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Abstract
Incidence of poverty for Ghana has reduced from about 52% in 1991/92 to 28.5% in 2005/06. This is a remarkable drop in the incidence of poverty, but the current level is still high. Equally high are the levels of the depth and severity of poverty. This means that any policy pursued by the country must aim at further reducing the incidence, depth and severity of poverty. A number of policies and programmes have been implemented to reduce extreme in Ghana. On such policy, liberalisation of import trade has been implemented extensively in the country even though its long run contribution to poverty reduction is not clear in the trade literature. Therefore, this study examined the long run impact of import liberalization on the incidence, depth and severity of poverty at the national and household levels. The investigation was carried out using a recursive dynamic computable general equilibrium and a microsimulation model calibrated to the 2005 Social Accounting Matrix (SAM) of Ghana. In spite of the strong criticism against import liberalisation as being anti-growth and poverty enhancing, the results showed that the net effect of import liberalisation leads to reduction in the incidence, depth and severity of poverty at the national and household levels in the long run. However, the benefits of import liberalisation accrue more to urban households than rural households. This finding is due to the fact that urban households, generally, are net consumers of imported goods and services than rural households. In addition, the urban areas have the necessary economic infrastructure and so are economically vibrant, thereby offering huge opportunities for people to participate in international trading activities. The study recommends that import liberalisation must continue to be part of the poverty alleviation strategy of government for Ghana Post 2015 and that government focuses poverty alleviation policies more in the rural areas.

Keywords: Import Liberalization, Tariff Revenue, Poverty, Ghana, SAM, CGE.

1.0 Introduction

The effect of import liberalisation on poverty has been and continues to be a hotly debated topic in development economics (while Omolo, 2011; Khan, 2007; Stolper-Samuelson, 1941 have

adduced evidence in support of a positive relationship between the two variables, Rodrik, 2000; Rodriguez & Rodrik, 2001; Ravallion, 2001; Lubker, Smith & Weeks, 2002; Wei, 2002; Chen & Ravallion (2004) have evidence in support of adverse effect of import liberalisation on poverty). This is because there is no historical antecedent linking import liberalisation to poverty and more importantly, the theoretical link between them is unclear (Winters, McCulloch, & McKay, 2004). Empirically, however, the channels through which trade liberalisation impact poverty have been identified as price and availability of goods, factor prices, government transfers, incentives for investment and innovation, terms of trade, and short-run risk (Winters, et al (2004) as cited in Bouet, 2006).

In explaining the link between import liberalisation and poverty, the argument has always been made that import liberalisation reduces the prices of consumer goods (Weerahewa, 2004, 2006), raise real incomes, expand the availability of goods and thereby lift many poor households out of poverty. Another channel that has been identified is the employment channel. That is, through import liberalisation local firms import raw materials at lower cost, expand their operations and create employment for more people. The protagonists, on the other hand, argue that import liberalisation destroys local productive activities, increase unemployment and push many households that were above the poverty line, below it. They further argue that import liberalisation deny government revenue from tariffs on imports that could be used to provide services and support the vulnerable in society. Clearly, the effect of import liberalisation on poverty is an empirical issue and must be taken case by case.

Ghana offers an interesting case study because it is one of the fastest liberalizers in Africa (Economic Commission on Africa, 2004). In the late 1960s and earlier 1970s, Ghana operated liberal trade regime. But this was replaced in 1972 with a controlled regime with the government as a major producer. The policies of the period emphasized import substitution, underpinned by a restrictive foreign exchange rate regime, quantitative restrictions upon imports and price controls. Indeed, the country recorded its worst macroeconomic performance during this period (Killick, 2010). Specifically, GDP recorded negative growth rates, there were large budget deficits, and high inflation rate from the early 1970s to the early 1980s (Killick, 2010). The situation got so bad that the government had to embark upon a massive reform of the economy in April 1983.

As part of a comprehensive reform programme supported by the IMF and the World Bank, Ghana liberalised her import trade. The liberalisation took the form of removal of quantitative restrictions on imports and replacing them with tariffs, and the reduction in the level and range of import tariffs. For instance, the simple average tariff rate fell from 32.6 percent for the period 1972-82 to 11.3 percent for the period 1990 -2003. There was also the liberalisation of the exchange rate, financial sector, and the labour market. The reduction in import tariff meant that imports of consumer goods were now cheaper for households. It also meant that firms that relied on import inputs could import raw materials at reduced costs. On the contrary, import liberalisation implied that cheaper imports of consumer goods have come to replace domestically produced goods forcing some local firms to collapse and raise the risk of adjustment and hence create unemployment, and increase poverty among the people.

