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Trade Liberalization and Firm Profitability: Insights from Ghana's Manufacturing Sector

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Abstract

The private sector is recognized as an engine of growth; hence a well-developed private sector is deemed as the means to accelerate the rapid industrialization needed in developing countries. In this light, The Government of Ghana over the years has put in place policies to make the private sector flourish. A key strategy was the liberalization of trade through the economic recovery and structural adjustment programmes in the 1980s. However, much is not known about the impact of such policies on the profitability of the private sector especially with respect to trade. Indeed, there is a paucity of research addressing the profitability of firms due to trade liberalization especially the private sector in the African context. This paper fills this gap by investigating how tariffs as a measure of trade liberalization affect the profitability of Ghanaian private firms in the manufacturing sector using firm-level data spanning 1991 to 2001. Profitability is measured as the net profit margin of a firm. A two-step approach was employed in the empirical analysis of the tariff-profitability nexus. The net profit margin of firms was estimated in the first step. After which the effect of tariffs on the estimated net profit margin of firms was examined. The findings reveal that tariff reductions result in increased profitability of local firms. In addition, productivity was found to positively impact firm profitability.

Key words: profitability, tariffs, private sector, Ghana, trade liberalization, manufacturing

JEL codes: F13, F14, F23

1. Introduction

The private sector plays a key role in the development process through employment generation, the provision of better wages/income, generation of public revenue, poverty reduction and improvement in living conditions. In Africa alone, the sector contributes over 80% to total production, two-thirds of total investment and creates about 90% of jobs for the working age population (AfDB, 2011). Also, the private sector serves as an engine of innovation, competition, growth, investment and prosperity (OECD, 2007). Nonetheless, the private sector can play its crucial role as an engine of growth if a conducive and enabling business environment exists. To this end, trade policies are especially needed to boost the contribution of the private sector to development. These policies incentivize players in the private sector to invest, withstand foreign competition in domestic markets and engage in international markets. Such trade engagements with other countries then allow for new technologies to be introduced as well as ensuring more competitive working systems (European Commission, 2010).

Furthermore, trade policies targeted at the private sector lead to the diversification of developing economies that are either overly dependent on the exports of a few non-traditional exports or export to a few international markets. Subsequently, these economies become more resilient. Then again, trade policies in the form of tariff reductions and elimination of non-tariff barriers to trade results in the reallocation of resources, changes in firm profits (Melitz, 2003) and outputs as well as wages and employment levels.

In spite of the potential contributions of the private sector, it was neglected by several African countries at independence including Ghana. Instead, state-led development characterized by state-owned enterprises backed by import substitution strategies dominated the Ghanaian economy.¹ In the early 1980s however, structural reforms spearheaded and sponsored by the Bretton Woods institutions sought to make the private sector a major player in Ghana's development. The Economic Recovery and Structural Adjustments Programmes (ERP & SAP respectively) sought to promote manufacturing industries and an outward looking economy backed by the private sector. In this light, tariffs were reduced, and non-tariffs barriers removed or minimized.

However, questions of whether trade liberalization has delivered the expected benefits in Ghana remain unanswered. In fact, Buffie (2001:3) posits that studies on trade policy in less developed countries abound on advocacy and assertion "but distressingly short on clean

¹ See Hoedoafia (2019) for an overview of the private sector in post independent Ghana.

analytical and empirical results “. Also, the number of studies with a focus on profitability as a measure of firm performance is still small, with an even smaller number of countries that are all member states of the European Union (Wagner, 2012). So far, only a few studies have looked at the link between trade and profitability, especially in relation to tariffs. Thus, it is believed that firm level analysis of the trade profitability nexus has not been well documented especially in the case of newly industrialized and developing countries (Srithanpong, 2014). Much research in this area is therefore needed especially from the perspective of African countries. Lastly, several studies in the past have been inclined to the public sector and not so much on the private sector. To the best of the authors knowledge, this is the first study that focuses on the private sector in the Ghanaian context.

It is for the above reasons that this paper seeks to analyze the effects of Ghana’s trade liberalization on the profitability of private firms in the manufacturing sector using firm level data. Specifically, the paper examines the extent to which tariff reductions have contributed either to an increase or decrease in the profitability of private Ghanaian manufacturing firms between 1991 and 2001. In addition, it investigates performance differences between firms engaged in import or export activities and their non-counterparts.

This paper is relevant to policy makers especially in the wake of calls for “continued structural reforms including further trade and investment liberalization as a means to improve the Ghanaian economy’s flexibility and growth prospects” (TPR, 2001:2). From a policy perspective, the paper provides evidence either in favour or against such calls. The paper also draws attention to the urgent need to promote exporting among indigenous firms since only a few are engaged in such activities.

The rest of the paper is structured as follows: The next section gives a brief overview of the policy context and content (background). Section 3 presents the empirical literature on the relationship between trade and profitability. In section 4, the data description and descriptive statistics are reported. The empirical model is outlined in section 5 and section 6 reports the empirical results. The paper concludes in section 7.

2. Background

Most African countries including Ghana adopted trade liberalization as a means to industrialization but there are concerns as to whether that is the best development strategy for developing countries. Indeed, the words of Weisbrot and Baker (2003:16), that “it is not clear that trade liberalization is the key to rapid growth and development “clearly alludes to that. In

fact, they assert that trade liberalization can result in worse outcomes for developing countries. Indeed, some critics of the World Bank argue that trade liberalization programmes backed by the World Bank has rather caused de-industrialization in Sub-Saharan Africa (Saha, 1991). These criticisms and concerns stem from doubts about the effectiveness of trade liberalization in developing countries based on reasons of domestic industry collapses, revenue losses to government, and the huge costs of such interventions (that relating to market failures).

