

RESEARCH PAPER  
**OPENNESS AND AGRICULTURAL PERFORMANCE IN  
GHANA**

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**ABSTRACT**

*The paper examined the relationship between openness and agricultural performance using data covering the period 1995 to 2009. Representing openness as foreign direct investment (FDI) and trade openness, the results showed that there is no long run relationship between FDI and trade openness on one hand and agricultural performance on the other. In the short run, trade openness and FDI exerted a statistically significant negative effect on agricultural performance. Though inelastic, the sign of the coefficients showed that increased openness of Ghana's agriculture through trade and FDI do not promote performance of the sector. These results provide evidence for an examination of the type of FDI attracted into the sector. Also, the detrimental effect of trade openness suggests a re-examination of the free trade policy to provide some cushion to sections of the sector to enhance output thereby increasing performance.*

**Keywords:** *Openness, trade openness, foreign direct investment, agricultural performance, Ghana*

**INTRODUCTION**

The modes and indicators of openness include international trade, foreign direct investment (FDI) and international flows of capital and information (Osabuohien, 2007). Openness to trade has been measured variously (See Trued and Mikesell, (1955); Triffin (1976); Edwards, (1993); Sachs and Warner (1995, 1997a, b); Auguste (1997); Sala-i-Martin (1997); Edwards (1998) and Miljkovic and Shaik (2010)). However, that of Squalli and Wilson (2011), which is the  $(X+M)/GDP$  adjusted by the proportion

of a country's trade relative to the average world trade, christened composite trade share (CTS) is employed in this study.

A non-trade measure of openness in the literature is foreign direct investment (FDI). Any investment scenario in which the investor owns at least 10% of the foreign enterprise is called a FDI (OECD, 1999). According to Rotjanapan (2005), FDI also refers to an investment involving a long-term relationship and reflecting a lasting interest and control of a resident entity

in one economy in an enterprise resident in another economy. The key feature of FDI is that it encompasses transfer of resources and acquisition of control (Krugman and Obstfeld (2009). FDI can thus be decomposed into equity capital, reinvested earnings, and other capital (UNCTAD, 2008).

Until the late 1980s, African countries were sceptical about the virtues of free trade and investment. History, ideology, and the politics of the post-independence period accounted for these scepticisms (Moss *et al*, 2004). They also argued that the prevailing attitudes and concerns in the region were due in part to the fact that policymakers in the region were not convinced that the potential benefits of FDI could be fully realised in the region. This inability to embrace FDI had deleterious effects on economic growth and living conditions in the region (Rodrik, 1998). However, since the 1990s Africa has embraced FDI activities. In Ghana, trade openness have led to import of agricultural products such as rice and poultry products that sell at prices at which local producers are unable to compete effectively. This inability to compete effectively may induce lower production of local agricultural output. On the contrary, the influx of imports may induce farmers in Ghana to improve efficiency and improved products in order to cope with the competition. Additionally, inflow of investments from foreigners into the agricultural sector may promote agricultural production. How these twin factors (openness to trade and foreign direct investment inflow) jointly impacts local agricultural production in Ghana is unknown. Therefore, the question addressed by the study is:; what is the effect of FDI inflow and trade openness on agricultural performance in Ghana? The study therefore seeks to assess the relationship between trade openness and FDI to agriculture on agriculture sector performance in Ghana.

The paper is significant for a number of reasons. First, agriculture in developing countries, (including Ghana) is a rural phenomenon and a source of livelihood for close to 70% of the

