.1619	0.1980	0.2124	0.1987
Obs.	1496	1496	1496	1465	1465	1465
F-statistic	2.56	2.40	2.58	3.66	2.36	4.03
p-value	0.0005	0.0012	0.0005	0.0000	0.0015	0.0000

Note: Asterisks indicate significance at the 10 percent (\*), 5 percent (\*\*), and 1 percent (\*\*\*) level respectively. Industry dummies were included but are not displayed to save space. The p-value is for the F-statistic and suggests that industry dummies should be included in the econometric specification. The standards errors are robust to heteroskedasticity and serial correlation. Ln is the natural logarithm operator.