It is argued that undue foreign competition drives local firms out of business as they are unable to compete with their foreign counterparts (Gashgari, 2016). Hence, without protection via tariff and non-tariff barriers, domestic firms in developing countries cannot withstand competition from their foreign counterparts. The absence of such protection as a result of trade liberalization thus squeezes domestic firm profitability, which inhibits their investment in cost reducing capital and technology (Slaughter, 2004). Consequently, thousands of jobs are lost due to the non-profitability and eventual collapse of such domestic firms (Gashgari, 2016). In fact, Saha (1991:2759) opines that dismantling import controls in Africa led to “massive redundancies in the formal manufacturing sector.”

Also, tariffs are said to be a major source of revenue to governments of developing countries, the removal of which causes revenue losses to the state (Weisbrot and Baker, 2003), and handicaps it in its effort to provide infrastructure to its citizenry. These losses are said to be larger than the gains accrued from such policies (Weisbrot and Baker, 2003). For instance, in Ghana food subsidies were removed as part of IMF backed adjustment programmes (Saha, 1991), which was probably meant to ease the burden on government due to decreases in tariff revenue emanating from declining tariffs as a result of reducing import controls. It is therefore believed that liberalization policies sponsored by the World Bank “had traumatic results on the poverty situation” in Africa (Saha, 1991:2760).

A major concern and controversy with regards to liberalizing trade is market failures and its associated cost. Harvey (2005) opines that market failure arises as a result of individuals and firms avoiding paying the full costs that are attributable to them, and rather shed such liabilities outside the market, thus requiring some intervention from the state. However, it is asserted that the costs incurred through government interventions meant to overcome the challenges of market failures are much higher than that associated with market failures (Reiner and Staritz, 2013; Herbst, 1993). For instance, Herbst (1993:104) notes that “governments in countries like Ghana have persuasively demonstrated just how costly government intervention in the

economy can be”. As such some neoliberals have argued that inaction by government in the case of market failures is preferred because they believe that the “cure will almost certainly be worse than the disease” (Harvey, 2005:67).

Contrary to the above claims, the Asian tigers flourished via opening up. Moreover, the Import Substitution Industrialization (ISI) strategy adopted by developing countries had very limited success (Steel, 1972; World Bank, 1985). For instance, Steel (1972) asserts that the import licensing system contributed to inefficiencies in the manufacturing sector due to high production costs. So, the proponents of free trade argue that the benefits of opening up far outweigh the associated costs especially for developing countries (Corden, 1967; Matusz and Tarr, 1999; Dollar, 2001; Love and Lattimore, 2009). This makes the debates on the best strategy or path to industrialization inconclusive especially in the African context.

2.1 The Ghanaian Context

In the case of Ghana, different strategies to development have been pursued since independence. Initially, a closed economy backed by ISI and state enterprises was adopted, hence, a highly restrictive trade policy regime existed coupled with several controls. For instance, there were strict controls on import quantities through the Bank of Ghana’s exchange rate allocation (Werlin, 1994). There were also strong controls on imported inputs leading to a massive capacity underutilization (Aryeetey and Harrigan, 2000). As a result, the performance of the domestic manufacturing sector was constrained by the lack of imported raw materials and inputs (MDPI, 1974; Nyanteng, 1980).

The results of such a strategy have been mixed. On the one hand, Ghana witnessed a high GDP growth and became the shining star of Africa. The country had large foreign reserves and a high per capita income as per African standards with an inflation rate of less than 1% (ODI, 1996). Indeed, the average income of Ghana at the time was about the same as that of Mexico or South Korea as asserted by the ODI (1996). Hence, it earned the name as one of the stronger economies in developing countries and was classified internationally as a ‘medium income’ country (ODI, 1996). Additionally, a huge infrastructural development took place, key among them was the establishment of a modern artificial harbour in Tema and the creation of a hydro-electric power plant -Volta River Project (Killick, 2010). Such infrastructure was capable of supporting higher level productive services (Killick, 2010).

On the other hand, some of the state projects were capital intensive but had no immediate returns or failed to generate adequate returns; the survival of such enterprises meant more

monetary support from government. It is believed that about 13% of government's total expenditure in the form of subsidies, equity contribution and capital grants were allocated to SOEs in 1982 alone (Herbst, 1993). In fact, public enterprises recorded large aggregate losses Killick (2010). As an example, Swanson and Wolde-Semait (1993) report that the deficits of public enterprises in Ghana were about 0.2-3.3% of GDP between 1980 and 1982. Therefore, the huge state investments did not yield the expected economic benefits (Killick, 2010) and the country was left nearly bankrupt (Clark, 1995). Subsequently, the first coup d'état was staged in 1966.

Since then, Ghana witnessed a series of coup d'états and political instability for close to two decades. The resulting effect was an economic downturn of the once vibrant economy with the plummeting and fluctuating economic growth rates. For instance, Ghana's per capita GDP fell by over 30% from 1970 to 1981. Private businesses also suffered from acute shortages of imported inputs and spare parts as well as a steep decline in the real aggregate demand in the economy (Kapur et al., 1991). In fact, the period 1977 – 1983 has been described as the worst in the growth performance history of Ghana (Mckay and Aryeetey, 2004). The Ghanaian economy was therefore in shambles and needed urgent repair. Hence, the military government of the last coup d'état² with the assistance of the World Bank and IMF introduced the ERP and SAP. The ERP began in April 1983 to correct the economic imbalances and distortions of the stagnated economy and lead it back on its economic development track. At the domestic level, state price controls were eliminated, and non-traditional exports promoted. At the same time, trade barriers were lessened with a reduction on import restrictions (removal of quotas, reduction of tariffs) and the withdrawal of export controls. For instance, in 1983, import tariff rates were revised downwards with tax schedules of 10%, 20%, 25% and 30% from schedules of 35%, 60% and 100% (Oduro, 2000). Hence, the maximum import tariff saw a drastic reduction from 100% to 30%.