population (World Bank, 2011). The efforts of these rural dwellers results in raw materials to industry across the globe. The intricate connection between agriculture and livelihoods in the light of attaining the food and agriculture oriented millennium development goals MDG suggest that any effects of economic policy variables such as trade and FDI would be important to policy makers. Secondly, efforts at widening trade, and eliminating trade barriers through the World Trade Organisation (WTO) with the inconsistent trade actions by the US (Miljkovic and Shaik, 2010) and the European Union through farm support and phyto-sanitary rules, the effects of globalisation on Ghana's agriculture which is dominated by smallholder rural farmers is of utmost relevance. Thirdly, trade policies are considered crucial to the process of industrialisation, with increased exposure to foreign competition acting as a stimulus to technical and economic efficiencies and real growth (Adenutsi, 2008). In the fourth place, studies in the area of openness effects on agricultural output in Africa are few. Whilst Karikari (1992), Gyapong and Karikari (1999), Frimpong and Oteng-Abayie (2008), and Sakyi (2011) documented empirical evidence for the whole economy of Ghana on the relationship between openness and economic performance, and Adenutsi (2008) for industrial performance, evidence for the agricultural sector in Ghana is hard to find. Indeed, Djokoto (2012) studied the relationship between external trade and FDI to the agriculture in Ghana. His paper considered the two variables within a Granger causality framework. Thus the effects of variables other than trade on agricultural GDP were not investigated. The paper feels these gaps.

The rest of the paper is composed into three sections. Section 2 presents review of literature pertinent to the title of study. Section 3 presents model and data. Section 4 contains the results and accompanying discussions. Reporting the research concludes in section 5 with the associated recommendations.

## LITERATURE REVIEW

### *Theoretical review*

As noted in the background FDI is a form of openness. The theory of FDI explains why foreign investments find their destination in certain locations. Three underpinning perspectives explain this. The first perspective, which is internationalisation theory, seeks to explain why firms often prefer FDI to licensing as a strategy for entering a foreign market (Hymer, 1976). The second perspective explains the patterns of FDIs. Knickerbocker (1973) first put forward this theory within oligopolistic industries framework. Firms invest in other countries as a following strategy by imitating their domestic competitors overseas possibly due to interdependence. The product life cycle hypotheses proposed by Vernon (1966) explains that firms undertake FDI at particular stages in the life cycle of the product they pioneered. They invest in other advanced countries when local demand in those countries grows large enough to support local production. Production is subsequently shifted to developing countries when product standardisation and market saturation give rise to price competition and cost pressures. Investment in developing countries is seen as the best way to reduce cost.

The third perspective is Dunning's Eclectic paradigm. The theory posits that the extent, geography, and industrial composition of foreign production undertaken by Multinational Enterprise (MNE) is determined by the interaction of three sets of interdependent variables; namely, ownership, location and internationalisation which are the key competitive advantages in this paradigm (Dunning, 2001).

The ownership competitive advantage posits that, *ceteris paribus*, the greater the competitive advantages of the investing firms, relative to those of other firms the more they are likely to be able to engage in, or increase, their foreign production (Dunning, 2001). The locational attractions indicates that the more the immobile, natural or created endowments, needed by the firms to use jointly with their own competi-

tive advantages, the higher the likelihood of gravitating towards that resource. Indeed, the MNEs will choose to supplement or take advantage of their ownership specific advantages by engaging in FDI. For this reason, the MNEs would undertake activities so as to add value to their operations.

Internalisation offers a framework for evaluating alternative ways in which firms may organise the creation and exploitation of their core competencies, given the locational attractions of different countries or regions. Such modalities range from buying and selling goods and services in the open market, through a variety of inter-firm non-equity agreements, to the integration of intermediate product markets and an outright purchase of a foreign firm. In summary, the eclectic paradigm, like its near relative, internalisation theory, asserts that the greater the net benefits of internalising cross-border intermediate product markets, the more likely a firm will prefer to engage in foreign production itself, rather than license the right to do so, for example by a technical service or franchise agreement, to a foreign firm (Dunning, 1993).

