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The Employment Generating Effects of Exporting: Firm level evidence of Micro, Small and Medium Enterprises (MSMEs) in Ghana

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By

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Abstract

It is a stylized fact that export promotion is a good policy, as exporting firms have been shown to have the potential to employ more workers. This is so because of the hypothesized redistribution of labour from the import-substituting sectors and towards the exporting sectors or the generation of new employment opportunities for unemployed labour, as a country begins to export. While this phenomenon is typical for many advanced economies, some developing countries have not realised this important economic advantage. For some of these developing countries, and as they began to export, the import substituting sectors displaced labour, while the exporting sectors could not absorb the displaced labour nor generate new employment opportunities. Theoretically, this is possible when international trade is analysed within the context of heterogeneous firms and bargaining, trade in tasks (offshoring), labour market frictions and incomplete contracts. Using a firm level survey of micro, small and medium Enterprises (MSMEs) in Ghana between 2013 and 2015, this paper attempts to answer the question of what the employment generating effects of exporting are for manufacturing MSMEs in Ghana and what could likely be an explanation.

Contents

1. Introduction

The employment generating effect of exporting is a very important political and economic issue for many developing countries. This is especially so for countries that believe exporting is a good for firm growth and exporters are 'good firms'; thus helping domestic firms export is certainly a good policy (Bernard and Jensen, 2004). Indeed, there is a large empirical evidence suggesting exporting firms differ substantially from firms that serve the domestic market because of the advantages that come with exporting (Bernard, Jensen, Redding and Schott, 2007 and Brambilla, Chauvin and Porto, 2014). Accordingly, across different countries and industries, exporters have been shown to employ more labour, are more productive, skill- and capital-intensive and pay higher wages than their counterpart non-exporting firms (Brambilla, Chauvin and Porto, 2014).

Indeed, these findings agree with the available theoretical literature in international trade. The literature has emphasized the important role exports play in affecting the efficiency, productivity and employment generating potentials of firms that serve the international market (Bernard and Jensen, 1997; Clerides, Lach and Tybout, 1998 and Alvarez and Lopez, 2005). Particularly for employment, the literature has emphasized a possible reallocation of labour away from the import substituting sectors and towards the exporting sectors or the total generation of new employment opportunities for unemployed labour in the export sectors (Myint, 1958; Brecher, 1974; Grubel and Lloyd, 1975; Mussa, 1978; and Bernard, Jensen, Redding and Schott, 2007). Unfortunately, evidence from the available empirical literature do not seem to support these theoretical conclusions wholly, as both positive and negative employment effects have been found (Armah, 1993; Edwards, 2004; Fu and Balsubramanyam, 2005; Nicita, 2005; Soderbom, 2004; Were, 2007; and Lichter, Peichl and Siegloch, 2013). Possible explanations for the negative employment effects are usually drawn from the labour market theory of efficiency wages as well as other labour market imperfections and their concomitant effect on downsizing (Melitz, 2003; Egger and Kreickemeier, 2009; Davis and Harrigan, 2007; and Helpman, Istkhoki and Redding, 2010).

This paper adds to the empirical literature on the employment effect of exporting by focusing on manufacturing micro, small and medium sized enterprises (MSMEs) in Ghana. Following the

literature, an attempt is made to examine this effect by addressing econometric problems like bias, inconsistent estimates, heterogeneity effects as well as endogeneity. Results from the estimation suggest the employment generating effect of exporting is positive, implying exporting firms in Ghana are large firms that employ more than those that serve only the domestic market. A possible channel through which this positive employment effect could be explained is through the utilization of unskilled labour and the use of imported inputs. More importantly, unskilled labour is relatively abundant in the country and it has been shown in the theoretical literature that exporting firms are better able to overcome the substantial costs involved with imported inputs, relative to their counterparts that serve only the domestic market.

These findings fill an important gap in the developing country literature. Particularly for Ghana, knowing the employment effects of exporting is crucial in facilitating a better understanding of the necessary policies that could reverse the decline in both the growth of the manufacturing sector as well as its job prospects. As suggested by Ackah, Adjasi and Turkson (2014) and Aryeetey and Baah-Boateng (2015), growth in the sector is declining, together with its employment generating potentials. In a different spectrum, this study provides an understanding of how the labour market of the manufacturing sector in Ghana adjusts to trade and more importantly, exporting.

The outline of the rest of the paper is as follows. Section 2 discusses some theoretical and empirical literature on the employment generating effects of exporting. The econometric model estimated is presented in section 3. The econometric results are presented in section 4. Finally, section 5 draws some conclusions from the econometric results presented.

2. Literature Review

2.1.Theoretical Models

Until the late 1990s, the main theoretical explanations for the employment generating effects of exporting have been dominated by accounts from the comparative advantage models of Ricardo and Heckscher-Ohlin-Samuelson (Bernard *et al.* 2007). More recently, the focus is on the new theories that focused on trade within the setting of heterogeneous firms and bargaining, trade in

tasks, labour market frictions and incomplete contracts (see for instance papers by Melitz, 2003; Egger and Kreickemeier, 2009; Davis and Harrigan, 2007; and Helpman, Istkhoki and Redding, 2010). In summary, both positive and negative employment effects have been hypothesized, with the former more dominant. The following paragraphs summarizes each of these explanations.

