

UNIVERSITY OF CAPE COAST

CAPITAL MOBILITY AND KNOWLEDGE DIFFUSION FROM CHINA
INTO GHANA'S AGRICULTURAL SECTOR

JOHN WINDIE ANSAH

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INTO GHANA'S AGRICULTURAL SECTOR

BY

JOHN WINDIE ANSAH

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Faculty of Social Sciences, College of Humanities and Legal studies,
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award of Doctor of Philosophy degree in Sociology

AUGUST 2020

DECLARATION

Candidate's declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's signature..... Date.....

Name: John Windie Ansah

Supervisors' declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal supervisor's signature..... Date.....

Name: Dr. William Boateng

Co-supervisor's signature..... Date.....

Name: Dr. Emmanuel Ekow Asmah

ABSTRACT

China's presence in Africa's development process represents new configurations in international relationships expressed in capital mobility and knowledge diffusion. (CMKD) This study sought to interrogate Chinese capital mobility and knowledge diffusion into Ghana's agricultural sector in terms of forms, trends, interpretations, adaptations as well as economic and political outcomes. The study was largely exploratory and descriptive employing mixed methods drawn from both primary and secondary sources using purposive sampling technique. Guided by political economy theories, the study revealed increasing patterns of importation of Chinese equipment with noticeable investments in the industrial fish trawling industry, albeit an observably low level of investments in the poultry and landed investments. These patterns are understood not within orthodox political economy contexts alone but also within social innovation contexts. The study also revealed varied interpretations and modes of cultural adaptations which are useful for policy formulation. The economic outcomes of Chinese CMKD were revealed as promising with threatening challenges. The political outcomes were riddled with traces of appreciable institutional responses but with exhibits of political inertia reducing Ghana's opportunity to benefit from China's CMKD. The study concluded that CMKD may produce development or underdevelopment in host countries. However, the occurrence of either of these developmental effects largely depends on institutional support and regulatory policies coupled with the interpretations and the behaviours people attach to the CMKD. It then recommended strong state activism which will alter the Chinese CMKD into opportunities for agricultural development.

KEY WORDS

Agriculture

China

Ghana

Liberalism

Marxism

Political Economy

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DEDICATION

To my Family

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LIST OF ACRONYMS AND ABBREVIATIONS

ADC	Agricultural Development Corporation
AESD	Agricultural Engineering Services Directorate
AGRA	Alliance for Green Revolution in Africa
ATDC	Agricultural Technological Training Center
BBC	British Broadcasting Corporation
BoG	Bank of Ghana
CAADP	Comprehensive African Agricultural Development Programme
CAAS	China Academy of Agricultural Sciences
CMKD	Capital Mobility and Knowledge Diffusion
CPE	Cultural Political Economy
EFAAC	Emergency Food Assistance Advisory Committee
FAO	Food and Agricultural Organization
FARM	Foundation for Agricultural and Rural Management
FDI	Foreign Direct Investment
GIPA	Ghana Investment Promotion Authority
GoG	Government of Ghana
GSFC	Ghana State Fishing Corporation
GSGDA	Ghana Shared Growth and Development Agenda
HPE	Heterodox Political Economy
IFPRI	International Food Policy Research Institute
ISRO	Indian Space Research Organization
MIDAS	Managed Inputs Delivery and Agricultural Services

MoFA	Ministry of Food and Agriculture
MoFEP	Ministry of Finance and Economic Planning
MoTI	Ministry of Trade and Industry
MTADP	Medium Term Agricultural Development Programme
NORRIP	Northern Regional Rural Integrated Development
OFI	Operation Feed your Industries
OFY	Operation Feed Yourself
PRC	People's Republic of China
ProSAVANA	Triangular Co-operation Programme for Agricultural Development of the Tropical Savannah in Mozambique
SFC	State Farms Corporation
SSA	Social Structure Accumulation Approach
SSA	Sub-Saharan Africa
UGFC	United Ghana Farmers' Council
URADEP	Upper Regional Agricultural Development Programme
VORADEP	Volta Regional Agricultural Development
VRC	Village Resource Center
WADDL	Wabao Grain and Oil Investment Limited
WTO	World Trade Organization

CHAPTER ONE

INTRODUCTION

This study figures out the actions and decisions of the Chinese government and Chinese private investors in so far as these actions permeate Ghana's agricultural regime. This study extends the scope of previous studies carried out on agriculture; as it situates the study of agriculture within international political economy contexts with emphasis on knowledge diffusion and capital mobility. This study also introduces the element of *agriculture* into the plethora of studies on Ghana-China ties which overly concentrates on mining, trade and infrastructural development.

The findings of the study will feed into the knowledge diffusion and the capital mobility development analytical framework. It introduces insights into these frameworks by integrating findings about knowledge diffusion and capital mobility in the agricultural sector as it pertains to the Ghanaian social structure

The usefulness of this study is also informed by the necessity to generate suitable policies which will attract and sustain Chinese investment in the agricultural sector. It may equally guide the institutionalization of best practices in terms of laws and political interventions to address contradictions which the Chinese long march into Ghana's agricultural sector may bring. Further, these policies may work to reduce Ghana's vulnerability associated to the Chinese participation in her agricultural sector, if any of these vulnerabilities would so exist.

Background to the Study

Serving as a source of foreign exchange, employment, reducing expenditure on importation, enhancing food security, agriculture remains the real foundation of every country's economic development (Todaro & Smith, 2009). In Africa, for example, agriculture accounts for 33 percent of its Gross Domestic Product (GDP) (New African, 2014). Its capacity to reduce poverty cannot be equally overemphasized because investment in agriculture, according to Moyo (2014), could lift 85 million people out of poverty by 2024. These realities signify the enormous potential in Africa's agricultural sector in poverty reduction as well as bridging the inequality gap (Ansah, 2013a). Besides, they also resonate Myrdal's argument that "it is the agricultural sector that the battle for long-term economic development will be won or lost" (1968, p.2).

In Ghana, the agricultural sector is made up of five key subsectors namely the food crop cash crop, fisheries, animal husbandry and the forestry sub sectors. The agricultural sector has made major contributions to economic and human development. Although the contribution of agriculture to GDP has declined to around 20 percent in recent years, its vitality to enhance crop production and employment remains apparent as it absorbs about 45 per cent of the work force (Okudzeto, Mariki, De Paepe & Sedegah, 2014). In addition, Ghana's agricultural sector experienced an increase in foreign exchange earnings from US\$ 687 million to US\$ 2.197 million between 2000 and 2009. This was largely attributable to strategies such as fertilizer subsidy, price setting, credit to small and medium scale enterprises as well as income tax deductions and exemptions (Bank of Ghana (BOG), 2010).

The usefulness of agriculture to mankind and human society seem to be a source of satisfying an instinctual desire. It may provide food to satisfy hunger which may then secure a considerable degree of survival. Agriculture is about subsistence; it is about life. Masanobu Fukuoka once said “*the ultimate goal of farming is not the growing of crops, but the cultivation and perfection of human beings*” (1985, p.5). Thus, agriculture is an endeavor that satisfies the natural rights of man.

Agriculture’s role to satisfy hunger is just one of the many things which may form the philosophical reason for this study. Agriculture is a wealth creating venture. The World Bank (2014) has clearly confirmed this by suggesting that growth in agriculture is 2.5 times more effective in reducing poverty than any other sector (cited in African Business, 2014). Hence, equally important is the fact that agriculture is also about prosperity.

Additionally, agriculture is about human happiness; it is about the sense of pride and fulfilment one enjoys when that person comes face to face with nature and observe nature takes its own course from planting to harvesting. Agriculture is about human virtue. Summarized by Thomas Jefferson,

agriculture is the wisest pursuit, because in the end, it contributes most to real wealth, good morals and happiness
(1787, p.1)

Thus, when we concentrate on agriculture we do not just survive, we promote human values. Agriculture is not about nature; it is the promotion of ethical principles. These claims about agriculture make it relevant to the moral philosophical persuasion therefore rendering it a utilitarian act. This study is

therefore situated within the philosophy of utilitarianism. Using the philosophy of utilitarianism, this study will display if the decisions about capital mobility and knowledge diffusion in the agricultural sector are promoting the utility – happiness - required of it.

Seeking to ensure an efficient agricultural regime transcends the quest to achieve individual aspirations. Agriculture works to meet the collective interests of the society. Individuals may engage in agricultural practices but the outcomes of their actions promote the collective good of society irrespective of one's class and influence. Achieving these common goals connotes equality because as John Rawls said, these collective interests are "*certain general conditions that are...equally to everyone's advantage*" (cited in Velasquez, Andre, Shanks, S.J., & Meyer, 1987).

These general conditions may include the food security, employment generation, higher incomes, and foreign exchange through exports. These are common goals which people recognize and further those goals they share. As a group of people seek such common good, they are urged to view themselves as members of the same community. Thus, as agriculture enables a group of people to achieve their common goals it promotes unity. They may reflect on broad questions concerning the kind of society they want to become and how they are to achieve that society. Hence, achieving the ideals of agricultural production is not about achieving *equality* alone but also promotes unity in society.

Far more remarkable about agriculture is the fact that its ability to reduce poverty is replicated in the political arena. Thus, when agricultural regime does not satisfy any economic needs and gains the political space may

lose its stability. Consequently, its ability to maintain law and order will be reduced. When the survival desires of men are unmet, they are likely to disregard the societal norms which guide their behavior.

When the essence of their livelihoods is distorted by the absence of those economic conditions which guarantee their existence, they put up actions may run inconsistent to existing patterns of social order. In Africa, agriculture is the key economic condition which guarantees the survival of the 70 percent Africans who rely on it for their livelihoods. Agriculture is not about profits alone; it is about politics and power. Aristotle once said, “*for men of ruined fortunes are sure to stir up revolutions*” (see Barnes, 2016, p.38). Inspired by Aristotle’s political philosophy of social stability one is thus convinced that maintaining a strong agricultural regime is a source of *citizens’ empowerment and political stability*.

Africa’s agricultural potential has attracted tremendous foreign investments (Alden, 2013; Brautigam, 2015; Buckley, 2013). Even though the reasons for the attraction may appear not be far-fetched Hallam (2009) puts it in a more elaborate and succinct fashion. He notes:

A major underlying driver for the recent spate of interest in international investment in food production appears to be food security and a fear arising from the recent high food prices and policy-induced supply shocks that dependence on world markets for foods supplies or agricultural raw materials has become more risky (p.2).

On account of the developmental outcomes of the foreign investment in the agricultural sector they have generated controversial economic, political,

institutional, legal and ethical issues with complex debates about whether or not these investments should be encouraged. While some regard it as an expression of South-South cooperation others regard it as a neo-imperialist expansionism. But whatever, the case may be agriculture is of strategic value to the political economy of China (Mueller & Mueller, 2014).

Putting Ghana on the spotlight, she has also attracted some enormous investments, trading activities and technical expertise from development partners and given the fact that productivity increases in Ghanaian agriculture are potentially significant (World Trade Organization (WTO), 2014). The movement of investments, commodities and technical or inventor ideas is generally referred to as capital mobility and knowledge diffusion. Capital mobility can be conceptualized as the flow of capital from one territory to another with multiple sources, actors, and mediums with developmental outcomes.

Knowledge diffusion also refers to the process through which knowledge is communicated through certain channels from members of one social system to another social system who do not share the same national territorial boundary through trade, foreign direct investment and inventor mobility (Almeida & Kogut, 1999; Aitken & Harrison, 1999; Bitzer & Geischecker, 2006; Javorcik, 2004; Coe & Helpman, 1995; Kang, 2015; Keller, 2002; Oettl & Agrawal, 2008). These two phenomena as noted by Kang (2015) operate simultaneously since most incidents of capital mobility are accompanied by knowledge diffusion and these may have developmental outcomes in the territories among whom capital mobility and knowledge diffusion take place.

The benefits of these investments cannot be overlooked considering Ghana's infrastructural deficits which currently require sustained spending of at least US\$ 1.5 billion per annum over the next decade (Ministry of Finance, 2013) and the fact that Ghana lacks the financial wherewithal to quickly address these deficits. One of these partners is China. In Africa, China's influence on the scope and amount of capital mobility and knowledge diffusion in agriculture in Africa is growing significantly (Buckley, 2013). In Ghana, China's influence in terms of capital mobility and knowledge diffusion has also been felt. In 2011 Ghana experienced 79 Chinese investment projects registered with the total value of \$145 million, while in 2012 China registered 56 projects making it a top investor in Ghana in terms of number of registered projects (Ghana Investment Promotion Council (GIPC), 2013) cutting across all sectors of the economy. Much as these forms of capital mobility and knowledge diffusion exist, they generate some attitudes, interpretations and behavioural patterns. They may create space of cultural diffusion and influence domestic politics.

As China makes this long march into Ghana's economy, many questions stir the intuitions of many sociologists, political economists, development analysts particularly about what China seems to bring on the table of Ghana's agricultural sector. These questions have not been fully answered because the trudge to search the real facts about China's role in Ghana's agriculture has either not been well ignited or perhaps got stalled, hence the motivation of the study.

The sociological significance of the study cannot be overemphasized. Bräutigam and Tang (2012) provide a clearer picture of Chinese activities in

agriculture is important foundation for Africans and their development partners to more fruitfully engage with an increasingly important actor. As a knowledge production enterprise, this study will thus produce the relevant information which will present policy makers with the opportunity to recognize specific areas in the agricultural sector which could be plugged in order to attract and, more importantly, sustain Chinese investment and then eventually create and consolidate the needed gains.

Much as this study may expose the manifest and latent functions of Chinese involvement in the agricultural sector which would have to be consolidated, it may as well uncover the deficiencies associated to the Chinese contributions in Ghana's agricultural sector. These deficiencies may be constituted by some dysfunctional outcomes which may derail the economic, social and human development prospects of Ghana. A discovery of these dysfunctions will offer the needed information which may guide the strategies which will cure such deficiencies.

Some studies have exposed some of the inherent contradictions to the growth of Ghana's agricultural regime (Asamoah, 2001; Frimpong-Ansah, 1991; Seini, 2002; Tsikata, 2007). However, as far as China's role in Ghana's agricultural production regime is concerned these contradictions remain assumptions. Having the facts may attract some immediate political responses but, more importantly, the facts about the contradictions would also inform the institutionalization of best practices expressed in agricultural policy planning, laws and interventions which will aim at forestalling these contradictions.

Enormous lessons could be tapped from the strategies used by the Chinese which have led them to the significant inroads made in their

agricultural sector. China's ability to ensure its population, which equals a fifth of the world's population, is adequately fed with only 8 percent of arable land is a brilliant success worth emulating.

The study unravels some of these strategies which, when emulated, may gravitate Ghana's agricultural performance to an appreciable pedestal. Finally, as an exploratory study, it serves as a launch pad for many other studies which will examine China's efforts at boosting or otherwise a food secure haven for Ghana.

Problem Statement

Gu, Zhang, Vaz and Mukwereza (2016) and Xu, Li, X., Qi, Tang and Mukwereza (2016) note that Chinese state funding serving as a support and guide to Chinese businesses are of particular interest as they reveal the emerging ways that expertise, technology and finance are deployed in agricultural development. Chinese position as a top investor weaves into her '*going out*' policy which encourages Chinese firms including agricultural parastatals to invest in a host of countries with myriad of incentives offered through the China Africa Development Fund. Consequently, China has strengthened itself as a leading player in the world economy, challenging the dominance of the United States (Paz, 2012). In addition, China also presents itself as more assertive in her intent of being at the core of the "multilateral debate about the reconfiguration of global governance mechanisms" (Vaz, 2015, p.1).

These international political economic realities Chinese engagement in the agricultural sector with African and other developing countries including

Ghana has attracted varied intellectual reactions about the outcomes of the Chinese economic philosophies, policies, decisions, and practices on the African social structure broadly categorized into three. The first is the Afro-optimists (Mpahlwa, 2008; Wade, 2008) who regard China's engagement with Africa as very favourable and beneficial. The second is the Afro-pessimists (Bond & Garcia, 2015; Lumumba-Kasongo, 2011) who suggest that Africa's exposure to the machinations of Chinese investors is a threat. The Afro-pragmatists (Alden, 2013; Buckley, 2013) with a more neutralist view claim that empirical studies on Chinese capital mobility and knowledge diffusion is required to authenticate the claims of the other intellectual reactions

As it stands now, intellectual discourse on Ghana's agricultural regime have concentrated on the internal contradictions in the sector and the role of internal actors in the improvement of the sector (Asamoah, 2001; Moyo, 2014: Nyanteng & Dapaah, 1993; Seini, 2002). Besides this, even though studies on China-Ghana relations exist, these studies have generally concentrated on trade, manufacturing, road infrastructure development, energy (Fenny & Aryeetey 2008; Glaesel & McCracken, 2012; Marfaing & Theil 2011; Tang, 2017; Tsikata,).

Some studies give an outlay on how Chinese foreign aid works to promote Ghana's agricultural sector (Amanor, 2013; Idun-Arkhurst, 2008) without any political economy outlook. Subsequently, other studies which provide rich intellectual analyses on the Chinese role in Ghana's agricultural sector have been carried out (see Amanor & Chichava, 2016; Scoones, Amanor, Favareto, & Qi, 2016). However, the studies were not focused exclusively on China and Ghana hence the information about China's role in

Ghana's agricultural sector in these studies seem to have been subsumed by information about other countries. Consequently, it blurs the detailed picture one needs to obtain which otherwise would enhance useful discussions and inform agriculture-related policy strategies.

Clearly, the spectra within which the afore-mentioned studies have been carried out suggest that attention could still be given to the agricultural sector but, this time round, on how China may have been contributing to the sector's prospects or otherwise in a detailed manner.

As an attempt to tease out the focus of this study as far as Chinese contribution in Ghana's agricultural regime is concerned, the discovery is made from the literature about certain truths which characterize major economic relations between countries. First, when actors from different territories meet knowledge is likely to be shared in more relational and interactive terms (Engel, 1990; Long, 2001). The knowledge appears to manifest instantaneously and transparently (Polanyi, 1967). In addition to Polanyi's observations, Philip (2015) contends that much can be taught about how knowledge diffusion and [*capital mobility*] could produce development or underdevelopment within specific regions of the modern world [*see Walker, 1978*]. Further, Hanusch, Maußner, and Rahmeyer (2009), also establish that despite the effect knowledge diffusion might have in territorial spaces, such effects have been neglected quite often in recent literature covering the topic of knowledge diffusion.

On grounds of these contestations and research gaps, this study locates the role of China, as an external actor, in Ghana's agricultural sector on the altar of three concepts namely capital mobility, knowledge diffusion and

territorial development couched within political economy frameworks. This study is located within political economy frameworks because, as Scoones et al. (2016) point out, intellectual discourse about Chinese engagements in African agriculture must look beyond the descriptive narratives and “look at the dynamic and uncontested politics of engagement as new forms of capital and technology enter the African context” (p.1). Scoones et al. (2016) argues that development visions are socially constructed imageries and are promoted as policy narratives and they are usually contested at home society and these contests even expand when they get to destination. With these gaps and intellectual backgrounds, this study seeks to focus on the role of China in Ghana’s agricultural sector with specific emphasis on the food production with crop production, animal husbandry, industrial fishing and aquaculture as the key sub sectors in focus.

General Objective

- To examine the nature of Chinese capital mobility and knowledge diffusion into Ghana’s agricultural sector

Specific Objectives

- To provide the political economy contexts within which the forms and trends of capital mobility and knowledge diffusion from China into the agricultural sector will be understood
- To analyse the interpretation attached to the capital mobility and diffused knowledge from China, for agricultural purposes, among various sub sectors

- To establish how the interpretations have influenced modes of adaptation of the capital mobility and diffused knowledge from China into Ghana's agricultural sector
- To analyse the usefulness of capital mobility and knowledge diffusion to the activities in the agricultural sub-sectors
- To interrogate the threats associated with capital mobility and knowledge diffusion from China into Ghana's agricultural sector
- To examine the implications of capital mobility and knowledge diffusion from China for the law and politics of food sector development strategies in Ghana

Research Questions

- What have been political economy contexts within which the forms and trends of capital mobility and knowledge diffusion from China to the various sub sectors occur?
- How have actors in the sub sectors interpreted the capital mobility and diffused knowledge from China, for agricultural purposes?
- How have these interpretations influenced the mode of adaptation of the diffused knowledge from China?
- How have capital mobility and knowledge diffusion been useful to the economic activities in the various sub-sectors of agriculture?
- In what regards do we discover the mobility of capital and knowledge diffusion from China as a threat to Ghana's food production sector?

- What are the implications of capital mobility and knowledge diffusion from China for the politics of food sector development strategies in Ghana?

Definition of Concepts

Knowledge – an ‘intangible’ tool which is constructed as an outcome of a social process which individual and groups continuously adapt and alter in response to changing intentions opportunities and circumstances in the ecology and the social structure. It is also a non-material resource which, as possessed by or dispersed among individuals, is generated, used, transformed and transmitted to promote social progress through rational choices, organizational efficiency, as well as through social and economic equity (Adapted from Hanusch, Maußner, & Rahmeyer, 2009; Purwaningrum, Beckhanov & Sepulveda, 2009; Quinn, Anderson & Finkelstein, 1996)

Knowledge Diffusion – the process through which knowledge is communicated through certain channels from members of one social system to another social system who do not share the same national territorial boundary through trade, foreign direct investment and inventor mobility (Almeida & Kogut, 1999; Aitken & Harrison, 1999; Bitzer & Geischecker, 2006; Javorcik, 2004; Coe & Helpman, 1995; Kang, 2015; Keller, 2002; Oettl & Agrawal, 2008) which may be obtained through a product or a policy attempt to transfer know-how to the end-user.

Capital Mobility – This refers to flow of capital from a foreign country to another in three main forms—investment from foreign private companies, known as private capital flows, remittances from migrant workers, and aid

from foreign governments, often called official development assistance (ODA) (Epstein, 2005; Krippner 2004; Palley, 2009). In this paper, the definition of capital mobility will be limited to the Investments from foreign (in this case, Chinese) companies and aid from foreign (in this case Chinese) government.

Adaptations – these are referred to as the cultural values made up of behaviours, perceptions and attitudes which individuals exhibit in response to changes in the social structure

CHAPTER TWO

LITERATURE REVIEW

Introduction

This chapter presents a review of literature linked with knowledge, knowledge diffusion and capital mobility as concepts. This is coupled with a review of political economy theories which explain the contexts and patterns with which capital mobility and knowledge diffusion produce certain observable developmental outcomes.