Supporters of trade openness (Smith, 1776; Ricardo, 1817; Mishimizu and Robinson, 1986; Nishimizu and Page, 1991; Tybout, 1992; Helleiner, 1989, 1994) argued that openness promotes competition which in turn propagates pressure for increased efficiencies, product improvement and technical change and factor productivity among other benefits. However, critics such as Todaro (1994), Elbadawi (1992), Elbadawi, *et al* (1992), and Demery (1994), disagreed. They argue that trade openness will be ineffective in the current world of unionism, interrupted national protection and international non-competitive pricing policies. In support of this Adenutsi (2008) stated that empirical evidences from Latin America and Africa fail to lend support to the superiority of SAP or trade liberalisation-implementing economies over those that did not implement it. Indeed some studies have even demonstrated that countries

that did not follow open-trade policy outperformed those that pursued policies in investment, saving, exports, external balance, inflation and economic growth (Elbadawi, *et al.* 1992; Demery, 1994). Todaro (1994) further provided evidence that the non-existence of an international agency to protect and promote the interest of economically weaker nations at the global front has seriously polarised the world into the extreme cases of the rich (North) and the poor (South). Killick (2000) provided further evidence that in spite of trade openness among other policies, Ghana's economy based on 1960-94 data did not show differences in terms of structure, growth, financial deepening, composition of exports, rigidity and low saving-investment ratios since 1960. In justifying the criticism against trade openness, Easterly (2005) showed in an *ex-post* analysis that there is no empirical justification for openness to trade and markets, since the intensive recipients of structural adjustment loans experienced the same near-zero per capita income growth rate as non-recipients.

#### *Empirical Review*

Tian, *et al.*, (2004) investigated FDI inflows to regions of China. They noted that regions with higher FDI inflows experienced faster GDP per capita growth. This they explained was possible through technology updating. In a firm level study on India, Sarkar and Lai (2009) showed that foreign investment in a firm significantly and positively increased the firm's output. In contrast to this finding, the firms with no foreign investment (FIs) were found to be less productive than sectors with more foreign investment compared to those firms in sectors with relatively smaller foreign presence. The results pointed to demonstrated positive spillover from foreign investment, particularly in industry sectors with more foreign investment. Additionally, the study noted that the firms' predicted output was likely to decline with every percentage increase in output dispersion. In the case of Thailand, Wattanakul (2010) noted that both FDI and services liberalisation impacted growth negatively but in a statistically

insignificant way.

In the specific case of Ghana, Karikari (1992), Gyapong and Karikari (1999), Osabuohien (2007), Frimpong and Oteng-Abayie (2008), Adenutsi (2008), Sakyi (2011) and Djokoto (2012a) provide pieces of empirical evidence. Karikari (1992) in a Ghana specific study (but not on agriculture) concluded that, for the period, 1961 to 1988, FDI did not Granger-cause economic output. On the other hand, economic output Granger-caused FDI. The effect was a slight decrease in FDI because of increases in output. In agriculture specific study, Djokoto (2012a) found that in the short-run, the coefficient for FDI inflows and imports were statistically significant. The negative sign pointed to a substitution or replacing relationship between the two variables. The coefficients between exports and FDI though negative, were not statistically significant. In the long-run, there was a feedback between imports and FDI. Exports Granger-caused FDI but not the reverse. Frimpong and Oteng-Abayie (2008) using data covering 1970 to 2002 concluded that there was no Granger causality between economic growth and FDI. A decomposed sample of 1970-1983 and 1984-2002, resulted in no causality conclusion. However, the latter sample showed a contrary outcome; FDI Granger caused GDP growth positively. Gyapong and Karikari (1999) explained that the effect of higher economic performance on FDI depends crucially on the strategy of the investment. Osabuohien (2007) studied the effects of trade openness and other economic variables on economic performance of two ECOWAS members, Ghana and Nigeria. Trade openness was found to positively impact the economies of ECOWAS members. However, the effect was higher in Ghana than Nigeria. This, he explained could be as a result of delay in policies implementation and also importations of consumer goods as well as reliance on exportation of primary products that usually have little value addition in the production process. This was in line with the assertion of Fosu (1996) cited in Osabuohien (2007) that primary exports have little

external impact on non-export sector. Additionally, the level of real government spending was relevant to the economic performance of Ghana and Nigeria, and again the effect on Ghana exceeded that of Nigeria. This was attributed firstly to high level of recurrent expenditure as well as delay in policy implementation that normally characterised their budgetary system; and secondly, the effect of corruption and insincerity in the administration of government expenditure was another issue. Hoeffler (2002), and Ndiyo and Ebong (2004) cited in Osabuohien (2007) also confirmed that openness to trade positively impacted growth of nations via increased investment.