Ghana succeeded in reversing the negative trends in macroeconomics indicators and she recorded sustained growth rate averaging 5 percent per annum, inflation reduced considerably, the huge fiscal deficit was brought within reasonably limits and the current account deficit was reduced. The period also witnessed an expansion in the range of imports as well as the absolute value of total imports with a lot of cheap imports of consumer goods coming in from the Asian

countries. Meanwhile, the composition of the traditional sources of Ghana's merchandise imports, Nigeria, United Kingdom, USA, Cote d'lvoire, Germany, Switzerland and Togo, remains intact.

The period has also witnessed significant reduction in headcount poverty from about 52 per cent in 1991/92 to 28.5 per cent in 2005/2006. Poverty remains substantially higher in rural areas than urban areas, even though poverty fell by 23% in the rural areas as against 16% in the urban areas for the period under consideration, and is disproportionately concentrated in the rural savannah. Despite the fact that the incidence of poverty has fallen, the depth of poverty for those who remain poor has remained relatively stable. The declines in poverty have been concentrated mostly in Western, Central, Volta, Eastern, Ashanti and Brong Ahafo, Northern, and Upper East regions. Only Accra experienced an increase in poverty. The poverty figure for Upper West region for 2005/06 is 21% higher than the figure for 1991/92 even though it represents a fall of 0.3% from the figure for 1998/99. Large poverty reductions have occurred among public sector workers, private sector employees in both the formal and informal sectors, and non-working households. The decline, however, is not evenly distributed according to ecological zones and regions.

Given that Ghana has adopted poverty alleviation as a kingpin of its development agenda in line with MDG 1, and she is likely to maintain this agenda Post 2015, there is a need to explore explicitly the link between import liberalisation and poverty using appropriate quantitative framework. Thus, the critical question that was answered in this study after considering the above issues is: What is the long run impact of trade liberalisation on poverty in Ghana? Specifically, the study investigated the macroeconomic impact of import liberalisation and the effect of import liberalisation on the incidence, depth and severity of poverty of households in Ghana. Performing one policy experiment, gradual removal of taxes on imports, the objective was achieved. The analysis was carried out for the period 2005 to 2020. The choice of the study period was informed by the availability of a comprehensive household dataset from the Ghana Living Standards Survey (GLSS 5) and the fact that 2020 is about five years post 2015 and more importantly, five years into the coming into being of the Economic Partnership Agreement between Ghana and the EU. Clearly, the study is significant in assessing import liberalisation as a post 2015 development strategy for Ghana. The results show a reduction in the incidence, depth and severity of household poverty when import taxes are gradually removed.

Previous Computable General Equilibrium (CGE) analysis of Ghana's trade policy reforms have been carried out within the static CGE framework with all pointing to the fact trade liberalisation complemented with other policies alleviates poverty (Bhasin & Annim, 2005; Bhasin & Obeng, 2005a; 2005b; 2006, Bhasin, 2012). The current study is different from all the earlier ones in that while the former studies covered only one period, the current study is dynamic in nature and therefore covers a longer time period. Second, and more importantly, while the earlier studies eliminated all taxes on imports and exports, this study employed a gradual elimination of trade taxes. Finally, sensitivity analysis was carried out in this study while the earlier others lacked sensitivity analysis.

The presentation of the rest of the paper follows this order: Section Two describes the research methodology, which covers the way the study was carried out and the model used. Section Three presents and discusses the results. Here, the presentation includes the macroeconomic effects of the policy simulations, national and household poverty. Finally, section Four concludes and presents the policy recommendations of the study.

2.0 Methodology

A study of the impact of import liberalisation on poverty requires the use of a model that can capture all the complexities involved in the linkage. With this in mind, the Dynamic Computable General Equilibrium and Microsimulation model was employed in this study. The following activities were systematically followed in pursuant of the objectives of the study: the dynamic computer general equilibrium model was run from 2005 to 2020, and the prices, incomes and commodity consumption and factor price changes for an aggregate household was fed into a microsimulation model for the disaggregated households in the survey. Household expenditures were accordingly updated and the standard poverty measures were then recalculated using the updated expenditure estimates and the new poverty line.

Model

The model adopted for this study is a recursive dynamic CGE linked to a micro-simulation model, developed by Breisinger, Diao and Thurlow (2009). It has its origins the static CGE model developed at the International Food Policy Research Institute (IFPRI) and documented in Lofgren, Harris and Robinson (2002). It is solved one period at a time through updating such variables as investment spending and population growth rate to reflect changes that have taken place in the current period. The model represents a small open economy that has no influence on international markets and it is calibrated to the Social Accounting Matrix (SAM) of Ghana for the year 2005. There are three production sectors, three factors of production and nine categories of households. The model is presented in four blocks, including production and prices; institutional incomes and domestic demand equations, equilibrium conditions and macroeconomic closure and factor accumulation and allocation equations.

