# Economic Performance of U.S. Multinational Agribusinesses: Foreign Direct Investment and Firm Strategy

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## 1. Introduction

Over the past decades there has been a very important increase in international capital flows and the trend toward an integrated world economy, which has resulted in an impressive growth of foreign direct investment (FDI) activity. The level of foreign direct investment undertaken by multinational enterprises is large and growing. According to Dunning (1998), FDI flows grew at rates more than twice as great as those of exports in the 1980s. Furthermore, by the early 1990s, the sales of foreign affiliates of multinational firms considerably exceeded those of world wide exports. Increasingly, firms are diversifying the geographic scope of their business activities in order to achieve competitive advantages (Porter 1990; Ramaswamy, 1995).

Various reasons are behind greater internationalization of businesses. Firstly, companies seek access to large and or the increase of their market power in fast growing international markets. Secondly, some firms may be searching for scarce resources available abroad such as raw materials, research capabilities, finance and skilled labor. Lastly, many firms try 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: 14). Although FDI is typically regarded as a profit-maximizing strategy, this organizational form is also associated with increased managerial costs due to such factors as large geographic distances and high demands on information processing.

U.S. agribusinesses have been an active part of this movement. Reed (2001) reported that FDI among U.S. food multinational firms has been important and growing. This considerable increase in cross-border investment activity by US agribusinesses coupled with some conflicting empirical evidence on the relationship between FDI, firm's strategic factors and economic performance warrant additional investigation. The purposes of this paper are: (1) to evaluate the effects of organization's strategic factors and FDI activity on the firm's economic performance

using two performance measures; (2) to identify the organization's strategic factors that impact FDI activity; (3) to explore the direct and indirect relationships between strategic factors, FDI activity, and economic performance; and (4) to assess the moderating effect of FDI activity on the relationships between strategic factors and firm performance. Hierarchical regressions and path analysis are employed to examine each of the above objectives.

This study contributes to the FDI literature, specifically to the literature on FDI and agribusiness, by investigating the direct and indirect relationships between FDI activity of U.S. agribusinesses and firm strategic factors with respect to 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