This chapter also presents a review of empirical evidence drawn from many geographical areas on issues related to agricultural production as well as Chinese investment in the agricultural sector. This chapter then presents a conceptual framework which sums up the content of the reviewed literature in a pictorial form.

Knowledge and Knowledge Diffusion: Definitions and Relevance

The notion of knowledge has appeared in much literature within philosophical and theoretical contexts. Even though the concept may not generate much controversy in definitional terms its nature and dynamic importance produces a platform of many perspectives.

Purwaningrum, Beckhanov and Sepulveda (2009) define knowledge as the ‘intangible’ resource which may be generated, used and transformed by multiple actors. From Hayek’s (1945) perspective knowledge never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and frequently contradictory which all separate individuals possess.

Polanyi (1967) points out the contextual nature of knowledge. In his submission, knowledge has implicit and explicit context. Implicit knowledge, to Polanyi cannot be captured instantaneously, over time and space and it must be transmitted by personal contact via face-to-face communication, because it is often embodied while explicit knowledge can be easily articulated, transferred and saved and is often disembodied. As such, knowledge may not just be generated, used and transformed but it may be transmitted as well. Indeed, the mode of transmission is determined by the context within which knowledge is generated (Urmetzer, Schlaile, Bogner, Mueller and Pyka, 2018).

Hanusch, Maußner, and Rahmeyer, (2009) introduce two closely linked facets of knowledge which include (a) the creation of knowledge and (b) the diffusion of knowledge. The linkages between the facets are far more expressed with the introduction of Information and Communication Technology (ICT) which does not only favor the process of knowledge diffusion but also enforces the creation of knowledge, indirectly, (Hanusch, Maußner, & Rahmeyer, 2009) as well as being an indicator of created knowledge.

From the classical works by Rivera-Batiz and Romer (1991) knowledge diffusion is defined as either a direct transfer in the sense of human capital transfer or more indirectly linked with the diffusion of new technologies and of intermediate and capital goods. Indeed, knowledge diffusion happens when knowledge is communicated through certain channels from members of one social system to another social system who do not share the same national territorial boundary.

As stated by Krugman (1991) knowledge diffusion is hard to measure, both practically and theoretically. This is because “knowledge flows are invisible; they leave no paper trail by which they may be measured and tracked” (p.2). Providing further insights in a rather metaphorical fashion, Hanusch, Maußner, and Rahmeyer, (2009) argue that diffusion process itself can be imagined as an epidemic or as a hierarchical phenomenon. The first assumes that, from a given source, knowledge diffusion spreads uniformly over space. The latter instead interprets knowledge diffusion as deepened by agglomeration phenomena. Knowledge first flows from the source to agglomerated areas and then with a certain delay to peripheral economic areas. Hence, knowledge creation and knowledge diffusion are not only context or problem based dependent, but further have a time and a spatial dimension.

The theory of diffusion of innovation (DOI) developed by Everett Rogers (1992) provides an explanation to the processes and contexts within which knowledge the diffusion of innovation theory explains how an idea or product gains impetus and spreads through a specific population or social system over time. The theory argues that is that people’s adoption of a new idea, behavior, or product is the end result of diffusion of that new phenomenon. This theory regards adoption as the process by which a person does something (product or a behavior) differently than what they had previously. In this sense, innovation, in a new social system, is said to have happened. The significant determinant to adoption, as they theory argues, is the person’s ability to perceive the idea, behavior, or product as new or innovative.

Adoption, according to Rogers (1992), does not happen in a social system simultaneously; rather it is a process whereby some people are more apt to

adopt the innovation than others. Five categories of the adopters were found out. They include innovators (those who want to be the first to try the innovation). They are followed by the early adopters (those who represent opinion leaders and embrace change opportunities). The third group is early majority (those are not leaders but adopt new ideas before the average person). The fourth group is made up of the late majority (those who are skeptical of change, and will only adopt an innovation after it has been tried by the majority). The fifth group is composed of the laggards who are very conservative.

The theory assumes that there are five main factors that influence adoption of an innovation, and each of these factors is at play to a different extent in the five adopter categories. They include relative advantage the innovation has over other ideas, product and programmes, the compatibility of the innovation with the values, experiences, and needs of the potential adopters, complexity associated with the understanding and/or use of the innovation, the extent to which the innovation can be tested or experimented with before a commitment to adopt is made (triability). The last factor is observability. This has to do with the extent to which the innovation provides tangible results.

One finds the operability of knowledge management between the knowledge creation and knowledge diffusion continuum Knowledge management, as Uriarte (2008) puts it, is the conversion of tacit knowledge into explicit knowledge and sharing it within the organization. In an elaborate manner knowledge management becomes the concept which expresses the process of finding, gathering, assessing, organizing, and sharing information or knowledge (Gonzalez & Martins, 2017) through which organizations may

generate value from their intellectual and knowledge-based assets (Urairte, 2008).

In classical philosophical and sociological writings, notably those by Comte and Hegel, knowledge is considered critical to the progress of societies. They expressly suggest that knowledge is not an end in itself. But other writings on knowledge which could situate within the realm of political economy have also displayed its usefulness in unequivocal terms irrespective of the ideological stand - be it liberalism or Marxism. For example, Hayek (1945), a neo-liberalist, concludes that the utilization of knowledge could generate ideas, inform decisions and construct rational economic actions among actors in any economic order.

Marx's argument about knowledge rightly expressed in his seminal writings also suggests the acquisition of knowledge about any economic order as significant to marking an end to 'false consciousnesses', hence forming the beginning for acquiring the 'true class consciousness – the path towards the liberation from economic exploitation. Unlike Hayek and Marx who find knowledge as useful to the individual, groups and society at large, Quinn, Anderson & Finkelstein (1996) situate the usefulness of knowledge from the organizational perspective and argue in that regard. To them, effective management of knowledge and innovation has become a key to corporate success, technology progress and economic development.

Fast forwarding the intellectual discourse on knowledge to the 21st century, intellectual analyses on the usefulness of knowledge particularly in the economy, has been brilliantly summarized by Hanusch, Maußner, &

Rahmeyer, (2009). They argue that “knowledge can be recognized as one of the competitive advantages in a globalized economy” (p.1).

Summing up, knowledge is a nonmaterial resource which, as possessed by or dispersed among individuals, is generated, used, transformed, managed, and transmitted to promote social progress through rational choices, organizational efficiency, as well as social and economic equity.

Theoretical Review

This section provides a review on the role of capital mobility and knowledge diffusion in promoting economic development or otherwise. It provides insights about how certain intervening variable contribute to the understanding of the CKMD-development nexus.

Knowledge Diffusion, Geographical Disparities and Economic Development

Quite a number of theoretical ideas have been put forward which define the relationship between knowledge diffusion and economic development within geographical contexts. In the first place, it is established in the literature that the diffusion of knowledge, and its attendant possibility of generating economic development, occurs through three mediums.

The first medium is trade (Bitzer & Geischecker, 2006; Coe & Helpman, 1995; Keller, 2002). The second is through foreign direct investment (FDI) (Aitken & Harrison, 1999; Javorcik, 2004) and the third is personnel or inventor mobility (Almeida & Kogut, 1999; Oettl & Agrawal, 2008). In the literature, proofs are offered about how knowledge diffusion is enhanced by each medium, separately. However, these arguments are limited

as they fail to recognize that these mediums can operate simultaneously. They also fail to recognize that the role of these mediums in enhancing knowledge diffusion is more dynamic and complex than the simplistic and isolated manner with which they have been argued.

Kang (2015) corrects the analytical deficiency in this early works on knowledge diffusion by showing the complex and dynamics relationship between the three mediums. Incorporating trade, FDI and inventor mobility and comparing their effects on knowledge diffusion, Kang makes it apparent that FDI and inventors mobility enhance knowledge diffusion but the flow of knowledge reduces when the technological portfolios of two countries are similar.

Comparing the effects of the three mediums, he argues that inventor mobility is the most effective medium for knowledge diffusion when the technological portfolios are of two countries are completely different while trade becomes more effective and balanced when the technological portfolios are completely identical (Kang, 2015). Hence, it is established, as the literature suggests, that the extent to which knowledge is diffused through these mediums largely depends on the similarities and differences between the technological portfolios of the geographical areas between which a particular kind of knowledge is being diffused.

On the contributions of knowledge diffusion to economic development, Audretsch and Feldman, (1996), in a simplistic fashion, argue that knowledge externalities provide relevant explanation for spatially uneven economic and innovative performance. Moreover, Purwaningrum,

Beckhnahov and Sepulveda (2009) contend that knowledge is important as its adoption by local firms would enable them to move up a value chain system.

One of the expressions of knowledge diffusion is technological transfer. This is true because knowledge is embedded in every technology. At the same time, knowledge diffusion can be beneficial to economic development through technological innovation in a host entity (at national and local level), because the entity can take advantage of both internal and external knowledge to strengthen its innovational capability in so far as spillovers arising from technological innovation can cross national boundaries (Fujita & Thisse, 2002; MacGarvie, 2005; Tseng, 2007).

In this regard, knowledge-intensive activities become fundamental for efficiency, improved competitive advantage and economic performance following the distinctive patterns of geographical distribution (Rodríguez-Pose & Crescenzi, 2008; Shaijumon, 2014). In addition, regions involved in trade and other forms of production and distribution networks may also benefit from channels of international knowledge diffusion which complements and enriches locally produced knowledge (Bathelt, Malmberg & Maskell, 2004; Kang, 2015).

Juxtaposing knowledge diffusion with regional disparities Henderson, Coe, Hess, Yeung, and Dicken (2002) establish that diffused knowledge cut through regional and national boundaries in highly differentiated ways and create structures that are ‘discontinuously territorial’. But the process of knowledge diffusion is done consciously and strategically as firms rationally locate other firms in different geographical areas (host regions) where the activities of the former firms could be carried out effectively (Ernst, 2005).

Additionally, firms may locate some geographical areas as useful in so far as they are needed to facilitate the penetration of important markets. For this reason, bringing the role of geographical disparities into the knowledge diffusion-economic development nexus, MacGarvie (2005) was quick to add that the effect of innovation on national comparative advantage depends on the geographic scope of its diffusion.

Extending the earlier arguments in the literature, studies by Ascani, Cresenzi and Iammarino (2012) have shown clearly that the success of host regions in capturing the advantages of knowledge diffusion, expressed through innovation, crucially relies on fundamental and structural characteristics. This argument serves as a macrocosm of assertions raised about by Sumberg and Thompson (2012) that technology which is an expression of knowledge is embedded in social, economic, cultural and political contexts. These structural characteristics or contexts, Ascani et al. (2012) noted, range from related local knowledge-base and the absorptive capacity of social and institutional infrastructure. Subsequently, studies by Adekunle, Ellis-Jones, Ajibefun, Nyikal, Bangali, Fatunbi and Ange (2012) and Shaijumon (2014) were carried out and their findings corroborated the afore-mentioned assertions. However, they contend that other conditions, these structures, play out in translating diffused knowledge into meaningful developmental outcomes.

On the part of Shaijumon (2014), translation of the knowledge into visible outcomes in terms of productivity depends on how properly the knowledge is diffused to the recipient. Beyond the idea of correctly diffusing knowledge, Adekunle et al (2012) argue that the current understanding and best practices in scientific knowledge diffusion demands a multi-stakeholder

and a multi-disciplinary approach in an integrated framework. This is a position which was rightly supported by Assefa, Alemneh and Roriss (2014) who argue that a successful knowledge diffusion regime relies on a more dynamic, participatory, collaborative system and the one that engages the knowledge end-user in the process.

Closely connected to knowledge diffusion is knowledge adaptation. To Roeling and Fliert, (1994) argue that the processes of adapting knowledge are complex and nonlinear thus the learning process requires heterogeneous and diverse processes in both horizontal and vertical fashions. What was missing in this argument was what could trigger the heterogeneity and diversity of the learning process. By locating the trigger, Purwaningrum, Beckhahov and Sepulveda (2009) extend Roeling and Fliert's arguments. Perhaps this is one of the few scholarly works which provide political economy insights in the knowledge diffusion. They pinpoint trade liberalization, good market infrastructure and favorable government policy as those economic conditions which allow the heterogeneity and diversity of the learning process to flourish.

Nonetheless, all these contentions represent one truth. They suggest that the innovation process and economic development which emerge from knowledge diffusion are the result of complex patterns of interactions between a number of actors acting together according to common norms, practices and historical inheritance (Coe & Helpman; 1995; Ascani, et al2012).

The reality, nevertheless, is that the common norms and practices change in time and space. It is in this regard that Long (2001) contends that the process of adapting knowledge, as a social process, is transforming and individuals or groups may alter and adapt their knowledge in response of the

changing intentions, opportunities and circumstances. These changes include ecological circumstances and economic situations (Purwaningrum et al, 2009) as well as political and social structures.

Capital Mobility and Regional Specificities in Development Process:

Political Economy Perspectives

This section draws on five perspectives each of which has its own unique arguments about capital mobility. These include the Neo-classical Economic Perspective, the Neo-liberal Political Economic Perspective, the Marxian Perspective, the Neo-Marxian Social Structure Accumulation Approach and the Heterodox Political Economic Perspective

Capital Mobility: Manifestations, Actors and Mediums

Historically, the mobility of capital was originally motivated by technological advancement particularly the railway industry (Bookstaber, 2107). Subsequently capital mobility occasioned global economic integration process spawned by imperialism and its hand maidens – slavery and colonialism – between the sixteenth century and the mid twentieth century. With the end of the Second World War and the success of the decolonization process which saw many colonies in Asia, Africa and Latin America gaining independence the texture of capital mobility changed from mere investments to foreign aid with all its true essence and character contained in what was to be known as the Marshal Plan. This operated side-by-side with establishment of subsidiaries of privately-owned multinational companies concentrated in European countries and the United States to developing countries mostly within the manufacturing and, in some little extents, the service industries.

However, the 21st century, with its progressively liberalized world order, has been presented with a new trend in the capital mobility enterprise. In recent times, capital mobility has become increasingly privatized and globally financialized, in intensive forms. Financialization presents itself as a pattern of accumulation in which profit making occurs increasingly through financial channels in the operation of the domestic and international economies through the increasing role of financial motives, financial markets, financial actors and financial institutions (Epstein, 2005; Krippner 2004)

Practically, there are new, hybrid relationships between states and businesses, where state funding supports and guides and businesses implement, are of particular interest, as they reveal the emerging ways that expertise, technology, and finance are deployed (Gu et al., 2016; Xu, Li, Qi, Tang & Mukwereza, 2016) with new roles for the state. Thus, capital mobility has assumed the 'beyond aid' reconfigurative character (Scoones et al, 2016).

Another reconfiguration on the capital mobility enterprise is the fact that it is now operating from multiple sources. With the advent of the new and emergent economies and capital hubs known as the BRICS (Brazil, Russia, India, China and South Africa), Lee (2014) observed that the inclusion of the new sources adding on to old sources such as US or European countries must be seen, in this light, as an extension of capital and markets, with greater diversity and options. Lastly, Moyo, Yeros, and Jha (2012) make new observations about the dynamics of capital mobility concerning the existence of new patterns of accumulation in new sites across the world including Africa in notable areas such as agricultural development, trade, manufacturing and construction.

For developmental purposes the newly configured patterns of capital mobility present a new landscape for development cooperation with greater opportunities for recipient countries to several sources of capital (Kragelund, 2008; Mohan & Lampert, 2013; Tan-Mullins, Mohan, & Power, 2010). However, for intellectual purposes, these new patterns also call for analytical frameworks and techniques within which writers would situate the incidence of capital mobility.

Given the fact that capital mobility may operate simultaneously with knowledge diffusion, it occurs through the three mediums mentioned earlier namely trade, foreign direct investment and personnel or inventor mobility.

Even though Kang analyses the mediums in a more complex fashion he failed to acknowledge the increasing patterns of financialization thereby rendering financial markets, financial actors and financial institutions (Epstein, 2005) as crucial mediums for promoting capital mobility which will be given attention in this paper.

The Political Economy Perspectives

The five perspectives, each with its unique set of arguments about capital mobility are reviewed here. Before looking into the essential arguments of these perspectives as they pertain to capital mobility it will be instructive to note, from purely ecological point of view, that development or under development processes may unfold, traditionally, at the local level owing to the availability of resources which may be spatially concentrated.

As Levy (2013) stresses, the maximization of these resources leads to economic development of the nation. The role of capital mobility, as Levy

(2013) further points out, has proven to be essential to a nation's ability to yield the maximum potential of its available natural resources. In other words, the emergence of a 'regional world' is essentially underpinned by the spatially bounded localised forces that trigger economic development (Storper, 1997). These resources are natural in essence.

Even though Levy (2013) and Storper (1997) argue that capital mobility may yield the maximum potential of available natural resources the process the potential could be realized was not explained. The quest to fill this gap gave rise to the neo-classical perspective to capital mobility.

The Neo-classical Economic Approach

Generally, the conventional neo-classical economic perspective argues that capital mobility, through trade and FDI, maximizes the use of natural resources by promoting financial development and increasing global productive efficiency and growth. Isaksson (2001), on his part, argues from the same neo-classical economic context that capital mobility is by theory, crucial to global resource allocation since it aids to smooth consumption and reduced risk. Isaksson submits further that capital mobility also allows for investment and economic growth as, in an unrestricted form, it facilitates specialization and production of services to the benefit of the international economy.

However, the strength of the neo-classical economic perspective as an analytical framework has been critiqued by recent empirical data which contradict the assumptions of the perspective. Findings from the works of Gomory and Baumol (2000) and Palley (2008) suggest that FDI and

outsourcing, all of which are fostered by capital mobility, may be good for private investors but may be harmful to national income. Furtherance to this, Palley (2009) challenges the functional implication of unrestricted movement of capital suggested early on by Isaksson (2001). Using China as evidence, Palley argues that trade, financial development and FDI also take place even with restricted capital. Besides the neo-classical perspective to capital mobility is deficient because it lacks enough data which present a robust positive relationship between capital mobility and growth (Kose, Prasad, Rogoff and Wei, 2006). Besides this perspective overlooks the extent to which capital mobility may influence political arrangements. This deficiency is apparently corrected by the neo-liberal political economic perspective.

That capital mobility dominates the policy agenda so completely is indicative of the ideological dimension of the debate. Official policy discussion regarding capital controls and exchange rate regimes has been led by institutions such as the International Monetary fund (IMF), the World Bank, the Organization for Economic Cooperation and Development (OECD), and the Bank for International Settlements (BIS) (Palley, 2009). These organizations are peopled by high-paid international bureaucrats drawn from around the world, who own global investment portfolios, and have homes and family in more than one country (Palley, 2009). Adopting a strictly neoclassical standpoint suggests these bureaucrats have a strong private interest in capital mobility, which likely taints the advice these institutions provide. That alone is grounds for fresh public debate over capital controls bringing in the neo-liberal political economic approach.

The Neo-liberal Political Economic Approach

The neo-liberal political economy perspective presents a relationship between the economy and the political institution and shows how economic arrangements affect the political organization. As Hayek (1944) mentioned capital mobility does not just enhance freedom but also helps to protect personal freedom by disciplining governments. Narrowing down to capital mobility as the specific economic arrangement in question the neo-liberal perspective argues that it creates a competitive market sanity that improves the quality of governance. As found in the works of Tiebout (1956) countries are disposed to improve the quality of governance if they realize that capital is exiting into other countries with better systems of governance. In effect, the exit of right capital confers on it the power not only governments; but it changes policy and the structure of economy (Crotty & Epstein, 1996). Palley (2009) argues that capital controls can contribute significantly to economic stability and create important space for autonomous national economic policy; financial liberalization policies in terms of the asset risk/characteristics, the liability and cash flows structure, their “risk appetite” and decision mechanisms (Bonizzi, 2013; Isaksson 2001), and international investment (McCann & Acs, 2009).

The Neo-Marxian Approach

Questions about the superficial functionality of globalization by neo-liberal economists and neo-liberal political economists had been raised by many decades ago in Marxist and Neo-Marxist analyses of imperialism (i.e. slavery, colonialism and neo-colonialism) using them as sources of uneven

territorial development among countries. In the words of the Marxists globalization may not be essentially beneficial for some territories due to exploitation of one territory by another territory. Unlike the neo-liberals who argue that capital mobility promotes vibrant competition among governments which then results in efficiency in governance and policy, the neo-Marxists see that capital mobility may run the economies of countries down which Palley (2009) describes as a “race to the bottom” (p.11). Palley (2014) further maintains that even though financial deregulation aided in fill the capital demand gap it lasted a short while. Indeed, to Palley (2014), the financialization, in the long run, rather resulted in an awfully fragile financial structure, which found expression in the 2007–08 financial crisis

Even though a bulk of literature supports these Marxist views thereby making them useful theoretical tools for analyzing development process in developed and developing countries the trajectories about uneven development in the 1970s and beyond have exposed weaknesses in the Marxist theoretical framework. Indeed, the theory is no longer apt in analyzing development processes perhaps not only because of its monocausal character as Mandel (1975) argues but also because it is unable to distinguish among separate forces operating simultaneously (Walker, 1978).

In other words, even though capital mobility may operate as an isolated force in creating unequal relations between developed and developing countries, Marxists failed to isolate the actual role of capital mobility in the unequal relations in their analyses. Isolating the role of capital mobility Walker (1978) tries to correct the deficiency in the Marxist thought by suggesting that capital may use a location as a strategy against labour with

local development becoming more dependent on outside capital as development comes in and goes out with capital generating a permanent reserve of stagnant places. However, Walker's argument does not necessarily correct the deficiency in full.

A review of the arguments of the neo-liberals and the Marxists has clearly showed the contrasting positions taken by each perspective. However, the arguments, in the remits of Social Structure Accumulation approach, are far beyond these two contrasting viewpoints. Invariably, other issues are left unmentioned. In addition, the neo-Marixist and the neo-liberal perspectives have shown fundamental flaws in their analyses of the role of capital in economic development. These perspectives suffer from the tendency to exogenize indigenous social structure of countries receiving the capital. Besides, they fail to contextualize the effectiveness of capital mobility to its appropriateness to local institutions of recipient of capital.

Thus, broadening the scope in the neo-liberal and Marxists analyses of capital mobility, the neo-Marxian Social Structure of Capital Accumulation (SSA) believes that institutional arrangements and rules developed by political actors affect the cost and benefit of policy options. In this regard some new political economy ideas have been introduced in the literature giving rise to the neo-Marxian social structure accumulation approach.

