

The Export Spillover Effects of Multi National Companies on Local Firms: A Study Conducted in Ethiopia

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Abstract

The presences of MNCs have direct and indirect impacts on the performance of local firms in the host country. This study was conducted with the aim of empirically examining the indirect effects with particular emphasis to export spillover effects. The study employed balanced secondary panel data of Ethiopian Manufacturing firms from 2010-2014 and employed logistic regression method to examine the same. The outcome unveiled that the increasing presence of MNCs decreases the likely hood of local firms' export decision and export propensity. Therefore, from the study it is concluded that the presences of MNCs negatively affect the export behavior of local firms in Ethiopia.

Keywords: Export spillover, Multinational companies, local firms, Ethiopia

1-1. Introductions

Unlike domestic market, global market is too volatile involving frequent changes in need, preference, fashion, trade regulation and so forth all of which demands the firm to continuously evaluate the international market to keep abreast of the competitors. The problem of exporting is exacerbated because exporting involves huge costs, which might include the establishment of distribution networks, creation of transport infrastructure, advertising expenditure, competitors' action, and so on. These facts unfold the level of difficulty for local firms to join foreign market. However, there are different situations that help them to overcome these problems. One of such opportunity is the nearby presence of exporting multinationals. Studies conducted in developed countries proved that many vigilant local firms have been benefited from MNCs' key firm specific asset. This study examined the cases from Ethiopian perspective.

1-2. Statement of the problems

There are many studies conducted to analyze the effect of MNCs presence on local firms' labor productivity by employing different proxies and estimation techniques. But, it is crucial to note that the study on the effect of MNCs presence on labor productivity is only half of the journey to deal with the overall local firms' performance. Therefore, the effect of MNCs' presence can be fully visualized by examining export spillover alongside with productivity spillover. To be exporter, producing quality product in mass quantity is necessary but not sufficient conditions and hence searching for lucrative potential demand in foreign market is a herculean task that demand local firms: to exert maximum effort, to spent priceless time and to invest huge capital all of which are next to impossible to bear by novice local firms.

Luckily, many researchers confirm that the presence of export-oriented MNCs eases local firms' effort to join the export market. For example, Rhee and Belot (1990) examined the export spillover by taking data from Bangladesh and find that the entry of several foreign firms led to the creation of a booming domestically-owned export industry. They also highlighted that in the low-income country the presence of multinational company proved to catalyze & spur local firms' export activity. Moreover, authors like Aitken et al, 1997; Barrios et al, 2003; and Greenaway et al. 2004 suggests that domestic firms can learn to export from the nearby export-oriented MNCs.

The idea of export spillover (market access spillover) emanates from the general understanding that entering a foreign market for a nascent local firm is costly, but by serendipity MNCs' exporting activities reduces the cost of foreign market access for nearby local firms. Painstakingly stating, export spillover is examined based on the presumption that activities or some particular characteristics of MNCs ease the burden of local firms' exporting cost. The justification is that the nearby exporting foreign firms presence in one way or another spur local firms to follow the footprint of MNCs. To investigate this presumption, the following hypothesis was derived.

H₀: The presences of MNCs do not significantly affect the likelihood of local firms' export behavior in Ethiopia

This hypothesis is too general to test. Thus, to properly address it, the following two sub-hypotheses were derived by considering the export spillover variables of information externality and competition to test the dependent variables of export decision and export propensity.

- a. MNCs have insignificant impact on the probability of local firms' export decision
- b. MNCs insignificantly affect the likelihood of local firms' export propensity

1-3. Methodology

In the following discussions, all the necessary research methodologies employed to examine market access spillover has been illustrated.

a) Variables specification

The selection of variables that comes into the model is dictated by the consideration of the empirical studies and theoretical literature related to the export spillover effects. In concordance to Franco and Subash (2008), to explore the export market spillover: *firms' level variables*, *spillover variables* and *year specific dummy variables* have been used.

i. Firms level variables

Firm level variables include both dependent and independent variables that can be modified or adjusted by the firm.