In the comparative advantage models of Ricardo and Heckscher-Ohlin-Samuelson, free trade as opposed to the mercantilist policies of protectionism, was seen as the route to achieving global efficiency. It was believed that by removing constraints on the domestic market, export growth induces demand for new or existing products, creates conditions for maximizing economies of scale and facilitates the adoption of new techniques of production. This export growth could be driven by productivity differences or relative autarky price differences (as in the Ricardian comparative advantage model) or because of a combination of cross-industry differences in factor intensity or cross-country differences in factor abundance (as in the Heckscher-Ohlin-Samuelson comparative advantage model) (Bernard *et al.* 2007). In either case, firms in the exporting sector are expected to expand production when they begin to trade, while those in the alternative import-substituting sector are expected to contract; *ceteris paribus*, employment in the former increases, while that of the latter decreases (Bernard *et al.* 2007). Therefore, trade results in the reshuffling of employment away from the import-substituting sector and towards the exporting sector.

Unfortunately, the comparative advantage models of Ricardo and Heckscher-Ohlin-Samuelson are unable to make precise conclusions about the net effects of trade on employment. This is mostly because of their assumption of full employment and the absence of adjustment costs (Mussa, 1978). The theories are also unable to explain the pattern of international trade that takes place between relatively similar trading partners, within same industries or sectors, or in products that are either vertically or horizontally differentiated. As explained by Grubel and Lloyd (1975), a large share of recent (post World War II) international trade is shown to follow such pattern.

What some theorists did to overcome some of the criticisms in the comparative advantage models of Ricardo and Heckscher-Ohlin-Samuelson was to make their assumptions more

realistic. A typical example is the vent for surplus theory by Myint (1958) (an advancement of Smith's theory), in which an attempt is made to explain trade within the context of underdeveloped countries. Myint (1958) assumed the existence of surplus productive capacity and an inelastic domestic demand for goods produced domestically; features that characterises many underdeveloped countries. The model makes very useful predictions about the employment generating effect of exporting. The model predicts that international trade activates dormant or idle resources and widens the market for such countries thereby accounting for a positive employment effect. Fu and Balasubramanyam (2011) cite very important differences between the vent for surplus theory and the Heckscher-Ohlin-Samuelson comparative advantage model. They point to the relevance of the model, over the Heckscher-Ohlin-Samuelson model, in the absence of an effective pricing system, its emphasis on increased production through the deployment of existing unused resources and the inflow of foreign capital (FDI) to complement domestic production.

Conversely, others relaxed the full employment assumption by hypothesizing that some domestic or labour market policies could hamper the labour adjustment process (Janson and Lee, 2007 and Brecher, 1974). For instance, Janson and Lee (2007) suggested that in economies where labour supply is highly elastic and largely latent (especially in the rural areas) trade could lead to an increase in employment. In addition, it is suggested that for many of these countries, where minimum wages are enforced, exporting reduces the demand for workers in the import competing sectors, thereby increasing unemployment in the import competing firms (Brecher, 1974). This is because wages in the exporting sector will be high and will attract more workers.

Recently, international trade theorists have relied on trade within the setting of heterogeneous firms and bargaining, trade in tasks (offshoring), labour market frictions and incomplete contracts to explain the employment generating effect of exporting. It needs to be emphasized that these recent models mostly emerged in response to several empirical predictions that were at odds with explanations from the earlier trade models as well as their numerous revisions and extensions. These new models incorporate a combination of economies of scale and consumer preferences for variety that lead otherwise identical firms to specialize in distinct horizontal

varieties, spurring two-way or intra-industry trade between countries (Bernard, *et al.*, 2007). These theories also offer very useful insights about the employment generating effect of exporting.

For instance, regarding the models that incorporate heterogeneous firms and bargaining, the starting point is the paper by Melitz (2003). There have been several other important extensions by Egger and Kreickemeier (2009), Davis and Harrigan (2007) and Helpman, Istkhoki and Redding (2010). The heterogeneous firms model by Melitz (2003) emphasize that exposure to international trade will induce only the more productive firms to enter the export market (since such entry involves sunk costs and higher per unit cost) and simultaneously force the least productive firms, which are more likely to produce only for the domestic market, to exit. The model shows that the continuous exit of the least productive firms and the additional export sales gained by the more productive firms reallocate resources from the least productive firms to the more productive firms. Therefore the productive firms, who are self-selected as exporters, are more likely to employ more labour. The model concludes by suggesting trade enhances the employment opportunities of exporting firms, while contributing to the downsizing of import substituting firms.

Egger and Kreickemeier's (2009) addition was to incorporate fair wages (as in Akerlof and Yellen, 1990), into the model by Melitz (2003). They showed that exporting generates equilibrium unemployment in conditions of excess labour supply, since employers have no incentive to lower the wages of their employees for the fear of reducing worker effort and the fact that workers may feel entitled to a higher income from the large profits being made by the firm. Davis and Harrigan (2007) merged the Melitz model with the conventional monitoring approach to efficiency wages by Shapiro and Stiglitz (1984) and also came to a similar conclusion by showing that trade eliminates the good jobs that pay higher wages because of high (marginal) production cost. Finally, Helpman, Istkhoki and Redding (2010) added search frictions, bargaining between workers and employees, idiosyncratic match quality and employer testing elements to the Melitz model to identify the most productive workers. Unemployment in the model is affected by two factors. First, worker screening is assumed more intensive in the

model and this reduces the hiring rate of workers being matched. Second, the probability of being matched increases if expected worker incomes increase. The overall employment effect is ambiguous.