The Social Structure of Accumulation Approach

The focus of SSA theory is on the institutional arrangements that help to sustain what Lippit (2006) describes as "long wave upswings". The SSA approach suggests that firms which move capital from one geographical area

to another use the threat of withdrawing their reduced standards that are socially and legally sought-after. Palley (2009) reiterates the views of the neo-Marxists by arguing that the situation of unrestricted competition between firms produces a prisoner's dilemma evident in "uncooperative" equilibrium that leaves firms worse off thereby calling for capital control as a mechanism for prevention of unwarranted competition.

According to him, whether such controls are well or poorly used depends on the quality of governance. Neo-liberals tend to automatically assume they will be used badly and make that assumption a centerpiece of opposition against capital controls. He contends that a combination of democratic transparent accountable government, a professionalized civil service, and strong civil society can ensure that capital mobility controls are used well. The neo-liberal concern with regulatory capture is real, but the answer should be the promotion of effective governance rather than abandonment of important policy tool.

However, like North (2005), the contemporary literature has not attempted to determine the relative roles of institutions supporting private contracts ("contracting institutions") and institutions constraining government and elite expropriation ("property rights institutions"). It is in this regard that Acemoglu and Johnson (2005) suggest that property rights institutions have a first-order effect on long-run economic growth, investment, and financial development.

Following these arguments other writers have documented the importance of a "cluster" of institutions that include both contracting and private property protection elements, despite the existence of well-established

theoretical arguments emphasizing each set of institutions. For example, the contract theory literature, starting with Coase (1960), links the efficiency of organizations and societies to what type of contracts can be written and enforced and thus underscores the importance of contracting institutions (see Hart 1995; Hart & Moore 1990). In contrast, other authors emphasize the importance of private property rights, especially their protection against government expropriation (De Long & Shleifer 1993; Olson 2000).

The centrality of institutions in the discussion on capital mobility and economic development has been promoted in diverse ways by leading to two strands of political economy described by Thomas (2011) as The New Political Economy anchored on the works of Sachs and Warner (1995) as well as Cypher and Deitz (2009). The proponents of The New Political Economy believe that the state must be a maximizer by rationally setting “minimalist” institutional policies and allowing the natural forces in the economic order operate within the remit of trade and investment. The second is Moderate Institutionalism inspired by the works of Krueger (1988) and Rodrik (2007). Subsequently, the works of Bonizzi (2013) has given refreshing lights on the role of regulation in promoting capital mobility. As a sequel to these entire works there has been a growing consensus among economists, political scientists and sociologists that the broad outlines of North’s story are correct in the social, economic, legal, and political organization of a society, that is, its “institutions,” are the primary determinant of economic performance.

Showing the relevance of the SSA approach to foreign aid, - another means through which capital mobility is crystallized, - new versions of analysis have emerged which has many appeals to this approach. For example,

following the failure associated with the overemphasis on neo-liberalism, Dominique Strauss-Khan and Robert Zoelick, former World Bank Presidents, mentioned the need for renewed understanding of current challenges and the introduction of a new paradigm (World Bank, 2009; IMF, 2010). In line with this philosophical frame, Guven (2012) locates the right diagnostic spot by recommending that the demand side of the lending relationship deserves consideration by focusing on the Fund and the Bank's borrowers or the recipient countries and the quality of their institutions. This recommendation re-echoes some earlier recommendations by two models known as the socio-economic model and the political model. The socio-economic model recommends the need to introduce friendly packages that acknowledge the social structure and the socio-economic conditions of recipient countries (see Asamoah, 2001; Dzorbo, 2001; Easterly, 2006; Ninsin, 2007). The political model, on the other hand, acknowledges the importance of political institutions in ensuring the effectiveness of capital mobility. This model calls for efficient political structures which offer credible governmental commitments of the recipient country as they implement IFI policy-related loans (Marr, 1996; Pankaj, 2005).

The SSA approach has been rightly used in the works of Liu (2014). In his work, the role of capital mobility in economic development, using the agricultural sector as a case in point, presents readers with information about the dynamic and complex range of outcomes which emerge from capital mobility in various forms, levels and scopes. Liu's (2014) examination of the role of capital mobility brings to the fore an explicit claim that capital mobility can potentially generate various types of benefits for the agricultural sector of

the host country such as employment creation, and better access to capital and markets for actors in the agricultural sector.

Furtherance to his assertion, Liu (2014) hinted that whether this objective can be met will depend on a large number of factors including legal and institutional framework in the host country, the local context and the knowledge of policy makers. These, according to Liu, are the ingredients which may enable investors to direct capital into the right kind of projects. Liu (2014) argues that the nature and degree of impact of capital mobility on a country or local community's economic development are largely determined by the certain factors including, local cultural context, good governance, involvement of the local stakeholders, formulation and negotiation process, content of investment contracts, profile of investors and support from third parties.

However, the issues regarding the interpretations people attached to the capital mobility, the threats and the implications of the capital mobility for the politics of agricultural sector development remain unexplained by the neo-classical, neo-liberal, the neo-Marxian and the SSA perspectives. In addition to this critique, the SSA model, specifically, suffers from the tendency to perceive the political structures as merely reactive to capital mobility; assuming that capital will be effective if political structures promote private property rights, competitive market and contract enforcement. Additionally, the model suffers from the tendency of falsely perceiving capital mobility as value-neutral and that it causes harm only when political institutions fail.

Such a false perception has been uncovered by studies which suggest that capital causes more harm than good irrespective of the effectiveness of

political institutions (see Boone, 1996; Lal, 2006; Remmer, 2004; Sorens, 2007; Svensson, 2000; Vreeland, 2003). In other words, capital mobility is essentially value laden. Furthermore, the SSA approach, according to Sorens (2007), suffers from the tendency to exogenize the actions of state actors and the subjectivities that underline these actions; thereby falsely assuming that “government actors are beyond the mechanisms of maximization that drive market actors” (p.1). Besides, the socio-economic model displays another striking deficiency by failing to contextualize the effectiveness of capital mobility to its appropriateness to local institutions. In other words, they assume foreign aid is effective only if it is suitable for local institutions and social structures.

These deficiencies found in the neo-Marxist, the neo-liberal perspective and the *Marxian social structure accumulation approach* have been corrected by the new political economy insights which introduce some amount of heterodoxy in the analysis of capital mobility, in particular, and development discourse in general.

The Heterodox Political Economic (HPE) Perspective

Heterodox political economy perspective makes a case for the role of other institutions and other social arrangements which are neither essentially legal nor economic nor political. Hence, the heterodox political economy perspective holds the view that the role of globalization expressed in capital mobility as a tool for reengineering regional economic development processes is habituated in social conditions. The political economy heterodoxy becomes useful as it comes in the wake of Palley’s (2009) argument that capital

mobility has become today's [political] economic orthodoxy, yet the pure economic case for capital mobility is amazingly flimsy. This perspective suggests that geographical economic development may rely not only on the availability of natural resources, economic and political factors. Rather, improved infrastructure such as development of transportation and communication systems may influence the pace at which capital mobility occurs and eventually affect regional economic development process (Kinda, 2010; Marx, 1967).

Extending its scope, this perspective further notes that enhancement of capital mobility is equally hinged on the non-physical aspects. In the literature it is apparent that fast-growing locations are not closed and independent economies, but rather they are, most likely, those area hosting Multinational Enterprises (MNEs) having financial capabilities ranging from their sales efforts to reduced turnover time on fixed capital as well as organizational innovation (Howaldt & Schwarz, 2010; Neumeir, 2012; Walker, 1978) all of which crucially connect the region with foreign markets and resources.

Beyond the organizational novelties, social processes are equally involved in the spread of particular means of production and patterns of consumption (Snyder, 1999). Thus, the spread of globalization through capital mobility may be contingent on social conditions as well. As Piore and Sabel (1984) contend flexible specialisation, trust and face-to-face social relations are fundamental requirements for regional economic success in an era of global economic expansion spawned by capital mobility.

It is therefore clear that the mobility of capital and its improvement thereof are hinged on a deep interrelationship between both physical and non-

physical factors cutting across economic, political and social spectra. Following are some research works which bring out how some key social ingredients which may influence the extent to which capital may flow and its possible implications for economic development.

First, the political economy heterodoxy of capital mobility is also understood in the works of Pope (2005). Pope provides a complex analysis on how capital mobility flows into the tourism sector which she refers to as the ‘dollars-only economy’ in Havana which, she discovered, was influenced by race and class. Pope’s study brings the gender dimension into play as shows how crucial it is in influencing the flow of capital in terms of which women’s bodies, and not just sex workers’ bodies, have been ‘commodified’ for personal, and even national, economic gain. Hence, at the center of the capital mobility-development nexus are the issues of class, race and gender.

In the works of Sorens (2007) much emphasis is displayed on how subjectively inclined actions and inactions of political leaders can either expose a country to or keep it unscathed from the challenging outcomes of the conditionalities associated with capital mobility (financial aid) from IFIs. In other words, the interpretation political actors attach to capital mobility may affect its developmental outcomes.

Jessop (2010) brings extended aspect of the interpretative aspect of the political economy heterodoxy earlier on mentioned in the works of Sorens. At the core of his political economy heterodoxy, similar to Sorens’, is the political economy of interpretation or what he refers to as Cultural Political Economy (CPE). It is that aspect of heterodox political economy approach that relishes the inherent subjectivities of not only economic actions and

phenomena but political structures and institutions. As a very recently introduced analytical approach, cultural political economy tries to synthesize contributions from the critical political economy and the critical analysis of discourse which are usually employed in the field of policy studies. As found in his works, Jessop (2004, 2010, 2013) has provided rich exhibitions to such synthesis. The notable one among the works with Sum is their most recent book titled *Towards a cultural political economy: Putting culture in its place*, and *Critical semiotic analysis and cultural political economy* (2013). Generally, the works show how the culture of interpretations plays out in the political economy of development. In effect, the focal point of cultural political economy is the incorporation of interpretations, as found in policy discourses as well as political and economic imageries, in the analysis of how strategies and projects are institutionalized.

Cultural Political Economy's (CPE) focal point for political economy enquiry is largely drifted to the study of pre-existing interpretations, their translation into hegemonic strategies and projects, and their institutionalization into specific structures and practices. Sum and Jessop (2103) highlight the relevance of the cultural dimension (understood as semiosis or meaning making) in the interpretation and explanation of the complexity of social formations such as policies. This clearly suggests that policy formulations are supposed to be undergirded by interpretations.

The primacy of interpretations as the foundation of Jessop's political economy heterodoxy produces two assumptions. First, he assumes that policies always reflect selective interpretations of the nature of problems, character of events, explanations of their cause, the anticipated effects, and

preferred solutions. Secondly, Jessop's evolutionary fervor leads him to argue that all institutional transformations can be explained by the iterative interaction of material and semiotic factors through three mechanisms he mentions as variation, selection and retention. It implies that the role of capital mobility in influencing economic development will be facilitated or hampered by the constructed interpretations of the political and economic actors about the policies that would either sustain or prevent capital mobility.

The theory of cultural political economy finds expression in the classical sociological theory known as symbolic interactionism. This theory has the analytical strength of explaining interpretations to symbols and objects. It also analyses human behaviours associated with those interpretations. The works of on Weber's (1922) work on "social action" and Mead's (1934) work on "pragmatism," provide foundations to the development of this theory. According to Mead (1934), develop subjective interpretations to symbols through the mind, after which behaviours are selected. Based on this, symbolic interactionists argue that objects do not have meanings; the objects obtain their meanings from social actors as they are used to interact. Blumer (1973) argues that the meanings are also regarded as social products, as creations that are formed in and through the defining activities of the people, as they interact.

Aksan, Kisac, Aydin, and Demirbuken (2009) add that individuals form their meanings through their own experiences are neither random nor unrelated. Invariably, individuals develop their own perspectives and empathetic abilities during their interactions with symbols (Stryker & Vyran, 2003), and these perspectives might be formed differently by everyone (Aksan et al., 2009). Through further interactions, the mind is developed, such that the

process of making behavioural selection is expanded, with an increased scope of interpretations. Blumer (1973) argues that the meanings attached to the objects and symbols direct a social action. In this regard, social interactions are a product of mutual changes of interpretation (Alver & Calgar, 2015). Three key propositions serve as foundations in symbolic interaction, as espoused by Blumer (1973):

1. Humans act toward things (objects) according to the meanings those things (stimuli) present to them.
2. These meanings are derived from the interaction of one of them from its addresses.
3. These meanings change through an interpretative process by the person in dealing with the things he encounters.

Symbolic interactionism analyses the processes with which individuals re-assess their plans of actions in terms of the objects and people they encountered in a social environment, and in terms of an assessment of themselves (Schenk & Holman, 1980). Symbolic interactionism is bedeviled with some criticisms. In the first place, it has been criticized for its inability to take human emotions into account when analyzing human behaviour. To Slattery (2007), the theory gets less interested in social structure, making it less psychological and less sociological. The idea that society exists on in the minds of the people is also found questionable by critics of symbolic interactionists; they are criticized for not expressing the true picture of a society as an entity that exists with roles, rules, laws, structures, systems, and policies which, though exist outside the mind of the individual, may also direct behaviour.

These criticisms lay bare the limitations in the ability of the symbolic interactionist perspective to fully explain the data gathered in this paper. Nevertheless, we still get to know that interactions and experiences may shape behaviours through the meanings social actors attach to the objects and symbols which the interactions would present to them.

The main contribution of the CPE approach in the analysis of economic development policy, as promoted by capital mobility, is the need to take seriously the importance of the mobilization of policy ideas, and the perceptions of political and economic actors, in the description and explanation of phenomena [in this case capital mobility] policy dynamics and policy outcomes. The perspective introduced by Jessop would have massive implications for usefulness to economic development planning to him by paying specific attention to the role of a particular set of policy actors (policy advisers, knowledge-brokers, industry players and think tanks) and the mechanisms of persuasion and construction of meaning (soft power) that involves the use to influence the perceptions of other actors. The CPE encourages that policy makers and policy actors in general, need to selectively attribute meaning to some aspects of the world rather than others and engage with pre-existing interpretations of the problems and solutions available to them in the decision-making process.

All such established perspectives and approaches fail to explain and predict essential and uncertain crises and changes relative to capital mobility. Classical and neo-classical perspectives were unable or refused to predict the crises of inequality associated with the industrial revolution as well as the crises of unemployment and job losses associated with the increased

‘financialization’ of the global economic order. This has given rise to a new approach known as the *agency-based approach* which equally operated within the realm, of political economy heterodoxy

The agency-based approach recognizes that capital mobility may be constrained by financial crises leading to some developmental challenges. As assessment of the financial crises that may constrain capital flow shows how everyday interactions, radical uncertainty, and limited human anticipation capacities combine to create sudden financial chaos. An understanding of capital flow may have to be understood in *agent-based approach* found in the works of Bookstaber’s (2017) with his book titled *End of Theory*. Bookstaber argues that varied human memories and imaginations color economic behavior in unexpected forms may facilitate or impede capital mobility.

The flow of capital and its usage goes beyond interpretations and focus on human reminiscences and imaginations. Earlier, Beard’s (2007) political economy analysis of capital mobility and its attendant implications for development in his book *The political economy of desire: International law and the nation state* had been situated within the context of desire. In her analysis, she views the concept of development, within the context of western culture, as a symptom of loss within the desire for completion. In her seminal write up she argued that capital mobility is a function of the desire for the use of capital as a means to engage in economic restructuring of nations hence the desire to see underdeveloped countries experience economic development is revealed as the function of the flow of capital from one society to the other. Though both the CPE approach and the agency-based approach embrace the

human narrative the agency-based approach expands the CPE approach in great respects.

Synchronizing the political economy approaches related to capital mobility and economic development Coe, Hess, Yeung, Dicken and Henderson (2004) assert that economic development is not a product of inherent regional advantages alone. Neither is regional development a mere function of “rigid configurations of globalization process” (p.469). Rather, as mentioned by Henderson, Coe, Hess, Yeung, and Dicken (2002), the role of capital mobility depends on the suitable or inhibiting social, cultural, human, political and economic conditions that may exist in the host country and the original source of the capital. Table 1 shows a summary of the proponents and the arguments of the various perspectives and the main issues they address.

Table 1: Summary of Arguments of the Political Economy Perspectives on Capital Mobility

Perspective	Proponents	Issue (s) Addressed	Arguments
The Neo-classical Economic Perspective	Gomory and Baumol (2000) Isaksson (2001), Kose, Prasad, Rogoff and Wei (2006),	What are the economic outcomes of the mobility of capital?	Capital mobility maximizes the use of natural resources by promoting financial development and increasing global productive efficiency and growth.
The Neo-liberal Political Economy Perspective	Hayek (1944), Tiebout (1956), Crotty and Epstein, (1996), Isaksson (2001), Ernst and Kim (2002), McCann and Acs (2009), Bonizzi (2013)	What are the political outcomes of the mobility of capital?	Capital mobility promotes efficient political structures, ensures discipline and improves quality of governance
The (Neo) Marxian Perspective	Mandel (1975), Walker, (1978), Bauer, 1968; Dzorbgbo (2001), Asamoah (2001), Easterly (2006), Ninsin (2007), Palley (2014)	What are the retrogressive outcomes of the mobility of capital?	Capital mobility in the long run, rather resulted in an awfully fragile financial structure, economic dependency and inequality
The Social Structure Accumulation (SSA) Perspective	Coase (1960), Williamson (1975, 1985), Jones (1981), Grossman and Hart (1986), Krueger (1988), Hart and Moore (1990), De Long and Sheifer (1993), Hart (1995), Sachs and Warner (1995), Marr (1996), Olson (2000), Burnside (2000), Pankaj (2005), Acemoglu and Johnson (2005), Lippit (2006), Rodrik (2007), Cypher and Deitz (2009), Dominique Strauss-Khan and Robert Zoelick (World Bank, 2009; IMF, 2010), Guven (2012), Bonizzi	Within which institutional contexts will capital mobility yield favorable outcomes or otherwise?	The outcomes of capital mobility depend on a large number of factors including legal and institutional framework in the host country, the local context and the knowledge of policy makers.

Table 1 Cont'D

The Heterodox Political Economic (HPE) Perspective	(2013), Lui (2014). Coe, Hess, Yeung, Dicken and Henderson (2004),	What are the structural, yet non-political and non-economic, narratives associated with capital mobility?	Social, cultural and human narratives influence capital mobility
<i>Social Innovation Approach</i>	Marx (1967), (Walker, (1978), Harvey (1975), Piore and Sabel (1984), Snyder (1999), Pope (2005), Kinda, (2010), Howard and Schwarz (2010), Neumeir (2012)		Improved infrastructure, sales efforts, organizational innovation and influence the pace at which capital mobility occurs
<i>Cultural Political Economy Approach</i>	Sorens (2007), Jessop (2004, 2010), Jessop and Sum (2013)	What are the human interpretive narratives which work to constrain or facilitate the mobility of capital?	The interpretation of political actors attach to capital mobility may affect its developmental outcomes.
<i>Agency-based Approach</i>	Beard (2007), Bookstaber (2017)	What are the narratives of human desires, memories and imaginations which work to constrain or facilitate the mobility of capital?	Varied human, desires, memories and imaginations color economic behavior in unexpected forms which influence the direction of capital mobility.

Author's own construction, 2017

Conclusion: Synthesis of the Perspectives

Given the fact that capital mobility plays a crucial role in shaping economic development processes indeed the traditional idea that lends credence to the role capital mobility cannot be ruled out. However, it apparent that it is not geographical proximity *per se* that causes growth, but it is an important factor shaping the location behaviour of economic agents as well as the intensity of linkages between them. Thus, in this paper, I sought to bring out the political economy perspectives that would provide a detailed insight about the dynamics surrounding the capital mobility-economic development nexus.

Indeed, capital mobility may have some favourable economic and political outcomes. Nevertheless, capital mobility may have both threatening and challenging outcomes. Beyond the role of geographical proximity, the social structure and the quality of the institutions play very crucial roles in determining the flow of capital to recipient societies and the outcomes thereof. To a very large extent the recipient country's ability to alter the learning process in the face of changing developmental objectives and opportunities as well as the political decisions may determine that society's ability to make economic gains out of its integration into the orbit of global economic exchanges. At this point it will suffice to argue that the role of capital mobility in economic development may depend on how global production and distribution networks and regional assets are coupled to stimulate value capture, value creation and value enhancement of commodities and services.

It is important to create a more dynamic political economy framework within which capital mobility-economic development will be analysed at a time when capital mobility is becoming more nuanced and complex in terms of geographical origin and destinations, actors and the intentions. This calls for introduction of new approaches to the already existing orthodox (classical, neo-liberal and the Marxist) and social institutional approaches (New Political Economy and Moderate Institutionalism). The new approaches provide a synthesized political economy approach which appeal to sociological, political, economic and geographical intuitions, in terms of which capital mobility could be largely recognized as a *relational* and *interdependent process* involving a combination of the opportunities which the global economic arrangements will present and the character of local institutional arrangement in the region in adapting the real opportunities which may produce what they refer to as interactive effects. Besides, the inclusion of these new approaches to the orthodox approaches enriches the quality and strength of the analytical tools which explain the complexities in the reconfigured capital mobility regime.

Hence, the extent to which capital is moved about into a host society and their implications thereof is determined by a host of natural, political, social, cultural, economic as well as human (desires, interpretations, memories and imaginations) forces which could be regulatory and non-regulatory, tangible and intangible as well as structural and interpretative in character. For this reason, none of the political economy perspectives is capable in answering all questions related to capital mobility. Indeed, the ability of a perspective to explain an issue related to capital mobility depends on the assumptions which

emerge from the aspects of capital mobility a proponent of a perspective may choose to discuss. However, given the complex narrative associated with the capital mobility and economic development it will be important to synthesize the political economy theories and approaches into a coherent whole to create a more nuanced picture.

On this score, a holistic approach to the discussion of capital mobility would require a synthesized perspective which recognizes the role of structural and human narratives as ingredients that shape the texture, direction, quantum and effects of capital mobility in any economic development trajectory.

Relevance of Theories to the Research

Putting these arguments into perspective, as far as the focus of this study may portray, the flow of capital from China will contribute to a reorganization of Ghana's agricultural industry towards a more flexible and successful production systems to respond to competitive pressure imposed by international market. China may focus on the flexible specialization, trust and face-to-face social relations with the key actors in the agricultural sector at the national, regional and local levels to enhance economic success at various regions and that China's contribution to Ghana's agricultural development process will be region-specific taking into account the geographical (natural resources), cultural, political and demographic conditions unique to these regions, which act as 'triggers' to economic development.