Within the framework of multivariate cointegration and vector error-correction modelling, Adenutsi (2008) provided an insight into the macroeconomic factors that explain industrial performance since the implementation of economic reform programme in 1983 with reference to Ghana. The study revealed that the key factors that undermine industrial performance are trade openness and lending rates, whilst the availability of raw materials, industrial wage rate, rate of inflation, and domestic market size or economic performance promote industrial performance particularly in the long-run. Employing an ADRL bounds test, Sakyi (2011) established a long run cointegration relationship between trade openness, foreign aid and economic growth in Ghana for the 1984 to 2007 period. The findings suggested that, despite reduced effect of their interaction term, the short and long run positive impact of trade openness and foreign aid on economic growth have been beneficial to Ghana. This outcome was not surprising as according to Sakyi (2011) Ghana is currently named among the star performers in efforts to reach the MDGs by 2015. The study also revealed the long run growth benefits of the political system currently operating in Ghana. It was also noted that a negative and statistically significant short and long run impact existed for both labour force participation rate and the share of government expenditure in GDP on economic growth.

**EMPIRICAL MODEL, DATA DESCRIPTION AND SOURCES**

Abstracting from the models of Adenutsi (2008) and Tello (2010), the following model is specified:

$$AGGDP = f(BCTA, REER, POL, INF, FDI, AGTOP) \dots 1$$

where *AGGDP* is agricultural GDP as a ratio of total GDP (agricultural performance), *BCTA* is bank credit to agriculture from deposit money banks (DMB) as a ratio of total GDP, both variables measured in nominal terms. *REER* is real effective exchange rate. *POL* is democracy proxied by polity2 variable and *INF* is inflation. The variables of focus are *FDI* and *AGTOP*. Credit contributes to resources required by operators in the sector to purchase inputs for production. Generally, increased credit to any sector should lead to increase in output. Hence, *a priori*, the sign of the coefficient of *BCTA* should be positive. Democracy is known to improve output owing to better allocation of resources and transparency in handling the affairs of countries. Therefore, the sign of the *POL* is expected to be positive. Inflation (*INF*) erodes the value of money. Therefore with the same level of money, the quantity of resources the money can acquire is reduced. As a result, the sign of the coefficient of *INF* is hypothesised to be negative.

Increased openness would create opportunities of trade in locally produced agricultural products. This would create market opportunities thereby increasing sales leading to higher output (Mahadevan, 2003). On the contrary, increased openness would lead to import of cheap agricultural products. These products would compete with those locally produced leading to reduction in agricultural performance. The coefficient of trade openness will therefore be positive or negative depending on the preponderance of the competition or market access effect. *FDI* represents foreign resources invested into agriculture. Generally, higher investments should lead to higher performance

and *vice versa*. Therefore, the *FDI* variable should exert a positive effect on agricultural performance. The *REER*, Ghana's currency value relative to the other major currencies is an index constructed, as adjusted for the effects of inflation. All currencies within the said index are the major currencies being traded. Generally, increased value of the index suggests that purchases from outside Ghana will be more expensive. This means that the agricultural sector would face higher resource prices. Thus, the coefficient for *REER* is hypothesised to be negative.

The *FDI* variable is constructed as inward foreign direct investment in current US dollars divided by Ghana's GDP in current US dollars. The *FDI* was obtained from Ghana Investment Promotion Centre (GIPC). The law establishing GIPC was passed late in 1994, thus data was available from September 1994. For the purpose of annual comparisons, data was used from 1995. The GDP data series used as the divisor was extracted from UNCTADSTAT.