For the models that emphasize trade in tasks (offshoring), Grossman and Rossi-Hansberg (2008) explored the implications of trade in tasks (as done by Feenstra and Hanson, 1996). In the model, trade in tasks was explained by assuming a single firm that produces by employing skilled and unskilled workers to perform a continuum of tasks, which can be ranked based on skill intensity. It was further assumed that the firm produces in two countries: one having abundant supply of skilled workers and the other unskilled workers. They then argued that since skilled workers are relatively inexpensive in the skill-rich country, the firm could allocate tasks that are more skill-intensive to the skill-rich nation and outsource the other tasks to the skill-poor country. The basic conclusion from the model is that trade in tasks (offshoring) provides firms with the opportunity to expand or enhance the labour demand for the inexpensive factor because of the augmented profitability associated with offshoring. This enhancement of labour demand process is predicted to even fall on local workers who perform tasks that cannot be easily offshored.

Lastly, for the models that emphasize contracts, an earlier exploration is the work of Matusz (1985), who incorporated a simple version of implicit contract (voluntary, self-enforcing or non-binding commitments) into a Heckscher-Ohlin model. Matusz (1986) showed that sticky wages and unemployment are the outcomes of an implicit agreement entered into by risk-averse workers and risk neutral firms. Matusz (1986) showed that a movement towards free trade or a change in terms of trade may induce long run shifts in the labour force between sectors characterised by high employment security and those characterised by low employment security, with aggregate unemployment high in sectors exhibiting high unemployment (sector experiencing a fall in relative product price) and vice versa. Matusz (1986) also showed that a move towards free trade or improvements in terms of trade can change contractual relationships, making employment security generally poor. In this latter case, any decline in employment security is more than compensated by an increase in wages. Similarly, for labour abundant

countries, this situation could lead to a fall in wages which will be more than compensated by an increase in employment security.

2.2.Empirical Literature

Empirically, very few studies examine the employment generating effects of exporting within the context of developing countries. The current literature is dominated by developed country studies with the conclusions largely depending on the data used: i.e. whether firm level or industry datasets. The following paragraphs summarizes a few of the studies that used firm level datasets and those that can be found for Sub-Saharan Africa but did not necessarily use firm data.

Lichter, Peichl and Siegloch (2013) analysed the effect of exporting on firms' labour demand using an administratively linked employer-employee panel data for Germany from 1996 to 2008. The theoretical underpinning of the study was derived from the long-standing Hicks-Marshall laws of derived demand, where international trade is postulated to increase competition as well as the price elasticity of product demand for exporting firms, thereby suggesting a more elastic demand for labour. Their results provide evidence of a positive employment generating effect of exporting. They further demonstrated that exporting had a positive and significant effect on the own-wage elasticity of unconditional labour demand, due to higher price elasticities of product demand.

Fu and Balsubramanyam (2005) used a panel data of 29 provinces in China, between 1987 and 1998, to examine the effects of exporting on labour demand by Township and Village Enterprises (TVEs). The paper was analysed within the context of the Smith-Myint 'vent for surplus' theoretical model. Empirical results from the model suggest that, assisted by foreign direct investments and TVEs, exports have successfully provided an effective vent for the surplus productive capacity and labour. In particular, they find a statistically significant positive effect of exporting on employment, as a 1 percent increase in exports was found to increase employment by 0.17 present. They also found that export expansion in labour intensive manufacturing industries has promoted the growth of industrial output and the transfer of large volumes of surplus labour from the agricultural sector to the non-agricultural sector.

Edwards (2004) used two firm level surveys, the National Enterprise (NE) survey and the Greater Johannesburg Metropolitan Area (GJMA) survey, to explore the implications of globalization for employment in South Africa. Using cross tabulations and estimating a labour demand equation, he found rising import penetration to negatively affect employment in large firms, but not small firms. Relatively large declines in employment also occurred within export firms, despite improvements in export competitiveness and export growth through trade liberalization.

Nicita (2005) used household level data to examine the distributional effects of employment change caused by trade in Madagascar's textile and apparel industry. Empirical results from the study suggested that the textile and apparel industry provided a viable means for the living standards of poor households through the creation of employment and increases in wages. In addition, they found that an increase in exports increased employment at a rate of more than 20 percent in the late 1990s. Nicita (2005) also found an average earning premium of about 40 percent for workers in the textile and apparel industry, especially when compared to other workers in the informal economy. More importantly, strong variations in the distribution of the benefits from export growth was found and this favoured the skilled and urban sector workers. This was because most poor household do not have the required skills to be employed in the export sector and reside in rural areas where the employment effect was minimal.

Were (2007) investigated the impact of trade, i.e. export orientation, on employment outcomes in Kenya's manufacturing sector using firm level data collected under the auspices of the World Bank. The analysis showed that export-oriented firms on the average employed more workers, relative to non-exporting firms, although the gap has narrowed over time; the share of employees in exporting firms in total employment declined by over 20 percent between the early 1990s and 2003. The results further showed that exporting did not significantly influence the proportion of casual workers employed by firms; although by virtue of size, export-oriented firms employed more causal and part time workers than non-exporting ones.

For the case of Ghana, no substantive works could be found except for the papers by Armah (1993) and Soderbom (2004) that made conclusion about the employment generating effect of exporting using other methodologies which are not based on the estimation of firm demand for labour. For instance, Armah (1993) used a historical comparative approach and disaggregated employment by sector to show that employment growth was persistently higher in export oriented sectors relative to sectors favouring import substitution.