While China may present Ghana with knowledge diffusion (machinery and ideas) and capital mobility Ghana's ability to absorb and successfully reuse the diffused knowledge is likely to be hampered by lack of spatial

proximity between Ghana and China and the social, political and economic forces at the regional levels. Moreover, the extent to which Ghana benefits from China's knowledge diffusion and local capacity building endeavours largely depends on Ghana's level of involvement in Global Production Network – i.e. the level of Ghana's contribution, or a particular region in Ghana, to China's quest to obtain agricultural products for its manufacturing sector.

Finally, the success of a region's ability to capture the diffused knowledge by China depends on the region's social structural arrangements including the local knowledge base and absorptive capacity to new infrastructure (either social or physical). Thus, agricultural development in Ghana, and its regions, is likely to be influenced by capital mobility from China and the ability on the part of local institutions at the regional level to absorb diffused knowledge

Review of Empirical Literature

This section reviews existing empirical literature on current debates surrounding capital mobility and knowledge diffusion and their implications for agricultural development. This section also highlights the role of knowledge diffusion in agricultural development as well as an overview of Africa's agricultural sector. A special emphasis is given to Ghana's agricultural sector in terms of policy evolutions and performance. In this section, attention is given to the Chinese-Africa agricultural relations as it gives another special attention to Ghana's economic relations with China.

Existing Debate on the Effects of Capital Mobility and Knowledge

Diffusion on Africa's Agricultural Development

Several theoretical arguments have been advanced about the role of capital mobility and knowledge diffusion in the development process of countries at the receiving end of such phenomena. Some of these arguments provide insights about unidirectional patterns as far as the influence of capital mobility and knowledge diffusion on development is concerned.

A key theoretical context within which the usefulness and threats associated with Chinese capital mobility and knowledge diffusion would be interrogated stems from the arguments of Levy (2013) which holds the view that development or under development processes may unfold, traditionally, at the local level owing to the availability of resources which may be spatially concentrated. The maximization of these resources, Levy (2013) further stresses, leads to economic development of the nation.

The role of globalization and capital mobility in reinforcing development patterns cannot be underestimated in all societies as rightly indicated by Levy (2013) as he asserts that the role of capital mobility has proven to be essential to a nation's ability to yield the maximum potential of its available natural resources. By implication, capital mobility and knowledge diffusion from China to Ghana's agricultural sector will unearth the food production potential in Ghana's arable lands and water resources.

Another context within which the usefulness and threats associated with Chinese capital mobility and knowledge diffusion would be interrogated equally stems from the arguments of Hanusch, Maußner, & Rahmeyer (2009) establish that knowledge diffusion might have effect in territorial spaces.

Even though they did not specify the actual effects and the institutional areas where these effects could occur, Philip (2015) provides elaborate picture on how the effects of knowledge diffusion and [*capital mobility*] would occur in a manner which could produce development or underdevelopment within specific regions of the modern world [*see Walker, 1978*] makes the need to interrogate the threats even further. In other words, capital mobility and knowledge diffusion may produce some beneficial outcomes there may be some threats as well. Philip's (2015), argument, in the light of a bidirectional effect of capital mobility implies economic, social, political, cultural and organizational outcomes which may be useful or threatening to Ghana's social structure using the agricultural sector as the focal point.

The unidirectional effects by Levy (2013) and the bi-directional implications anticipated by Hanusch, Maußner, and Rahmeyer (2009) and Philip (2015) have formed theoretical bases for a number of intellectual orientations with regard to the effect of Chinese investment in Africa. In a bigger picture the arguments form basis for the analysis of Chinese capital mobility and knowledge diffusion in Africa.

It is thus worthy of note that these intellectual contexts within which the usefulness of Chinese capital mobility and knowledge diffusion to Ghana's agricultural sector can be analysed are contradictory and varied in many regards. It is because the modes of Chinese engagement in the agricultural sector with African countries with similar political economy vagaries as Ghana has attracted varied reactions about the outcomes of the Chinese economic philosophies, policies, decisions, and practices on the African social

structure. These reactions can be broadly categorized into three namely, the Afro-pessimists, the Afro-optimists and the Afro-pragmatists.

The Afro-optimists (Wade, 2008; Mpahlwa, 2008) regard China's engagement with Africa as very favourable and beneficial. Yet the Afro-pessimists (Bond & Garcia, 2015; Lumumba-Kasongo, 2011; Mpahlwa 2008) including the European Union and the United States of America express concerns about Africa's vulnerability to the machinations of Chinese investors describing African countries as the creators of the avenues for exploitation thereby describing China as "The New Colonialists".

For the afro-pragmatists, they believe that the principles objectivity and neutrality must remain the guide in the analysis of the Afro-China development engagement. Alden (2013) believes the holding on to the controversies obscures the real discussions on global trends and Africa's opportunities embedded in China's long march into Africa's agriculture. Hence, to Ansah (2013b), the most important thing in the Chinese long march to Africa is for Africa to assess "her position with its economic relations with China and project the implications of that position for her progress, freedom and comfort" (2013:657) which, he stresses, can be done only when certain observable regularities (the benefits and threats) are considered.

Similarly, Buckley (2013) argues that studies on Chinese capital mobility and knowledge diffusion need to have a broader body of empirical evidence on the nature and impacts of the diversity of Chinese agricultural engagements in African countries. On the grounds of the arguments raised by the neutralists, this study will use certain observable regularities to establish

the usefulness of China's capital mobility and knowledge diffusion endeavours to Ghana's agricultural sector.

The Role of Knowledge in Territorial Agricultural Development:

Experiences from Countries across the Globe

A study by Shaijumon (2014) on the role of knowledge diffusion from research organizations to farmers in India, he analysed the impact of the use of Village Resource Centers (VRCs) as means of transmitting knowledge from the Indian Space Research Organization (ISRO) to farmers on three key variables associated with agriculture. These include, productivity, level of knowledge and innovation performance.

Shaijumon (2014) found out that knowledge transferred for the ISRO through the VCRs improved productivity, level of knowledge and farmers' innovativeness. He also discovered, in sociological terms, that the diffused knowledge reduced information inequality among farmers as well as the emergence of new socio-economic relationships.

Even though the quantitative research methods used were suitable in arriving at the conclusions, Shaijumon's findings cannot be generalized to all farmers since the study was limited to rural farmers alone. Besides it was not clear in the study whether that targets were subsistent farmers or farmers who were engaged in commercial farming or both.

Barring these limitations, Shaijumon (2014) demonstrates a high level of understanding over the impact of knowledge on agricultural development. Clearly, he might have acknowledged the fact that absorptive capacity is needed to translate diffused knowledge to improved agricultural performance

as earlier elucidated by Cohen and Levinthal (1990) as well as Ascani, Cresenzi and Iammarino (2012).

Broadening his submission, Shaijumon (2014) introduces a new perspective into the knowledge diffusion-agricultural performance nexus by arguing that diffused knowledge improves productivity and innovativeness “only when it is correctly and successfully transferred and assimilated by a large number of the intended end-users” (p.481). In a similar study carried out earlier, Purwaningrum et al. (2009) focused on the role of knowledge for firms in the agricultural value chain including cotton farmers and agro-processors in the Khorezm region of Uzbekistan. Applying the game theory in this study, they analysed the choices farmers made in the adoption of diffused knowledge and innovation at points when the prices of their commodities were altered. Using econometrics, they observed that farmers refused to use diffused technological knowledge anytime they envisaged lower prices by government. The ultimate outcome as the literature, suggested was a reduction in the sustainability of agricultural production.

Assefa, et al (2014), unlike the afore-mentioned studies, drifted from the attention of studying the impact of the diffused knowledge. They focused primarily on the modalities with which agricultural knowledge is diffused. Specifically, they carried out an investigation into the knowledge diffusion models used in 15 selected African countries and their limitations. The study also sought to unearth some of the best available practices and their potential for translational research to augment extension services in Sub-Saharan agricultural practices.

They observed that current state of knowledge diffusion in Africa (especially in SSA) is dominated by extension services that are largely coordinated by the Ministry of Agriculture (and their equivalent institutions) in respective countries. Synchronizing these findings, by way of summary, one can argue that knowledge diffusion would be useful in promoting efficient agricultural production regime but would require the right context, mode application and the right actors to promote the knowledge diffusion enterprise.

The Role of Capital Mobility in Territorial Agricultural Development

The role of capital mobility in the agricultural sector presents readers with information about the dynamic and complex range of outcomes which emerge in various forms, levels and scopes. Each of these outcomes may be influenced by contextual factors. Liu's (2014) examination of the role of capital mobility brings to the fore an explicit claim that capital mobility can potentially generate various types of benefits for the agricultural sector of the host country such as employment creation, and better access to capital and markets for actors in the agricultural sector.

Furtherance to his assertion, Liu (2014) hinted that whether this objective can be met will depend on a large number of factors including legal and institutional framework in the host country, the local context and the knowledge of policy makers. These, according to Liu are the ingredients which may enable investors to direct their investments into the right kind of projects.

Liu (2014) argues that the nature and degree of impact of capital mobility on a country or local community's economic development are largely determined

by the factors such as good governance, local cultural context, involvement of the local stakeholders, formulation and negotiation process, content of investment contracts, profile of investors, support from third parties, type of production systems and crops. The review shows that there are some contextual factors which influence the extent to which knowledge can influence agricultural development. However, the issues regarding people's interpretations to capital mobility and knowledge diffusion are not known. Additionally, the threats that occasion capital mobility and knowledge diffusion are not discussed. Further, the implications of the capital mobility for the politics of agricultural sector development are equally unknown. These are some of the issues this study seeks to pursue to fill the literature gap.

Overview of the Agricultural Sector in Africa

Africa's Agricultural Potential

Africa's potential in using agriculture to promote and sustain economic growth and human development is not just an incontestable reality but absolutely remarkable. Africa's geographical disposition as being a host to enormous and agriculturally suitable natural resources coupled with a teeming energetic population may warrant such as a conviction. Estimates suggest that 65 percent of all remaining arable land in the world is in Africa (African Business, 2014).

However, of the 400 million hectares of arable land space in Africa, only 10 percent is being cultivated (New African, 2014). For some country-specific examples, the situation in Zambia, for example, suggests that only 14 percent of the 42 million hectares classified as having medium and high

potential for agriculture is being utilized. In Nigeria, of the 84 million hectares of arable land, only 40 per cent is cultivated (African Business September, 2014).

In terms of irrigation, Africa uses only 156,000 out of an estimated 2.7 million hectares available (International Food Policy Research Institute (IFPRI), 2010). Nigeria alone is endowed with 263 billion cubic meters of water which comes from two of the largest rivers in Africa. IFPRI, further notes that 40 per cent of the water in Southern Africa is in Zambia and the amount of surface and underground water in Zambia means that it irrigates itself for a year-round and grow variety of crops for both domestic and export markets.

It is argued that when these resources are tapped with the right structural environment, agriculture's role in reducing poverty in Africa would remain tremendous despite the increasing level of economic diversification especially given the fact that more than 70 percent of the population in Africa works in the agricultural sector. The World Bank has also indicated that growth in agriculture is 2.5 times more effective in reducing poverty than any other sector, (cited in African Business September, 2014). By implication, investments in agriculture would promote economic growth at a faster rate. On this score the sections that follow reviews some of the strides and challenges which promote or mar agriculture's potential to drive economic progress.

Strides in the Africa's Agricultural Sector

Indeed, some countries in Africa have made some strides evident in the significant support given to the agricultural sector. Burkina Faso and Ethiopia

are clear examples contributing an average of 16.9 per cent and 15.2 per cent, respectively, between 2003 and 2010. The results have been impressive. While, Burkina Faso has created about 235,000 jobs, Ethiopia reduced poverty levels to 49 per cent (New African, 2014).

A similar story can be said about Rwanda. Making reference to the African Progress Panel Reports Versi (2014) indicates that the incidence of poverty in Rwanda fell by 12 per cent which correlates strongly with investments in the agricultural sector. The report concludes that the poverty reduction and redistribution in Rwanda were fuelled by spectacular increases in cereals (by 73%) and roots and tubers (52%) between 2006 and 2011 (Versi, 2014).

In Kenya, the introduction of technology through an Alliance for Green Revolution in Africa (AGRA) programme has made the value chain system effective and profitable. The use of basic mobile phone applications plays a crucial role here. Practically, the use of Short Message Service (SMS) and mobile money facilities is the new and innovative means through which economic exchanges ensue between a marketer and a farmer. The outcome has been tremendous. AGRA (2014) estimates that the total cumulative value of commodities sold by farmers as a result of the technological interventions between 2009 and 2013 was \$219.6 million (cited in African Business, 2014).

In a similar vein, Nigeria is running an Electronic Wallet (E-wallet) scheme for farmers which operate through the use of mobile phones for government's direct purchase and fertilizer distribution. The outcome has been successful because within two years, the e-wallet system has reached 8 million

farmers while 40 million rural farm households have been empowered to raise food production.

Food production in Nigeria thus increased by 21 million metric tonnes between 2011 and 2014 (Odeh, 2015) as food import has declined from 19.0 billion in 2011 to 4.5 billion in 2013 (African Business, September, 2014).

Foreign Investment Initiatives for Agriculture in Africa

Foreign investments in agriculture, according to Anseeuw, Boche, Breu, Giger, Lay, Messerli, Nolte (2012) originate from, among other sources, emerging economies in East Asia and South America. One of the emerging Latin American countries making inroads in African agriculture is Brazil. Even though Brazil is regarded a small player relative to others it is gaining influence, and this includes a focus on agriculture (Buckley, 2013), a sector that is especially important for Brazil (Cabral, Shankland, Favareto, & Costa Vaz, 2013). This is because it is strategic value to her political economy which is largely characterized by a heavy reliance on agribusiness.

Brazil's remarkable performance in agriculture is evidenced in a shift from a technologically backward arena to becoming the world's largest exports of meat and grain (Favareto, 2016). This was achieved through the creation of capacities that made it possible to introduce significant innovations coupled with the adaptation of tropical agriculture and the development of technology for the production of fuels and from biomass and sugarcane (Favareto, 2016).

Brazil uses four actors to pursue its agricultural projects at the international level. They include the state agricultural research centers, the

Federal Network of Professional Education, private actors and the Embrapa Technology Development Center. The Embrapa Technology Development Center mainly responsible for providing technologies, technical assistance, farm supply, food production and logistics (Arcuri, 2014). Embrapa is heavily involved in Brazil's work in Africa which focuses largely on agribusiness expansion. In Ghana, for example, this occurs through the Agricultural Innovation Marketplace. This is done as Embrapa, through its established office, uses consultants to offer advice on a number of programs and businesses with partnership from the Food and Agricultural Organization and Europe.

Brazil's agricultural policy represents a form of "dualism characterized as agribusiness and family farming. Brazil's family farming has three competing strands each of which is characterized by their unique narratives and interests (Favareto, 2016). Brazil's "development cooperation" efforts, are not fundamentally different from the United States or European countries in addition to public-private partnerships (PPP). Generally, the public-private partnerships take the form whereby the government provides or guarantees loans and provides tax rebates, technical assistance or other means of support. Justifications to these PPP arrangements are situated within the general PPP theoretical framework which posits the strategy of risk reduction, including financial risks and reputational risks (Bastin, 2003).

This form of cooperation according to (Lee, 2014) reflects the era of state 'developmentalism' where the state assumes the new role of supporting an expanded private capital and markets. Understanding Brazil's new role in the context of its own domestic political economies, and wider global trends in

geopolitical restructuring and the shifting of the geographies of international capital, provides a deeper understanding of how Brazil is positioning itself as a key actor in African agriculture (Scoones, et al., 2016).

The central role of the state for private actors in agricultural investment is apparent in the new forms of development encounters initiated by foreign countries as part of state-directed “developmentalism” and in relation to new patterns of accumulation by capital in new sites across the world (Liu, 2014; Moyo, Yeros, & Jha, 2012). Consequently, governments prefer to support investment by their home companies which are extending capital and markets rather than investing directly into agricultural land in developing countries. This is aptly evidenced by a recent survey that investments made by public-private partnerships accounted for some 600,000 hectares in 2012 (Anseeuw *et al.*, 2012).

In Mozambique, the Triangular Co-operation Programme for Agricultural Development of the Tropical Savannah in Mozambique (ProSAVANA) where agribusiness investments, has been with the support of the Nacala Fund. This programme sits alongside plans for the development of smallholder farming along the Nacala corridor rendering it a highly controversial program. The programme also resonates the contrasting Brazilian “imaginaries” of agricultural development are exported to Africa under the ProSAVANA (Shankland & Goncalves, 2016). Brazil has also introduced Project “Cotton 4” in Mali, Benin, Chad, Burkina Faso and Togo.

Local Private Sector Investments Initiatives for Agriculture in Africa

Private sector investments are expanding fast in Nigeria's agriculture's sector. Since 2012, there has been over \$4 billion private sector investment involving industry players such as Unilever, Syngenta and Cargill (African Business, 2014). Also, the country's agriculture sector attracted over \$5.6 billion of private sector investments between 2011 and 2014, a record anywhere in Africa (Odeh, 2015).

This includes the recent announcement by Dangote Group, Notore and Indorama to invest \$5 billion to build fertilizer manufacturing plants to expand fertilizer production with the intention of making Nigeria the World's largest producer of fertilizer (African Business, 2014). Dangote Group alone invests \$1 billion in commercial rice production in Nigeria, the largest ever single investment in food production in Africa (Odeh, 2015). In addition, the number of private seed companies increased from 5 to 80 between 2012 and 2014 (African Business, 2014). Despite these strides in the Africa's agricultural sector, some visible but surmountable hurdles still confront Africa's agricultural sector.

Hurdles in Africa's Agricultural Sector

One of the major hurdles in African countries is the reliance on heavy imports of food. Africa spends US\$40 billion importing food (New African, 2014). Its attendant ramifications are apparent. While it produces fluctuations of local currency it equally disposes African countries to experience balance of payments deficits. Africa, therefore, bears the brunt of the global supply and demand imbalance in food production and distribution. Another hurdle is

found in the weak market linkages have resulted in the low rate of commercialization in the agricultural sector.

Further, Sub-Saharan countries face huge post-harvest losses for perishable agro-commodities (fruits and vegetables) averaged at between 35 and 50 percent of total attainable production. For grains, the loss varies between 15 and 25 percent (Gajigo & Lukoma, 2011). These hurdles are real outcomes of some inherent challenges in Africa's agriculture each of which may not have to be isolated in explaining how they might affect the less thriving agricultural outlook. After all, agricultural development, as Shantanu, Ram and Uma (2001) maintained, requires a mix of conditions. Although the precise nature of the mix depends on the context, it usually includes good infrastructure, access to credit, water, land, markets, input delivery, social organization, relevant technology (White, 2013).

Another hurdle in Africa's Agricultural Sector is underinvestment. The trend in agricultural financing in Africa has been driven largely by the development paradigms which occasioned various periods in Africa's politico-economic history. Foundation for Agriculture and Rural Management (FARM) (2008) reckons that the old rural finance paradigm of the 1960s and 1970s was based on public authorities' desire to facilitate access to rural finance. The objective was to promote agricultural development by modernizing agriculture.

The most common approach involved direct government intervention through state-owned development banks and direct donor intervention in credit markets with favorable terms and conditions like soft interest rates or lenient guarantees. Even though the system was costly it was unsustainable

due to poor repayment. Hence, the desired result of this paradigm on agricultural development, as Meyer (2011) notes, was apparently absent.

The pattern, however, changed in the 1980s where failure of government-led credit supply coupled with a global paradigm shift in development process produced a renewed approach to rural and agricultural finance in developing countries. Consequently, state-owned development banks either closed or redirected their original focus; financial sectors were liberalized attracting many commercial banks, both local and foreign.

Besides this FARM (2008) remarks that public subsidies were redirected towards creating new microfinance institutions (MFIs) that were supposed to achieve financial sustainability thanks to cost-covering interest rates. Despite shifts from the state-led to market-led paradigm the agricultural sector remains heavily under resourced.

At the early stages of the new millennium a renewed recognition about the central role of the state as a financier of agriculture has been raised. In 2003, African leaders adopted the Comprehensive Africa Agriculture Development Programme (CAADP). African leaders pledged to commit at least 10 percent of their national budgets to agriculture aimed at achieving at least six percent agricultural growth annually. However, some fundamental challenges wrought this programme. According to Siphon (2014) the 10 percent target is just not enough even though it contains elements of transparency which enables farmers to track the use of the money.

Despite the insufficiency of the financial resource, New African (2014) reports that as at 2014, only eight out of 54 countries in Africa have redeemed

their commitment. Consequently, access to state finance remains limited in most African countries.

Besides, access to finance in the private sector remains equally daunting. Citing the World Bank, Jackson (2015) hints that only one per cent of commercial loans go to smallholder farmers in Africa. Da Silva and Mhlanga (2009) equally observed that commercial bank lending to agriculture is less than 10 percent in sub-Saharan Africa, while microfinance loans are usually too small and not suited to capital formation in agriculture.

In Zambia, for example, Ntoba (2014) notes that farmers have limited access to finance to improve their yield and exploit the country's vast expanse of land. While Ntoba claims this happens when financial institutions are averse to lending credit to small scale farmers because of the risk of high rate of default, Galvez-Nogales and Webber (2017) claims this is lack of collaboration between various stakeholders, including government and investors

Other reasons adduced by FARM (2008) suggest that farming activities are generally located in isolated areas with low population density and poor infrastructure. Farming activities are dependent on weather and production cycles; income is seasonal and monetary income is limited as the agricultural prices are notoriously volatile and few farmers can offer guarantees that are legally or financial acceptable.

At points when the aforementioned sources of financial support were found unhelpful attention was turned to FDI. Incidentally, however, FDI, as an alternative, has not been supportive to Africa's agricultural sector either. Similarly, even though Liu (2014) has intimated that the economies of

Africa's share of FDI that goes to the agri-food sector almost doubled between the periods 2000-2005 and 2006-2008. He accedes, however, that it was still low compared to other economic sectors, accounting for less than five percent over the 2006-2008 period. Within the agricultural sector alone the bulk of agricultural FDI flows are directed to the food manufacturing sector, while primary agricultural production accounted for less than 10 percent over the period 2006-2008 (Liu, 2014). From the realities presented the point can be stressed undeniably that the quantum of investment for the agricultural sector from sources such as the state and private actors (formal and informal) have been largely unhelpful.