SAP was introduced in 1986 to sustain the gains of the ERP. A key feature of SAP was the shift from the over protected and inward-looking economy via ISI strategy to a liberalized outward looking economy led by the private sector. The import licensing system, which was Ghana's main instrument to regulate imports, was finally abolished in February 1989 (GATT, 1992). Importers were only required then to file an import declaration form either at the commercial banks or at the point of entry. import tax schedules were further reviewed

² The last coup in Ghana was staged in December 1981 and led by Flt Lt. Jerry John Rawlings.

downwards in 1988 by about 5 to 15-percentage points, thereby making import tariffs rates within 10% and 25%. Then again, import duties on both capital and intermediate goods saw a decline to about half of their 1983 levels by 1988. There was also a 10-percentage point reduction on sales taxes on imported goods (Oduro, 2000). Overall, import taxes reduced and were about 19% lower than their 1983 levels as of 1986 (Jebuni et. al., 1992). Non-traditional products exports were also encouraged through the increase in the retention of foreign earnings for exporters from 20% to 35% (GOG, 1987). In the light of the above, this paper sought to examine the impact of tariff reductions on the net profit margin of private manufacturing firms.

3. Profitability Effects of Trade: Empirical Literature

The empirical literature on the trade-profitability nexus have been inconclusive. On the one hand, some studies (Breinlich, 2016; Mukherjee and Chanda, 2016; Srithanpong, 2014) have found a positive effect of trade on firm profits. On the other hand, others have concluded on a negative impact instead (Peltonen et al., 2008; , Baggs and Brander, 2006; Kambhampati and Parikh, 2005; Beng and Yen, 1977) whereas others reveal the absence of any effect of trade on firm profitability (Grazzi, 2012; Wagner, 2011; Girma et al., 2004).

On the positive effect of trade, Mukherjee and Chanda (2016) reveal that tariff reductions positively impacts profitability in their study of the Indian textile industry. According to their study, trade liberalization resulted in the increase of imported raw materials and an improvement in firm-level profitability over the period 2000 – 2009. In fact, they found a stronger effect for input tariffs reductions. In addition, they disclosed that larger firms benefited most in comparison to smaller firms from trade liberalization. In other words, larger firms that take advantage of tariff reductions by increasing their imports of quality inputs/goods are able to earn more profits than smaller firms that are unable to capitalize on such reductions due to their size.

Similarly, the results of Breinlich (2016) in his study of Canadian firms show that intermediate input tariff reductions led to higher profits for importers. Using an event study approach to look at the link between tariff reductions and profitability, his results show that overall, per-period profits increased by about 1.2% as a result of the Canada United States Free Trade Agreement (CUSFTA) of 1989, which he believes was mainly due to reductions in intermediate input tariffs. Likewise, Srithanpong (2014) suggests that firms that do not engage in trade are the least profitable in his study of Thai manufacturing firms using data that covers 1999 – 2003 and 2007.

In terms of exports and firm profitability, Wagner (2014) found that exporters of high-quality goods were more profitable. Likewise, the results of Srithanpong (2014) reveal that exporters earn higher profits. In a similar way, the results of Fryges and Wagner (2010) show that exporters are more profitable than non-exporters as revealed in their investigation of exports and profitability among German manufacturing enterprises from 1999 – 2004. Using regression analysis and generalized propensity score methodology, they found that the rate of a firm's profit tends to increase with the export-sales ratio, thereby concluding that a positive relationship exists between exporting and firm profitability. However, they did not find any evidence of profitable firms' self-selection into the export market.

Ruane and Sutherland (2005) also found that in general exporters had superior performance than their domestic counterparts. Their findings reveal a positive and significant impact of exporting on profitability, which they measured as labour gross value added. They obtained their results using descriptive statistics and random effects panel data regression methods in analyzing Irish manufacturing firms for the period 1991 – 1998. Likewise, Kambhampati and Parikh (2003) show that exports led to lower profit margins before 1991 in India, but the reverse was witnessed after the post 1991 trade liberalization. That is, exports did increase profit margins with liberalization in India. Another study of Kambhampati and Parikh (2005) on India revealed that at the manufacturing level in general, profit margins which hitherto were decreasing did stabilize after trade liberalization. They show further that profit margins increased after liberalization in five sectors namely, paper, chemicals, cement, food processing and plantations.

Closely related to their findings are the results of Amendolagine et al. (2008) for Italian manufacturing firms from 1995 – 2003. Their investigation, which also employed regression analysis and propensity matching score revealed a positive impact of exports on firm profits: new entrants into the export market exhibited a significant growth in their gross profit rate per employee. In other words, new exporters were found to earn higher profits than their domestic counterparts. Evidence was not found in support of the self-selection into exporting hypothesis by more profitable firms.

On the contrary, Peltonen et al. (2008) found that an increase in the total import penetration by 10% resulted in a 0.9% decrease in profitability in their study of 15 manufacturing industries in 10 countries of the euro area from 1995-2004. In other words, the outcome of their research suggests a significant negative effect of total imports on profitability in the euro area. In the

same way, the study of Breinlich (2016) suggests that Canadian import tariff reductions resulted in lower profits. His results revealed that a one percentage point reduction in import tariffs was found to be associated with a 0.1 percentage point lower profit. Similarly, Baggs and Brander (2006) in their study of Canadian firms revealed that decreasing domestic tariffs resulted in declining firm profits especially for firms in import-competing industries. On the other hand, declining foreign tariffs were found to result in increasing profits for export-oriented firms.