❖ *Dependent variables of export spillover*

Consistent with Kinuthia (2012), the dependent variables were categorized into two as: probability on export decision and probability on export propensity.

The decision to export (EP): these variables help us to detect whether the presence of export-oriented MNCs increases the likely hood of local firms' export decision to join the foreign market. It is dichotomous variable taking 1 if local firms exports and 0 otherwise. Sample selection for the export propensity model is also performed at this stage by using export decision model.

The propensity to export (EXP): is a variable that helps us to capture whether the presence of MNCs influences the likely hood of local firms' export proportion. The propensity to export was calculated only to those local firms who decide to export (identified at the 1st model). The proxy used to capture this variable is the ratio of local firms' export to total sales of the same firm. It is worth to note that calculating dependent variable is straightforward at the aggregate level, but not at the firm level.

❖ *Explanatory (independent) variables of export spillover*

In this section, the most common explanatory variables which have the direct impact on local firms' export decision and export propensity has been discussed. The common independent variables include the following:

Capital intensity (CI): CI is introduced to assess the probability of influence of fixed cost on local firms' export marketing and hence it is captured by the ratio of FA per employees. The negative and significant CI indicates that high fixed cost in local market discourages local firms export probability and vice versa.

Wage: in this case, wage explains the influence of employees' skill level on local firms' export behavior. To capture the skill level, the ratio of total remuneration to total employees in local firms was used. As underlined by Kinuthia(2012), positive relationship between the two indicates the importance of skill to become an exporter and negative relationship indicates high administrative and labor cost discourages local firms export behavior. Thus, positive relationship between the level of skill and probability to export is expected.

The size of firm: from export spillover perspective, size refers how big the scale of operations of the firm is. Even though there are various ways to proxy size, because of complete data availability, the absolute number of employees was used to capture firms' size. Our presumption is that large firms are better equipped to bear risks involved in exporting and hence they are more likely inclined to export than the small size firm. Consistent with these presumptions, Franco and Sasidharan (2010) find that large firm size is positively influenced by export-oriented MNCs operations. Moreover, researchers like Anwar and Nguyen (2011), Karpaty and Kneller (2011), Duran and Ryan (2014) all reach on similar findings. To the contrary, other researchers like Gachino(2014) argued that small size firms have less fixed cost, high flexibility, and better customization and hence are sensitive to export spillover than large firms. Thus, positive coefficient indicates large size encourage local firms to join the export market and negative sign indicates large size deters local firms' flexibility to fit a foreign market. It is crucial to notice that, the relationship between firms' size and their likely hood of export behavior cannot be linear. In other words, since every additional employee may not add proportional to the firm's resources, the logarithmic value of employees is taken to circumvent the problem.

Labor productivity (LP): it is sound much to expect that better productive firms are more likely becomes exporter than poor productive firms. Thus, our general expectation is that the higher the productivity, the more likely that local firms will join the export market i.e. positive and significant relationship. As stated in the literature, omitting firm productivity could lead to an overestimation of export spillovers. Therefore, LP was included as one of the determinant variables in our study. Kinuthia(2012) presumed that LP has a significant impact on firms' decision to export. According to Kinuthia, once the firm becomes an exporter, LP has insignificant effect on export propensity and hence, this variable was included only to examine its effect on the export decision. As stated above, LP was captured by the ratio of production value to a number of employees in local firms.

ii. Spillover indicator variables

Researchers identified & employed three variables to capture the different channels of export spillover-*demonstration, competition, and information externalities* [see for example Franco & Subash, 2008; Narjco, 2009; Kinuthia, 2012; Keshari, 2016]. Even though early researchers argued the possibility of some of them being endogenous, authors like Bernard & Jensen (1999) and Greenaway et al. (2004) suggested that this is less likely to affect the actual outcomes. Because of data unavailability, demonstration as spillover channel was not considered in this study. Now let us discuss the other two variables one after another.