The problem of weak infrastructure is another hurdle in Africa's agricultural sector. Infrastructure, in forms of roads, irrigation technology and post-harvest storage technology, is a major determinant of agricultural productivity. Not only does it increase both output per capita and output per unit but it also reduces transaction costs in input and output markets as well as better integrating markets within sub-regions (Gajigo & Lukoma, 2011).

The World Development Indicators on road networks among the continents paint a dire picture about Africa. The indicators show that only 30 percent of the Africa's rural residents have access to all-season roads. Far more striking is the fact that the percentage of paved roads between 1990 and 2005 in Sub-Saharan stood at 15 percent. Meanwhile, in Middle East and North Africa it stood at 74 percent. Records about the other continents include Latin America (74%), Europe and Central Asia (88%) and East Asia and Pacific (54%) (World Bank, 2015).

With regard to irrigation its usefulness cannot be overemphasized because as noted by Gajigo and Lukoma (2011) it reduces substantial shocks and risks in agricultural outputs for individual farmers most of which are associated with rain-fall dependent agriculture. Beyond cushioning production risks, the distributive gains are also apparent. Purwaningrum et al (2009) similarly maintain that irrigation systems are inseparable elements of agriculture value chain.

Making relevance of these theoretical persuasions, an outlay of the real situation about irrigation in Africa may suffice. The picture about Africa's irrigation technology regimes shows not only a relatively low level of irrigation infrastructure which stands at 5 percent but low growth rate over barely three decades spanning 1980 and 2008. The World Bank development indicators show that the percentage of Africa's irrigated land remained at 6 percent over the period under consideration (World Bank, 2008).

Comparatively, Europe may not have recorded any increase within the same period, but the level of irrigation stood at nine percent relative to the size of its arable land. In other regions however, appreciable changes were recorded. They include the Americas (10% to 12 %), Asia (31% to 47%), and Oceania (4% to 7%). The five percent irrigation penetration rate in Africa is an accounted average of the sub-regional differences which are presented as follow: North Africa (19%), Southern Africa (10%), Eastern Africa (4%), West Africa (1%) and Central Africa (1%).

Poor market linkages also remain a hurdle in Africa's agriculture. Generally, African farmers lack access to markets (Consumer Unity & Trust Society-Africa Resource Centre, 2006). In some cases, low market demand for

value-added products, which are associated with trade liberalization, increase marketing constraints. The implication has been that small-scale farmers have not benefited much from the liberalization.

Among some selected African countries used as case studies, it was established in Tanzania, that the market linkages are still weak (Gaddis et al, 2013). Remoteness, low production, low farm-gate prices, high marketing margins, lack of information, or simply farmers' unwillingness to participate in the market underpin weak market linkages in Africa. Evidently, 26 per cent of all farmers did not sell any of their crop production and so were not connected to markets. Besides, only 25 per cent of farmers sold more than half of their production. In addition, more than two thirds of maize farmers did not sell any of their harvest and only 25 per cent of total maize production is marketed (Gaddis et al, 2013).

Uganda and Kenya have similar statistics. The livestock sector is even less commercialized than the crop sector. As many as 52 per cent of livestock owners did not get any cash income out of their animals in 2011. Less than 10 per cent of the overall country livestock value is marketed. This situation, compared to other countries in other continents, shows that African countries have underperformed. For example, Vietnam moved from 48 per cent of crop production being marketed in 1993 to 87 per cent in 2008 (Gaddis et al, 2013).

As indicated by Dannson, Ezndima, Wambua, Bashasha, Kirsten and Satorious (2004) processors in low-margin sectors with limited skills and assets face constraints to ensure on and off-seasonal raw material suppliers. In addition, spot market transactions were usually organized in an unplanned

manner. Apart from the uncertainty in the supply of adequately high quality of raw material, African farmers also face high cost of coordination coupled with poor production planning and other marketing-related problems.

In some cases, as argued by Rao, Coelli and Alauddin (2004), poor market linkages are attributable to poor quality of land and labour and through increased transport costs via poor roads and ports infrastructure. Given these weaknesses in the agricultural sector, the question posed in this regard is, how are they affecting Chinese capital mobility and knowledge diffusion?

China's Engagement in Agriculture: Experiences from African Countries

Africa's agricultural sector has attracted investments from China (Alden, 2013) thereby opening up the platform to interrogate the contexts, nature, success and the challenges associated with such investments

Context of Engagement

China's engagement in Africa's agricultural development process introduces very intriguing dynamics on issues relative to development cooperation, international relations, local politics and political economy. The agricultural development partnerships between China and Africa have taken place in the context of wider economic, trade and investment relations (Brautigam & Ekman, 2012). This partnership, according to Harvey (2007), feeds from a reconfiguration of the development ties which marks a shift from the orthodox donor-support regime to the internationalization of private investment in a more financialized and liberalized world order with massive reach and power.

Historically, China's engagement in Africa's agricultural sector started in the 1960s and 1970s when China's agricultural aid in Africa laid emphasis on large state farms even though it changed in the 1980s when small-scale projects in support of small holder farmers were favoured (Alden, 2013). This has been largely driven by China's internal policy focus which emphasizes both agricultural modernization and increased productivity in mechanized farms without crowding out the peasant sector (Scoones, et al., 2016) and the 'going out' policy in terms of which expansion of Chinese business enterprises [including agricultural enterprises] and the transfer of technology beyond the frontiers of Chinese economic space are encouraged (Gu et al, 2016). China's policy statement on agricultural engagement with Africa is clearly elucidated in a document titled China's African Policy which reads as follow:

Focus will be laid on the cooperation in land development, agricultural plantation, breeding technologies, food security, agricultural machinery and processing of agricultural and side-line products. China will intensify cooperation in agricultural technology, organize training courses for practical agricultural technologies, carry out experimental and demonstrative agricultural technology projects in Africa and speed up the formulation of China-Africa Agricultural Cooperation Program (Part IV, 2 [4]).

Central to the Sino-African agricultural relations is the massive state-led involvement of the Chinese government through the provision of financial incentives. These relations also signify the preference to a strand of political-economic heterodoxy characteristically expressed in a hybrid relationship

between states and businesses where the state provides the needed support for the businesses to carry out the real economic activities (Li, Qi, Tang, Zhao, Jin, Guo, & Wu, 2012; Scoones et al., 2016).

The root of all these internal political economic heterodoxies embedded in China's development agenda is the fact that China's interest in Africa's agriculture has been particularly influenced by a two-sided force (Alden, 2013). The demand side of the force contains China's quest to attain food security as it relies on food and feed to satisfy the rising demand, albeit Africa's inability to feed China (Brautigam, 2015). On the supply side, the ecological, economic and political conditions in African countries, albeit varied, favour and attract Chinese investment. For example, while China's attraction to Ghana is motivated by a sustained programme of economic liberalization, oil discoveries and successful transfer of democratic power (Amanor, 2012), Ethiopia is rather attracted to China because of its adoption of a strong 'developmental state' stance (Vaughan, 2011). In Mozambique, the investment support for narrow forms of accumulation by the political elites (Chichava & Fingerma, 2015) and Zimbabwe's 'Look East' policy due to the withdrawal of international donor support (Moyo, 2011; Youde, 2007) have operated in their respective regards to attract Chinese investment in the agricultural sector.

Within pure political economy contexts, these conditions in the African may represent contrasts in political economic ideological stances (Scoones et al., 2016); some countries emphasizing neo-liberalism while others practice state-led development agenda. Yet China expediently meanders its way into all of these political economic contexts to pursue its capital expansionist

endeavours. It is in this effect that China's assistance to agriculture and rural development in [*African countries*] can be understood within economic and technical cooperation model (Brautigam & Tang, 2012) shaped by its non-insistence on political economic ideology but on economic and political pragmatism. Clearly, the Chinese trudge into Africa's agricultural sector signals a political economy orientation which captures realism as its focal point, practically and analytically.

It is understandable from the aforementioned that China's interest in Africa's agriculture has been inspired by a plurality of economic, geographical and political conditions operating in a multi-dimensional manner. It is also apparent that these supply and demand factors have operated simultaneously. As Scoones et al. (2016) noted, the rise of China's involvement in African agriculture with the flow of capital has coincided with the restructuring of most African economies with the introduction of neo-liberal economic policies. But, beyond the political-economic rhetoric is the humanistic perspective which extends the motivations behind China's engagement in Africa's agriculture.

Apart from seeking economic gains, China believes that aid, investment, trade and other forms of [agricultural] cooperation should be used to increase food and agricultural output globally (Brautigam & Tang, 2012; Buckley, 2013). Besides, China is also guided by diplomatic motivations, accompanied by the idea that aid to Africa's agricultural development should generate mutual benefit and cooperation in land and agricultural development (Brautigam & Tang, 2012; Chichava, Duran, Cabral, Shankland, Buckley, Tang & Yue, 2013) by totally exploring and making the most of each other's

comparative advantages (Ministry of Foreign Affairs of the People's Republic of China (FMPRC), 2012).

China's mode of engagement with Africa in the agricultural sector has received many reactions. These reactions reflect the absence of a common standpoint about the outcomes of the Chinese economic philosophies, policies, decisions, and practices on the African social structure. While some (Mpahlwa, 2008; Wade, 2008), remain extremely optimistic about China's engagement with Africa, others remain incredibly pessimistic.

The pessimists including the European Union and the United States of America are already expressing concerns about Africa's vulnerability to the machinations of Chinese investors describing African countries as the creators of the avenues for exploitation. China has thus been described by *The Economist*, as "The New Colonialists" (Bond & Garcia, 2015; Lumumba-Kasongo, 2011; Mpahlwa 2008: 52).

For some others, they believe objectivity and neutrality must remain the guide in the analysis of the Afro-China development engagement. Alden (2013), for example, hints on the need to tone down on the growing debate surrounding the issue whether China is a saviour or a colonist to Africa. Alden believes the holding on to the controversies obscures the real discussions on global trends and Africa's opportunities embedded in China's long march into Africa's agriculture.

Similarly, Ansah (2013b) discovers that the pessimistic stance of the West about China's inroads in Africa is only tinted in hypocrisy and rooted in the West's fear of losing out on Africa's natural resources to China. To Ansah, the most important thing is to assess "the position of Africa in her economic

relations with China and project the implications of that position for her progress, freedom and comfort” (p. 657) which, he stresses, can be done only when certain observable regularities (the benefits and threats) are considered.

Buckley (2013) corroborates these views by asserting that the debate, as summarized by Alden (2013), about whether China is an exploiter, development partner or a competitor, will not be resolved until a broader body of empirical evidence on the nature and impacts of the diversity of Chinese agricultural engagements in African countries is established. Convinced by the argument of the neutralists, this review of China-Africa agricultural engagement will focus on these observable regularities.

Forms of Engagement by Chinese in Africa’s Agricultural Sector

Chinese-African experiences in agriculture have appeared in many mediums. These include capital mobility and knowledge diffusion. Each, or sometimes both (see Kang, 2015) of these forms of transmission happens inherently through trade, aid, investment and inventor mobility. Capital mobility from China to Africa’s agricultural sector has not just been tremendous but also signalling conformity to the increasing wave of ‘financialization’ of development cooperation in a neo-liberal global economy.

The investment China has made into Africa’s agricultural sector added up to an amount of \$134 million in 2009 which was four times the figure in 2000 with 50 agricultural enterprises and over 100 farms (Alden, 2013). In Mozambique, an Agricultural Technological Demonstration Center (ATDC) introduced by the Chinese cost around US\$6 million and its operation costs

the Chinese government annually about US\$180,000 managed by the Hubei Lianfeng Agricultural Development Corporation (Chichava, et al., 2013).

The Chinese State Farm Agribusiness Corporation also invested into abandoned sisal farms as the late the 1990s saw the Chinese company purchase the Tanzanian cotton processing plant. In 2007, several agricultural projects and a honey project using smallholder farmers were launched (Brautigam & Tang, 2012). In 2012, Wanbao Grain and Oil Investment Limited (WAADL) took over the project. WAADL brings along greater financial muscle and has been granted an area of 20,000 hectares to produce rice and establish agro-processing facilities (Danqing & Yongsheng 2012). Interspersing these spending on agricultural infrastructure are the processes of financing the cultivation of crops, the storage of the commodities and their shipping thereof (Alden, 2013).

Besides this, China's engagement in Africa's agriculture has been characterized by some exhibits of knowledge diffusion and technological transfer expressed through technical assistance and inventor mobility (Scoones et al., 2016). Inventor mobility from China to Africa has been characterized by the dispatch of 100 senior agricultural experts to Africa for a year of technical assistance.

Knowledge diffusion has been expressed in provision of short-term training in China in addition to the establishment of 20 China Agriculture Technology Demonstration Centres (ATDC) across the continent (Alden, 2013; Brautigam & Tang, 2012; Chichava, et al., 2013). Further, Chinese agricultural specialists who provide training in rice, tea and sugarcane production have been sent to Africa coupled with scholarship and training for

Africans on various aspects of agriculture Chinese-African agricultural ties (Alden, 2013).

The political economy perspective has been adduced by Agyei-Holmes who uses the Chinese science and technology capacity, residing in Embrapa or the Chinese Academies as an example to argue that the transfer of technology from China to Africa succeeds where there is a clear demand; a low cost, allowing wider ownership; the technology fits within a broader value chain; and imported technologies come with wider support for repairs and servicing (Agyei-Holmes, 2013).

Mention is equally made of Chinese technical assistance which is done by sending Chinese agricultural specialists who provide training in the production of certain specific food stuffs (Alden, 2013). Such training and capacity building efforts have become part and parcel of the new paradigm for global capital expansion (Scoones et al., 2016) occasioned by demand for resources to import which underpins Chinese foreign policy and diplomatic approaches (Tugendhat & Alemu, 2016).

It is clear in the literature that the nature of Chinese firms in Africa is changing. In addition, there is an introduction of some more training centers and the establishment of bilateral relationship between China and other developing countries. For example, a bilateral agreement specified that a Chinese enterprise from Hubei would establish a rice production project and would transfer Chinese rice production technology to local farmers (Chichava, et al., 2013). Parallel to these inventor mobility activities, a group of Chinese scientists from the Chinese Academy of Agricultural of Sciences (CAAS) organized rice yield tests with the support of the Gates Foundation, under the

framework of “Green Super Rice Program” in Xai-Xai in 2008-2009. Under this programme, 30 varieties of Chinese hybrid rice and one Mozambican variety, called Limpopo rice”, were tested with success (CAAS 2009).

In addition to the process of technology transfer is the development of infrastructure. Notable ones are irrigation development and improvement projects (Alden, 2013). The case of the Regadio do Baixo Limpopo (RBL), more commonly known as the Xai-Xai irrigation scheme located in Gaza province with an area of 12,000 hectares, and another one at the Ponela block remains one of the largest irrigation schemes in the region has played out significantly in the Chinese agricultural technology transfer process (Chichava & Fingermann, 2015). The manufacturing of agricultural pesticides, bacteria sterilizers, and herbicides has been the role of a Chinese firm since 2005. This phenomenon has gradually emerged as integral part of technology transfer from China (Alden, 2013).

Thus, Chinese engagement with Africa in the agricultural sector signals a rebalancing toward boosting technology (Angang, 2015). Chinese provincial firms equally engage in African agricultural sector. In Zambia, Uganda and South Africa for example, private Chinese farmers have set up farms with local farmers (Alden, 2013). In Tanzania, a Chinese private firm, Boleyn International, has launched several agricultural projects coupled with an organic honey project involving smallholder farmers (Brautigam & Xiaoyang, 2012). The implications of technological transfer for economic development and politics are often contested. As Scoones et al. (2016) noted narratives of development, imaginaries of particular places, and contests over development solutions which are associated with the introduction of

technologies are exported as part of the development encounter which produces a long history and often intense domestic politics.

Extending the frontiers of her agricultural ties with Africa, China engages in the trade of agricultural commodities with African countries. With regard to agricultural imports, China led in the region with an import share of 44 percent of the world's commercialized soybeans, 35 of the world's commercialized cotton, 20 percent of the world's commercial palm oil and 2.5 percent of the world's rice Alden (2013). In addition, China has contributed food aid and made some agriculture-related donations (Brautigam & Tang, 2012). Finally, some plans are in place to expand Chinese involvement in agriculture and rural development in Tanzania. Exploring possibilities of converting cassava into starch and biofuels runs paramount. Others include mixed farming and rural energy projects (Brautigam & Tang, 2012).

Beyond these, there is interest in contract farming arrangements for key crops (including cotton and tobacco), and potential for investment along agricultural value chains, including processing, machinery, and input supply (Kaplinsky, 2013). Besides, Chinese build networks, solicit political and business-related alliances and train technicians, farmers and bureaucrats as means of expanding their capital mobility frontiers (Scoones et al., 2016; Tugendhat & Alemu, 2016). The training and other forms of interactions between the external experts and the investors on the one hand and the local bureaucrats, technicians and farmers are usually characterized by negotiations on issues relative to management practices, world views, cultural perspectives agronomic routines, technologies and visions (Fetcher, 2012; Lewis & Mosse, 2006) and these may regarded as development aid. The political economy

narratives of these ‘knowledge encounters’ offered by Eyben (2009) and Mawdsley (2012) relish this aspect of Chinese development aid as “gift”.

Challenges Associated with Chinese Engagement in African Agriculture

The challenges associated with Chinese agricultural relations in Africa stems from political, economic and cultural conditions in Africa. Some of the setbacks of Chinese Engagement in African Agriculture that exist are evident in the fact that the agreements do not specify what was to be done. A classic case in point was mentioned by Chichava et al (2013) who noted the absence of specificities with regard to the rice production levels, the type of technology to be transferred and the actual local beneficiaries found in African countries. Furthermore to that issues of urban residents in some African countries being dislocated because of the construction of infrastructure equally exist. In addition are varied degrees of political instability which have been precipitated by the failure on the part of some Chinese firms to meet their overambitious objectives relative to the agricultural sector (Alden, 2013).

The transfer of Chinese technology to Tanzania was battered massively as HLMO Co.Lda’s could not manage to fully develop the 300 hectares granted by the Mozambican government during the five years of activity (Chichava et al, 2013). Besides, the company was also unable to fulfil other aspects of the bilateral agreement which requires HLMO Co.Lda. to help local farmers improve their productivity from original levels of 1-3 tonnes to 7-10 tonnes per hectare (Chichava et al, 2013) as planned.

In Mozambique, coordination has been undermined due to misunderstandings and power conflicts between MINAG-Agro Rural and the

Ministry of Sciences and Technology (Duran & Chichava, 2012, cited in Chichava et al, 2013). With regard to trade arrangements on agricultural goods between China and that the undeveloped legal systems in Africa create a fertile ground for collusions among collateral managers leading to the removal of goods from warehouses. Declines in profits become the outcome Africa (Alden, 2013). The inability of African indigenous banks to finance the construction and maintenance of warehouses emerges as another observable setback because international banks take advantage of the financial gaps, offer the credit, maximize profits and expropriate them Africa (Alden, 2013) concomitantly resulting in capital flight.

In Mozambique for example, some technology transfer programmes failed because the majority of local farmers were unable to pay for such services and the apparent lack of commitment to agriculture among Mozambican farmers (Chichava et al, 2013). Even though the activities of Wanbao Grain and Oil Investment Limited (WAADL) are still at an early stage, some concerns are beginning to be voiced in the local press, including fears of displacement of farmers and water management issues (Chichava et al, 2013). Even though Chinese teams attempted to keep the financing of state farms, factories and the farmer training centers buoyant, few Chinese investors bid for such assets in the wake of Tanzania's quest to privatize many of its state-owned assets (Brautigam & Tang, 2012). In addition, the process of technology transfer, technologies and policy models usually enfolded in wider visions of what agriculture and development should look like and are rather not matched to local contexts (Scoones, et al., 2016).

The challenge of contradictory reports about amounts spent on projects remains apparent in China's agricultural engagement with Africa. For example the reports about Wanbao Grain and Oil Investment Limited (WAADL) which undertook the production of rice and establish agro-processing facilities on 20,000 hectare land in 2012 suggests that the investment reached US\$200 million, yet a Chinese source indicated that the amount was actually US\$95 million (Danqing & Yongsheng 2012).

To conclude, it becomes apparent in the literature that Chinese involvement in African agriculture is a reflection of China's own policy narratives and imperatives, and is driven by a range of factors, often with strong state involvement (Scoones, et al., 2016). Further, China's involvement in Africa's agriculture comes with prospects and challenges but as it stands an exploratory research into how rural economics and formal institutions are being affected by China's long march into Africa's agricultural sector (Alden, 2013) remain unexplored.

Beside the question whether or not China's engagement in Africa's agriculture will result in new forms of 'developmentalism' or stimulate corrupt patronage politics, according to Hanlon and Mosse (2010), will depend on local negotiations and these are issues which require further interrogation. Kaplinsky (2013) has also envisaged that the farming arrangements appear in forms that may favour poorer producers and business enterprises, as the technologies are sometimes more appropriate and the market standards less restrictive than investments from the West. These are issues which this study seeks to address.

Africans' Perception of Chinese Investment in Africa

A number of studies have been carried out with the aim of presenting the perceptions Africans have about the long march of Chinese investment in Africa Alden (2013) as corroborated by Ansah (2013b), argues that African leaders have a positive perception of Chinese investment and aid. According to them African leaders usually dislike the interferences of traditional Western donors or investors which are riddled with the long meetings and strenuous conditions while it is easy to negotiate with Chinese without interference nor harsh conditions. These studies were limited in findings given the narrow-scope nature of their target groups – that is – focusing on the leaders alone.

To broaden the study scope, attention was shifted from leaders to citizens. This study was conducted by the British Broadcasting Corporation (BBC) World Service in 2009 in three African countries namely Nigeria, Egypt and Ghana. The study found that perceptions about China were positive and the scores ranged between 62 and 75 percent amongst the three countries (see Rebol, 2010).

In an extended study to that of the BBC World Service, the China Quarterly study on African's perception of China-Africa links was conducted in nine countries across Africa in 2013. Quite similar to the findings of the BBC World Service 74.2 percent of the respondents claimed that China's developmental orientation run parallel with their respective countries' growth trajectories which presupposed a positive perception. Even though the perceptions of China tended to be favourable in most countries, the citizens of other countries such as Cameroon, Zambia Nigerian, Egyptian and South African had some reservations. These countries tended to be more

apprehensive with China than other countries due to issues related to unfavourable labour, health and safety.