The studies of Kambhampati and Parikh (2003, 2005) and Beng and Yen (1977) further support the assertion that tariffs enable producers to earn higher domestic profits. In other words, they assert that higher tariffs allow domestic producers to earn higher profits and vice versa. That is to say that reducing tariffs result in low profits for firms that serve the domestic market. Beng and Yen (1977) in their study of Malaysian manufacturing industries found that domestic industries that were protected via tariff barriers enjoyed higher profits. In like manner, Kambhampati and Parikh (2003) indicate that imports had positive impacts on profitability before trade liberalization in India, which however disappeared after. They further found later that profit margins in textiles and trading worsened with trade liberalization in India (Kambhampati and Parikh, 2005).

Nonetheless, a strand of the empirical literature reveals the absence of any statistically significant effect of trade on firm profitability. One of such is that of Wagner (2011) who studied German manufacturing enterprises and found that a firm's rate of profit does not vary with respect to its participation in international trade. That is, whether firms were engaged in imports only, exports only or both imports and exports trade had no impact on their profits. In a similar fashion, Grazzi (2012) did not find any differences in profitability between exporters and non-exporters among Italian manufacturing firms in the period 1989 – 2004. Employing both non-parametric methods and regression analysis, he revealed a lack of relationship between exporting and profitability even with a closer focus on more export intensive sectors. Likewise, Girma et al. (2004) could not find any significant difference in profitability between exporters and non-exporters due to export trade. They arrived at this conclusion using descriptive statistics and Kolmogorov-Smirnov tests in studying Irish firms for the period 2000. In the same way, Vu et al. (2014) in their study of manufacturing SMEs in Vietnam (2005 – 2009) revealed the absence of a linkage between exporting and firm profitability using an OLS approach. However, they found that exporting is positively related to profitability in the case

of firms with high profit growth and negative for firms with low profit growth using a quartile approach.

Studies in the services industry have revealed similar mixed effects of trade on profitability. Temouri et al. (2013) in their studies of business services enterprises in Germany, France and the United Kingdom over the period 2003 – 2007 found divergent results across the three countries. Using methods of regression analysis and propensity score matching, service enterprises into exports were found to be less profitable than non-exporters in Germany. On the other hand, the opposite was revealed in the case of France whilst in the United Kingdom, no profitability difference was found between exporters and non-exporters. Evidence in support of the self-selection hypothesis was not found in France and the United Kingdom. Interestingly, less profitable firms self-selected into the export market in Germany, a result that digresses from the usual self-selection hypothesis.

4. Data Description and Descriptive Statistics

The empirical analysis is carried out with firm-level panel data from the Ghana Manufacturing Survey, a panel database of manufacturing firms covering 1991 – 2002. The data was gathered by the Centre for the Study of African Economies (CSAE) at Oxford University, University of Ghana and the Ghana Statistical Service and made available by CSAE through the World Bank's Regional Project on Enterprise Development (RPED). Firms in the dataset are classified into various subsectors in accordance with the International Standard Industrial Classification (ISIC, Rev. 2) at the 3-digit level (see Table 1 in the Appendix). These firms are located in four cities of Ghana, specifically, Accra, Kumasi, Cape Coast and Takoradi. All four cities are located in the southern part of Ghana and are capital seats of their respective regions (Accra is the capital city of Ghana). Most privately-owned firms are often situated in the urban areas of Ghana and this could be the reason for the choice of the cities.

The dataset³ includes but is not limited to the following: firm-specific output, raw materials, number of workers, export status, percentage of raw materials imported, type of firm ownership (private, state, foreign, Ghanaian, mixed etc.), and the structure of the firm (sole proprietorship, limited liability etc.). Output and raw materials variables are based on 1991 firm-specific prices. In view of the fact that, firm-level data are hardly available in African countries, the RPED dataset is the most suitable for the current firm-level study, because it covers a sizeable number of firms (312 in total) and consists of 12 years of data, about the longest panel of firm

³ See Teal (2011) for a description of the construction of the dataset.

data in a country like Ghana. Also, the survey periods coincide with the immediate aftermath of major trade reforms in Ghana, making it suitable for assessing the response of the Ghanaian private sector to trade liberalization policies.

On the other hand, tariff data is obtained from the Center for Prospective Studies and International Information (CEPII)⁴ Tradeprod dataset compiled by De Soussa et al. (2012). The Tradeprod dataset contains bilateral tariff rates between Ghana and other countries of the world for the period 1991 to 2001. The tariff rates employed are therefore calculated as the average of all bilateral tariff rates for each period as shown in Table 2 in the appendix. Tariff changes have been uniformed across the different subsectors. Generally, tariff rates have been particularly high within the garments and beverages subsectors and relatively low in the machines subsector. On the whole, the 2001 average tariff rates are lower than that of 1991, indicating that average tariffs declined between 1991 and 2001.

The final dataset consists of an unbalanced panel of 971 firm-year observations, made up of 118 firms in four subsectors (i.e. Food and Beverages, Garments, Furniture, and Metal and Machines), from 1991 to 2001 and covers a minimum of three and a maximum of eleven years (see Table 3 in appendix for a composition of the data). Given that an unbalanced panel is employed, entry and exit decisions of firms are implicitly considered as Van Beveren (2012) notes.