Information externality (MNCEX): researchers employed different proxies to capture the influence of information externality on local firms export decision and export propensity. Following Atkinson & Harrison (1997), this thesis proxy *MNCEX* by calculating the ratio of MNCs' export amount in a certain sector to total exports in the same sector. The justification is that, the greater the export amount, the higher the firms' engagement in a foreign market and so does the opportunity for foreign market information leakage. The level of export amount explains how important MNCs are in the host country. It is assumed that the greater their importance in the exports of a given sector, the higher the scope for local firms to benefit from the information externalities. Therefore, positive relationship is expected between information externality and likely hood of local firms' export decision and export propensity.

Competition channel (MNCCP): the greater the concentration of MNCs, the stiff the competition becomes and hence competition level can be captured by the degree of MNCs concentration. Following Greenway et al. (2004), in this thesis, the degree of MNCs presence (concentration) is proxy by the ratio of employees working in foreign firms to total employees in the respective sector level. The justification is that the higher the presentation of export-oriented MNCs, the greater the competition will be. The ultimate effect of competition can be favorable or unfavorable. For example, Aitken and Harrison(1997) underlined that competition may act unfavorably and diminish exports from local firms if exporting MNCs exert such a competitive pressure that they could force local firms to reduce their production and thereby push their average cost curve up. On the other hand, Keshari(2016) highlighted that competition may act favorably if competition from MNCs puts pressure on local firms to utilize their resources in the most efficient manner, innovate products and processes and thereby target more competitive overseas market for selling their products. Consistent to Keshari, under normal circumstance, the relation between the degree of competitions and local firms' export likely hood can be negative or positive.

The Heckman two stages selection models that execute the data in the stated sequence was used. Due to the strong correlation and multicollinearity, each channel variable and its interaction with dependent variables were executed separately in the estimation techniques.

Given the above variables, now let as derive the *model* that enables us to explore the export market spillover from MNCs to local firms.

b) Data and Model Specification

The target populations are those medium and large firms engaged in manufacturing sectors for the last consecutive couples of years. This is because, in Ethiopia, many MNCs with high tech are available in this industry than any other industries and hence to investigate spillover effect, manufacturing industry has been taken as the best sources of data. The manufacturing sectors include local (both private and public firms) and foreign firms. The classification of manufacturing firms into local and foreign affiliates has been made following International Monetary Fund classification. According to IMF suggestion, the significance of MNCs on local firms is high when the foreign investor holds a share of 10% or more of the nominal capital (IMF, 1993) and hence those firms with more than 10% foreign share was treated as MNCs and the rest as local firms.

The data were collected from different strata which have been classified by the international standardization for industrial classification (ISIC) nomenclatures with a minor modification to avoid sector with no foreign presence. While cleaning the data, firm for which researcher cannot calculate key variables due to missing information and sectors which do not have foreign firms has been avoided. After making necessary adjustments, researcher came up with 14 different sectors. Finally, on average, there are about 900 foreign firms and 1300 local firms in each year for the last four consecutive years and therefore a total of 8800 individual medium and large manufacturing firms have been consulted for analysis.

Following Aitken et al (1997) and Kinuthia(2012), the researchers estimated equations for both 'export decision' and 'export propensity' by using data from local firms only. This is logical because since this study examined the impact on local firms, foreign firm data has nothing to do with these specific variables.