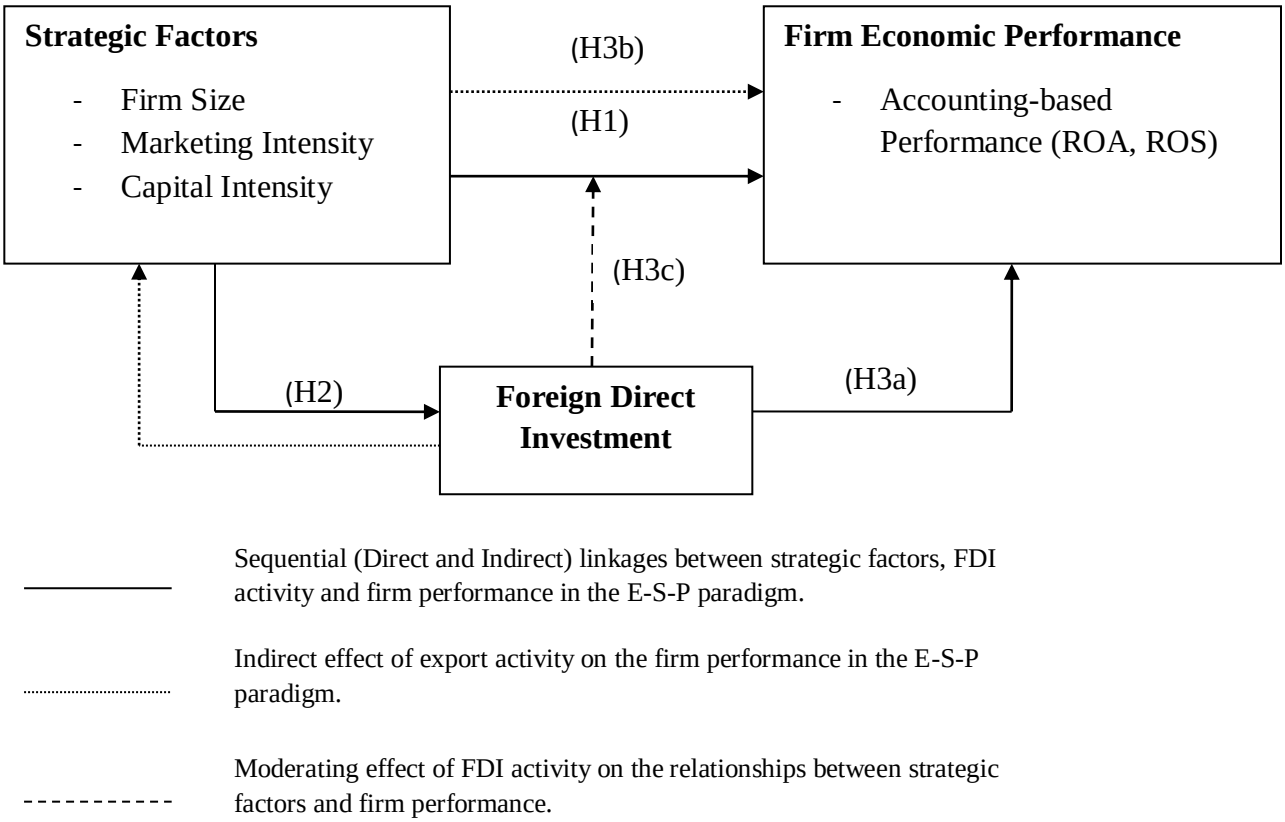
This study borrows the theoretical framework developed by Lee and Habte-Giorgis (2004) that analyzes the linkages between organizational strategy, export activity, and a firm's performance. Figure one depicts the proposed conceptual framework that includes the interactions between strategy, FDI activity and performance. This figure also illustrates how well-chosen strategic factors like firm size, marketing intensity, and capital intensity are directly and/or indirectly linked to successful FDI which, in turn, improves a firm's economic performance. A direct link between FDI and firm economic performance is also hypothesized.

### *2.1 Organization' strategy and performance*

There is a vast amount of literature that has focused on the linkages between management strategies adopted by firms and their performance (Geringer, Tallman, and Olsen, 2000; Hitt, Hoskisson, and Kim, 1997; Montgomery, 1985; Porter, 1980). In their study Beard and Dess (1981) present empirical evidence that corporate-level strategy (Diversification) and business-

level strategy (Firm size, R&D and capital intensity) have positive and significant effects on firm profitability. The following strategies were selected in this study: Firm size; marketing intensity and capital intensity.

Figure 1. A theoretical framework explaining the sequential linkages between strategy factors, FDI activity and the Agribusiness' economic performance.




*2.1.1 Firm's strategic factors, FDI, and performance*

Most empirical research has indicated that variance in firm performance is partly explained by firm size (DeCarolis and Deeds, 1999), and existing evidence shows that firm size positively influences firm profitability (Buzzell & Gale, 1987; Geringer et al., 2000; Ravenscraft, 1983; Samiee & Walters, 1990). Only larger firms can achieve economies of scales and thus reduce their average cost per unit as the scale of output is increased. Moreover, larger firms often have a degree of market power which, in turn allows them to negotiate more favorable terms and reduce

the cost of raw materials and capital. Adenaeuer 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. In summary, firm size is regarded as an important determinant of firm profit performance and it is should be positively related to FDI activity.

**Hypothesis 1a:** Firm size is expected to have a positive impact on the firm's economic impact.

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

*2.1.2 Capital intensity*

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

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

**Hypothesis 2b:** Capital intensity is expected to have a positive and direct effect on FDI activity and also a positive indirect causal effect on firm's economic 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. Firms that spend money on advertising and promoting their products are likely to increase sales either by an expansion of sales of a product category or by getting customers to switch to their 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 good literature review on the relationship between market orientation and business performance see Sin et al. (2005). Arguably effective marketing campaigns could result in increases in market shares and that firms with strong brand names are in a position of charging premium prices in foreign markets (Helsen, Je-didi and DeSarbo, 1993). In both scenarios this will result in increases of firms' profitability. 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. Finally, Kotabe, Srinivasan and Aulakh (2002) show that the impact of multinationality on financial performance is moderated by firm marketing capabilities. This study proposes that firms with higher marketing intensity will support FDI activities and allow firms to achieve greater gains.