3. Methodology

3.1.The Model

To examine the relationship between exporting and employment, the derived labour demand function as suggested by Currie and Harrison (1997), Milner and Wright (1998) and Greenway, Hine and Wright (1999) is used. Following standard practice in the literature and mostly for the developing world, this derived labour demand equation is obtained from a Cobb-Douglas production function (see for instance, Söderbom and Teal, 2004; Mengistae and Pattillo (2004); Bigsten et al., 2000; Bigsten, Collier, Dercon, Fafchamps, Gauthier, Gunning and Teal, 2004). For instance, the use of this production function has been shown by Söderbom and Teal (2004) to adequately represent production technologies in Africa. More importantly, the empirical specification of the derived labour demand function used in this paper is as follows:

$$InN_{it} = \theta_0 + \theta_1 In(w_{it}) + \theta_2 InEMS_{it} + \theta_3 InQ_{it} + \theta_4 InX_{it} + \varepsilon_{it} \quad (1)$$

where N_{it} is the units of labour utilised by firm *i* at time *t*, w_{it} is the average total wages by firm *i* at time *t*, Q_{it} is the total sales by firm *i* at time *t* and X_{it} is a set of control variables including union density as well as other firm fixed effects.

Following the existing empirical literature, it is expected that the employment generating effect of exporting will be positive for the case of manufacturing MSMEs in Ghana, since the export market can reasonably be expected to provide a means of employment for the large unskilled labour currently available. For the other key explanatory variables, it is expected that the theories that explain the export-employment link through the inflow of foreign capital would be

influential, since most of these resources needed by the manufacturing firms cannot be sourced locally.

3.2.Estimation Methods

Various estimation methods for the empirical model in Section 3.1 have been proposed to deal with likely econometric problems such as bias, inconsistent estimates, heterogeneity effects and endogeneity (see for instance the works of Currie and Harrison, 1997; Milner and Wright, 1998; and Greenway, Hine and Wright, 1999). For instance, export market status is likely to be endogenous and can as well be determined by the size of the firm and other factors. There are several studies that found the size of a firm to be an important determinant of exporting (see for instance, Söderbom and Teal, 2000, Bigsten et al., 2004 and Rankin, Söderbom and Teal, 2006). More importantly, the model could be made dynamic to deal with heterogeneity effects such as the presence of firm bargaining conditions, technological shocks and employment adjustment.

In this study, these econometric problems are dealt with by adopting the Hausman Taylor estimator (see Hausman and Taylor, 1981) and a variant of Heckman's selection model that allows the estimation of average treatment effects (and other parameters) of an outcome equation augmented with an endogenous binary treatment model (see Cerulli, 2014 & Stata, 2013). Particularly, the Hausman Taylor estimator allows the estimation of the impact of time invariant variables and tackles endogeneity concerns by using the following instruments: (a) deviations from group means of the time-varying exogenous variables, (b) deviations from group means of the time-varying endogenous variables, (c) means of the time-varying exogenous variables and (d) the time invariant variables (see Hausman and Taylor, 1981; and Dixit and Pal, 2010). The first two serve as instruments of the time varying endogenous variables and the last two for the time-invariant endogenous variables. Conversely, the variant of Heckman's selection model is derived from the argument by Wooldridge (2010) that the proper instruments are those derived from an endogenous binary treatment model that could be estimated, for instance from a probit model. This requires a two-step approach where predicted values of the binary treatment model are incorporated into the outcome equation under the assumption of joint normality of errors and the causal effects being similar in the treated and untreated units. In this paper, an export

equation is therefore estimated with conventional export decision factors such as firm size, productivity, location, export destination as well as other firm level factors and used as the endogenous binary treatment model (see Söderbom and Teal, 2000 and Söderbom, 2001). This approach also corrects for any selectivity bias that may be encountered. A third possibility exists where the outcome equation is differenced to eliminate firm fixed effects as well as any other unobserved factors.

3.3.Data

The data used for the estimation was part of a survey conducted in Ghana by the r4d project team of the University of Ghana and sponsored by the Swiss Programme for Research on Global Issues for Development. The survey was in two phases: the first phase was over a period of 3 months in 2015, by means of computer-assisted personal interviewing, and the second was in 2016, by means of a paper based questionnaire that focused exclusively on exporting. Altogether, the survey solicited data for 2013, 2014 and 2015 from business owners or managers of micro, small and medium enterprises registered with the Association of Ghana Industries (AGI) and the National Board for Small-scale Industries (NBSSI). Firms registered with these institutions were used because of the absence of a more recent industrial census of enterprises registered in Ghana.

A total of 600 firms were initially selected based on a stratified random sample across industry, size and location. Out of this, valid responses were obtained for 428 (i.e. 71% of 600) for the first phase. The second phase relied exclusively on the firms that participated in the first phase of the survey. For the second phase, information was obtained from 370 (62% of 600) firms. This sample corresponds very well to the structure of firms registered with both the AGI and NBSSI, as more than 70% were small-scaled with very few large firms. This paper uses only information on manufacturing firms for the estimation. Table 1 presents some information on the number of manufacturing firms surveyed as well as the proportion that were exporters.