Taking into accounts all the above variables, the following *logistic regression models* which respectively measure the effects of MNCs presence on the likely hood of local firms' export decision and export propensity has been derived.

$$EP_{it} = \beta_0 + \beta_1 WAGE_{it} + \beta_2 CI_{it} + \beta_3 \log SIZE_{it} + \beta_4 LP_{it} + \beta_5 MNCEX_{jt} + \beta_6 MNCCP_{jt} + D_t + \varepsilon_i \quad (1)$$

$$EXP_{it} = \beta_0 + \beta_1 WAGE_{it} + \beta_2 CI_{it} + \beta_3 \log SIZE_{it} + \beta_4 MNCEX_{jt} + \beta_5 MNCCP_{jt} + D_t + \nu_i \quad (2)$$

Where, j =sector level, t =time, i =firm level, all variables assume the values as explain above with: $\varepsilon_i \sim N(0,1)$; $v_i \sim N(0, \delta)$ $(\varepsilon, v) \sim N(0,0, \sigma^2_{\varepsilon}, \sigma^2_v, \rho_{\varepsilon v})$ i.e. both ε & v (the error terms) are distributed normally with mean 0, σ^2 as indicated and the error terms are correlated where $\rho_{\varepsilon v}$ represent the correlation coefficient. It means that the two equations are related if $\rho \neq 0$. The error terms are independent of both dependent and explanatory variables. LP is used to discriminate between the two exports equations.

The first equation is estimated for all local firms and it is sound to note that this equation can be estimated within the framework of a binary choice model (taking the value of 1 if local firm exports and 0 otherwise), instead of a linear probability model (LPM). This is because the predicted probability derived from LPM may lie outside the 0-1 region, which is not reasonable in practice.

Interpretation of coefficient was made consistent with previous research works like Aitken et al (1997) and Narjoko(2009). Accordingly, the magnitude of the coefficient obtained is not relevant in the interpretation of the outcomes; rather the sign and significance of the magnitude expressed in likelihood matters more.

1-4. Data analysis and presentations

The executed data have been presented and discussed in the following sections

1-4-1. Spillover effect on Export Decision

Local firms export decision is believed to be influenced by the presence of nearby export-oriented MNCs. In spite the fact that there is plethora evidence of export spillover, the results are inconclusive and hence in this section, the effect of MNCs on the export decision of local firms was examined from the Ethiopian perspective. As discussed above, two channels-*competition and information externalities*- were employed to examine the existence of export spillover. The positive and significant coefficient of these two variables implies the positive effects of MNCs on increasing the likely hood of local firms to join the foreign market and negative coefficient shows the inverse. The following table summarizes the executed data.

Table 4- 1 Competition and information spillover effects on export decision

Variable	Coef.	SE	Coef.	SE
CI	-.0108957*	.0068783	-.02019568***	.0101951
LP	.0042484*	.0025141	.0076778**	.0039256
LogSize	.0004175**	.0001953	.0004959*	.0002681
Wage	.0383035	.0314963	.0731372*	.0448958
<i>MNCMP</i>	-5.159142*	3.021818		
MNCEX			-67.60886***	29.68698
_cons	-.5128896	.5578081	.7889598	.8389189
Year Dummy	Yes		Yes	
wald chi2	60.27			
Prob>chi2	0.0000			

NB: ***, ** & *significant at 1%,5%&10%respectivel

The table summarizes the effect of MNCs on the export decision of local firms' executed using Heckman two stages selection model. Under both columns, the data ensure the validity of the model for making the inference. By the same token, the wald chi2 revealed that 60% of the variability in the decision to export is explained by the variability of the listed explained variables.

In concordance to our expectation, the coefficient of labor productivity, size and labor quality(wage) are positive and significant at different significance level implying that large size local firms having skilled labor with higher labor higher productivity are likely to join the export market. This finding is consistent with industrial organization literature which unmask that older and larger plants are more likely to show higher productivity performance and thus higher exporting activity. For example, as highlighted by Hirsch and Adler (1974), all else equal, larger size firms are in a better position in terms of capability to bear FC and export market operational costs than small size firms and hence likely to join the foreign market.

However, when the coefficient of CI is considered, it is negative and significant at 10% implying that huge fixed cost incurred in the local market most likely discourages the local firms export decision. Consistent to Kinuthia(2012), this shows that local firms have high FC in a local market and this deters them to earmark additional budget to join the foreign market. Likewise consistent with Barrios et al (2003) and Aitken et al (1997), the coefficient of wage is positive indicating that skill is important to become exporter i.e. production for export is considered relatively skill-intensive and results in high wages.