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

*2.2 FDI and performance*

Even though FDI is traditionally seen as a profit maximizing strategy, there still is an ongoing debate on the impacts that FDI has on corporate growth and financial performance. A positive relation between international diversification and a firm's value has been found by numerous studies (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 more technologically advanced than their domestic counterparts. Singh and Montgomery (1987) present evidence consistent with this view based on a sample of 105 domestic acquisitions in the period 1975-1980. In another study, Ecer, Ulutagay, and Nasiboglu (2011) analyze FDI and financial performance for different industries in Turkey. Their results show that FDI has a positive impact on financial performance in the "food, beverages and tobacco", "clothing", "other manufacturing" and "electrical equipment." For the remaining industries FDI caused to decrease financial performance. Despite strong evidence of the positive effects of FDI on performance other studies have contradicted this hypothesis. Christophe and Pfeiffer (1998) and Click and Harrison (2000) find that multi-national firms trade at a discount relative to domestic firms. More recently Denis et al. (2002) show that global diversification reduces shareholder value by 18%, whereas industrial diversification results in 20% shareholder loss. Finally, Doukas (1995) argues that firms that diversify around specific (that is, core) resources are more profitable than firms that diversify more broadly. In the case of FDI undertaken by the US food industry, Handy and Henderson (1994) found that for the most part it is horizontal in nature. That is, this sector has been engaged in FDI activities that are similar to the parent company's core business.

**Hypothesis 3a:** FDI activity is expected to have a positive direct effect on the firm's economic performance with respect to accounting-based performance.

**Hypothesis 3b:** FDI activity is expected to have a positive indirect effect on the firm's economic performance with respect to accounting-based performance.

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

## 3. Empirical design and methodology

### *3.1. Sample and data collection*

The original sample was drawn from COMPUSTAT and comprised of 1,860 publicly traded US-based agribusiness firms. From this sample we chose those firms that have data on foreign assets and total assets, so that the sample was reduced to 96 firms with data on FDI. Finally, based on data availability, a sample of 78 firms was used for ROA analysis while a sample of 77 firms was used for ROS analysis (see Table 1). Data for all variables was obtained from COMPUSTAT for the period from 1976 to 2010. Different business segments for each firm were also obtained from COMPUSTAT Industry Segment files. 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. agribusinesses is an unbalanced panel.

### *3.2 Description of variables*

In order to evaluate the effect of firm's strategic factor on FDI activity, three organization's strategic factors were selected, namely firm size, marketing intensity, and capital intensity. As a proxy for firm size this study uses the log value of total assets (COMPUSTAT Item 6). The marketing intensity variable is proxied by selling, general and administrative expenditures (COMPUSTAT Item 189). Capital intensity is measured by the ratio of a firm's net amount of

plant & equipment (COMPUSTAT Item 8) to its total assets. Different studies have used different measures of a firm multinationality and its FDI activity. This study uses the ratio of foreign assets to total assets (FATA) as a proxy for FDI activity (Hennart, 2011).