The poverty effects of the policy simulations were carried out in the microsimulation model. The microsimulation model was constructed using the expenditures of all the households in the 2005/2006 living standard survey for Ghana. In the CGE model, however, households are aggregated and do represent larger household categories identified in the survey based on expenditure and location. As the relevant data for the CGE is the 2005 SAM for Ghana, which is constructed with data from the survey, there is a direct mapping between commodities and households in the model and survey. The endogenous changes in prices, incomes and commodity consumption from each aggregate household coming from the policy simulation to the CGE is used to adjust the level of expenditure for the corresponding disaggregated households in the survey. The incidence, depth and severity of poverty at the national level and for each household category are recalculated using the updated expenditure estimates and the poverty line.

The main policy experiment carried was a gradual reduction of import tariff rate by 6% per annum. The 6 per cent reduction in the import tariff rate was arrived because the target was to reduce import tariff to zero by the simulation period of 2020. So given an average tariff rate of 16 per cent, a 6 per cent yearly reduction will bring the tariff rate to zero at the end of the 15 year period.

3.0 Results

Macroeconomic effects

The first objective of the study was to examine the macroeconomic impact of a gradual elimination of import tariffs. This section of the report pursues the first objective. The impact of gradual elimination of imports tariffs on key macroeconomic variables such as absorption - private consumption, government consumption, investment and stock change-, exports, imports, GDP, and exchange rate are summarized in Table 1. All the figures are expressed as percentages of the base values. The simulated results are derived after a policy experiment has been implemented.

Table 1: Macroeconomic Indicators

Variable	Base	Sim(%)
Absorption	258508.79	8.39
Private Consumption	168893.02	9.10
Government consumption	33168.71	3.59
Fixed investment	56398.47	10.70
Stock change	48.58	2.19
Exports	64163.34	17.22
Imports	-115304.17	10.27
GDP (factor cost)	177235.57	9.40

Source: Simulation results

The results show that in the long run gradual removal of import taxes (Trade liberalisation) leads to increase in absorption. As shown in Table 1, absorption increases by about 8.4 percent over the base scenario. There is also an increase of about 9.1 percent in private consumption. Increase in private consumption is sustained by rise in imports. Other components of absorption have equally been affected positively by the policy experiments. For instance, government consumption increases by about 0.3 percent, and investment rises by about 10.7 percent. The rise in absorption is an indication that import tariff elimination (trade liberalisation) enhances overall welfare in Ghana for the study period of 2005 - 2020. Other components of aggregate demand that have seen improvements as a result of the policy change are exports and imports. Exports increase by about 17.2 percent while imports rise by about 10.3 percent. The increase in absorption, exports and imports has reflected in the positive change in GDP at factor prices. There is an increase of about 9.4 percent in GDP at factor prices. The finding supports the results of Acharya (2010), Diallo et al (2010), Wong et al (2008), Feraboli (2007), Bchir et al (2005) and Cattaneo et al (1999).

The improvement in the macroeconomic variables is justified in the sense that tariff removal improves the competiveness of the economy of Ghana. Tariff reduction results in a decrease in import prices that makes imports cheaper than domestic import-competing substitutes. Consumers therefore, shift from the domestic import-competing substitutes to demand more of imported goods and services. The import-competing sectors, which were initially heavily protected, will see a decline in output and employment.

The increase in imports causes depreciation of the local currency because the current account is assumed fixed. Again, the fall in the prices of imported inputs reduces domestic costs of production. These two effects lead to a reduction in the domestic costs of production for the expanding sectors of the economy. Output in these expanding sectors will rise, employment will grow, and the productive factors from the declining sectors will relocate to these growing sectors.

The reduction in costs of production and the depreciation of the local currency leads to increase in competiveness of the export sector. As a result of the increase in the domestic price of exports, the export industry expands, investment increases, production of exportables increase, export of goods and services rise, employment in the export sector rises, incomes increase; this creates a multiplier effect of incomes and expenditures leading to further increase in GDP. Examples of expanding exports sectors include non-traditional exports such as fruit, tree nuts, vegetable and industrial crops, and traditional exports like cocoa, forestry products, fish products and wood products (see Table 3 in Appendix A).

These are the sectors in which Ghana has comparative advantage and, more importantly, are also labour intensive activities. Consequently, employment of unskilled and semi-skilled labour will be substantial. Since labour income is the main source of income for majority of households in the country (refer to Appendix B), household incomes will rise and poverty rate may decrease.

It is not only the exports sector that expands in response to the policy shock. Table 3 shows that other non-tradable sectors of the economy of Ghana have equally expanded. Some of the other sectors that have expanded include administration, health, water, education, trade, transport and communication, real estate, mining, trading, other services, etc. Majority of the sectors have expanded to provide supporting services to the export sector (backward linkages). Examples of these services include road transport, business services including telecommunication, public sector services, water and electricity, health and education. The expansion of the service sector which includes retail trade is significant in that it provides employment for many people. Construction contracts because as a non-tradable it had benefited enormously from the tariff protection. These results suggest that additional trade liberalisation brings welfare gains to Ghana. The findings confirm those of Wang and Zhai (1998) for China, Siddique et al (2008) for Pakistan, but contradict that of Pradhan and Sahoo (2008) for India.