Table 1: Exporting by Ghanaian Manufacturing Firms (2013 – 2015)

	Total Number of Manufacturing Firms		Exporting Manufacturing Firms	
	Frequency	Percentage	Frequency	Percentage
Food	375	35.51	49	30.63
Textiles	36	3.41	11	6.88
Garments	132	12.5	11	6.88
Leather	21	1.99	2	1.25
Wood	48	4.55	13	8.13
Paper	9	0.85	5	3.13
Publishing, printing and Recorded Media	54	5.11	0	0
Refined Petroleum Product	3	0.28	0	0
Chemicals	141	13.35	23	14.38
Plastics and Rubber	36	3.41	10	6.25
Non-Metallic Mineral Products	30	2.84	0	0
Basic Metals	48	4.55	14	8.75
Fabricated Metal Products	63	5.97	12	7.5
Machinery and Equipment	18	1.7	5	3.13
Office, Accounting and Computing	3	0.28	3	1.88
Electrical Machinery and Apparatus	6	0.57	0	0
Medical, Precision and Optical Instruments	3	0.28	0	0
Other Transport Equipment	9	0.85	2	1.25
Furniture	21	1.99	0	0
Total	1,056	100	160	100

Two things are noticeable from the table. First, few manufacturing firms are exporting (15%). Second, the distribution of the proportion of exporting manufacturing firms favour goods in industries such as agriculture, forestry and mining (primary products). These findings are not too different from what exists in the literature about Ghana. For instance, Söderbom (2001), found Ghanaian manufacturing exportable to be dominated mainly by wood. In addition, Wood and Berge (1997) and Wood and Mayer (1998) have long predicted that most African manufactures will be dominated by such goods because of abundant unskilled labor on the continent.

The variables used in the regression analysis are defined in the appendix and their summary statistics are provided in Table 2. In total, 15 percent of firms in the sample have ever exported

between 2013 and 2015. The average log of employment and wages were respectively 2.7 and 10.4. In addition, the log of sales was 11.8 and that of the log of firm age was 2.7. Comparatively, these proportions were higher in exporting firms relative to non-exporting firms. For instances, the log of employments was 3.8 for exporters and 2.4 for non-exporters, suggesting exporting firms are large. In addition, exporting firms had more foreign presence, employed high-valued assets and have their workers more unionised than non-exporting firms (see Table 2).

Table 2: Summary Statistics of Main Variables

Variable	All		Exporters		Non-Exporters	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Log of Employment	2.661	1.540	3.764	1.586	2.448	1.438
Log of Wages	10.375	2.174	11.612	1.856	10.130	2.150
Log of Sales	11.886	2.919	14.117	3.016	11.415	2.671
Log of Firm Age	2.557	0.920	2.813	0.699	2.509	0.948
FDI	0.145	0.352	0.281	0.451	0.121	0.326
Log of Assets	6.249	5.493	7.130	6.271	6.092	5.331
Union Density	0.190	0.393	0.363	0.482	0.160	0.366
Export Dummy	0.152	0.359	-	-	-	-
Export Intensity	0.052	0.174	0.346	0.314	0	0

4. Empirical Results

4.1. Regression Results

Table 3 reports the estimated results of the employment effect of exporting at the extensive margin (i.e. using export dummy as the export variable). The first column reports the findings based on the random effects estimator. In that specification, the employment generating effect of exporting was found to be positive and statistically significant, suggesting exporting increasing the employment of manufacturing MSMEs in Ghana by approximately 25%. When the fixed effects estimator is used, the magnitude in the change in employment is approximately the same. In the other specifications where econometric problems like bias, inconsistent estimates, endogeneity and heterogeneity effects are addressed (i.e. the Hausman Taylor, differenced and treatment effects models), this positive sign is maintained and again statistically significant, though the extent of the change in employment is different. For instance, the percentage change

in employment is smaller in the Hausman Taylor equation as well as the differenced model (15%) while it is larger in the treatment effects model (more than 100%). These findings of a positive employment effect of exporting is similar to what is found in the literature for most exporting firms (see Armah, 1993; Baah-Nuakoh et al., 1996; Bigsten et al., 1999; Soderbom, 2004; Fu and Balsubramanyam, 2005; Nicita, 2005; Were, 2007; Sarpong and Wolf, 2008; and Lichter, Peichl and Siegloch, 2013). More importantly, this finding is intuitive as there is abundant labour in the country; something exporting firms can easily take advantage of to meet the expectations of the export market.

Table 3: Exporting and Employment: Extensive Margin

VARIABLES	Random Effects	Fixed Effects (LSDV)	Hausman Taylor	Differenced Model	Treatment Effects Model
Log of Wages	0.185***	0.194***	0.119***	0.117***	0.196***
	(0.021)	(0.024)	(0.024)	(0.025)	(0.000)
Log of Sales	0.168***	0.249***	0.025	0.020	0.176
	(0.019)	(0.019)	(0.024)	(0.025)	(0.000)
Log of Firm Age	0.152***	0.092***	0.252***	0.283	0.065
	(0.049)	(0.036)	(0.064)	(0.188)	(0.142)
Log of Assets	0.022***	0.019***	0.031***	-	0.021***
	(0.008)	(0.006)	(0.011)		(0.003)
Union Density	0.279**	0.136	0.437**	-	-0.026
	(0.129)	(0.088)	(0.173)		(0.782)
FDI	0.592***	0.317***	1.111***	-	0.180
	(0.162)	(0.118)	(0.220)		(0.124)
Export Dummy	0.225***	0.230***	0.144*	0.151*	1.86***
	(0.078)	(0.084)	(0.087)	(0.090)	(0.000)
Sector	Yes	Yes	Yes	-	Yes
Time	Yes	Yes	Yes	Yes	Yes
Constant	-1.718***	-2.482***	0.131	-0.098***	-1.873***
	(0.219)	(0.189)	(0.315)	(0.035)	(0.000)
Lambda	-	-	-	-	-3.103***
					(0.000)
Observations	742	742	742	423	697