Table 1 Agribusiness firms by sample and industry

| **Industry** | **SIC Code** | **Firm No. (ROA)** | **Firm No. (ROS)** |
|---|---|---|---|
| Agricultural Production Crops | 0100 | 3 | 3 |
| Agricultural Services | 0700 | 1 | 1 |
| Food And Kindred Products | 2000 | 1 | 1 |
| Poultry slaughtering and processing | 2015 | 1 | 1 |
| Dairy Products | 2020 | 1 | 1 |
| Preserved Fruits and Vegetables | 2030 | 1 | 1 |
| Canned fruits and vegetables | 2033 | 2 | 2 |
| Grain Mill Products | 2040 | 9 | 9 |
| Cookies and crackers | 2052 | 2 | 2 |
| Sugar and Confectionery Products | 2060 | 3 | 3 |
| Fats and Oils | 2070 | 1 | 1 |
| Beverages | 2080 | 1 | 1 |
| Malt beverages | 2082 | 1 | |
| Bottled and canned soft drinks | 2086 | 4 | 4 |
| Misc. Food and Kindred Products | 2090 | 2 | 2 |
| Cigarettes | 2111 | 3 | 3 |
| Broadwoven fabric mills, cotton | 2211 | 2 | 2 |
| Pulp mills | 2611 | 1 | 1 |
| Paper mills | 2621 | 10 | 10 |
| Agricultural Chemicals | 2870 | | 1 |
| Farm machinery and equipment | 3523 | 5 | 5 |
| Special Industry Machinery | 3550 | 1 | 1 |
| Farm-Product Raw Materials | 5150 | 2 | 2 |
| Beer, Wine, and Distilled Beverages | 5180 | 1 | 1 |
| Farm supplies | 5190 | 4 | 4 |
| Grocery stores | 5411 | 2 | 2 |
| Eating places | 5812 | 14 | 13 |
| Total | | 78 | 77 |

To examine the proposed research questions, and following Lee and Habte-Giorgis (2004), this study employs the after-tax return on assets (ROA) and the after-tax return on sales (ROS) as

measures for accounting-based performance. The ROA is the ratio of after tax income (COMPUSTAT Item 172) to a firm's total assets. In other words, it measures the profitability of the company relative to the total amount of assets the owners have invested in the business, and it is often 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 strategic factors, export activity, and performance*

Hierarchical multiple regression analysis is first used in this study to analyze the moderating effect of FDI activity on the linkages between U.S. agribusinesses' strategic factors and economic performance. Path analysis is also employed to examine the relationships between strategic factors, FDI activity and economic performance. Path analysis is recommended in the absence of a well-developed theoretical framework, and according to Zahra & Das (1993) it can be helpful in the refinement of the theoretical model.

Step 1, in the hierarchical multiple regression analysis, estimates the direct relationships between firm's strategic factors and the measures of performance. In Step 2, the proxy for FDI activity (FATA) 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. Dummy variables for every industry (defined by two-digit SIC codes) and a yearly time variables are included in all models; however their estimated coefficients are not included in the tables due to space considerations. After a careful examination of the dataset, outlier values for all variables were removed from the sample.

All models were estimated using Ordinary Least Squares (OLS) method with robust standard errors. The results are presented in Table 1 and show that the estimated models explained between 23 and 37 percent of the variance of the dependent variables. Marketing intensity has a positive and highly significant effect on all estimated models which, in turn confirms hypothesis 1c. In the case of capital intensity, the results show that this strategy has a positive impact on ROA in Step 1 and 2, while in Step 3 it only has a positive and significant impact when it is interacted with FDI. Finally, capital intensity has no significant effect on ROS in any of the three scenarios. The results for firm size reveal some inconsistencies in terms of signs and statistical significance. While firm size appears to have a highly significant and positive impact on ROS in Step 1 and 2, a negative and significant effect on ROA is found for all three scenarios.

Interestingly, the interactions between firm size and FDI have a positive and significant effect on both performance measures. Additionally, the effect of FDI on performance is positive and significant for both measures in Step two, but negative and significant in Step 3. This suggests a direct positive impact of FDI on the economic performance (Step 2) and complementary synergies with the strategic factors (Step 3). Nevertheless, FDI appears negative and significant in Step 3 for both ROA and ROS, which contradicts the hypothesized relationship. Lastly, the addition of the FDI variable and the interaction terms (in Step 2 and 3) increased the multiple-squared correlation coefficient ($R^2$), which indicates improvements in the explanatory power of the models.