So far as the coefficient of export spillover variable is concerned, contrary to our expectation, information variable become negative and significant at 1% significance level. This is possibly due to poor interaction between local firms and exporting MNCs or the latter have done things behind the closed door. Likewise, the coefficient for the competition is also negative and significant at 10%significance level ratifying that the presence of foreign affiliates most likely discourages local firms' export decision. As suggested by Aitken and Harrison

(1999), competition may plummet export likely hood of local firms if MNCs exert competitive pressure that force local firms to reduce their production and thereby pushing their average cost curve up- results in negative spillover effect. Moreover, as accentuated by Keshari(2016), negative spillover occurrence may also imply that competition from foreign firms does not put pressure on local firms to: utilize resources efficiently, innovate products & processes thereby targeting more competitive overseas market. In either case, the export spillover decision is negatively affected by MNCs.

Generally, with regard to the coefficient of export spillover variables, both competition and information variables becomes negative and statistically significant at 10% and 1% level respectively. Given these facts, we have evidence to reject null hypotheses 3a. Therefore, the finding vindicates that the presence of exporting MNCs' significantly reduce the likelihood of local firms' export decision. This finding is in accord with many previous studies. For example, as underlined by Ruane and Southland (2004), it is likely that exporting foreign firms negatively affect local firms' export decision. Moreover, Narjoko(2009) conducted a study by utilizing data of the Indonesian manufacturing for the census year 1996 and 2006 and concede that the extent of competition arising from the operation of MNEs does not seem arouse local firms' export participation. Likewise, Kinuthia (2012), after examining export spillover in Kenya find negative competition and information externalities corroborating the negative spillover of exporting MNCs on local firms' export decision.

Nonetheless, this finding is in contrast to many researchers like Aitken et.al (1997) and Greenaway et.al (2002) who finds statistically significant information spillovers from exporting activities of multinationals. Moreover, after conducting the investigation on the export decision by taking data from Ghanaian manufacturing industry, Abor et al. (2008) find that the presence of export-oriented MNCs is most likely enhancing local firms' export decision. In the same fashion, this finding is inconsistent with Keshari (2016) who highlighted that market information spillover increase the probability of local firms' export orientations.

1-4-2. Spillover effect on export propensity

In this section, the effects of MNCs on the export propensity of local firms were examined. To assess the impacts of this channel on local firms export propensity, researchers employed the same variables and estimation techniques as did in the above table. But here LP variable was excluded because, as stated by Kinuthia (2012), LP more likely affects the export decision, not export propensity. The following table summarizes the executed data to examine impacts of competition & information externality on local firm's export propensity.

Table 4- 2 Competition and information spillover effects on export propensity

Variable	Coef.	SE	Coef.	SE.
CI2FA	-.0000202	.0001199	-2.69e-06	.0000996
LogSize	5.97e-06***	1.19e-06	4.53e-06***	7.07e-07
Wage	.0036314***	.00123	.004264***	.0010577
LogMNCMP	-.8665291**	.4153953		
LogMNCEX			-.0816215***	.0496538
_cons	-.078138***	.0275837	-.0925768***	.0230157
Year Dummy	Yes		Yes	
wald chi2			44.55	
Pro.>chi2			0.0000	

NB: ***, ** & *significant at 1%, 5% & 10% respectively

As the data in the table corroborate the model as valid and 40% of the variability in the export propensity of local firms is explained by variability in the aforesaid variables.

With regard to capital intensity, similar to export spillover decisions, it becomes negative under both columns. But in this case, the coefficient becomes insignificant indicating that the huge investment in a local market most likely discourages export decision than export propensity i.e. capital likely influence the decision to join foreign market but do not have the significant impact on the amount of export. This is true that, once the exporting firms decide to export and earmarked to cover export-related fixed costs, then CI will most likely lose its power to influence export intensity. When one considers the variables of local firms' size and quality of labor, both assume positive and significant coefficient. This ratifies that the two variables affect not only export decision, but also likely affect the amount of export.