The Pew Research Center, in 2013, conducted a study known as the Pew Global Attitudes Study in eight countries. The uniqueness of this research was its comparative nature given the fact that it sought Africans' perception of investments not from China alone unlike what other studies did. Rather this study required citizens to provide their perceptions on Chinese investments vis-à-vis investments from the United States of America. The findings suggested that perceptions of the US amongst Africans were favorable at a mean of 73%, whilst China stood at 65%. These findings generally corroborate the BBC World Service study. It also corroborated Alden (2013) and Ansah (2013b) findings despite the differences in the targets of the various studies. While Alden and Ansah focused on the political elites the Pew Global Attitudes Study focused on citizens.

Even though the above-mentioned studies showed some positive perceptions and orientations towards Chinese investment a study on Chinese African Business Perception study conducted by the Ethics Institute (2014) which also looked at Africans' perception of Chinese business presence presented contrary findings. In this study, variables including reputation, quality of Chinese products and services, social, economic and environmental responsibilities as well as employment practices were measured. Overall, the study found a negative African perception of Chinese investment in Africa. Africans, as the study found out, were concerned about the environmental and social responsibility of China, the quality of Chinese products, their employment practices and the Chinese possible involvement in corruption and

illegal activities. Albeit, the study discovered that the economic impact of Chinese trade and investment have been beneficial.

By way of critique the studies were generally quantitative in nature which failed to unearth the depth of information relative to the experiences and the encounters of Africans which occasioned their perceptions. In the case of the study carried out by the Ethics Institute of South Africa in 2014, it acknowledged its deficiency which was expressed in its reliance on perceptions which, though based on realities, also resulted from rumours and equally fuelled by the media. In other words, the perceptions were not experiential thus the findings cannot be considered as hard core truth. This study will however focus of on interpretations of the Chinese capital mobility and knowledge diffusion and give much attention to the experiences and interpretations which have worked to produce these interpretations, using qualitative methods.

Ghana-Chinese Relations: A Historical Overview

Idun-Akhurst (2008) notes that Ghana and the People's Republic of China (PRC) established official diplomatic ties in 1960. This has been characterized by strong personal relationships between the political elites of the two countries, and by high-level official visits. Idun-Akhurst (2008) adds that the relationship between China and Ghana dates back to 1960 occasioned by the establishment of diplomatic contact. While Ghana's support for China has been generally intangible, when Kwame Nkrumah lobbied for China's reinstatement by the United Nations, China has offered material and financial support for Ghana.

Idun-Akhurst (2008) further notes that Nkrumah campaigned for the reinstatement of the People's Republic of China (PRC) in the United Nations and supported China in the border conflict with India in 1962 as China assisted Ghana with economic aid and continuous technical assistance which constituted Nkrumah's developmental imperatives. However, when Nkrumah was overthrown in 1966, the PRC pulled out about 200 Chinese aid workers and embassy officials from Ghana perhaps in protest of the wrongful overthrow of a strong political 'ally' which Idun-Akhurst (2008) described as frosty. Later on, Ghana joined other African states to cast the majority of votes to reinstate China in the UN in 1971. Following this, nonetheless, bi-lateral relations were restored in January 1972, the National Redemption Council (the then military regime) took various steps to normalize Ghana's relations with China, and diplomatic relations were restored on 29th February, 1972 (Nyarku, 2013).

President Rawlings' regime was marked by an unwavering diplomatic support to the PRC during the controversial suppression of the Tiananmen Square pro-democracy protestors in 1989. China reciprocated by building the National Theater in Accra in the early 1990s for Ghana (Idun-Akhurst, 2008). Fast tracking to President Kufuor's tenure (2000-2008), structural relations between China and Ghana were interspersed with some micro-level relationships between him and Premier Wen Jiabao culminating into the Chinese grant of \$2.4 million for the renovation of the National Theatre (Idun-Akhurst, 2008). On the second leg of Premier Wen Jiabao's seven-nation tour of Africa in June 2007, China and Ghana issued a joint communiqué on strengthening cooperation in trade, infrastructure, telecommunications,

education, health and culture. According to the account of Idun-Akhurst (2008) the Chinese premier's visit resulted in the signing of six agreements, including an agreement to build a malaria centre and a primary school in Ghana, and a \$66 million loan agreement to expand and upgrade Ghana's telecommunications network.

Since then, the cultural, educational and socio-economic relations between Ghana and China have been deepened by three fundamental principles in international politics namely equality, mutual respect and mutual benefit. These principles have been clearly elucidated in the words of President Hu Jintao of China on a visit to South Africa at the University of Pretoria in February, 2007 who said "China did not, does not and will not impose its will or inequality on other countries, as well as do anything that will harm the Africa people" (FMPRC, 2012).

Trade Relations

Over the years, bilateral trade between China and Ghana accumulated to the tune of \$3.5 billion as at 2011. According to China government information available elsewhere, the statistics indicate the bilateral trading volume between China and Ghana registered around \$5.4 billion in 2012, with an increase of 56.5 percent over the previous year as Ghana's export volume to China in 2012 went up 77.2 percent (Dogbevi, 2015). Ghana's exports to China hit \$1.4 billion, a historical high since 1960 (Dasmani, 2015). At the end of 2015, the Economic Complexity Report suggests that China (\$1.06B) emerged as third among the top export destinations of Ghana after India (\$3.21B) and Switzerland (\$1.39B). In terms of import the China

ranks high among the top import with an amount of (\$5.31B). This is followed by the Netherlands (\$884M), the United States (\$848M), India (\$641M) and France (\$515M) (The Observatory of Economic Complexity, 2016).

Investments from China into Ghana's Economy

China's investment areas in Ghana have been largely concentrated in the areas of construction, mining, steel industry, building materials industry, pharmaceuticals, food processing, power plants and agriculture (Gyasi, 2014). Since 2011, Chinese investment has been improving. At the end of 2013 a total of 219 projects with an estimated investment value of US\$259.56 million had registered in Ghana (GIPC, 2013). Consequently, China's investment in Ghana jumped from the 10th in 2013 to 5th in 2014. The investments have resulted in some benefits as training and technological transfers have been made available (Abodakpi, 2015). In 2015 alone, 820 officials and technical staff were trained by China, according to the Chinese ambassador (Ghana News Agency, 2016).

Aid from China to Ghana

Chinese financial aid to Ghana, which started since 1960, has produced some reaching outcomes. It has ranged from debt reliefs, grants, interest-free and interest subsidized loans, concessionary loans as well as buyer's and supplier's credit. Ghana has enjoyed a relief in debt of amounts which, since 1985, had accumulated to the tune of US\$ 25 million. Besides this Ghana received an amount of US\$ 43.5 million between 1964 and 1970 and received

the single largest buyer's credit of US\$ 18 million between 1960 and 1990 (Idun-Arkhurst, 2008).

Since 2001 and beyond, China's aid has focused on the development of roads, energy, telecommunication infrastructure and technical cooperation. In the energy sector for example, Ghana made arrangements to secure a loan involving US\$3 billion from the Chinese Development Bank to finance oil and gas infrastructure in 2010 (Ansah, 2013). A second deal for US\$ 9.87 billion was signed with Chinese Exim Bank for road, railway and dam works. Another observable Chinese assistance to Ghana's energy sector includes \$562 million loan from the China Export and Import Bank (Exim Bank) for the construction of a \$622 million Bui dam (Ansah, 2013).

Ansah (2013b) catalogues a number of projects which have been financed by Chinese aid. One is a 12 million grant agreement which was signed to finance an accelerated provision of boreholes in rural communities, to ensure the construction of a modern sports complex in the Cape Coast Municipal Area and the Kotokoraba market also in Cape Coast. Another US\$20 million interest-free loan was signed to facilitate the construction of fish landing sites in selected communities in the Central Region whilst a concessionary loan of US\$ 250 million with an interest rate of two per cent supported an ongoing rehabilitation of the Kpong Water Works (Ansah, 2013). In the telecommunications sector, the National Communications Backbone Network Project received USD 32 million finance phase one of the project in 2007, which, according to ACET (2009), aims to link telecommunications access to the various regional capitals and major towns.

Ghana-Chinese Relations: Agriculture-in-Focus

In the agricultural sector, Idun-Arkhurst (2008) provides a litany of projects carried by the Chinese. They include a transfer of bamboo technologies through the development of the bamboo and rattan industry and a transfer of fish-farming technologies through the establishment of demonstration centres for training out-growers. The latter has been accompanied with distribution of fingerlings to the out-growers.

Idun-Arkhurst (2008) also observed Chinese assistance to Legon Fisheries to start processing of octopus; assisted Ghana National Fishing Corporation to establish a factory with processing capacity of 20,000 metric tonnes of tilapia and 8,000 tonnes of shrimp. Support for irrigation farming, including for Afife rice project in the Volta region and construction of landing sites for fishing communities are other clear cases in point. Further, the provision of a \$99 million interest free loan for the construction of landing sites coupled with technical assistance have also occasioned Chinese presence in Ghana's agricultural sector.

Clearly the account given by Idun-Arkhurst on China's contribution to Ghana's agricultural regime is quite superficial; but understandably so, the account was part of a generalist outlook of the patterns of relationship between Ghana and China. Nonetheless, Idun-Arkhurst's account provides a wealth of information about China's performance in capital mobility into Ghana's agricultural sector with an amount of US\$ 4,709,000 between 1994 and 2007 which Amanor (2013) claims is "limited but significant" (p.7).

Examining these studies, it is apparent that Amanor's (2013) conclusion forms part of other conclusions he drew from a very

comprehensive research he carried out on China's contribution to Ghana's agricultural sector as compared to Idun-Arhurst's (2008). Further perusing Amanor's research findings separately, it is evident that China's contribution to Ghana's agricultural sector can be categorized into two broad themes – the direct and the indirect contributions.

The direct contributions, Amanor (2013) notes, come from the significant investments which have been in irrigation plants at Afeke and Nobewam. The project occupies an area of 880 acres. The main development interventions within Ghana at present focus on the enhancement and expansion of irrigation facilities, and the provision of technical advice to the Ministry of Food and Agriculture (MOFA) on appropriate cultivation methods. Insidiously, the Chinese government provides technical support to these projects rather than investment in commercial rice production.

Chinese companies are also providing both fertilisers and agrochemicals. Examples include the 'ShevaineXinam' Chemical Industry Group (Zhejiang Xin'an Chemical Industrial Group), which has established a subsidiary in Kumasi to produce agrochemicals. Similarly, Zoom Lion, a jointly-owned Ghanaian and Chinese company, has recently established a fertiliser plant at Amasaman in the Greater Accra Region (Amanor, 2013).

Amanor (2013) indicates that China does not yet have significant agribusiness companies operating in the agricultural sector. However, there are a number of small Chinese farmers operating in Ghana producing vegetables, cowpeas and *Jathropha* while some of these farmers are also involved in distributing Chinese agricultural machinery.

The indirect contributions include the interventions in the broader economy that focus on the provision of basic transport, construction and communication infrastructures. After an analysis of the Ghana-China ties in the field of agriculture, Amanor (2013) makes the claims that Chinese investments in Ghanaian agriculture have been limited but significant. Further, those Chinese initiatives in agriculture grow out of larger commitments to infrastructure developments, and so the project documents are often combined with others (e.g. transport infrastructure and energy). More so, Chinese projects in agricultural input supply which occurs alongside other related interests outside of the agricultural sector, such as within the framework of the development of petrochemical industries and waste disposal in so far as they are directly linked with the production of fertilizer.

Amanor continues that Chinese projects also often combine high-tech elements with appropriate technology that creates affordable technologies for farmers, as in gravitational irrigation or fertilisers processed from urban waste. In contrast with other nations' provision of aid, China does not seek to gain influence over food markets through market governance (i.e. by the imposition of standards and control over production linked to specific forms of market integration) and a value chain approach, or establish a niche for Chinese agricultural and agri-food companies. In addition, claims that China is investing in large-scale agriculture leading to the appropriation of smallholders' lands are unwarranted in the Ghanaian case. Thus, Chinese technicians gain experiences and insights into Ghanaian agriculture and are able to influence subsequent developments, and Chinese companies derive revenues from infrastructure provisioning.

A review of both studies shows that they do not present issues about Chinese-Ghana agricultural ties from the knowledge adaptation perspective and the territorial dimensions of capital mobility. Moreover, even though Amanor and Idun-Arkhurst present facts which suggest some patterns of knowledge diffusion, little is shown about how the diffused knowledge is carried out across regions and, far more importantly, the motivations behind the variations in the patterns with which the knowledge is diffused, if they so exist. Besides, even though information about the Ghana-Chinese ties on trade, investment and aid is available little is known about inventor mobility from China to Ghana, especially in the agricultural sector. These are the gaps this study seeks to fill.

A Review of Ghana's Agricultural Policies since Independence

For the benefit of hindsight, I choose to conceptualize agricultural development as a directional process containing plans, strategies and actions of the state and related actors in the agricultural sector culminating into the achievement of food sufficiency for which a country becomes a net exporter of food.

From this conceptualization, the questions which stir my intuition are: Has Ghana ever reached the feat of food sufficiency? How did this happen? Are there proofs to authenticate claims that Ghana has failed to achieve food sufficiency? And if some failures are apparent, why has Ghana delayed in its quest to attain food sufficiency despite numerous policies with grandeur objectives and strategies? How have these policies influenced actors' behaviours, culture and norms?

Reviewing recent literature on Ghana's agricultural development, it is evident that some answers seem to have been offered to these questions. These answers provide partial truths as to why Ghana failed in its quest to promote agricultural development. The first set of answers acknowledge that agricultural development has delayed and seem to lay blame largely on climate change (Ahene, 2003; Amponsem, 2015; Mawunya & Adiku, 2013; Müller-Kuckelberg, 2012). However, some agricultural experts such as Haveman (2016) have shared the view that concentrating on climate change alone as a factor undermining agricultural sector in Ghana is wrong because "climate change affects agricultural success at a rate of -0.7% (p.2).

Rather, he locates the problem within micro-level sociological contexts attributing the sector's sluggish growth to a lack of passion for agribusiness among some Ghanaian farmers. In his attempt to explain the delayed agricultural development, he describes the education system and the teaching approaches in the country as focusing less on agricultural prospects, "thereby compelling graduates to take up other professions leaving few in the agriculture sector" (2016, p.2).

Even though these answers may give hints as what must be done to improve the agricultural sector, it is also important to determine what might make possible to the delayed agricultural development over the past years within political leadership and in political economy contexts. An undeniable reality is that it is within these contexts that Ghana's agricultural policy reforms are engrained. Practically, then I find the political economy contexts very relevant because for policies to actually change, in addition to the implementation capacity and the policy environment having to be in place, the

political economy also has to be right or made right (Nankani, 2009). Upon this I argue that the challenge with Ghana's delayed agricultural regime is essentially political.

I seek to provide evidence to my claims by taking a look at the agricultural policies, decisions and practices in Ghana since independence. It is not my intention to merely review the policies but to highlight the key objectives of the policies and match them with the agricultural outcomes, using existing statistical evidence, and then I will explain the gaps using viewpoints drawn from politics and political economy. I start with a review of Ghana's agricultural policies after independence and the political economy domains within which they have been formulated and implemented.

Evolution of Agricultural Policies in Ghana

Ghana's agricultural regime has moved on many policy-formulation and implementation trajectories during. The varied policies have occasioned specific periods of Ghana's politico-economic history. Seini (2002) identifies five distinct periods among which one could find notable policy variations.

It starts with the pre-independence era with strong drive for export crop production. This was followed by the immediate post-independence era characterized by massive government participation. This was also followed by neo-liberal economic policies which saw the introduction of the capitalist means and modes of production. Seini (2002) observed that each of these periods was interspersed with periods of economic down turns preceding eras of "stabilization and adjustment".

Since the country became politically independent in March 1957, the policies have been marked by some general national goals and objectives which have not changed in substance, albeit some varying emphasis (Nyanteng & Dapaah, 1993). The major goals have been to produce enough food to feed the population, produce enough raw materials for the existing and contemplated agro based industries, earn foreign exchange through cocoa and non-traditional export crops.

Other goals explicitly or implicitly stated include increasing employment opportunities through agriculture, reducing underemployment by raising labour productivity, increasing incomes of small-scale farmers, ensuring food prices at reasonable levels, releasing and generating resources (labour, capital, etc) for industrial and general economic development and ensuring food availability to meet nutritional requirements and at affordable prices (food security). Following is an outlay of the various post-independence regimes and the unique policy strategies which were developed by the political actors of each regime and the associated deficiency thereof.

State-driven Agricultural Development

The immediate post-independence era was marked by the desire for rapid industrialization and social development among the teeming youth in the urban areas. At this point there was a widespread belief that development is coterminous with industrialization (Killick, 2010). This development trajectory influenced the content of agriculture-related policies and the direction of the agricultural industry. This period was therefore an era of massive state participation in agriculture during which attempts were made to

develop large scale farming through mechanized agriculture. This was a period which, to Seini (2002), was necessitated by having an agricultural policy that would avoid dependence on small scale farmers while it created job opportunities. Frimpong-Ansah, (1991) notices that at this same point, agriculture was supposed to be used to enhance rapid industrialization real strategy to tax agriculture through both direct and indirect means to finance the rapid import-based industrialization

This was a system which believed that centralizing power can help achieve the aims of agricultural policies of the time. Thus, in a first Five-Year Development Plan (1951-56) developed by the government, the view was expressed that agriculture could be modernized and adapted to the needs of an expanding economy solely through progressive improvement of the traditional subsistence system of production. Accordingly, large scale farms under public auspices were to be established leading to the establishment of the Agricultural Development Corporation (ADC).

The government's agricultural effort was shifted almost completely to a new sector of state and co-operative agriculture. This was expressed in the formation of the United Ghana Farmers' Council (UGFC) with the responsibility of organizing the small farmers for mechanized agriculture through cooperative efforts and the provision of extension services. In addition, the State Farms Corporation (SFC) was formed to undertake large scale mechanized farming which rapidly expanded its farms and total land holdings. The Ghana State Fishing Corporation (GSFC) was formed and organized with a fleet of fishing trawlers and cold storage facilities to undertake the fishing and distribution of fish throughout the country. The

Workers' Brigade and the Young Farmers' League were also established to run farms.

After a careful evaluation of large-scale agriculture involving public ownership the general conclusion by many analysts is that it was a failure. Low levels of productivity leading to inflationary prices of food stuffs were symptomatic of this failure (Killick, 2010). The reasons are reviewed as follow. First, Nyanteng and Dapaah (1993) bemoaned an apparently relative neglect of the agricultural sector. He argues that the overall policies pursued in the post-independence era did not favor agriculture in general and food production in particular. This was evident in that only between 4.3 percent and 13.5 percent of annual development expenditure was allocated to agriculture between 1961 and 1965. Meanwhile, the bulk of the money went to the socialized sectors even though its net contribution to aggregate production was less than 1 percent Seini (2002).

This failure in the agricultural sector was also attributable to the fact that the policies failed to recognize the implication of rapid population growth for the agricultural sector (Seini, 2002). This does not only demonstrate a clear case of leadership deficiency evident in a lack of vision but signifying a misplaced agenda for economic development. Further, Killick, (2010) points out that there were high scales of inefficiency in the distributive system. This was due to the centralization of the system which led to the abuse of control of the few distributive channels by actors in the agricultural value chain at the time.

Asamoah (2001), corroborated by Seini (2007) and Killick (2010), pointed out the peasant sub-sector as the worst hit by the relative agricultural

neglect. Not only were they totally excluded from the strategies for economic development (Asamoah, 2001) there was a cut down of exiguous investment in small scale farming (Seini, 2002) leading to a discouragement of the rise of the indigenous class of private industrialists (Killick, 2010). This is closely linked with a clear case of poor corporate governance which characterized the administration of the agricultural policy. For example, Killick intimates that the UGFC lacked the technical expertise, administrative capacity and motivation to operate an extension service. Further, the officials used their positions to cheat farmers who became increasingly hostile to the organization which was supposed to help them.

Apart from the neglect of peasant farmers, Seini (2002) makes an observation which suggests that the overall objective which drove the agricultural development planning process was misplaced. He reckons that agricultural policies in the early years of independence were designed to deal primarily with urban unemployment and not to deal with rural poverty. The policies were equally designed to avoid dependence on the small scale independent private farmers whose political philosophy was inconsistent with that of the ruling party. Hence the state-led agricultural policy had to be accompanied with a centralized method of control characteristic of most state-led development programmes.

From a political economy point of view, the state-led agricultural policies failed because the individual economic liberties of the peasants which could have enhanced some degrees of creativity and rationality were subsumed under an overly centralized control of agricultural activities by state institutions. These failures which occasioned the state-led agricultural

approach confirm the views of critics of socialism such as Hayek (1945) and Friedman (1982) that central planning is significantly inefficient in terms of development and resource allocation.

However, some forms political deficiencies associated with the implementation of the state-led agricultural policy were independent of the centralization of control. For example, the issues of neglect could not have been a function of the state-led approach to agricultural development but demonstration of a poor appreciation of the role of the peasant in the agricultural sector. It was also a demonstration of the lack of knowledge about the actual character of socialist agricultural planning which, in essence, responsibly organizes small scale farmers into cooperatives into the mainstream mechanized farming to promote higher agricultural productivity as was the case in soviet countries.

Hence the failure of agricultural development was a product of a system which did not encourage and expand opportunities to small scale farmers to use their ingenuity and creativity and rationality to guide economic actions. Agriculture also failed around this period because the political system was riddled with political actors who paid lip service to the real directions need for agricultural development and misapplied the strategies in the system they purported to be practice.

The Agricultural Sector in the 1970s

During this period, agricultural development, specifically rural farm production, was integrated into a large-scale development plan occasioned by considerable investments in rural development projects in roads, water and

electricity. In addition, irrigation was promoted with the commissioning of the Dawhenya Irrigation Project. Other irrigation projects were dotted within the Northern, Upper East and West Regions.

Between 1972 and 1974, the agricultural sector also gained a significant boost with the introduction of ‘Operation Feed Yourself’ (OFY) and ‘Operation Feed Your Industries’ (OFI) where individuals were encouraged to take up agricultural activities. ‘Operation Feed Your Industries’ was particularly important as it encouraged the supply of needed raw materials for industries. The OFY was marked with a state-controlled pricing regime where guaranteed minimum prices were set for major agricultural products such as cocoa, maize and rice with the specific purpose of stimulating production. In addition, government provided enhanced access to credit facilities coupled with duty-free importation of agricultural machinery (Owoo & Lambon-Quayefio, 2016). Broadly, these strategies embedded in the programme were to “make Ghana self-sufficient in food supply in order to break with the colonial past and correct the image of a beggar nation” (Lemenmeier, 2011, p.1).