Table 2. Results of hierarchical regression analysis: Simultaneous effect of strategic factors and FDI activity on the firm's economic performance

| Variables | ROA | | | ROS | | |
|---|---|---|---|---|---|---|
| | Step 1 | Step 2 | Step 3 | Step 1 | Step 2 | Step 3 |
| Intercept | 0.763** | 1.123*** | 1.400*** | -0.151 | 0.177 | 0.318 |
| Firm size | -0.002* | -0.003** | -0.013** | 0.006*** | 0.039*** | -0.002 |
| Capital intensity | 0.026* | 0.027** | 0.006 | 0.011 | 0.014 | -0.009 |
| Marketing intensity | 0.258*** | 0.250*** | 0.100*** | 0.188*** | 0.183*** | 0.089*** |
| FDI | | 0.039*** | -0.262*** | | 0.033*** | -0.214*** |
| Firm size*FDI | | | 0.030*** | | | 0.027*** |
| Marketing intensity*FDI | | | 0.356*** | | | 0.214*** |
| Capital intensity*FDI | | | 0.067* | | | 0.066** |
| Industry Dummy | yes | yes | yes | yes | yes | yes |
| Time | yes | yes | yes | yes | yes | yes |
| Obs | 852 | 852 | 852 | 848 | 848 | 848 |
| Model $R^2$ | 0.23 | 0.25 | 0.31 | 0.31 | 0.33 | 0.37 |

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

Note: Dummy variables for each industry were included in all regressions but not displayed due to space considerations.

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

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

The results from the path analysis are depicted in Figure 2 and Table 3. In consonance with the previous results in the hierarchical regression analysis, FDI activity has a positive direct effect on U.S. agribusinesses' economic performance with respect to accounting-based performance. Thus, the results support hypothesis 3a, which states that increases in FDI activity will have a positive impact on firm's performance.

Table 3. Results of path analysis: causal linkage between the strategic factors and FDI activity and firm's economic performance

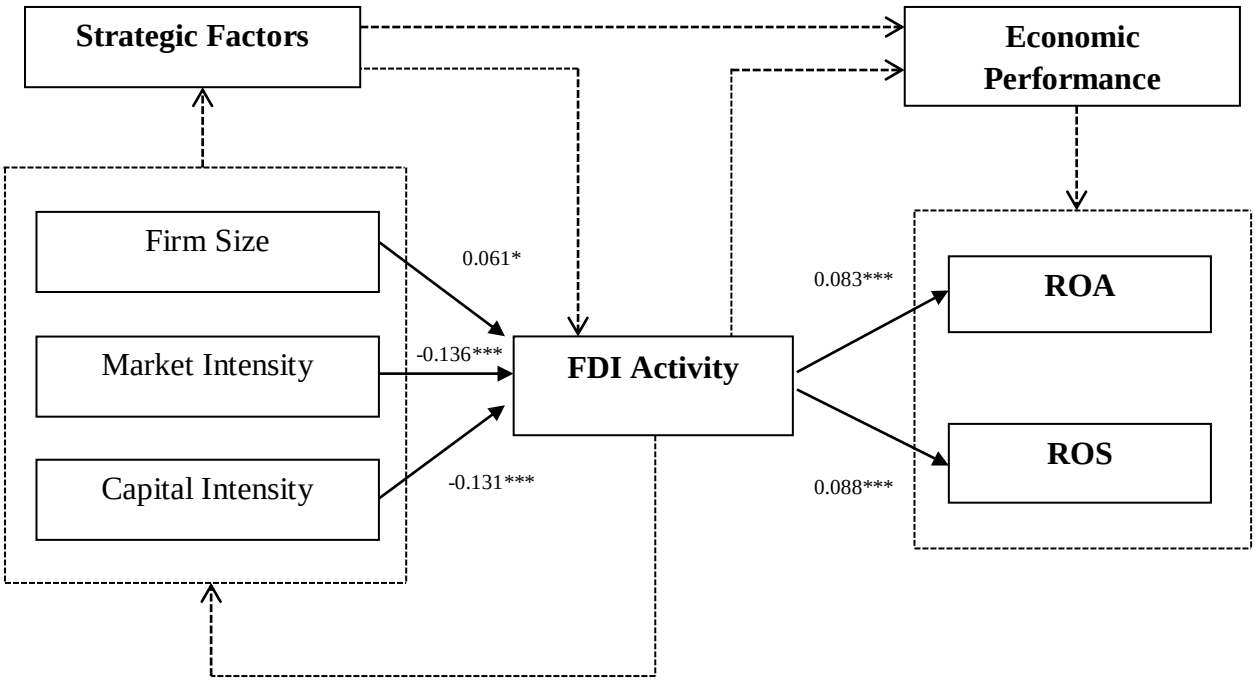
| Proposed relationship | β |
|---|---|
| **Direct linkages between firm strategic factors and FDI activity* | |
| FDI = 0.061(Firm size)* -0.131(Capital intensity)*** - 0.136(Marketing intensity)*** | |
| Firm size on FDI activity | 0.061(1.775)* |
| Capital intensity on FDI activity | -0.131(3.716)*** |
| Marketing intensity on FDI activity | -0.136(3.910)*** |
| **Direct linkages between FDI activity and firm economic performance* | |
| FDI activity on return on assets (ROA) | 0.083(2.513)** |
| FDI activity on return on sales (ROS) | 0.088(2.662)*** |