Since panel data was used in this work, the unit-root test was used as a pre-estimation test to determine if each variable employed is stationary or not. This is particularly important because time series variables that are nonstationary (i.e., contains a unit root) tend to suggest meaningful relationships between variables when in actuality there is none (Gujarati and Porter, 2010). The test was therefore necessary to avoid spurious regression. Specifically, the Fisher-type test based on Phillips–Perron unit-root test was preferred because it is suitable for an unbalanced dataset that contains gaps. In addition, the Phillips–Perron unit-root test has been observed to be robust to serial correlation as well as heteroscedasticity. The Z statistic of the inverse-normal is presented as recommended by Choi (2001) for use in applications because it offers the best trade-off between size and power. The null hypothesis of the Fisher-type Phillips–Perron unit root test (H_0) is: All panels contain unit roots, while the alternative hypothesis (H_a) is: At least one panel is stationary. Based on the results obtained as reported in Table 4.1, we can reject

⁴ French acronym.

the null hypothesis (since a p-value < 0.05 was obtained) and conclude that the dataset is stationary. In other words, each variable used follows a stationary process.

Table 4.1: Unit Root Test of Key Variables.

Variable	Z statistic		Z statistic(demeaned)	
	Level	First Difference	Level	First Difference
ln NPM	-9.4553***	-10.3212***	-7.8099***	-8.4996***
ln TFP	-5.3024***	-6.1204***	-5.7958***	-6.1507***
ln Tariff	-13.5190***	-14.8009***	-7.5612***	-7.6852***
ln Firm size	-1.7333**	-2.2074***	-8.5597***	-8.5985***
ln import share	-0.9315*	-1.3878*	-9.2677***	-9.3229***
ln export share	-3.0425***	-2.9805***	-5.9247***	-5.2724***

Source: Author's construct from RPED, GMES dataset.

The summary statistics for the key variables employed are presented in Table 4.2. It can be observed that the average net profit margin is about 3.3% and the mean total factor productivity is approximately 1.6% over the study period. Also, close to 39% of firms engage in importing whereas only about 8% are into export activities. In terms of location, about 50% representing half of the observations are found in the capital city of Accra, and another 40% in Kumasi, the second largest city in Ghana. Average net profit margins are about 3.4% and 3.1% in the garments and, metal and machines subsectors respectively.

Table 4.2: Summary Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
lnNPM	971	3.32461	2.095271	-5.385133	52.412
lnTariff	971	2.802.204	.4113046	1.258461	3.795714
lnTFP	971	1.570898	6.922536	-1.026449	1.179797
imports	971	.3892894	.4878404	0	1
exports	971	.0875386	.2827684	0	1
ln Tariffs*Ims	971	4.121036	5.471233	0	1.612607
ln Tariffs*Imd	971	1.070414	1.365093	0	3.795714
exit	971	.0319258	.1758933	0	1
ln firm size	971	2.852321	1.120396	0	5.703783
Accra	971	.5087539	.500181	0	1
Cape Coast	971	.0288363	.1674324	0	1
Kumasi	971	.4088568	.4918761	0	1
Takoradi	971	.053553	.2252496	0	1
lnNPM_Food&Bev.	132	3.366134	1.986224	-4.466537	5.00478
lnNPM_Garments	304	3.416335	1.965523	-5.208004	5.2412
lnNPM_Furniture	266	3.382188	2.232258	-5.385133	5.107711
lnNPM_Metal&Mach.	269	3.143639	2.149.375	-4.653816	5.177402

Source: Author's calculations from RPED, GMES dataset.

5. Empirical Methodology

5.1 Measuring Profitability

The aim of every firm is to maximize profit; hence, profitability is very important to firms because without profitability, a firm will not survive in the long term (Hofstrand, 2009). Profitability “reflects a company’s competitive position in the market, and by extension, the quality of its management” (Robinson et al., 2009:291). Thus, a firm’s profitability is a measure of its success. In this vein, measuring profitability is a primary goal of every firm.

Profitability is measured in this study based on the concept of economic profit because it takes care of not only business expenses but also those relating to labour and management ability (Hofstrand, 2009). According to Hofstrand (2009), economic profit is the ability of a firm to generate sufficient returns on the capital and employees that is used in its operations. According to Robinson et al. (2009:277), “Profitability ratios measure the company’s ability to generate profitable sales from its resources (assets)”. Hence, the profitability ratio of net profit margin (NPM) is employed. This is because it reflects the long-term profitability of firms and also for easy comparability across firms.

The NPM is expressed as the relationship between net profits and sales or revenue. Hence, it serves as a measure of management’s ability to operate the firm with success such that it does not only recover revenue but also earns a reasonable margin of compensation for its owners. The NPM in this case is determined as:

$$NPM = \frac{Net\ income}{Revenue} \times 100 \quad (1)$$

Where Net Income (NI) is given as:

$$NI = Revenue - variable\ cost - fixed\ cost - trade\ cost \quad (2)$$

Fixed cost here refers to the cost of rent, land, transport etc. and trade cost is the tariff paid on imported materials, given as tariffs multiplied by the value of material import. It is therefore zero for firms that do not import any material input. The NPM measure does not include corporate tax and interest payments since such data is not available in our dataset.

The net profit margin is best for instance in determining which company is more profitable than the other since it includes all expenses incurred by the firm. Therefore, a high NPM shows that a firm is able to withstand adverse economic conditions as well as ensuring that owners have adequate returns for their investments. Ultimately signalling a sign of good management. On the other hand, a low NPM indicates danger as shareholders are unable to earn a satisfactory return on their investments.