The OFY programme was largely successful since agriculture’s contribution to GDP was over 40 percent. In the first three years of OFY, Ghana, for the first time, officially became self-sufficient in rice production. Rice production rose from 11,000 tons in 1971 to 61,000 tons in 1973, At this point rice was exported. In addition, production levels of all key food and industrial crops rose (Lemenmeier, 2011; Seini, 2002). For example, maize production from 53,000 in 1971 to 430,000 tons in 1973 (See Reynolds, 2015).

The success of the OFY programme cannot be attributable merely to the active ownership and management of the state in the activities in the agricultural sector. The success was also rooted in the strong sense of inspiration and leadership drive by political actors who through widespread propaganda in newspapers, radio and television, urged Ghanaians to engage in agriculture and contribute to the country's food production. In Lemenmeier's (2011) analysis, the uniqueness of the OFY compared with previous food programmes was found in its initial enthusiasm it created in the country where thousands of Ghanaians took part in clearing land or helping harvest crops.

Notwithstanding the success of the programme in the early years of its implementation it collapsed after 1975 when the government was confronted with harsh international economic conditions in the orbit of global capitalism such as a drop in the export of cocoa, gold, timber, and diamonds compounded by the rise of oil prices, and local ecological conditions such as droughts and bush fires (Reynolds, 2015). Despite the role of the severe international conditions which exposed Ghana's economic fragility due to high dependency on primary commodities, such internal political conditions as political corruption as well as fiscal indiscipline (Addo, Korboe, Williams & Mensah, 2010) equally worked to derail the prospects of the programme. With all the international economic conditions and internal political conditions acting together, the government revenues, which amounted to 21 percent of GDP in 1970, dropped to nine percent in 1976 (Aryeetey & Kanbur, 2008) thus rendering the government unable to finance the OFY programme.

Towards the end of 1970s small scale development programmes were initiated to provide opportunities for small farmers. One such project was the

World Bank Scheme geared towards raising incomes of the rural small farmers of the Upper Region of Ghana- the Upper Regional Agricultural Development Programme (URADEP). The period was also marked by special investments in commercial rice farming. Furthermore, the commercial rice farming strategy succeeded by creating varied forms of employment opportunities to small farmers and their families. The irrigation projects benefitted tomato farmers in Navrongo and Bolgatanga enormously. However, it must be stressed that it benefitted the few urban based bureaucrats, professionals, military men and the top stratum of rural people. Besides the entire agricultural sector was unable to significantly respond to the World Bank's regional agricultural plans on a sustained basis as output declined at a rate of 0.3 percent per annum throughout the 1970s (Seini, 2002).

Agricultural Policies from the 1980s to 2002

The 1980s ushered Ghana into the era of neo-liberalism occasioned by the introduction of market-led policies in all sectors of the economy. It is an economic system which discourages centralized state planning of economic activities and encourages individual economic liberties by granting private economic actors 'decentralized power'. Discouraging state planning nevertheless, Hayek (1945) submits that government could play a role in the regulation of work and monetary policy as well as the transmission of information. So do Keynes (1936), Friedman (1982) and North (2005) admit same as a role for the government. This was the framework within which Ghana's agricultural policies in the 1980s were to be formulated and implemented.

Putting the economic policies of the 1980s in context, it was natural to observe agricultural sector being the target of policy intervention in the 1980s because it remained the largest sector of the economy. It might have needed such interventions since agriculture was going through enormous problems: the most notable were inadequate and untimely supply of inputs such as fertilizer, insecticides, cutlasses, etc; inadequate research and extension services; a contracting cocoa industry; severe bottlenecks in transportation and storage of farm produce and inadequate producer price structure for major crops. Animal production also suffered from erratic supply of animal feed and concentrates while fish declined in supply in the domestic market due to shortage of marine engines and fishing gear. Agriculture's declining growth of 0.3 percent per annum throughout the 1970s was worsened by severe drought and widespread fire damage in 1982 and 1983 which accounted for an output decline of over 6 percent for each year with an equivalent fall in GDP.

To address these challenges in the sector, there were notable programmes including the Volta Regional Agricultural Development Programme (VORADEP), the Northern Regional Rural Integrated Project (NORRIP) and the Managed Inputs Delivery and Agricultural Services (MIDAS) which were all established in the early 1980s with the aim of increasing agricultural production particularly of small scale farmers by providing agricultural inputs and services on time and on regular basis.

The second phase of economic reforms emphasized increased productivity and internal price stability in the agricultural sector. At this time State-led development policies continued through various regimes despite the neo-liberal rhetoric. As such, the government actively promoted cereal

production in pursuit of food security objectives. For example, every year the government raised the guaranteed minimum price for maize and rice, which had been in operation since the late 1960s, and offered subsidies for essential farm inputs such as fertilizers, machinery, and other agricultural chemicals continued, though on a reduced sale.

However, under the third phase of the adjustment process (liberalization and growth phase), which started in 1989, the major goals included deregulation of commodity and service markets to reduce domestic price distortions, as well as liberalization of export and import markets. The food and agricultural development strategy of the government was set out in the “Medium Term Agricultural Development Programme (MTADP).

As part of the liberalization programme, the guaranteed minimum price for maize and rice were abolished and all subsidies removed, including subsidies for agricultural inputs, notably fertilizers and insecticides. Consequently, the average prices of most agricultural chemicals used in cereal productions increased in excess of 40 percent per annum between 1986 and 1992 (Assuming-Brempong, 1994).

A careful analysis of the agricultural policies pursued in this period indicate that in spite of attempts to assist small scale farmers in the early years of this era, they all tended to favour large-scale capital-intensive mode of production over small-scale production units and gave little consideration for industrialization based on agricultural surpluses. Practically, agribusiness was given little attention in Ghana’s political economy.

These agricultural related programmes coupled with other neo-liberal economic decisions resulted in the deterioration and stagnation in the quality

of lives of the majority of peasant farmers in Ghana (Asamoah, 2001). The effect on the agricultural sector's performance will be seen in the subsequent sections.

Shifting attention to the 1990s and the early years of 2000, Ghana's agricultural policy directives were still guided by strong neo-liberal orientations. At this point, the focus of agricultural development contained in the Medium-Term Agricultural Development Programme included pursuing a strong domestic and foreign demand-driven production goals, enhancing productivity partly to reduce underemployment in agricultural production activities, improving production competitiveness, which is currently limited to the farm gate, promoting an effective linkage between agriculture and industry in order to ensure that they supply the inputs needed by each other, promoting agricultural growth based on regional comparative advantage and resource endowment, enhancing food security by way of adequate, nutritionally balanced diets at affordable prices, increasing the foreign exchange earnings base by diversifying into non-traditional export crops, increasing the production of import substitutes, ensuring sustainable growth and development, ensuring sound ecological management (environmental protection), and alleviating rural poverty.

To achieve these objectives, some strategies were outlined. Notable ones include the privatization of the importation and sales of fertilizer, which hitherto had been under a government programme. The effects were debilitating, just like the 1980s, since domestic prices of fertilizers doubled or tripled between 1990 and 1992. Moreover, the private sector response to the privatization policy has been judged by Jebuni and Seini (1992) to be sluggish

with negative distributional consequences. The distribution of wealth became skewed towards the foreign investors at the expense of consumers and employees. Thus this created inequality between classes in the Ghanaian social structure (Dzorgbo, 2001). This period was also marked by the liberalized importation of commodities making imported rice, in particular, compete strongly with domestic rice. In all the removal of guaranteed prices on agricultural products and subsidies on agricultural inputs did not just increase the costs of production in the sector but collapsed a number of agricultural industries due to their inability to compete on the international market (Owoo & Lambon-Quayefio, 2016).

Politically, the negative economic effect demonstrates a lack of consistency between the policy objectives and the strategies symptomatic of the fact that the Medium-Term Agricultural Development Programme was not a well thoughtout programme. It also begs the question whether or not political leadership learnt key lessons from the 1980 experiences.

From political economy perspectives, the aftermaths of the neo-liberal agricultural policies demonstrate, to an extent, the other side of neo-liberalism riddled with low productivity and deteriorating living conditions which reflects some of the risks of neo-liberalism at the global levels. Besides these were some fundamental aberrations to the character and essence of neo-liberalism. First, even though the state was positioned to play a secondary economic role as part of neo-liberal policies the state still gained some considerable degree in the economy by introducing high direct and indirect taxation and the under-pricing of agricultural commodities for the benefit of

the urban population, concentration of infrastructure and social amenities in the large cities.

Second, the neo-liberal agricultural policy was narrowly crystallized in the pricing regime through the removal of subsidies and deregulation of prices of agricultural inputs. It is clear in the ideas of Hayek (1945) that the solution to the problem of abuse of power associated with central planning was decentralization. This was to serve as a political trade-off between government and individual liberty. However, the agricultural policy lacked the decentralization finesse. This was largely exemplified in the imposition of top-down government schemes and the unwillingness to transfer the administration of marketing, storage, input distribution and credit programme to the private sector.

Fundamentally then, the agricultural policies in the 1980s did not really involve the peasant farmers in the neo-liberal strategies which occasioned the agricultural policies. Explaining the state's difficulty in involving the peasant farmers, it will be critical to note that the content of these policies were World Bank and International Monetary Fund donor conditionalities which political leadership at the time had less control over.

Therefore, as instructed by the external donors to pursue a neo-liberal agricultural policy the then government had to deploy state control and a centralized decision-making approach to implement the policy. In effect, the government's dependency on these external actors created grounds for decisions which were not favourable to the peasant farmers and the country's agriculture sector in general. This gives a clue that when external actors are involved in neo-liberalism of a developing country it undermines the

decentralization component of neo-liberalism and the results may contradict the expectations as will be shown in subsequent sections.

Performance of Agricultural Sector: 1980-2002

After 1983, agriculture grew at an average annual rate of 5.1 percent one of the five fastest growth rates anywhere in the world. The sector grew on most fronts. Staple crop production also increased – cassava, yam, cocoyam and sweet potato in particular. With rising yields and a more than doubled harvested area since 1983, cassava production has grown by over 7.2 percent between 1975 and the year 2000 as non-traditional exports have also taken off (Leturque & Wiggins, 2010).

In spite of these achievements, agriculture's contribution to GDP has been on the decline since 1980 up till 2002. Table 2 below shows the trend for some selected years.

Table 2: Agriculture's Contribution to GDP 1980-2002

Period	Contribution (%)
1980	52
1991	49
2000	39.6
2002	39.5

Source: Ministry of Agriculture (1991)

Ghana Statistical Service (2010, 2015)

The figures suggest that agriculture's contribution to GDP declined at the rate of 24 percent.

Indeed, it will be instructive to observe that the contribution of the agriculture's sector operates in a *'trilectical'* relationship between the

manufacturing and the service sectors. In this sense the drop or increase of the agriculture's contribution to GDP is either a function of the relative contribution of the manufacturing or the service sectors to GDP for a given period. In other words, if agriculture is declining, then the service and manufacturing sectors may be purported to be increasing their contributions to GDP. Theoretically, one may consider the declining contributions of agriculture as a sign of economic growth and could represent a precondition for an economic take-off (see Rostow, 1960). But from a more realistic point of view, this assertion is valid only if three conditions are satisfied (a) when the GDP growth rate is increasing in absolute terms, (b) if agriculture's performance for a particular year constitutes an improvement upon previous periods' performances and (c) if the growth rate of agriculture is increasing at either the same rate as the GDP growth rate or above the GDP growth.

Therefore, the mere drop in agriculture's contribution to GDP may not constitute a real picture about whether or not inherent challenges exist in that sector. In this regard a more reliable way of determining the performance of agriculture in the entire economy is to ascertain the rate of growth in the agricultural sector and compare it with the overall GDP growth rate, which is measured as the average of the growth rates of all the sectors of the economy.

Table 3: Growth Rate in Agriculture vis-à-vis Overall GDP Growth Rate 1970-2002

Period	Agriculture	GDP
1970-83	-0.5	-0.8
1984-89	3.6	4.8
1990-1995	2.0	4.3

2000	2.1	3.7
2001	4	4.2
2002	4.4	4.5

Source: Ghana Statistical Service, 1995; IMF, 2004

Table 3 shows that the agricultural sector's performance in terms of growth rate has been lower than the GDP growth rates. Perhaps the period between 1970 and 1983 which saw the agricultural sector performing better than the GDP growth rate, the performance was still abysmal, in absolute terms.

Ghana's Agricultural policies in from 2003 Beyond

The year 2003 is used as a benchmark because it was marked by the period when African leaders agreed on the Comprehensive African Agricultural Development Programme (CAADP) which enjoined all African leaders to allocate at least 10 percent of their national expenditure to agriculture with an expected growth rate of six percent. Key strategies developed to after 2003 included, fertilizer Subsidy Programme in 2007, agricultural Mechanization Services Enterprises Centers Programme in 2007 and block Farming, as part of the youth employment programme in 2009.

Moving further on to 2010 the Government of Ghana developed a new and comprehensive development programme known as the Ghana Shared Growth and Development Agenda (GSGDA) with eight broad policy objectives that are relevant to the Ministry of Food and Agriculture. As a political economy approach, Ghana seemed to have moved from extreme ideological persuasions to a more pragmatic and realistic technique towards agricultural development. After years of experiencing the debilitating effects of over liberalization of the agricultural sector, the state has been drawn into the sector but in a more strategic way. Thus, there are traces of state-market fusion where both government and private actor work in partnership to play active roles in the pursuit of agricultural development.

Generally, these programmes were designed to improve agricultural productivity, increase agricultural competitiveness and enhance integration into domestic and international market, reduce production and distribution risks/bottlenecks in agriculture and industry, promote selected crop development for food security, export and industry, promote livestock and

poultry development for food security and income, promote fisheries development for food security and income, improve institutional coordination for agriculture development and promote the application of Science, Technology and Innovation in all sectors of the economy (see Government of Ghana, 2013).

Ghana's acknowledgement of the importance of the programme was translated into some producer-oriented efforts clearly expressed in the construction and rehabilitation of irrigation works. Consequently, the irrigated portion of the cultivated area has expanded from 7,500 hectares in 1990 to 30,589 hectares in 2013. Besides these, the area for cultivation has expanded from 33.3 percent in 1990 to 57.6 percent in 2010. The cultivatable area thus increased from 0.2 percent in 1990 to 1.04 percent in 2013 (Nyanteng & Dapaah, 1993; National Development Planning Commission (NDPC), 2013). Other programmes organized in line with the policy objectives included (a) National buffer stocks and minimum guaranteed prices for farmers in 2010 (b) AGRA Loan Guarantee Programme in 2011 (c) Ghana Agricultural Insurance Programme in 2011 and Ghana Broiler Revitalization Project in 2011.

These programmes were interspersed with some trade-oriented programmes such as the National Export Development Programme and the rice imports ban through borders in 2013 as well as the Ghana Export Trade Information Centre in 2015. Following these developments, the agricultural sector which experienced a declining growth in 2010 and 2011 began to show signs of strides and recovery in 2013. The sector posted a consistently increasing growth since the marginal growth of 0.8 percent in 2011.

Furthermore, it grew by 1.3 percent in 2012 and 3.4 percent in 2013 (Ministry of Finance, 2013).

Further, foreign exchange earnings from agriculture recorded increases over the past decades. The foreign exchange earnings from agriculture between 2000 and 2009 rose from US\$687 million to US\$2.197 billion (Ghana Export Promotion Council, 2010; Bank of Ghana, 2010).

In spite of all these strides after 2010, indicators of Ghana's food import regime and the general picture in the agricultural sector show a bleak picture. First, imports of food are up to the tune of US\$1.5 billion (Government of Ghana, 2014). This was actually a double the average figure for Africa's food import bill which stood at US\$750 million per country. Secondly, the agricultural sector's contribution to GDP has been reducing since 2003 as indicated on Table 4

Table 4: Agriculture's Contribution to GDP, 2003 and beyond

Period	Contribution (%)
2003	39.8
2004	40.3
2005	39.5
2006	39.3
2007	38.0
2008	33.9
2009	34.5
2010	29.8
2011	25.3
2012	22.9
2013	22.4
2014	21.5
2015	19.7

Source: Ghana Statistical Service (2010, 2015)

As indicated on Table 4, agriculture's contribution to GDP declined from 39.8 in 2003 to 19.7 in 2015 representing a drop of 20.1 percentage points in twelve years. In addition, the performance of agriculture, in terms of growth rates, vis-à-vis the economic growth rate has been largely unimpressive as indicated on Table 5.

Table 5: Growth Rate in Agriculture vis-à-vis GDP Growth Rate 2003 and beyond

Period	Agriculture	GDP
2003	6.1	4.7
2004	7	5.4
2005	4.1	5.9
2006	4.5	6.0
2007	-1.7	6.5
2008	7.4	8.4
2009	7.2	4.0
2010	5.3	8.0
2011	2.8	15.0
2012	1.3	8.8
2013	3.4	7.2
2014	4.6	6.9
<i>Average</i>	4.16	7.23
<i>Cumulative Change</i>	-1.7	-1.2

Sources: Ghana Statistical Service, 2003, 2012; NDPC, 2013

Table 5 indicates that the performance for the agricultural sector for the period between 2003 and 2013 was below the expected benchmark pegged at six percent per annum, in line with the Maputo CAADP. Besides, its performance was below the overall GDP average growth rate of 4.16 percent while the GDP growth rate averaged 7.23 percent. Granted that this is an indication of the service and industrial sectors performing better than

agriculture within the 2003-2014 period, it is, more importantly, noticeable from Table 5 that the performance of the agricultural sector between 2003 and 2014 grew cumulatively by -1.7 while the GDP grew by -1.2 percent.

An Overview of Ghana's Agricultural Sector

From the figures and their interpretations, an indication stands true about the inability of agricultural policy objectives remaining unachieved. Ultimately, the quest for agricultural development remains a delayed endeavour. The challenges which beset the agricultural sector including high food import bill, the declining rates in agriculture's contribution to GDP as well as the unimpressive growth rates in the agricultural sector are symptomatic of the delayed agricultural development enterprise. These challenges display the political economy contexts within the delayed agricultural development will be understood. Largely, the challenges bother on issues relative to production systems, budgetary allocation to agriculture and access to finance and production inputs which the policies have failed to address over the years.

Production Systems

By expectation since the majority of the Ghanaian working population is into agriculture, the sector should have seen significant contributions to GDP. This is because Ghana has a weak agricultural production base. Ghana, just like many other African countries, has an agricultural regime which is organized largely on a smallholder basis. About 90 percent of farm holdings are less than two hectares in size, albeit the existence of some large farms and

plantations, particularly for rubber, oil palm and coconut (Ministry of Food and Agriculture, 2010).

Even though large farms for rice, maize and pineapple production exist they are few. Besides these, the main system of farming remains traditional. The hoe and cutlass are still, as compared to the precolonial era, the main farming tools as bullock farming is practiced in some places, especially in the North (Ministry of Food and Agriculture, 2010). Nevertheless, there is little mechanized farming. Agricultural production is still dependent on rainfall as the levels of production varies with the amount and distribution of rainfall. This has been due to a missing gap found in the low use of sophisticated technology.

The reduction in agriculture's contribution to GDP and the comparatively slow grow rates represent the lack of the deployment of sophisticated technology into that (FAO, 2015b) sector while the other sectors (industry and service) experience increasing rates of technology. Currently, the tractor-farmer ratio stands at 1:1,500 (WTO, 2014b). In 2010, Ghana had an estimated 11 tractors per 100 square kilometres of arable land, compared to 43 and 25 tractors in South Africa and Kenya, respectively. With regard to irrigation, Ghana could only record of an increase in cultivated area under irrigation by 1.04 percent in 2013 (MOFA, 2010). Further, the small-scale producers, with average farm size of about 1.2 hectares, dominate Ghana's agriculture sector and about 80 percent of them is aging, as young people migrate away from farms to urban areas (Ministry of Food and Agriculture, 2010).

Agricultural Financing

The challenges in the production systems are directly linked with the challenge of agricultural financing. It is so because, as Jebuni et al (1990) rightly point out, public financial support is a functional prerequisite for infrastructural development which can stimulate private investment in the agricultural sector. Table 6 shows the share of agriculture in development expenditure.

Table 6: Agriculture's Share in Development Expenditure 1961-2016

Period	Share of Expenditure (%)
1961-1965	8.9
1980-1989	5.62
1990-2003	4.37
2004	1.36
2005	1.65
2006	1.43
2007	1.29
2008	1.58
2009	1.98
2010	N/a
2011	N/a
2012	2.6
2013	N/a
2014	N/a
2015	1
2016	3
2017	3.4
2018	2.45

Sources: Benin, 2014; Institute for Social, Statistical and Economic Research, 2013; Jebuni et. al. 1990; Ministry of Finance, 2015, 2017, 2018

Agriculture's share of development expenditure declined from the 1960s to the early years of the new millennium by more than half. It, however, increased to a rate close to that of the 1960s in 2004 following government's ratification of the Maputo Declaration in 2003. Since then, there have been a few instances when Ghana's expenditure on agriculture has reached or gone beyond the 10 percent mark. Even though the expenditure dipped to 9.93 percent in 2007, it was marginal by any measure. However, a correlational analysis between the agriculture's share of development expenditure and growth rate in the agricultural sector suggests that increase in budgetary allocation for the agriculture's sector did not essentially increase agriculture's growth rate for that same period. This was because some hitches accompanied the increased allocation while some age-old hitches also persisted. First, it was apparent that consumable inputs were given much premium than intangible inputs.

A public expenditure analysis of Ghana's agricultural policies for the period 2006-2012 shows that, whereas the share of agriculture-specific expenditure on payments to producers in the form of fertilizer subsidies increased substantially, the share of agriculture-specific expenditure allocated to agricultural research and knowledge-transfer activities (such as training, technical assistance and extension) decreased sharply (FAO, 2014).

Second, the share of total public expenditure in support of the food and agriculture sector, including administrative costs dedicated to agricultural and rural infrastructures declined across the period (FAO, 2015a). Third, the administrative costs seem to absorb a large portion of agricultural public

expenditure in Ghana, as they represented about 35 percent of EFAAC, on average between 2006 and 2012 (FAO, 2015a).