Sectoral impact

Complete removal of import tariffs across the board results in the reduction of the domestic prices of imports. As is to be expected, the reduction in import prices is highest in sectors with high initial tariff (See Appendix C). As captured in Table 2 (Appendix C), the protected sectors are rice, chicken, dairy products, textiles, clothing, leather and footwear, paper products, publishing and printing and fertilizer. The removal of the import tariffs causes significant reduction in their prices as recorded in Table 4 (Appendix D).

As depicted in Table 4, the price of rice, chicken, dairy products, textiles, leather and paper products decreases the most as a result of the gradual removal of import tariffs. The decline in the domestic price of imports brought about by tariff removal causes the quantity of imported goods in the consumer goods sector to rise. Examples of such imported consumer goods include rice, dairy products, chicken, processed food, textiles, clothing, and paper products (see Table 5 in Appendix E). Other products that have seen improvement in their imports are crude oil and related products and fertilizer. The increase in fertilizer import is, particularly, significant because it will boost agriculture production, ceteris paribus. Because imported goods are now cheaper relative to domestic import-competing substitutes, demand for imports in Ghana rises. Demand for domestic import-competing substitute falls, profits in that sector falls, and local production decreases. Because the earnings of factors of production fall under these circumstances, factors may relocate to the expanding sectors of the economy.

The expanding sectors are mainly in the agricultural, industrial and export subsectors. The expanding agriculture sectors include maize, other crops, other cereals, vegetable farming, goat and sheep rearing and cocoa farming. Other food processing, other chemicals, electricity and metal sectors constitute the expanding industrial sectors. For the export sector, the growing sectors include non-traditional exports such as fruit exports, tree nuts, vegetable exports and export industry crops, and the traditional exports like cocoa, forestry products, fish products and wood products, while in industrial sectors, sectors like electricity, water, and mining, among others have expanded their output (See Table 6 in Appendix F). The expanding sectors, particularly, agriculture employ over 50 percent of the labour force and by extension provides income to many households in Ghana.

It is instructive to note that most of the expanding agricultural and export-oriented sectors are labour-intensive productive activities. Consequently, employment of unskilled and semi-skilled labour will be substantial. Since labour income is the main source of income to majority of households in Ghana, household incomes will increase and many people will come out of poverty. The rise in incomes in the agricultural and export sectors will lead to increased demand for non-tradable goods and services. Cattaneo et al (1999) obtained a similar result for Costa Rica.

The expansion of the agricultural sector, industrial sector and export sector will cause ancillary sectors such as those in the services sector to also grow. In particular, the transportation industry such as road transport will have to expand to deal with the increasing volumes of cocoa, wood products and the transportation of all the agricultural products from the farm gate to the marketing centres. Other service sector activities that are expected to grow to support the expanding sectors in agriculture, industry, and exports, are telecommunication and business services, banking and finance, insurance and real estate.

Factor earnings

As noted earlier, the decreased cost of imported inputs causes the domestic costs of production to fall and coupled with the depreciation of the local currency will lead to increase in the competitiveness of the exports of Ghana. Because domestic export prices rise under these circumstances, it induces production of more export crops, so export volume increases. As can be seen in Table 6 (Appendix F), export volumes of all non-traditional exports such as true nuts, fruits, vegetables, fish, processed meat and fish increase. These sectors are labour intensive

activities and as output in these sectors expand, the demand for labour will increase, wages go up, and labour from the contracting sectors, i. e. import-competing sectors of the economy, will be attracted to these sectors. This development has implications for factor employment, factor earnings and sectoral allocation of productive resources. Returns to labour has accordingly risen as shown in Table (7) (Appendix G).

As shown in Table 7, with the exception of change in return to capital, there is a positive change in return to self-employed labour (agriculture), and land in all the ecological zones as a result of the removal across board of import tariff. This finding is not surprising as most of the expanding sectors are agricultural activities with high labour intensities. It is pertinent, however, to note that the change in returns to self-employed agricultural labour is more than that of skilled labour non-agriculture and unskilled labour non-agriculture. Similarly, the change in returns to land exceeds change in returns to skilled labour non-agriculture and unskilled labour non-agriculture. This pattern in the change of factor returns is because trade liberalisation allows Ghana to realize its comparative advantage in producing labour-intensive commodities that use agriculture labour and land intensively. As noted earlier, most of the expanding sectors of the economy are agriculture-related activities, which use agricultural labour and land intensively. Hence, the demand for self-employed agricultural labour and land increase relatively more than other factors, pushing up their relative returns.

Equally important, earnings of skilled labour (non-agriculture) and unskilled labour (non-agriculture) have risen. The increase in income of non-agriculture skilled and unskilled labour emanates from the expansion in some sectors in the industrial sector such as electricity, water, the service sectors such as retail and wholesale activities, transportation, etc.