On the other hand, when examining the estimated coefficients of variables representing by the export spillovers i.e. the coefficient of the export spillover proxies by competition and information externalities, it becomes not only negative but also are statistically significant at 5% and 10% significance level respectively. Thus, it is unveiled that competition and information spillover effect from the foreign plants most likely impose challenges on local firms' export propensity.

Under both columns, the coefficients of competition and information externalities on export propensity become negative and statistically significant at 5% and 10% level respectively. Given these facts, there is evidence to reject the null hypothesis 3b. Therefore, it is identified that the presence of exporting foreign affiliates decreases the likely hood of local firms' export propensity. This outcome is consistent with the findings

of many researchers like Keshari (2016) and Kinuthia (2012) who concede that information and competition spillover effect from exporting MNCs to local firms export propensity is negative and significant.

But, contrary to our finding, some researchers' provide evidence about the correlation between presences of foreign export-oriented firms and export trend of local companies. For example, Aitken et.al (1997) conducted a study for manufacturing establishments in Mexico in 1986–1990 and find that export activities of MNEs in a sector have positive effects on the probability local firms' export propensity in the same sector. Moreover, Greenaway et.al (2002) finds that presence of export-oriented MNEs in the sector positively affects local firms' export decisions as well as the choice of export ratio. Likewise, Blake et al (2009) conducted a study in China and find that the soared amount in the export propensity of local firm is the result of export spillovers from MNCs.

Generally, by bringing the evidence under both export decision and export propensity tables stated above, there is strong evidence to reject the third main hypothesis which states that 'The presences of MNCs insignificantly affect the likelihood of local firms' export behavior'. The coefficient of both information externalities and competitions under both export decision and export propensity assume statistically significant negative value and hence the presence of exporting MNCs most likely discourage local firms export decision and export propensity i.e. negative export spillover effect. This is in contradiction to previous studies like Aitken et al (1997), Barrios et al (2003) and Greenaway et al (2004) who suggest that domestic firms can learn to export from the nearby export-oriented MNCs

However, one must take this result with a grain of salts because secondary data do not reflect all necessary information. Moreover, longer time period may require for positive export spillover to results. Often, export spillover initially turned to be negative because of many factors like competition of markets, workers and so on and hence at the latter stage firms' may realize positive spillover. In addition to this, because unavailability of complete data, demonstration effect as the export spillover channels do not included in the examination. Moreover, the export spillover estimation is made proxy which still is prone to estimation error. For example, Narjoko (2009) highlighted that competition and information spillover might exist by mechanisms which are difficult to trace and measure. As he quoted, for example, export market information can be transferred via personal contacts and this is difficult to trace in the secondary data. Thus, it is worth to note that it could not be possible to capture all relevant information from only the secondary data and hence it is a must to cross-tabulate with primary data.

For these reasons, as depicted in the next section, so as to make the finding more robust, the researchers triangulate secondary data finding with the primary data. By and large, the evidence proved that export-oriented MNCs negatively influence Ethiopian local firms' export marketing behavior. However, since there is no previous study for the export spillover in the country, researchers could not be able to make comparisons.

1-5. Conclusion

The export spillover effect unveil that local firms do not get export market related benefited from the presence of nearby export-oriented MNCs but rather their presence most likely discourage local firms export decision and export propensity. To express it succinctly, the evidence ratified that the probability of exporting has decreased with the presence of export-oriented MNCs, thus the presences of MNCs likely wiped out Ethiopian firms from the export market. So it is plain to bold that the increased presence of exporting MNCs likely decrease the export behavior of local firms and hence results in negative export spillover. This is possibly because of different reasons: foreign market information leakage may be prevented and/or local firm's absorptive capacity is so weak and/or MNCs may not have spare capacity and so forth.

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