A new trade openness variable according to Squalli and Wilson (2011) was computed for Ghana's agricultural trade. It is the  $(X+M)/GDP$  adjusted by the proportion of Ghana's trade relative to the average world trade, christened composite trade share (CTS). The source of data on import and export of agricultural products is FAOSTAT. The GDP used was for agriculture. *BCTA* data was obtained from various issues of Quarterly Bulletin, Statistical Bulletin and Economic Review published by Bank of Ghana (BOG). The data was captured as credit outstanding to agriculture, forestry and fishing from deposit money banks in Ghana in cedis. This was first converted to Ghana cedis and later converted to US dollars using exchange rate data obtained from UNCTADSTAT. *POL* representing polity2 data was obtained from polity4 data set (<http://www.systemicpeace.org/inscr/inscr.htm>). These contained negative value for 1995. In order to make the data amenable to conversion to natural logarithm, the value 2 was added to

every element of the series to transform the series to all positive numbers (Frenkel, 1976). Annual inflation was obtained from Ghana Statistical Service (GSS). The limitation of data from GIPC from 1995 and the FAO data set up to 2009 resulted in 15 data points. Obviously, this was inadequate for meaningful time series work. Therefore, following Adenusti (2008) and Djokoto (2012b) the data was converted to quarterly series using EViews 7. Prior to escalating the frequency, the data was transformed into natural logarithm.

## RESULTS AND DISCUSSIONS

The mean agricultural performance ratio is 0.2961, close to the max of 0.3166 (Table 1). The mean of trade openness ratio is about twice the minimum and more than half of the maximum ratio. In respect of *FDI*, the mean is about 1.6 times the minimum and about a third of the maximum of the ratio. Clearly, the means of the key variables are appreciably high. On the contrary, except for the *FDI* variable, the standard deviations of the variables are relatively low pointing to more reliable spread of these variables.

The data series were tested for existence of unit roots. Three reasons accounted for the test; to avoid infinite persistent shocks of data series, eliminate spurious regression and conform to the standard assumptions for asymptotic analysis that ensure that the *t*-ratios follow a *t*-distribution. With the ADF test, with the exception of *AGGDP* that was stationary at levels, all others were stationary after first differencing. In the case of P-P test, *BCTA* and *POL* were stationary at levels whilst all others were stationary after first differencing (Table 2).

There is conflict between the decisions of ADF and P-P regarding the *AGGDP*, *BCTA* and *POL*. Irrespective of the choice of decision between ADF and P-P, the results of unit root test show a mix of *I*(0) and *I*(1). This situation precludes the use of Johansen's method to test for cointegration. The alternative is the ARDL method. This was accomplished in Microfit 5.

**Table 1: Descriptive statistics of data**

|           | <b>AGGDP</b> | <b>AGTOP</b> | <b>FDI</b> | <b>BCTA</b> | <b>REER</b> | <b>POL</b> | <b>INF</b> |
|-----------|--------------|--------------|------------|-------------|-------------|------------|------------|
| Mean      | 0.2961       | 0.5034       | 0.0016     | 0.6631      | 107.5502    | 7          | 0.4308     |
| Min       | 0.2729       | 0.2445       | 0.0001     | 0.0249      | 91.4167     | 1          | 0.2415     |
| Max       | 0.3166       | 0.8006       | 0.0048     | 1.0018      | 141.1375    | 10         | 0.5986     |
| Std. Dev. | 0.0119       | 0.1671       | 0.0014     | 0.2712      | 17.6517     | 3.03       | 0.1192     |

Note: The series starts from 1995 to 2009. POL adjusted by adding 2 to convert negative to positive to be amenable for logarithmic transformation (Frenkel, 1976)

**Table 2: Unit Root Tests**

| <b>Variables</b> | <b>Augmented Dickey-Fuller (ADF)</b> | <b>Phillips-Perron (PP)</b> |
|------------------|--------------------------------------|-----------------------------|
| AGDDP            | -3.765785*** I (0)                   | -3.615346*** I (1)          |
| AGTOP            | -3.636250*** I (1)                   | -4.448985*** I (1)          |
| BCTA             | -2.940230** I (1)                    | -6.038421*** I (0)          |
| FDI              | -3.530051** I (1)                    | -4.304133*** I (1)          |
| INF              | -3.509175 ** I (1)                   | -3.971993*** (1)            |
| REER             | -3.088640 *** I (1)                  | -3.088640***I (1)           |
| POL              | -4.582231*** I (1)                   | -5.207351*** I (0)          |