Note: In the Hausman Taylor estimator, exporting, wages and sales were specified as endogenous variables; Results of the probit estimation that accompanied the Selection model are presented in the Appendix; Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

The other significant variables in Table 3 are the log of wages, sales, firm age, assets and union density. It however needs to be indicated that not all these variables consistently remain

significant in all the specifications. For instance, the log of sales is statistically significant only in the random effects estimator. Conversely, the log of firm age is insignificant in the selection model. This notwithstanding, all the variables that are statistically significant, positively affect the log of employments. While these signs can easily be explained by economic theory, that of the log of wages cannot, since it is postulated to be negative in the economic literature (see Hamermesh, 1993). However, a possible explanation for the positive effect could be the reason given by Teal (1995) and Gyan-Baffour, Betsey, Tutu and Boateng (2001). They found a positive wage effect on the demand for labour in Ghana and associated it with firm-level fixed effects, where many large firms (including those owned by multinationals with capital intensive technologies that makes them more cost effective and productive) were found to be paying higher wages. A similar effect was underplay in this study as a larger share of high skilled workers with higher wages were found to work in bigger firms that also employ a lot more capital intensive technologies.

The findings of a positive effect of sales, firm age, asset, union density and FDI are also intuitive. An increase in sales provides an opportunity for firms to make more profits and this allows them to employ more. For firm age, older firms are able to employ more workers because of the advantages of long term economies of scale. Regarding assets, the literature has emphasized that firms that are experiencing an increase in their sales are more likely to expand their capital intensive base (see Söderbom and Teal, 2000 and Söderbom, 2001), and this allows them to employ more workers to meet the increased demand for their products. For unions, there is a suggestion that unions exist to safeguard the employment of their members and ensure that they obtain at least fair wages (Oswald, 1982). Therefore, unionized firms are more likely to safeguard worker employment positions. Lastly for FDI, the positive effect is intuitive since FDI is associated with superior technology and resources and this allows firms with foreign presence to increase their productivity as well as efficiency, and are able to employ more workers.

The robustness of the results presented in Table 3 was checked by estimating the employment effect of exporting at the intensive margin (i.e. using export intensity as the export variable). The results largely remained the same (see Table 4). For instance, the employment generating effect

of exporting was estimated to be slightly larger (between 32% and 37%) both for the random effects and fixed effects estimator respectively. For the Hausman Taylor estimator, the effect was 40%. No statistically significant results could be inferred from the differenced model. Conversely, the treatment effects model was not estimated as it required exporting to be a dummy variable. In addition, the signs and magnitudes for the rest of the variables remained approximately the same.

Table 4: Exporting and Employment: Intensive Margin

VARIABLES	Random Effects	Fixed Effects (LSDV)	Hausman Taylor	Differenced Model
Log of Wages	0.182***	0.191***	0.127***	0.114***
	(0.021)	(0.024)	(0.023)	(0.025)
Log of Sales	0.173***	0.254***	0.035	0.022
	(0.019)	(0.019)	(0.024)	(0.025)
Log of Firm Age	0.159***	0.098***	0.251***	0.294
	(0.049)	(0.036)	(0.064)	(0.188)
Log of Assets	0.022***	0.019***	0.030***	0.000
	(0.008)	(0.006)	(0.011)	(0.000)
Union Density	0.272**	0.128	0.418**	0.000
	(0.129)	(0.088)	(0.173)	(0.000)
FDI	0.609***	0.337***	1.093***	0.000
	(0.162)	(0.119)	(0.218)	(0.000)
Export Intensity	0.324**	0.374**	0.404**	0.058
	(0.160)	(0.165)	(0.166)	(0.202)
Sector				
Time				
Constant	-1.752***	-2.513***	-0.043	-0.099***
	(0.219)	(0.188)	(0.308)	(0.035)
Observations	742	742	742	423

Note: In the Hausman Taylor estimator, wages and sales were specified as endogenous variables; Results of the probit estimation that accompanied the Selection model are presented in the Appendix; Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

In Table 5, some measures that explain the export-employment relationship are introduced, separately initially, and later interacted with the export status of a firm to examine the differential impact of these measures in the employment-export link. This will assist in identifying which theoretical explanation best suits the link between exporting and employment in Ghana. In equation (1) of Table 5, where the proportion of skilled workers is introduced, a statistically

significant negative correlation is found suggesting firms that have more skilled workers are relatively small. In equation (2), differences can be found in the magnitudes of this coefficient with that of non-exporting firms appearing larger. This implies the negative correlation of the proportion of skilled workers with employment is higher for non-exporting firms than exporting firms. Conversely, a positive correlation of the proportion of unskilled workers with employment which favours non-exporting firms is tenable, since the sum of the two skill set sums to unity.