5.2 Empirical Model

To determine the effect of trade policy and other variables on firm profitability, the following regression model is estimated:

$$\ln\pi_{it} = \theta_0 + \theta_1 \ln T_{jt} + \theta_c C_{it} + \mu_{it} \quad (3)$$

Where $\ln\pi_{it}$ is the log net profit margin of firm i in time t , $\ln T_t$ is the log of average tariff, C_{it} represents a set of control variables, θ_0 , θ_1 and θ_c are coefficients to be estimated and μ_{it} is the error term. The control variables relate to the log of firm size measured as the number of employees, and the log of firm productivity. All variables are expressed in natural logarithm. To prevent the loss of data and an estimation focusing on only profitable firms, we employ the inverse hyperbolic sine transformation to convert all negative and zero profits to positive values.

To assess and or control for other key trade variables in line with trade literature, we estimate:

$$\begin{aligned} \ln\pi_{it} = & \theta_0 + \theta_1 \ln T_{jt} + \theta_2 (\text{imports})_{it} + \theta_3 (\ln T_{jt} \times \text{imports})_{it} + \theta_4 (\text{exports})_{it} \\ & + \theta_5 (\ln Ex_{share}) + \theta_6 (\ln T_{jt} \times \ln Im_{share}) + \theta_7 \ln TFP_{ijt} + \theta_c C_{it} \\ & + \mu_{it} \end{aligned} \quad (4)$$

Where imports is a dummy variable for importing vs. non-importing, exports is a dummy variable representing exporting vs. non-exporting, $\ln Ex_{share}$ is the log export share, $\ln Im_{share}$ is the log import share, $\ln T_{jt} \times \text{imports}$ is an interaction term between tariffs and the import dummy and the other variables are as defined in equation (3). Equations 3 and 4 are analysed using fixed effects and the system GMM estimators. The use of fixed effects controls for all time-invariant variables at the firm-level, therefore good for reducing omitted variable bias. The FE estimator also controls for any endogeneity relating to tariffs and profitability. For robustness of the results, the system GMM has also been employed. Additionally, the System GMM estimations control for endogeneity by allowing for lag dependency in the profitability analysis as well as capturing the contributions of other firm characteristics that can explain firm profits.

6 Empirical Findings

In Table 6.1, we present the baseline results of the tariff – profitability nexus for the fixed effects regressions in line with equation 3. In order to deal with any potential heteroscedasticity and serial correlation, we use standard errors clustered at the firm-level to obtain standard error

estimates that are robust to disturbances being heteroscedastic and autocorrelated. From Table 6.1, the tariff variable is negative across all model specifications and statistically significant. This implies that tariff reductions are associated with increases in the net profit margin of indigenous firms. As an example, model 1 shows that a 10-percentage point reduction in tariffs is associated with about 14.7% increase in the net profit margin of firms as depicted in Table 6.1. The positive tariff – profitability relationship outcome for local firms however runs counter to the evidence provided by (Baggs and Brander, 2006; Kambhampati and Parikh, 2003; Beng and Yen 1977) that lower tariffs results in lower profits for indigenous firms. Also, in line with Stierwald (2010), the results suggest that productivity enhances firm profitability. In other words, firm productivity is positively and significantly related to firm profitability, signaling that productivity is a key determinant of firm profitability. That is, more productive firms tend to be more profitable.

Table 6.1: Tariffs and Firm-Level Profitability – Baseline Results.

Dependent Variable	ln_NPM	ln_NPM	ln_NPM
	(1)	(2)	(3)
ln Tariff	-1.4746** (0.6753)	-1.6404*** (0.5958)	-1.6454*** (0.6000)
lnTFP		1.0081*** (0.2079)	1.0284*** (0.2121)
ln firm size			-0.1806 (0.1914)
exit			0.0410 (0.3833)
constant	7.9741*** (2.2135)	7.0896*** (1.9697)	7.5810*** (1.9884)
year effect	Yes	Yes	Yes
Observations	971	971	971
No. of firms	118	118	118
R ² (within)	0.0258	0.1237	0.1251

Notes: (1) Fixed effects estimations with firm fixed effects, year effects and sector effects in models with TFP (2) Robust standard errors that are clustered at the firm level are in parentheses (3) lnTFP is the total factor productivity (4) Significance at * 10%, ** 5%, *** 1%.

Source: Author's calculations from RPED, GMES dataset.

In Table 6.2, the fixed effects results of the tariff-profitability nexus in line with the trade literature in the spirit of equation 4 are presented. Similar to the results reported in Table 6.1, the tariff variable is negative across all specifications and statistically significant as shown in Table 6.2. This means that tariff reductions are associated with increases in the net profit margin of firms. For example, model 3 shows that a 10-percentage point reduction in tariffs is

associated with 13.2% increase in the net profit margin of firms as depicted in Table 6.2. This finding digresses from the argument by Gashgari (2016) that trade liberalization renders locally owned enterprises less profitable, and eventually lead to their exit from the market. The current results therefore offer support for reducing barriers to trade in the form of lowering tariffs. As expected, a positive relationship between firm productivity and profitability is reported. The high significance of the productivity variable (i.e. TFP) at the 1% level suggests that more productive firms earn higher profits.

In terms of the trade orientation of firms and profitability, the findings from the fixed effects regressions reveal a positive effect. For instance, indigenous firms that export are observed to be about 60% largely profitable in relation to non-exporters at the 1% significance level. This is similar to the findings of Wagner (2014) and Fryges and Wagner (2010) who found exporting firms to be more profitable in comparison to domestically oriented firms. The observed profitability differences between exporters and non-exporters as found in the current study is at variance with the findings of Grazzi (2012) and Girma et al. (2004) who found no such distinction in their respective studies. Also, the export share variable is positive and significant, implying that the size of exports matters significantly. Subsequently, there is strong evidence to suggest that exporting firms are more profitable.