Note: \*, \*\*, \*\*\* represents 10% 5% and 1% levels of significance respectively

**Table 3: ARDL Test for Cointegration among the Variables**

| <b>Testing for existence of a level relationship among the variables in the ARDL model</b> |                 |                 |                 |                 |  |
|--|-----------------|-----------------|-----------------|-----------------|--|
| F-statistic  | 95% Lower bound | 95% Upper bound | 90% Lower bound | 90% Upper bound |  |
| 12.2121  | 3.7361          | 4.9703          | 3.1710          | 4.2773          |  |

The result of the cointegration test (Table 3) shows that the  $F$ -statistic exceeds the upper bound of the 5% and 10% probability levels.

This point to the existence of cointegration relationships among the variables. The existence of cointegration relationship among the variables necessitated the estimation of the long-run model (Table 4) and short run model (Table 5).

None of the coefficients were statistically distinguishable from zero for the long run model. The non-statistical significance of coefficients of AGTOP and FDI shows that openness has no discernible effect on performance of the agricultural sector in Ghana in the long run. These results concur with the finding of Karikari (1992). The statistical insignificance of the coefficient of the openness variable shows that the benefits of free trade alluded to by the proponents do not hold in the case of Ghana's agri-

cultural sector based on the data employed. Indeed, the negative sign shows some semblance of a disincentive role of trade openness to agricultural sector of Ghana. The result however diverge with the findings of Gow and Swinnen (1998), Cuadro *et al* (2001), Osabuohien (2007), Adenutsi (2008), and Sarkar and Lai (2009).

Turning to the short run results (Table 4), a relatively high adjusted R squared (0.77702) suggest that the variability in AGGDP is adequately explained by the explanatory variables specified. Also, the statistical significance of the  $F$ -statistic (30.1586) at 0.00% confirms that the explanatory variables specified jointly explain AGGDP. The impressive model statistics paves the way to discuss the short run model in Table 4.

In the short run, increase in democracy variable by 1% will exert 0.02% increase in agricultural

**Table 4: Estimated long-run relationship**

| Estimated Long Run Coefficients using the ARDL Approach<br>ARDL(1,1,1,0,0) selected based on Schwarz Bayesian Criterion<br>Dependent variable is AGGDP<br>59 observations used for estimation from 1995Q2 to 2009Q4 |             |                |                 |
|---|-------------|----------------|-----------------|
| Regressor   | Coefficient | Standard Error | T-Ratio[Prob]   |
| AGTOP   | -0.036467   | .10781         | -0.33826[0.737] |
| FDI   | 0.076432    | .14396         | 0.53092[0.598]  |
| INF   | -0.41957    | .25862         | -1.6223[0.111]  |
| REER  | -0.46014    | .35861         | -1.2831[0.205]  |
| BCTA  | -0.20711    | .26918         | -0.76940[0.445] |
| POL   | 0.42891     | .47542         | 0.90218[0.371]  |
| C   | 0.050192    | .38634         | 0.12992[0.897]  |