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

Note: The values in paranthesis represent the estimated t-values

On the other hand, the strategic factors were found to have mixed effects on FDI activity. Capital and marketing intensity both show negative and highly significant effects on FDI activity which contradicts hypothesis 2c and 2b. Firm size is the only strategy that positively contributed to FDI activity as stated in hypothesis 2a.

Figure 2. Results of path analysis explaining the sequential linkages between strategic factors, FDI activity, and the firm's economic performance.




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

Note 1: Values indicate the standardized estimate of the patch coefficient.
Note 2: Indirect effects of strategic factors on the firm's economic performance are exhibit in table three – Decomposition of Path Variance.

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

Table 4 shows the sequential and causal effects of strategic factors and FDI activity on the two measures of performance. Once again, FDI activity has a significant direct and indirect positive effect on performance, with the exception of the indirect effect on ROA. Such evidence

is consistent with hypotheses 3a and 3b. In summary, FDI is a managerial strategy that can have a significant and positive implication for the U.S. agribusinesses' overall performance.

Table 4. Decomposition of variance: sequential effects of strategic factors and FDI activity on the firm's economic performance

| Variables | Firm's economic performance | | | | | |
|---|---|---|---|---|---|---|
| | ROA | | | ROS | | |
| | Direct | Indirect | Total | Direct | Indirect | Total |
| FDI activity | | | | | | |
| Direct effect[b] | 0.084 | - | 0.084** | 0.088 | - | 0.088*** |
| Indirect (causal) effect | - | 0.008 | 0.008 | - | 0.0315 | 0.0315** |
| Firm size | - | 0.005 | 0.005 | - | 0.005 | 0.005 |
| Capital intensity | - | -0.011 | -0.011** | - | -0.012 | -0.012** |
| Marketing intensity | | -0.011 | -0.011** | - | -0.011 | -0.011** |

a Value shows standardized effect coefficients (direct, indirect, and total effect)
b Direct effect of FDI activity on the firm performance from strategy factors → export activity → performance (S-E-P) paradigm.
c Direct effect of FDI activity on the firm performance from FDI activity → strategic factors → performance (E-S-P) paradigm.