In a similar way, the import status dummy of local private firms is positive and significant at the 10% level. Hence, Ghanaian firms engaged in importing are observed to be more profitable relative to non-importing firms. Furthermore, the import share variable is positive and significant, suggesting that the share of imports is a major factor in the profits of importing firms. Indeed, an even greater effect at the 5% and 1% levels of significance is reported for the interaction variables of tariff and import, and tariffs and import share respectively. This indicates that the higher the share of imports, the larger the gain in profitability.

Interestingly however, firm size is reported to be negative. Even though it is insignificant it can be attributed to the numbers of employees in small firms, who are mostly not paid employees. Indeed, small firms in developing countries are mostly family ran businesses that are often characterized by non-wage labour, mostly family members, who often do not draw regular wages (Abor and Quartey, 2010) in comparison to larger firms, who hire highly skilled labour and therefore have higher labour costs in their financial books.

Table 6.2: Tariffs and Profitability of Local Firms – Fixed Effects Regression.

Dependent Variable: ln NPM				
	(1)	(2)	(3)	(4)
ln Tariff	-1.4746** (0.6753)	-1.6454*** (0.6000)	-1.3287** (0.6229)	-1.2269** (0.6183)
ln TFP		1.0284*** (0.2121)	1.0161*** (0.2085)	1.0006*** (0.2056)
ln firm size		-0.1806 (0.1914)	-0.2213 (0.1923)	-0.2113 (0.1950)
exit		0.0410 (0.3833)		
imports			1.5379* (0.8507)	
ln Tariffs*Imd			-0.6142* (0.3292)	
exports			0.6071*** (0.2193)	
ln Im_share				0.4474** (0.2174)
ln Tariffs*Ims				-0.1879** (0.0841)
ln Ex_share				0.1573* (0.0836)
constant	7.9741*** (2.2135)	7.5810*** (1.9884)	6.7509*** (2.0448)	6.4374*** (2.0385)
year effect	Yes	Yes	Yes	Yes
Observations	971	971	971	971
No. of firms	118	118	118	118
R ² (within)	0.0258	0.1251	0.1351	0.1377

Notes: (1) Fixed effects estimations with firm fixed effects, year effects and sector effects in models with TFP (2) Robust standard errors that are clustered at the firm level are in parentheses (3) lnTFP is the total factor productivity (4) ln Tariffs*Imd is log tariffs-import dummy interaction and ln Tariffs*Ims is log tariffs-log import share interaction (5) Significance at * 10%, ** 5%, *** 1%.

Source: Author's calculations from RPED, GMES dataset.

The tariff-profitability nexus of Ghanaian firms based on firm size in line with equation 4 is presented in Table 6.3. Medium and large Ghanaian firms are found to gain positively from falling tariffs in terms of their net profit margin. For instance, models 3 and 4 show that a 10-percentage point reduction in tariffs is associated with a 17.9% and 17.6% gain in net profit margin of medium and large local firms at the 5% and 1% level of significance respectively. This shows that medium firms are the most profitable, supporting the outcome of Fernández et al. (2019) that medium firms earn the highest returns. For micro and small Ghanaian firms, the tariff variable though negative is not significant. Hence, the study does not provide any significant evidence on the effect of tariffs on the profitability of such firms.

Also, across the different firm size specification, the results reveal a positive relationship between productivity and profitability of firms. This outcome therefore falls in line with the superior firm hypothesis of Demsetz (1973), which states that a direct relationship exists between firm productivity and firm profitability.

Table 6.3: Firm Size and Profitability (NPM) of Ghanaian Firms.

Dependent Variable: ln NPM				
	Micro (1)	Small (2)	Medium (3)	Large (4)
ln Tariff	-1.7252 (2.5474)	-1.0452 (1.4120)	-1.7972** (0.7945)	-1.7665*** (0.5986)
ln TFP	1.0319*** (0.3704)	0.8815** (0.3833)	1.6598*** (0.5095)	1.1476*** (0.3981)
exit	-0.4519 (1.6205)	-0.0530 (0.5705)	0.7006 (0.6197)	-0.8191 (0.5248)
constant	4.4813 (8.7581)	5.3820 (4.7411)	7.7331*** (2.4311)	10.1814*** (1.9481)
year effect	Yes	Yes	Yes	Yes
Observations	158	382	333	98
No. of firms	38	74	64	19
R ² (within)	0.1869	0.1107	0.1957	0.2965

Notes: (1) Fixed effects estimations with firm fixed effects, year effects and a sector effect via the TFP (2) Robust standard errors that are clustered at the firm level are in parentheses (3) lnTFP is the total factor productivity of firms (4) Significance at * 10%, ** 5%, *** 1%.

Source: Author's calculations from RPED, GMES dataset.

6.1 Robustness Checks using System GMM Estimator

To check the robustness of our results, we employ the system GMM estimator instead of fixed effects to analyze the nexus between tariffs and firm profitability in line with the logic of equation 4. From the results reported in Table 4, tariff, the key variable of interest is negative and significant across all the model specifications as expected. Hence, corroborating our earlier results from the fixed effects estimator reported in Tables 1 – 3. For example, a 10-percentage point reduction in tariffs leads to a 14.66% gain in the net profit margin of firms at the 5% significance level as per model, about the same results as reported in Table 6.1 in terms of magnitude. The current results lend support to that of Mukherjee and Chanda (2016) that tariff reductions have positive effect on the profitability of firms in their study of the textile industry in India. The imports and import share variables are negative and insignificant, hence no evidence on whether importing firms or firms with more imports are largely better in terms of their net profit margin than non-importers.