The decline in the returns to capital is expected as the capital released by the declining sectors cannot be absorbed in the expanding sector thereby causing the returns to capital to fall. The expanding sectors are not able to absorb the capital released from the contracting sector because of the specificity of capital. Specificity of capital means that the capital equipment is meant to be used for only one particular activity and so the capital cannot be redeployed for use in other productive activities. An example of the contracting sectors is textile. Capital used in the textile industry will not be suitable for an expanding sector in agriculture, say, vegetable farming.

Another reason that accounts for the decline in the returns to capital is that installed capacity utilization of firms is very low in Ghana. According to Asante, Nixson, and Tsikata (2000) capacity utilization of the manufacturing sector in Ghana was 46 percent in 1993. Among the numerous factors accounting for the low capacity utilization in manufacturing are lack of domestic demand for manufactured products, inadequate supply of raw materials, lack of spare parts and the use of obsolete machinery and plants. Now, with this huge unutilized capacity in the manufacturing sector and with the underlying cause of the problem, i.e. lack of domestic demand for locally manufactured goods unresolved, there is no way that capital released from a contracting sector will be absorbed by an expanding sector because the expanding sector will just put its idle capacity back to use.

The description of the changes in factor returns appears to be in line with the prediction of the Stolper-Samuelson theorem. The theory states that when a country opens up to trade, returns to factors that are used intensively in its export sector will increase while returns to the factors used intensively in its import-competing sector will decrease. The results of the policy

shock indicate expansion in the traditional and non-traditional export sectors of the economy. These are labour-intensive activities and so the returns to all categories of labour have increased. On the other hand, there has been contraction of the import-competing sectors, which use capital intensively. Consequently, returns to capital have declined for the period of study.

Following the policy simulation, income change for all categories of household has been positive. Under trade liberalisation, for example, urban households benefit more from the income change than rural households as shown in Table 8. With the exception of Accra, all households recorded percentage changes of less than 1%. It is also worth noting that Rural South and Rural North obtained percentage increases of less 0.5%.

Table 8: Household income

Household	Base	Sim (%)
Accra	20240.29	6.98
Urban coastal	6425.04	6.83
Urban forest	10858.13	5.08
Urban south	10202.28	5.92
Urban north	2190.00	5.02
Rural coastal	5826.97	6.98
Rural forest	15597.96	4.66
Rural south	15397.22	4.50
Rural north	9185.72	4.77

Source: Simulation Results

It is observed from Table 8 that even though both urban and rural households benefit from import liberalisation, urban households benefit more from import liberalisation than rural households. This finding confirms the finding of Acharya (2010) for Nepal but contradicts that of Omolo (2011) for Kenya where rural households benefitted more than urban households.

Household consumption, another channel through which import liberalisation impact poverty, was investigated. Given the positive change in incomes as reported in Table 9, the structure of consumption is affected through prices. With the liberalisation of import trade, prices of imported consumer goods fall and if households consume more of such goods with lower prices, then consumption will increase depending on the nature of the good in question. Table 9 reports the percentage change in consumption for all categories of households following import liberalisation.

Table 9: Household consumption

Household	Base	Sim (%)
Accra	18174.80	6.43
Urban Coastal	6274.58	5.01
Urban Forest	10086.66	4.89
Urban South	9764.72	4.63
Urban North	2204.19	4.92
Rural Coastal	5704.94	4.17
Rural Forest	13630.09	4.12
Rural South	14810.10	4.89
Rural North	8475.53	4.51

Source: Simulation Results

Clearly, apart from Accra, all other households register less than 1% increase in consumption.

Poverty Analysis

The second objective of the study was to investigate the impact of import liberalisation on national and household poverty. In pursuant of this objective, tariff on import was gradually removed and the impact on incidence, depth and severity of poverty at both the national and household levels were analyzed. Table 10 reports the poverty outcome of gradual import tariff removal at the national level.

Table 10: National Poverty

	Base			Import Liberalisation		
	P0	P1	P2	P0	P1	P2
National	28.5	9.6	4.6	27.4	9.0	4.3
Urban	10.8	3.1	1.3	7.4	2.0	0.8
Rural	39.2	13.5	6.6	39.0	13.2	6.3

Source: Simulation Results

The Table shows that all the poverty measures fall at the national level for the policy shock. Under trade liberalisation, the incidence of poverty falls from the base value of 28.5 percent to 27.4 percent in 2020. The depth of poverty, which measures how far the poor are from

the poverty line, also decreases from 9.6 percent in the base to 9.0 percent in 2020. Equally, the severity of poverty declines from 4.6 percent in the base to 4.3 percent in 2020. In relative terms, the incidence of poverty reduces by 1.1 percent, the depth falls by 0.6 percent and the severity of poverty declines by about 0.3 percent. The outcome clearly suggests that trade liberalisation has the potential to better the circumstances of the poor in Ghana in the long run. This finding confirms the findings of Omolo (2011), Raihan (2010) and Nahar and Siriwardana (2009), who found that trade liberalisation has a positive impact on poverty.