While the results from the hierarchical regression (Table 1) and path analysis (Table 2 and 3) present strong evidence of a positive contribution of FDI to agribusinesses' profitability, they also show the existence of some discrepancies. More specifically - in Table 1- FDI appears to have a detrimental impact on performance when its interactions with all the strategic factors are included in Step 3. Furthermore, all the interactions terms have a positive and significant impact on both measures of performance. These results may be an indication of possible thresholds of the impacts of FDI on performance with respect to the different strategic factors. Consequently, the hierarchical regression analysis is extended to models that include only one interaction at a time. The results are shown on Table 4. The set of variables included in the regressions explained between 25 and 36 percent of the variance in accounting-based performance variables. Interestingly, all interactions are positive and significant. FDI is negative in five of the six models and significant in two models for ROA and in one model for ROS. Regarding firm strategic factors, contrary to Step 3 for ROA in Table 1, Model 3 shows that capital intensity is negative but it is not significant. In Model 4, 5 and 6 for ROS, firm size and capital intensity alternate signs. These two strategic factors have a negative effect on ROS as shown in Step 3 in Table 1. In model 1, 2 and 4, the coefficients on FDI and the interaction terms are significant and

suggest that a threshold of a firm strategy is required for FDI to have a positive effect on performance[1]. 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 effect of FDI increases in magnitude with increases in firm size, capital intensity and marketing intensity. Additionally, each model includes FDI and each firm strategy alongside their products, so that the significance of the interaction terms cannot be the result of the omission of any of these factors.

Table 5. Results of hierarchical regression analysis: Simultaneous effect of strategic factors and FDI activity on the firm's economic performance for each interact

| Variables | ROA | | | ROS | | |
|---|---|---|---|---|---|---|
| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| Intercept | 1.428*** | 1.039*** | 1.130*** | 0.312 | 0.054 | 0.370 |
| Firm size | -0.015*** | -0.003*** | -0.003** | -0.005*** | 0.006*** | 0.006*** |
| Capital intensity | 0.033** | 0.022* | -0.001 | 0.017* | 0.008 | -0.023* |
| Marketing intensity | 0.220*** | 0.081** | 0.2414*** | 0.163*** | 0.052** | 0.169*** |
| FDI | -0.260*** | -0.033** | 0.005 | -0.221*** | -0.014 | -0.007 |
| Firm size*FDI | 0.041*** | | | 0.036*** | | |
| Marketing intensity*FDI | | 0.489*** | | | 0.371*** | |
| Capital intensity*FDI | | | 0.094** | | | 0.125*** |
| Industry Dummy | yes | yes | yes | yes | yes | yes |
| Time | yes | yes | yes | yes | yes | yes |
| Obs. | 852 | 852 | 852 | 848 | 848 | 848 |
| Model $R^2$ | 0.2956 | 0.2813 | 0.2527 | 0.3646 | 0.3458 | 0.3297 |

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

In Model 1, the relationship between FDI and firm size suggests that FDI has a positive effect on performance, but only for certain levels of firm size. The coefficients for FDI and the interaction term indicate that for a firm with a log value of total assets greater than 6.34 (a firm size value of $566.79 million of 2005 US dollars), FDI has a positive effect on performance. In our sample, 52 out of 78 agribusiness firms have a mean value for firm size that passes this threshold. In contrast, FDI negatively affects performance for firms with firm size below this

[1] 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.

threshold. In addition, for a firm with a mean log value of 7.65 for firm size (the sample average and equivalent to US$2,100.65 million in 2005 dollars), which is greater than the threshold value of 6.34, an increase in FDI of 0.21 (one standard deviation) which is an increase of 68 percent relative to the FDI's sample mean will raise performance by 0.04 percentage points per year. Given the same increase in FDI, but for a firm with a log value of 11.10 for firm size (equivalent to US$66,171.16 million in 2005 dollars), the maximum value in the sample, performance rises by 0.13 percentage points a year. Therefore, on average, conditional on firm size, increasing FDI has a positive impact on ROA as a measure of agribusinesses' performance.