In equations (3-6) of Table 5, the proportions of production workers and innovation (composite index of process and product innovation) are included respectively. No statistically significant results were obtained for these variables. A similar insignificant result (not presented in the work) was obtained when process innovation and product innovation were used separately. It is however important to mention that in all the specifications in Table 5, the export measure (obtained from the probit estimation) remains statistically significant and positive.

Table 6 presents the results with the inclusion of productivity and the percentage of the imported inputs out of total inputs. Some statistically significant results are obtained for productivity and the percentage of the main imported inputs out of total inputs used. Two measures of productivity are used: the log of sales per worker and the log of value added per worker. In both cases, productivity was found to be negatively related to employment, with the effect found to be higher for exporting firms relative to non-exporting firms. First, this finding could be due to the earlier finding that exporting firms are more productive and pay higher wage premiums; therefore exporting firms are inclined to keep smaller firm sizes to continue to remain productive. Second, it could be because exporting firms are more technologically sophisticated relative to non-exporting firms and therefore do not need more labour to remain productive. This finding is not very different from what Gretton and Fisher (1997) and Barnes, Johnson, Kulys and Hook (1999) found for Australia. Lastly, the percentage of the main imported input was found to be positive and statistically significantly correlated to employment when used separately. When it was interacted with the export dummy, it was significant only for exporters and insignificant for non-exporters. This implies that intermediate input use has a positive effect on firm size only for exporting firms. This, to a large extent, agrees with the theoretical literature

discussed by Brambilla *et al* (2014). The point to note is that such inputs cannot easily be locally sourced to meet the export market. Therefore, they have to be imported and this does not crowd out employment.

Table 5: Exporting and Employment: Heterogeneous Labour and Innovation

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Log of Wages	0.185***	0.185***	0.197***	0.197***	0.197***	0.197***
	(0.025)	(0.025)	(0.026)	(0.026)	(0.026)	(0.026)
Log of Sales	0.197***	0.197***	0.176***	0.176***	0.176***	0.176***
	(0.024)	(0.024)	(0.026)	(0.026)	(0.026)	(0.026)
Log of Firm Age	0.066	0.066	0.065	0.065	0.065	0.065
	(0.042)	(0.042)	(0.045)	(0.045)	(0.045)	(0.045)
Log of Assets	0.021***	0.021***	0.021***	0.021***	0.021***	0.021***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Union Density	0.036	0.036	-0.026	-0.026	-0.026	-0.028
	(0.090)	(0.090)	(0.095)	(0.095)	(0.095)	(0.095)
FDI	0.198*	0.198*	0.179	0.180	0.180	0.179
	(0.111)	(0.111)	(0.117)	(0.117)	(0.117)	(0.118)
Proportion of Skilled Workers	-0.455***					
	(0.080)					
Not Exporting		-0.457***				
		(0.088)				
Exporting		-0.440***				
		(0.162)				
Proportion of Production Workers*			0.029			
			(0.116)			
Not Exporting				0.031		
				(0.125)		
Exporting				0.014		
				(0.230)		
Innovation*					-0.007	
					(0.105)	
Not Exporting						-0.020
						(0.113)
Exporting						0.063
						(0.181)
Export Dummy	1.679***	1.670***	1.861***	1.872***	1.862***	1.801***
	(0.270)	(0.284)	(0.284)	(0.328)	(0.284)	(0.315)
Lambda	-0.936***	-0.937***	-1.048***	-1.047***	-1.048***	-1.054***
	(0.154)	(0.154)	(0.162)	(0.162)	(0.162)	(0.163)
Observations	697	697	697	697	697	697

Note: Results presented here are for only the selection model. Results of the probit estimation that accompanied the selection model are presented in the Appendix; Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 6: Exporting and Employment: Productivity and Imported Input Use

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Log of Wages	0.392***	0.384***	0.380***	0.373***	0.194***	0.196***
	(0.030)	(0.032)	(0.031)	(0.033)	(0.026)	(0.026)
Log of Sales					0.178***	0.179***
					(0.025)	(0.025)
Log of Firm Age	0.077	0.070	0.068	0.060	0.068	0.069
	(0.058)	(0.061)	(0.060)	(0.063)	(0.044)	(0.044)
Log of Assets	0.017*	0.016	0.018*	0.018*	0.019***	0.019***
	(0.009)	(0.010)	(0.010)	(0.010)	(0.007)	(0.007)
Union Density	-0.239*	-0.234*	-0.201	-0.198	-0.036	-0.036
	(0.123)	(0.129)	(0.127)	(0.133)	(0.094)	(0.093)
FDI	0.511***	0.490***	0.464***	0.444***	0.168	0.175
	(0.151)	(0.159)	(0.157)	(0.166)	(0.116)	(0.116)
Log of Sales Per Worker*	-0.179***					
	(0.035)					
Not Exporting		-0.159***				
		(0.038)				
Exporting		-0.272***				
		(0.058)				
Log of Value Added per Worker*			-0.190***			
			(0.036)			
Not Exporting				-0.178***		
				(0.038)		
Exporting				-0.271***		
				(0.064)		
Proportion of Main Imported Inputs*					0.002**	
					(0.001)	
Not Exporting						0.001
						(0.001)
Exporting						0.003***
						(0.001)
Export Dummy	3.083***	4.417***	3.157***	4.302***	1.828***	1.722***
	(0.333)	(0.755)	(0.356)	(0.849)	(0.281)	(0.289)
Lambda	-1.743***	-1.867***	-1.774***	-1.905***	-1.025***	-1.012***
	(0.190)	(0.212)	(0.202)	(0.234)	(0.160)	(0.159)
Observations	697	697	659	659	697	697

Note: Innovation is defined here as a composite measure of both process and product innovation. Results of the probit estimation that accompanied the Selection model are presented in the Appendix; Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

In summary, the findings of these study suggest that the employment generating effect of exporting is positive for manufacturing MSMEs in Ghana and the result is robust in different specifications. The results also seem to agree with the theoretical literature that explains the export employment linkage by focusing on the use of unskilled abundant and imported inputs. It was found that the proportion of skilled workers and productivity are related to the downsizing of firms, regardless of the export status of a firm, with the effects stronger for non-exporting than exporting firms.