Across all locations, all poverty indicators also decline. For urban areas, the headcount poverty decreases from 10.8 percent in the base scenario to 7.4 percent in 2020, while the poverty gap falls from 3.1 percent in the base to 2.0 percent in 2020. Finally, the severity of poverty falls from 1.3 percent in the base to 0.8 percent in 2020. The extent of decrease in the poverty measures under trade liberalisation is 3.4 percent for the incidence of poverty, 1.1 percent for the depth of poverty and 0.5 percent for the severity of poverty. In the rural areas, on the other hand, the percentage of people living below the poverty line goes down from 39.2 percent in the base scenario to 39.0 percent in 2020. The poverty gap decreases from 13.5 percent in the base scenario to 13.2 percent in 2020, while the severity of poverty falls from 6.6 percent in the base to 6.3 percent in 2020. In effect therefore, the incidence of poverty decreases by 0.2 percent, the depth of poverty falls by 0.3 percent and the severity of poverty declines by 0.3 percent.

In terms of the change in poverty indicators, the fall in the incidence of poverty, the depth of poverty and severity of poverty is higher in the urban area than in the rural area. For instance, while the incidence of poverty falls by a margin of 3.4 percent in the urban area, it falls by 0.2% in the rural area. The depth of poverty for urban area falls by 1.1 percent, while it declines by 0.3 percent in the rural area. Finally, the severity of poverty also changes by a higher percentage in the urban area than in the rural. Specifically, while the severity of poverty falls by 0.5 percent in the urban areas, it decreases by 0.3 percent in the rural areas.

The analysis done above shows that trade liberalisation favours urban households more than it does to rural households. The results confirm the findings of Annabi et al (2005) for Senegal, Siddique et al (2008) for Pakistan, Adjovi et al (2008) for Benin, but contradict the result of Aredo, Fekadu and Workneh (2007) who found that a complete elimination of tariff increases poverty at the national level in Ethiopia.

Two plausible reasons can be assigned for the observed trends in poverty measures after the implementation of the gradual removal of import tariffs. The first reason is that most of the goods whose prices decline after removing import tariffs are consumer goods consumed mainly by the urban population. It therefore stands to reason that the urban areas benefit more from poverty than the rural areas that consume less of these goods. Second, the levels of poverty in the rural areas are so high that the positive change in income is not enough to take many people out of poverty. In other words, the poor in the rural areas are so far away from the poverty line such that the positive change in income is not enough to reduce poverty significantly. Contrary, the poor in the urban areas are very close to the poverty line such that the slightest increase in income makes a significant impact on urban poverty.

At the household level, generally, poverty is prevalent in rural households than in urban households. Again, poverty is higher in the northern households than any other households. Northern households have the highest incidence of poverty in both urban and rural areas. For northern rural households, poverty levels have been very high so that even though poverty generally reduces with trade liberalisation, the level of poverty in the northern rural households

still remains high. For example, the poverty headcount decreases from 68.3 percent in the benchmark to 66.5 percent in 2020 for the policy shock and the depth of poverty falls from 31.4 percent in the benchmark to 29.4 percent in 2020. Finally, the severity of poverty declines from 17.8 percent in the benchmark to 16.3 percent in 2020. Strikingly, the urban north tops in all the measures of poverty for the urban households. For instance, the incidence of poverty reduces from 31.9% to 25%, the depth of poverty reduces from 10.9% to 8.1% and the severity of poverty declines from 4.9% to 3.3%. It is also worthy of note that the highest reduction in the incidence of poverty occurs in the rural coastal household. Here, the poverty headcount decreases from 24.0 percent in the benchmark to 16.1 percent in 2020 under the policy scenario.

Table 11: Trade liberalisation and household poverty

Household	Base			Import Liberalisation		
	Po	P1	P2	Po	P1	P2
Accra	10.6	2.9	1.1	7.3	1.6	0.6
Urban Coastal	5.5	0.9	0.2	2.8	0.4	0.01
Urban Forest	6.9	1.7	0.7	4.3	1.1	0.5
Urban South	21.6	7.6	4.0	15.2	5.9	3.1
Urban North	31.9	10.9	4.9	25.0	8.1	3.3
Rural Coastal	24.0	5.3	1.8	16.1	3.5	1.1
Rural Forest	27.7	6.8	2.4	33.3	7.4	3.1
Rural South	36.7	8.4	2.8	32.9	6.9	2.3
Rural North	68.3	31.4	17.8	66.5	29.4	16.3

Source: Simulation Results

The analysis so far shows that there are significant differences in the incidence of poverty, depth of poverty and severity of poverty even though poverty rates generally decrease for each household (Siddiqui et al, 2008; Cororaton, 2008; Akapaiboon, 2007). For instance, poverty rates are much higher in the Northern households compared to households in the other locations. The Urban North households record the highest poverty headcount among the urban

households and the Rural North households also experience the highest incidence of poverty among rural households.