The estimates for FDI and its interaction with marketing intensity in Model 2 suggest a threshold for marketing intensity. That is, agribusiness firms with a marketing intensity value greater than 0.068 have a positive effect of FDI on performance. In our sample, 63 out of 78 agribusiness firms have a mean value for marketing intensity above this threshold. In contrast, FDI negatively affects performance for firms with marketing intensity below this threshold. Moreover, for a firm with a mean log value of 0.182 for marketing intensity (the sample average), which is greater than the threshold value of 0.068, an increase in FDI of 0.21 (one standard deviation) which is an increase of 68 percent relative to the FDI's sample mean will raise performance by 0.04 percentage points per year. Given the same increase in FDI, but for a firm with a value of 0.546 for marketing intensity, the maximum value in the sample, performance rises by 0.16 percentage points a year. Therefore, on average, conditional on marketing intensity, increasing FDI has a positive impact on ROA as a measure of agribusiness performance. In Model 3, the signs for FDI and the interaction term suggest that FDI has an unambiguously positive effect on performance.

Regarding ROS as a measure of agribusiness performance, the estimates of FDI and its interaction with firm size in Model 4 also suggest a threshold for firm size. That is, for agribusiness firms with a log value of total assets greater than 6.14 (a firm size value of $464.05 million of 2005 dollars) FDI positively affects performance. A total of 52 out of 77 agribusiness firms in our sample have a mean value for firm size that passes this threshold. In contrast, FDI negatively impacts performance for firms with firm size below this threshold. In addition, for a firm with a mean log value of 7.61 for firm size (the sample average and equivalent to US$2,018.28 million in 2005 dollars), which is greater than the threshold value of 6.14, an increase in FDI of 0.21 (one standard deviation) which is an increase of 68 percent relative to the FDI's sample mean will raise performance by 0.04 percentage points per year. Given the same increase in FDI, but for a firm with a log value of 11.10 for firm size (equivalent to US$66,171.16 million in 2005 dollars), the maximum value in the sample, performance rises by 0.12 percentage points a year. Therefore, on average, conditional on firm size, increasing FDI has a positive impact on ROS as a measure of agribusiness performance. Regarding Model 5 and 6, the coefficients on FDI and the interaction terms show the appropriate sign for a firm strategy threshold, but FDI is not significant.

The positive effect of FDI on performance in Model 1, 2 and 4 given the threshold of firm strategy suggests that, on average, FDI strengthen the impact of firm strategy on agribusiness economic performance. It is likely that by increasing foreign assets and conditional on firm strategic factors, FDI raise firm performance. In addition, in those models in which there is no threshold, a positive and significant interaction term suggests that the effect of FDI on performance increases in magnitude with the increase in the value of the firm strategic factor, or that there is a complementary effect between FDI and firm strategic factor. In Model 3 for ROA,

the effect of FDI on performance increases in magnitude with the increase in capital intensity. In Model 5 for ROS, the effect of FDI on performance increases in magnitude with the increase in marketing intensity; and in Model 6, the effect of FDI on performance increases in magnitude with the increase in capital intensity.

## 5. Conclusions

This research empirically assesses the sequential relationships among firm strategic factors, FDI activity, and economic performance for a sample of U.S.-based Multinational agribusinesses. The most important findings of this research is a positive direct effect of FDI on performance (Step 2s), the complementary effect between FDI and firm strategic factors (positive and significant interaction terms) on performance, and the positive effect of FDI on performance given some thresholds of firm strategic factors. Therefore, this results support the argument of the existence 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 of a positive relation between foreign ownership and business performance (Love et al., 2009).

This study provides evidence that FDI activity is an important factor for U.S. agribusiness financial strength. This study also contributes to the research that seeks to investigate about the relationship between agribusiness firm's key strategic factors such as firm size, marketing intensity and capital intensity, and FDI activity and their effect on U.S. agribusiness performance. Specifically, it 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.

Despite data limitations and a well-defined theoretical model, this research's findings contribute to the understanding of the relationship between FDI and U.S. agribusiness performance. The results provides agribusiness managers interested in increasing U.S. agribusiness multinational activity a better understanding of the relationship between agribusiness firm strategic factors and FDI. This study also suggests that U.S. agribusiness firms

can combine FDI activity with some firm strategic factors in order to seek improvements in their economic performance. Finally, with respect to future research, it would be interesting to analyze the relationship between FDI, agribusiness firm strategic factors and some other measures of performance.

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