Note: Prob is probability

**Table 5: Estimated short-run relationship**

| Error Correction Representation for the Selected ARDL Model<br>ARDL(1,1,1,0,0) selected based on Schwarz Bayesian Criterion<br>Dependent variable is dAGGDP<br>59 observations used for estimation from 1995Q2 to 2009Q4 |             |                            |                |
|--|-------------|----------------------------|----------------|
| Regressor  | Coefficient | Standard Error             | T-Ratio[Prob]  |
| AGTOP  | -0.062983   | 0.013010                   | -4.8411[0.000] |
| dFDI   | 0.025217    | 0.003522                   | -7.1605[0.000] |
| dINF   | 0.019671    | 0.016495                   | -1.1925[0.239] |
| dREER  | 0.021573    | 0.016482                   | -1.3089[0.196] |
| dBCTA  | 0.009710    | 0.001936                   | -5.0167[0.000] |
| dPOL   | 0.020109    | 0.004005                   | 5.0211[0.000]  |
| ecm(-1)  | 0.046883    | 0.056667                   | -.82734[0.412] |
| ecm = AGGDP + 0.036467* AGTOP -0.076432*FDI + 0.41957*INF +<br>0.46014* REER + 0.20711*BCTA -0.42891* POL -0.050192*C-   |             |                            |                |
| List of additional temporary variables created:  |             |                            |                |
| dAGGDP = AGGDP-AGGDP(-1), dAGTOP = AGTOP-AGTOP(-1)<br>dFDI = FDI -FDI (-1), dINF = INF-INF(-1), dREER = REER-REER(-1)<br>dBCTA = BCTA-BCTA(-1) and dPOL = POL-POL(-1).   |             |                            |                |
| R-Squared  | 0.81162     | R-Bar-Squared              | 0.77702        |
| S.E. of Regression   | 0.0016125   | F-Stat. F(7,51)            | 30.1586[.000]  |
| Mean of Dependent Variable   | 0.8309E-4   | S.D. of Dependent Variable | 0.003415       |
| Residual Sum of Squares  | 0.1274E-3   | Equation Log-likelihood    | 301.1294       |
| Akaike Info. Criterion   | 291.1294    | Schwarz Bayesian Criterion | 280.7417       |

Note: 1: \*, \*\*, \*\*\* represents 10% 5% and 1% levels of significance respectively. 2. R-Squared and R-Bar-Squared measures refer to the dependent variable dAGGDP and in cases where the error correction model is highly restricted, these measures could become negative. 3. Note: Prob is probability.

performance. This confirms the role of democracy in promoting Ghana's agricultural economy. This may be attributable to better and more transparent allocation of resources and support to the sector from Ghana's development partners because of the democratic dispensation. In respect of BCTA, the sign is negative. This is unexpected. This implies that

BCTA declined with increase in AGGDP; that is; less and less credit in the formal credit sector went to agriculture as a ratio of Ghana's GDP. The predominantly smallholder nature of Ghana's agriculture may also explain this occurrence. These smallholders may not borrow from the mainstream financial institutions. Thus a decrease in DMB loans and definitely

an increase in alternative financing other than from deposit money banks will induce agricultural performance in the short run. Turning to the variables of focus, a 1% increase in FDI will induce a 0.025% decline of agricultural performance. Similarly, a 1% decrease in trade openness will exert a 0.063% increase in agricultural performance in the short run. Despite the minuscule coefficients, the negative sign and statistical significance are important. Clearly, in the short run, openness of the economy of Ghana to trade and FDI do not promote improvement in agricultural output. The short run results agrees with the outcomes of the studies by Karikari (1992). The results however diverge with the findings of Gow and Swinnen (1998), Cuadro et al (2001), Osabuohien (2007), Adenutsi (2008), and Sarkar and Lai (2009).

#### CONCLUSIONS AND RECOMMENDATION

The paper examined the long run and short run relationship between openness and agricultural performance. Representing openness as FDI and trade openness, the results showed that there is no long run relationship between FDI and trade openness on one hand and agricultural performance on the other. In the short run however, the coefficient of some variables were statistically distinguishable from zero. Outstanding loans to the sector exerted a negative effect on agricultural performance. Democracy was positively related to agricultural performance. Inflation and real effective exchange rate did not show any statistically significant effect on agricultural performance. In respect of the key variables under investigation, trade openness and FDI exerted a statistically significant negative effect on agricultural performance. Though inelastic, the sign of the coefficients show that increased openness of Ghana's agriculture through trade and FDI do not promote performance of the sector. These results require an examination of the type of FDI attracted into the sector. Also, the detrimental effect of trade openness suggests a re-examination of the free trade policy to

provide some cushion to sections of the sector to enhance output thereby increasing performance.

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