One major reason why trade liberalisation has the lowest impact on poverty in the Northern region is that two of the major commodities of the region, rice and poultry, actually contracted. Other reasons cited for the region's poor poverty record are its geographical disadvantages, including relatively low and variable rainfall, savannah vegetation, and the inaccessibility of large parts of the region which has less well-developed rural road networks compared to those in the rest of the country (ODI & CEPA, 2005; Breisinger et al, 2008) and a deliberate colonial government policy to under-develop the region so, it could serve as a source of cheap labour for the south (Shepherd & Gyimah-Boadi, 2004 as cited in AL-Hassan & Diao, 2007). The stark inequality between the north and the south of Ghana needs to be addressed in order to make a significant progress in poverty alleviation.

The finding that urban households benefit more from import tariff liberalisation than rural households corroborates the results of Nwafor et al (2007), Bibi and Chatti (2006), Siddique et al (2008), Siddique (2009), and Adjovi et al (2008), but contradicts the findings of Nahar and Siriwardana (2009), Chitiga and Mabugu (2005) and Bautista and Thomas (1997), Pradhan and Sahoo (2008) and Decaluwe et al (1999). In conclusion, import tariff liberalisation reduces poverty at the household level in the long run. In particular, trade liberalisation reduces the incidence, depth and severity of poverty. However, urban households benefit more than their rural counterparts.

4.0 Conclusions and Policy Recommendations

The study investigated the impact of import liberalisation on poverty in Ghana using a dynamic CGE framework. Two specific objectives were pursued. The first specific objective was to find out the effect of import liberalisation on macroeconomic indicators. Secondly, the study sought to investigate the impact of import liberalisation on the incidence, depth and severity of poverty at both the national and household levels.

In pursuance of these objectives and to be able to capture both the direct and indirect effects of import liberalisation in Ghana, a recursive dynamic computable general equilibrium (DCGE) and a microsimulation model calibrated to a 2005 Social Accounting Matrix (SAM) built with the most recent household survey data, Ghana living Standards survey (GLSS5) was used for the study for the period 2005 to 2020. One main policy simulation, gradual import tariff reduction, was carried out in this study to evaluate the poverty impacts of import liberalisation in Ghana.

The results of the study also revealed that import liberalisation produces positive impacts on macroeconomic indicators. Specifically, GDP, private consumption, government consumption, investment, exports and imports increased as a result of the gradual removal of import tariff. The second most important results observed is that import liberalisation is poverty-reducing. That is, the incidence of poverty, depth of poverty and severity of poverty decrease at the national, regional and household levels when all import taxes are removed. This means that while import liberalisation reduces the number of poor people in the population, it improves on the conditions of the poor as exemplified by the reduction in the depth of poverty and severity of poverty. However, the north-south poverty divide and the rural-urban poverty dichotomy still persist.

This finding is due to the fact that urban households, generally, are net consumers of imported goods and services than rural households. In addition, the urban areas have the

necessary economic infrastructure and so are economically vibrant, thereby offering huge opportunities for people to participate in international trading activities. The study recommends that import liberalisation must continue to be part of the poverty alleviation strategy of government for Ghana after 2015 and that government must focus poverty alleviation policies more in the rural areas.

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Appendix A

Table 3: Trade liberalisation and value added

Commodity	Base level	Trade Liberalisation (%)
Maize	831.54	-1.31
Rice	365.64	-43.91
Sorghum/Millet	1070.68	-0.20
Cassava	707.14	4.00
Yams	132.30	0.55
Cowpea	294.23	0.72
Soyabea	65.01	2.85
Groundnuts	732.68	-3.07
Tree nuts	226.79	10.84
Fruit domestic	500.99	3.29
Vegetable domestic	1572.36	-5.07
Plantains	129.57	3.28
Fruit export	55.81	4.98
Vegetable export	122.82	4.83
Palmoil	207.30	3.89
Cocoa beans	1896.40	4.62
Other crop	129.20	21.93
Export Industrial crop	548.43	5.85

Chicken	8.88	-15.83
Eggs	28.60	9.17
Beef	539.18	-6.30
Goat	346.17	6.24
Other meat	434.77	3.25
Forestry	4963.44	0.47
Fishery	2197.22	8.97
Mining	6592.86	0.83
Other formal food processing	573.64	5.21
Cocoa processing	728.95	3.05
Dairy	655.34	-12.66
Meat and fish processing	2171.27	3.88
Textile	328.63	-59.06
Clothing	1274	-5.87
Leather and footwear	600.97	-38.15
Wood production	1695.08	11.57

Table 18 (Continued)

Paper products, publishing and printing	324.62	-2.65
Petroleum	519.98	6.19
Diesel	436.47	5.59
Other fuels	12.82	2.67
Other chemicals	1430.29	22.61