The postestimation results are in line with expectations for all the models. From the p-value of the AR (1), we reject the null of no first order autocorrelation. For the test for second order autocorrelation, the insignificant p-values across all models show that there is no significant evidence of second order autocorrelation. Finally, the insignificant p-values of the Hansen test reported in Table 6.4 implies that we do not reject the null hypothesis on the validity of the overidentifying restrictions. All the model specifications are therefore in order based on the test statistics reported.

Table 6.4: Tariffs and NPM: System GMM Estimation.

Dependent Variable: ln NPM				
	(1)	(2)	(3)	(4)
ln NPM _{t-1}	0.3913*** (0.1055)	0.4076*** (0.1026)	0.3871*** (0.0944)	0.3798*** (0.0898)
ln Tariff _{t-1}	-2.0170** (0.8201)	-1.4663** (0.6892)	-1.5016** (0.6945)	-1.3262* (0.7905)
ln TFP _{t-1}	0.0521 (0.0530)	0.0278 (0.0418)	0.0200 (0.0440)	0.0124 (0.0556)
ln firm size		0.1064 (0.2230)	0.0787 (0.2241)	-0.0244 (0.1676)
exit		0.2136 (0.3432)	0.2385 (0.3453)	0.2315 (0.3595)
imports			-0.0674 (0.2089)	
ln Im_share				-0.0577 (0.1916)
ln Tariffs*Ims				-0.0053 (0.0684)
ln Ex_share				0.0900 (0.0642)
constant	8.7249*** (2.6933)	6.6571*** (2.4943)	6.9556*** (2.5359)	5.7626** (2.4148)
year effect	Yes	Yes	Yes	Yes
Observations	795	795	795	795
No. of firms	118	118	118	118
Instruments	28	35	41	53
AB 1(p-value)	0.0001	0.0001	0.0001	0.0002
AB 2 (p-value)	0.3773	0.3580	0.3632	0.2858
Hansen test (p-value)	0.2231	0.3135	0.5674	0.3853

Notes: (1) The instruments for specifications for all columns are: differenced equation, ln Tariff, ln NPM and ln TFP lagged 1 period, imports, ln Im_share, ln Ex_share, ln Tariffs*Ims, ln firm size and exit, differenced year dummies; levels equation, first difference of ln Tariff, ln NPM and ln TFP, imports, ln Im_share, ln Ex_share, ln Tariffs*Ims, ln firm size and exit (2) Robust standard errors in parentheses (3) The null hypothesis underlying the autocorrelation test is that there is no autocorrelation (4) AB 2 is a test for second order serial correlation. (5) Significance at * 10%, ** 5%, and *** 1%.

Source: Author's calculations from RPED, GMES dataset.

7 Conclusion

This paper answers the question of how tariffs as a measure of trade liberalization affect firm profitability of private manufacturing firms in Ghana. The main findings reveal a positive effect of tariffs on profitability of local firms. In other words, lower tariffs were found to be strongly associated with higher firm profitability using Net Profit Margin as a measure of profitability. The current findings provide counter evidence against the argument by Weisbrot and Baker (2003) that local firms must be protected in order to be profitable. In terms of size, declining tariffs were associated with an improvement in the net profit margin of medium and large firms. Size is thus a key determining factor of firm profitability. Finally, there was no strong evidence to suggest that exiting firms are less productive relative to surviving firms.

A striking aspect of the results is the fact that exporting firms are highly profitable in the economy, highlighting the importance of export markets and the need for firms to respond adequately to policies by taking advantage of changes in trade policy especially those regarding exports. Indeed, the findings show that Ghanaian owned exporting firms are about 60% largely more profitable in comparison to their non-exporting counterparts (see Table 6.2). Therefore, to benefit from trade, policy makers must be interested in providing enhanced export opportunities for domestic firms since it appears that such opportunities outweighs the costs associated with export competition.

In addition, a greater export orientation of the Ghanaian economy is expected to be associated with the generation of positive externalities to non-exporting sectors in the form of efficient managerial skills, improvement in production capacities and labour skills accumulation which are all vital for the long run growth of the economy. Further, the more outward the economy is, the higher the opportunities of economies of scale because exports are to the rest of the world, the biggest market. Therefore, even in situations where the purchasing power of domestic consumers is low, such scale opportunities will not be hindered. Hence, policy makers need to introduce more export-led programs and implement them properly to boost the export capacities of domestic firms. Such programs must however be easily accessible to all firms irrespective of their political affiliations in order to improve the growth of the manufacturing sector as well as avoid entry and exit of firms based on change of governments and therefore maintain the sector on a sustainable growth path.

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Appendix

Table 1: Firm Classification into Subsectors Based on ISIC (Rev. 2).

ISIC Code	Description	Abbreviation
312	Food products	Food
313	Alcohol	Beverages
322	Wearing apparel	Garment
332	Furniture except metal	Furniture
381	Fabricated metal products	Metal
382	Machinery except electrical	Machines

Source: Author's construct from RPED, GMES dataset.

Table 2: Average Output Tariffs (1991 and 2001), Ghana.

Year	Food	Garments	Furniture	Metal	Beverages	Machines
1991	20.45	33.3	23.64	22.19	18.63	13
2001	12.38	25.87	15.75	13.55	44.51	5.45

Source: De Soussa et al. (2012).

Table 3: Composition of Data.

Sector	No. of Firms	No. of Observations	% Observations	Cum.
Food & Beverages	17	132	14%	14%
Furniture	32	266	27%	41%
Garment	38	304	31%	72%
Metal & Machines	31	269	28%	100%
Total	118	971	100%	

Source: Author's construct from RPED, GMES dataset.