5. Conclusion

This study examined the employment generating effects of exporting by manufacturing MSMEs in Ghana. It is a topical policy issue for many developing countries for a number of reasons. First, it contributes to a better understanding of the important role of exporting for manufacturing firms, and especially with their employment's. Second, it facilitates a better understanding of how the longstanding problem of unemployment could be solved. Consequently, this motivates the need to understand this relationship at the firm level to inform policy.

The main findings of the paper can be summarized as follows. The employment generating effect of exporting is found to be positive, suggesting exporting firms are larger firms. This positive effect could be explained by the abundant unskilled workers currently available and the use of imported inputs by exporting firms. Finally, it was established that firms that are likely to export have higher sales, mostly export to African markets (or markets within the African sub-region) and are those that take advantage of international trade preferences.

The findings from this paper are very insightful. Particularly to economic policy makers, there is the need to recognise exporting as key to job creation by manufacturing firms in Ghana. This needs to be complemented by conditions that will ease constraints on the general business environment. For instance, it is important for constraints on imported inputs to be significantly eased as manufacturing MSMEs typically need these inputs to survive in the export market. Another equally important way is to give tax incentives to firm that are able to employ more

workers. In addition, this study has shown that Ghanaian MSMEs are gradually making high advancements into markets within the African sub-region signalling stronger integration.

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Appendix

Table 1A. Definition of variables

Variable	Definition
Employment	Number of existing jobs (a headcount of number of employees at all levels)
Export	Dummy variable Whether a firm has exported or not
Export Intensity	The ratio of export and sales
Wages	Average monthly wage for all workers
Sales	Average monthly Sales Revenue
Skilled Workers	A skilled worker may have attended a college, university or technical school or may have learned on the job.
Production Workers	Production workers are workers engaged in services closely associated with production operations.
Imported Inputs	The proportion of main imported inputs
Firm Age	Number of years a firm has been in existence
FDI	Dummy variable that indicates the presence of a foreign partner or a foreign parent company
Value of Assets	Total market value of assets owned by the firm
Union	The presence of union activity at the firm
Sector	Sub classification of the Manufacturing sector
Training	Provision of training to employees by the frim
Innovation	Whether the firm has undertaken product or process innovation or both.
Product Innovation	If a firm introduced a new or significantly improved product or service in 2014 and/or 2013' respectively
Process Innovation	Whether the firm introduced any new or significantly improved methods of producing or offering services in 2014 and/or respectively

Table 1B: Descriptive Statistics

Variable		Mean	Std. Dev.	Minimum	Maximum
Log of Employment	overall	2.661	1.540	0.000	7.669
	between		1.541	0.000	7.518
	within		0.374	0.934	5.858
Log of Wages	overall	10.375	2.174	4.564	23.582
	between		2.231	4.787	22.686
	within		0.722	6.909	13.514
Log of Sales	overall	11.886	2.919	5.011	20.906
	between		2.892	5.704	20.906
	within		0.751	8.326	17.289
Log of Firm Age	overall	2.557	0.920	0.000	4.382
	between		1.002	0.000	4.369
	within		0.130	1.960	3.058
FDI	overall	0.145	0.352	0.000	1.000
	between		0.352	0.000	1.000
	within		0.000	0.145	0.145
Log of Sales	overall	6.249	5.493	0.000	20.146
	between		5.498	0.000	20.146
	within		0.000	6.249	6.249
Proportion of Skilled Workers	overall	0.202	0.401	0.000	1.000
	between		0.402	0.000	1.000
	within		0.000	0.202	0.202
Product Innovation	overall	0.791	0.407	0.000	1.000
	between		0.161	0.667	1.000
	within		0.374	0.124	1.124
Process Innovation	overall	0.356	0.479	0.000	1.000
	between		0.356	0.000	1.000
	within		0.321	-0.311	1.023
Union Density	overall	0.190	0.393	0.000	1.000
	between		0.393	0.000	1.000
	within		0.000	0.190	0.190
Export	overall	0.152	0.359	0.000	1.000
	between		0.301	0.000	1.000
	within		0.196	-0.515	0.818

Appendix 2: Determinants of Exporting (Probit Estimation)

VARIABLES	(1)
Log of Sales	0.334***
	(0.080)
Log of Firm Age	0.342
	(0.232)
Process Innovation	0.471*
	(0.265)
Log of Assets	-0.022
	(0.033)
Average Employment	-7.422**
	(3.292)
Export Destination (Africa)	1.953***
	(0.513)
Trade Show	3.437***
	(1.149)
Free Zones Status	0.963
	(0.983)
Sector Dummies	Yes
Regional Dummies	Yes
Constant	Yes
Observations	755

Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1