Metal production	1679.38	7.94
Acapt	1459.64	10.28
Construction	15749.79	-5.42
Water	268.62	5.24
Electricity	4748.71	7.88
Trade services	7582.82	7.49
Other services	1025.24	4.59
Transport services	4575.34	5.46
Communication	2829.49	7.08
Business	2389.17	15.12
Real Estate	3752.11	6.34
Community and other services	3045.86	3.68
Administration	18902.66	0.07
Education	4018.46	0.04
Health	1167.06	1.11

Source: Simulation Results

Appendix B

Table 27: Factorial source of household income

Household	labour Income	Capital Income	Remittances Income	Transfer Income	Total

Accra	83.5	3.1	10.4	3.4	100.0
Urban Coastal	86.4	1.1	9.9	2.6	100.0
Urban Forest	83.9	1.1	14.5	0.5	100.0
Urban South	91.2	3.6	4.6	0.6	100.0
Urban North	89.1	1.5	8.9	0.5	100.0
Rural Coastal	90.7	1.8	7.1	0.4	100.0
Rural Forest	90.5	1.7	6.7	1.1	100.0
Rural South	93.6	1.6	4.7	0.06	99.96
Rural North	92.7	3.4	3.4	0.5	100.0

Source: Author's own computation from GLSS 5

Appendix C

Table 2: Initial tariff rates

Sector	Tariff rate
Rice	20.4
Chicken	18.9
Forestry	5.5
Dairy Products	28.7
Meat and fish Processing	6.1
Textiles	32.1
Clothing	7.1
Leather and footwear	35.1
Paper products, publishing and printing	39.2
Fuel	0.8
Fertilizer	10.2
Other chemicals	4.9

Metal products	2.7

Source: Ghana 2005 SAM

Appendix D

Table 4: Trade Liberalisation and import prices

Commodity	Base Level	Trade Liberalisation (%)
Maize	1.55	4.10
Rice	3.76	-12.83
Other cereals	1.00	4.10
Other crops	2.66	4.26
Chicken	1.00	-11.79
Beef	1.00	4.25
Sheep and Goat	1.00	4.24
Other meat	1.00	4.23
Other formal food processing	1.00	4.25
Dairy products	1.00	-18.26
Meat and fish processing	1.00	-1.62
Textiles	1.00	-20.16
Clothing	1.00	-2.52
Leather and footwear	1.00	-22.01
Paper product, publishing and printing	1.00	24.27

Crude and other oils	1.00	4.26
Other fuels	1.00	3.52
Fertilizer	1.00	-5.17
Other chemicals	0.88	-0.54
Metal products	0.48	1.45
Electricity	1.00	4.14

Source: Simulation Results

Table 5: Trade Liberalisation and imports

Commodity	Base Level	Trade Liberalisation (%)
Maize	188.71	-9.36
Rice	1054.42	32.07
Other cereals	136.74	3.34
Other crops	64.49	-15.09
Chicken	1782.82	17.41
Beef	740.93	7.30
Sheep/ Goat	175.44	8.64
Other meats	374.20	4.75
Other formal food processing	8352.54	4.34
Dairy products	144.19	13.65
Meat and fish processing	2396.95	16.00
Textiles	1689.67	3.80
Clothing	4358.93	4.67

Leather and footwear	1069.50	4.99
Paper product, publishing and printing	503.28	5.27
Crude and other oils	10104.97	6.44
Other fuels	4787.27	4.48
Fertilizer	2879.73	0.31
Other chemicals	7356.46	0.87
Metal products	6335.89	-5.36
Electricity	86.36	-13.92

Source: Simulation Results

Table 6: Trade liberalisation and exports

Commodity	Base level	Trade Liberalisation (%)
Cocoyam	92.31	-2.81
Palm oil	163.02	-0.73
Groundnuts	46.58	-.03
Tree nuts	473.63	1.37
Fruit export	660.77	22.05
Vegetable export	47.78	4.91
Cocoa beans	874.65	5.77
Export of industrial crops	79.43	5.53
Forestry	7726.40	2.05
Fishing	1679.71	15.06
Mining	11292.39	0.93

Cocoa processing	1927.72	0.03
Meat and fish processing	1927.72	16.78
Textiles	118.52	-4.30
Wood products	3246	14.35
Other chemicals	119.45	6.36
Repairing, hotel and restaurant	8203.77	6.04

Source: Simulation Results

Appendix G

Table 7: Trade liberalisation and factor returns

Factor	Base	Trade Liberalisation (%)
Self-employed agricultural labour	8.76	7.37
Skill labour (non-agricultural)	26.26	5.35
Unskilled labour (non-agricultural)	12.49	5.11
Capital	0.21	-2.36
Land (coast)	3.26	8.00
Land (forest)	2.39	6.62
Land (south)	3.90	6.46
Land (north)	2.17	5.85

Source: Simulation Results