Moving ahead into 2015, government's budgeted expenditure on the agricultural sector was GHC395.19 million while for 2016, GHC355.14 million was budgeted, indicating a 10.1 percent decrease. This situation is not different from the general trend in sub-Saharan Africa which saw a decline by 25 percent. However, it represents a marked difference from the East Asia and Pacific region which saw its real per capita agricultural expenditures increase seven-fold from 1980 to 2010, and South Asia nearly four-fold (see IFPRI, 2016). This indicates that the agricultural sector still faces constant neglect under recent political regimes. This trend represents clear political deficiencies in the agricultural sector. The deficiency moves beyond a mere lack of will. This is because the willingness has already been expressed in the agreement to spend 10 percent of total public expenditure on agriculture at the Maputo Declaration. Rather, it demonstrates what Ansah (2013b) refers to as the “lack of translating willingness into action among political leaders” (p.662) as they seek to embark on agricultural development.

Access to credit

The current challenge in the agricultural sector is inextricably linked with access to credit. The state's recognition of this reality resulted in the formulation of a policy to formalize credit to small scale farmers and for agricultural development all of which culminated into the establishment of the Agricultural Development Bank in the 1960s. The bank was obliged to lend not less than 25 percent of loanable funds to the agricultural sector at a subsidized interest rate (Nyanteng & Dapaah, 1993).

However, as Nyanteng and Dapaah, observed, the policy was scrapped in the 1990s due to neo-liberal policies which called for reduced state intervention in economic endeavours. Consequently, small scale farmers endured the double jeopardy of financial credit. Not only has the interest rate on agricultural loans been raised to the same level as non-agricultural loans, but there has been a sturdy decline in the access to credit by farmers.

Evidently, between 2001 and 2010, agriculture's share of credit dropped from 16.8 percent to 5.5 percent (Ministry of Food and Agriculture, 2010) and the interest rates were as high as 27.63-32.75 percent being the same as the interest rates for the export and manufacturing sector (Bank of Ghana, 2007). Even though 2011 recorded a marginal increase over the 2010 figure to 5.9 percent, the share of agricultural credit declined to 4.70 in 2012 and further to 3.16 percent in 2013 (Bank of Ghana, 2013).

As a result, the agricultural sector ranks ninth (on a scale of 1-11) among sectors which receive financial credit from Deposit Money Banks (NDPC, 2013). The reasons are not far-fetched. The commercial banks indicate that the default rate among farmers is high and the administrative cost of processing loans to small scale farmers both of which act as disincentives to offer loans to small scale farmers (Nyanteng & Dapaah, 1993).

Consequently, small scale farmers are disposed to rely on informal sources of financial credit usually from friends, relatives, private money lenders and private credit schemes. The money is not only meager, it also attracts high interest rates (Nyanteng & Dapaah, 1993). The decline in the access to credit to the agriculture is happening, ironically at a time when GDP

has been growing. It demonstrates that agriculture seems marginalized as the economy expands.

The challenge associated with access to credit reflects some inherent deficiencies associated with state-led financial credit regime which is riddled with inefficiencies in the recovery regime. This was what accounted for a scrap of the policy in the 1990s. However, the introduction of neo-liberal orientations did not address the challenges either. The challenge associated with access to credit in the agricultural sector, after the 1990s, also reflects some of the shortfalls inherent in economic liberalism especially when it is carried without regard for the structure of the economy where it is introduced. The agricultural sector is challenged because the state has allowed market forces to determine farmer's accessibility to credit when farmers lack the financial wherewithal to actively participate in an economy where rationality seems to guide the actions of economic actors. It is clear that none of the systems (i.e. state-led agricultural financial credit and neo-liberal financial credit) did not essentially address the challenging issues with agriculture. It is therefore useful to interrogate the contexts within which the credit is given.

The trends that characterize the formal access to credit show that the whole idea of loans to farmers by commercial banks has not been placed within the right contexts. Giving out loans without the right infrastructure and extension services to enhance production and distribution may not effectively enhance higher productivity. Inevitably, the high default rate which acts as a disincentive to banks becomes an outcome. Reversing the high default rate may then require strong linkages between the access to credit and infrastructural development and improved agricultural extension services.

A general observation made is that there were changes in government, which culminated into the shifting to and from socialist and capitalist policies on agricultural promotion. However, irrespective of the variation in the political approaches used by respective regimes, a general assessment of the agricultural sector clearly leads to uniform conclusions that the political actors have not learnt enough lessons from the socio-economic contradictions our past governments have created. The leaders have equally failed to commence the process of synthesizing the modern and peasant sectors of the national economy.

Beyond these observations, the failure of agricultural policies of all the governments Ghana has had so far has been founded on, to a great extent, by the unwise distribution of government revenues, failure to concretely situate agricultural policies within larger development policies, failure to establish institutional linkages between the agriculture sector and other institutional areas and inappropriate and lopsided spending of agricultural funds. Importantly, it should be appreciated that the failure of the agricultural policies was not the political economy approaches that backed them.

Rather, the quality of the leadership in terms of intentions, will, skill and speed of action worked to significantly cripple the potential of agriculture to boost economic growth in Ghana. Moreover, the failure of the policies is closely connected to the leaders' ability to contextualize the ideologically inclined agricultural policies within the real developmental needs and social structure of Ghana and apply the essence of the ideologies which informed the policies in full.

Conceptual Framework

From the literature reviewed so far it is clear that capital mobility and knowledge diffusion play critical role in promoting political and economic development. However, there are indications that capital mobility and knowledge diffusion may also derail developmental prospects. All these arguments notwithstanding, it is also apparent the possibility that capital mobility and knowledge diffusion would promote, or derail development will depend on the political, economic and social conditions which may be structural and subjective. The crux of these narratives is what has been presented as the conceptual framework diagrammed as Figure 1.

Summary of Literature Review

This chapter has provided the conceptual issues on capital mobility and knowledge diffusion. The review has showed that capital mobility and knowledge diffusion can occur simultaneously. In addition, capital mobility and knowledge diffusion can have some developmental outcomes much as it can generate cultural values and norms. It also highlights the cultural and social contexts that influences the processes with which capital mobility and knowledge diffusion can be meaningful. This chapter has also revealed existing theoretical literature on political economy which reflects some classical sociological theories and perspectives such as structural functionalism, conflict theory and symbolic interactionism. These theories provided useful frameworks to the explanation and discussions of the data in this study.

The empirical review in this chapter generally show that capital mobility and knowledge diffusion have affected the agricultural sector using countries as case studies. The empirical review also showed that Africa's agricultural sector has enormous potential but still faces many structural and political challenges. In addition, this chapter has reviewed literature on the agricultural policies of Ghana. The review suggests that many of the policies have not resulted in the expected agricultural development due to political, economic and sociological reasons. Lastly, this chapter has reviewed the patterns of economic relations between Ghana and China as they permeate the sectors of the Ghanaian economy. The question then is: What are dynamic changes which have taken place after China decided to play some roles in the agricultural sector? What are the policy implications and options for Ghana's agricultural sector since China has become involved in the sector?

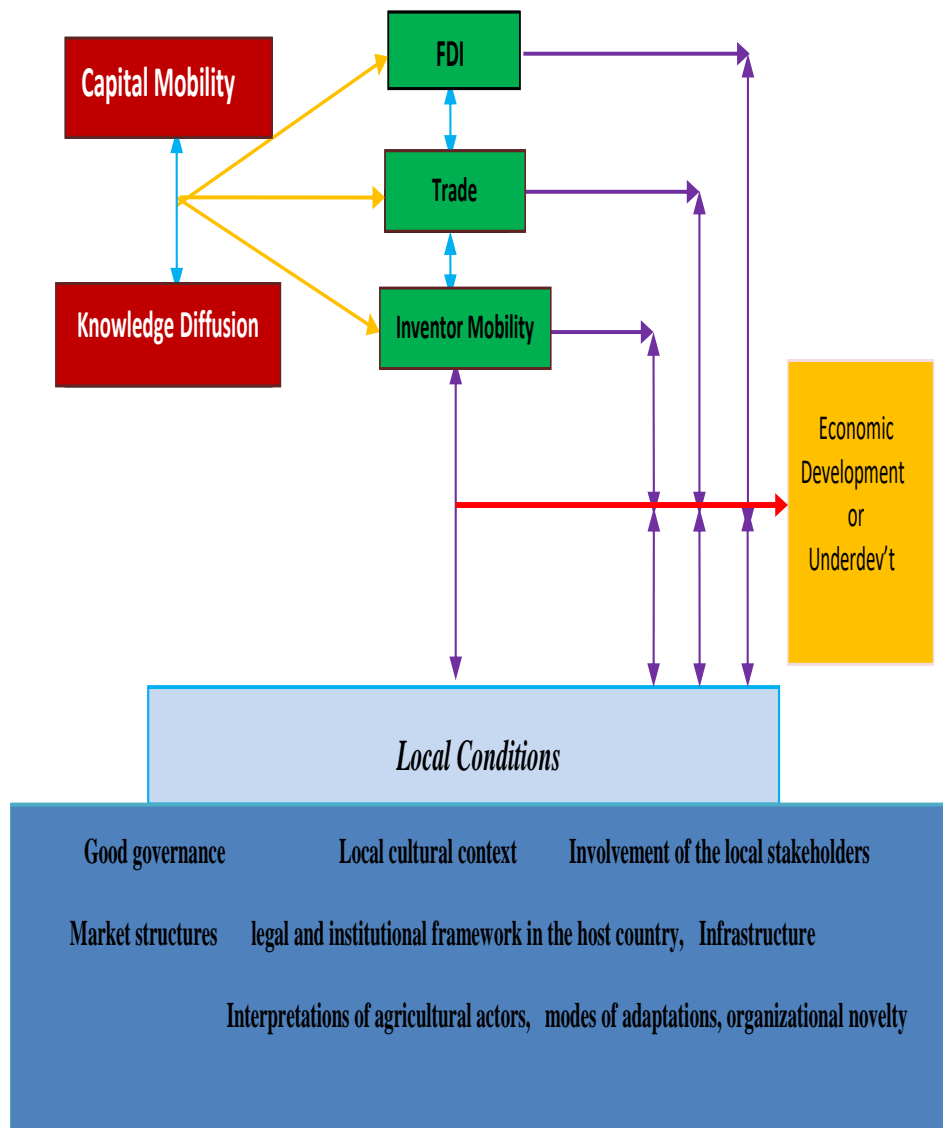


Figure 1: Conceptual Framework

Author's own construct, 2018 Adapted from Kang, 2015

CHAPTER THREE

RESEARCH METHODS

Introduction

This chapter brings to the fore, in the first place, the main research approaches used in knowledge production. This is followed with the research design for this study as well as a description of main activities embarked upon during the research including the identification and selection of research participants, access negotiation, the methods and instruments used in the data collection and the various of modes of data analysis used in the study.

This section also presents information about the trustworthiness of the study and the ethical considerations.

Research Orientation of the Study

Research Design and Justification

Philosophically, the study was largely rooted in the pragmatic paradigm to knowledge production. Situating the orientations of the pragmatic philosophical paradigm into this research I resorted to the mixed method approach in an unbalanced manner largely skewed towards the qualitative approach. In specific terms the study was essentially descriptive and exploratory. With this, the quantitative component focused on the analysis of the trends, forms and quantum with which the Chinese capital mobility has taken roots in Ghana's agricultural sector. The qualitative component explored the interpretations, mode of adaptations, the outcomes and the implications associated with the Chinese capital mobility. Using the *sequential* mixed

method approach, in more specific terms, the analysis of the forms and trends which revealed the industries where Chinese capital mobility was discovered to be moving into, served as reference points to explore the interpretations, mode of adaptations, the outcomes and the implications associated with the Chinese capital mobility.

Relative to knowledge diffusion and interpretations the qualitative method, specifically the exploratory design was preferred to the quantitative method. This stems from the fact that knowledge diffusion is hard to measure, both practically and theoretically. This is because “knowledge flows are invisible; they leave no paper trail by which they may be measured and tracked” (Krugman, 1991, p.2) and the fact that the interpretations, motivations and adaptations are difficult to be quantified. Moreover, given the fact that no such study, in terms of research participants and scope had been carried out, this study assumed an exploratory stance so that it would create a research foundation for which quantitative studies was conducted. Thus, in the exploratory design, the participants were engaged to capture their encounters, interpretations, assessments and motivations associated with the patronage and use of Chinese agricultural input in their main stay agricultural activities.

On those above-mentioned scores, the study engaged research participants with the aim of exploring the depth of how a research participant understands, thinks, and feels about and behaves towards Chinese capital mobility and knowledge diffusion into Ghana’s agricultural sector. Ultimately, the study sought to provide an understanding of complex world of human experience and interpretations from the point of view of Ghanaian agricultural actors those involved in the process of capital mobility and knowledge

diffusion from China. The process of exploring the viewpoints and orientations of the participants is usually inspired by Max Weber's (1968) "*Verstehen*" or "empathetic understanding of phenomenon". The experiences they share may project the patterns of trusts and norms embedded in the complex array of activities, organization and relationships as well as the interactions among the actors in the agricultural sector. On grounds of the consistency between the orientations of the pragmatic paradigm to research and the nature of the research qualitative and quantitative methods were employed in a sequential order with the latter method preceding the former.

Unit of Analysis

For primary sources, the units of analysis for this study were constituted by actors drawn from the three main sub sectors of the agricultural sector including the crop sub sector, the animal husbandry sub sector and the fisheries sub sector as well as state institutions. They were grouped into three categories according to the nature of group formation. They included associations, non-state institutions, and individuals. The actors were re-categorized according to their statuses in the agricultural sector. They were then given labels as producers, distributors and technical experts.

The groups, institutions and individuals were selected when experts in the crop, fisheries, and animal husbandry sub sectors acted as lead persons. Knowledge about their existential presence in the Ghana's agricultural sector was obtained through some key experts and officials in the various subsectors. Some were also obtained through other groups and individuals. Information about their presence came up during the interviews of those whose names had

been mentioned by the experts. They were then selected because their role brought them into direct contact with the equipment hence possibility of experiencing capital mobility and knowledge diffusion.

The scope of the unit of analysis was stretched to the point where secondary data were elicited from some state institutions which had relevant information about Chinese capital mobility and knowledge diffusion thus were purposively selected. These include the Fisheries Commission (fish production levels, exports and licensing fees and quantum of investment), the Ghana Investment Promotion Authority (number, location, dates and quantum of investment from China), the Ministry of Trade and Industry (types and costs of agricultural machinery imported from China) and the Ministry of Finance and Economic Planning (government expenditure on the agricultural sector). Table 7 shows a matrix of primary sources of data (producers, distributors and technical experts) who were individuals or were found as members of associations. The others were found to be working in key corporate and state institutions.

Table 7: Target Groups – Primary Groups

Agricultural Actors	Associations/End Users	Institutions	Individuals
Producers	Poultry farmers, aqua culturists, commercial and peasant farmers, industrial fishermen		Agro-chemical ³ producer
Distributors		RST, WYNCA, Enerjoyson, agro-chemical retailers, poultry feed supplement and drug retailers	
Technical Experts		Agricultural Engineering Services Directorate, MOFA, Fisheries Commission	Agricultural Engineering Services Directorate ² , RST ¹

Secondary Sources

- Ghana Investment Promotion Authority
- Ministry of Trade and industry
- Fisheries Commission

Ghana Revenue Authority

Secondary data was collected by officially contacting the above-mentioned state institutions with a letter requesting for information on Chinese investments (Ghana Investment Promotion Authority), trade volumes and values on agricultural inputs between Ghana and China (Ministry of Trade and industry),

Second-person referral participants

number of fishing vessels (Fishing Commission) and the revenue accrued from fish trawling in Ghana.

Population and Sampling Techniques

Purposive sampling was used to select the target participants because they were well-positioned, as industry players in the agricultural sector, to articulate the context of the increasing levels of patronage and imports of Chinese agricultural inputs. The target participants were also selected because they provided secondary information on Chinese capital mobility into Ghana's agricultural sector regarding their interpretations, mode of adaptations and the implications they have for the food sector development strategies (Palys, 2012).

The '*criterion*' purposive sampling was used to select the retailers, the meat producers, the aqua culturists as well as leaders and members of the various farmers' associations, including the poultry farmers, peasant farmers and the commercial farmers. They were selected using this sampling method because they had some life encounters (Given, 2008, p.2) which occasioned the capital mobility and knowledge diffusion regimes. In addition, they had unique interpretations and an assessment of Chinese capital mobility and knowledge diffusion (Given, 2008, p.2) which needed to be explored. Finally, they were also selected because they had experiences which provided considerable contextual understanding of how political economy and social contexts influenced the patronage of Chinese agricultural input.

Officials from the Ministry of Food and Agriculture, the AESD, the Fisheries Commission and the importers of Chinese equipment were selected

using '*expert*' purposive sampling technique to select them because they "have a particular expertise that is most likely to be able to advance the interests of the researcher and potentially open new doors" (Given, 2008, p.2) with regard to the patterns, attractions, interpretations and the law and politics associated with Chinese capital mobility and knowledge diffusion. The selection was also meant to open the frontiers upon which the political economy contexts within which Chinese capital and knowledge diffusion operate will be understood.

A total of 16 interviews involving 16 key informants were conducted. Focus Group Discussions (FGD) were also deployed involving the use of FGD guides. The FDGs were limited to the engineers of the Agricultural Engineering Services Directorate (AESD), under the Ministry of Food and Agriculture, and the end-users given their uniformity of exposure and the variations in their encounters with Chinese agricultural inputs. In all, 6 FDGs, involving a total 51 discussants, were formed for the discussions. The groups were constituted, in their respective terms, by 4 engineers, 5 agro-chemical retailers, 5 meat producers, 6 aqua culturists, 7 inshore industrial trawlers' association members, 5 members of poultry farmers' association and 20 members of the farmers' association. In all, 67 research participants were involved in the study. Leaders of the various groups were informed about the purpose of the focus group discussions and were given ample time to decide on members who fit into the set criteria for participation. Participants for the focus group discussions were selected based on two criteria which include their knowledge and their direct encounters of the imported agricultural commodity from China.

All the FDGs were held at quiet and enclosed locations decided upon the discussants. The researcher was the moderator assisted by two field workers. The moderator introduced himself and the field workers and informed the discussants about the purpose of the research. The moderator raised the questions in the FDG guide and invited discussants to share their views, opinions, experiences and assessment of Chinese capital mobility and knowledge diffusion into Ghana's agricultural sector.

Data Collection Approaches

For all these groups, institutions and individuals, information about the patterns of knowledge diffusion associated with Chinese mobility was drawn out from the research participants through in-depth interviews and focus group discussions which were carried out. The setting for the data collection was the respective workplaces of the research participants which generally took between one hour and an hour and a half. The information was recorded in all cases as the interviewees had granted the opportunity to do so. The research participants were asked to provide their experiences and encounters and documentary evidence through which they had found Chinese experience as a tool for knowledge diffusion in their sphere of operation in the agricultural sector. To ensure objectivity, research participants were encouraged and restricted to concentrate on the knowledge they had acquired, the interpretations they had formed, the adaptations they have developed relative to Chinese capital mobility into the agricultural sector alone. Attempts to rake out the political economy contexts within which Chinese products had pervaded the Ghanaian agricultural sector was composed of the questions

which required the participants to compare their experiences and encounters with Chinese and other countries as far as capital mobility and knowledge diffusion were concerned.

Official letters were written and handed over personally to the front desk executives of the state institutions. Incidentally, all of the front desk executives received and recorded receipt of the letters and provided information about the actual unit within that state institution which was well adept to provide the relevant information relative to the substance of the study. Personal contact numbers of the potential interviewees were taken for follow ups and booking of interview appointments. The interviews were carried out on the appointed dates.

The officials in the state institutions were asked to address issues relative to the patterns and history of engagement between Ghana and China in Ghana's agricultural sector, the patterns of political engagement between state institutions and industry players as well as how the absorptive capacities of the regions have been developed to accept the capital and diffused knowledge from China. In AESD in particular two officials in that unit were available on the day for the interview.

The non-state groups, institutions and individuals were selected when experts in the crop, fisheries, and animal husbandry sub sectors acted as lead persons. Knowledge about their existential presence in the Ghana's agricultural sector was obtained through some key experts and officials in the various subsectors. Some were also obtained through other groups and individuals. Information about their presence came up during the interviews of those whose names had been mentioned by the experts. Among these non-state

institutions, phone calls were made by way of formalizing contact. While some agreed on the interview exactly on the day the request was made, others scheduled the interview appointment on a later date. They opened up for the interviews because of the credibility of the source of reference I made regarding my knowledge of the presence of Chinese capital mobility and knowledge diffusion in Ghana's agricultural sector.

Participants were interviewed using in-depth interview guides and key informant interviewing method as the main methods and instruments of the gathering information about the interpretations and modes of adaptation, the motivations and experiences. Focus group discussions were also used. The discussion process revealed underlying views and motivations, behavioral triggers and challenges and explored reactions to messages (Wallace & Sheldon, 2015) about capital and knowledge diffusion from China.

The process of gathering data from the participants involved the 'SenseMaker' approach. This approach gave a deeper sense of the experiences, interpretations and the mode of adaptations among Ghanaian agricultural actors whose activities were directly connected to Chinese capital mobility and knowledge diffusion. By this approach, I used the following strategies:

Sought experiences from participants as they conveyed complex knowledge through their stories rather than merely seeking their opinions

Used indirect promptings to elicit answers that tended to be more honest and revealing

This approach involved methods which gave a deeper sense of the underpinning motivations of China's interest in Ghana's agriculture, the lived experiences of the agricultural actors with the mobility of capital and knowledge diffusion from China and the extent to which the capital and knowledge affected their economic activities and then built a contextual understanding of these realities. Practically combining these strategies, the research participants who traded in Chinese agricultural inputs were made to compare their experience with the Chinese and other countries in order to establish the veracity of the emerging heterodoxies in Chinese capital mobility and knowledge diffusion

Table 8: Summary of Category of Research Participants, Their Respective Numbers, Kinds of Data Collected from Each Category And Methods Of Data Gathering

Source of Data	Kind of Data	Method of Data Gathering	Number of Participants
<i>A. Institutions</i>			
1. Ministry of Food and Agriculture (<i>Policy Directorate</i>)	Primary	Interview	2
2. Ministry of Trade and Industry	Both primary and secondary	Interview	2
3. Ghana Revenue Authority	Secondary	N/a	N/a
4. Ghana Investment Promotion Authority	Both primary and secondary	Interview	1
5. Ministry of Finance and Economic Planning	Secondary	N/a	N/a
6. Regional Maritime Authority	Primary	Interview	1
7. Agricultural Engineering Services Directorate (Officials)	Primary	Interview	2
8. Agricultural Engineering Services Directorate (Engineers)	Primary	Focus Group Discussion	4
9. Fisheries Commission	Both primary and secondary	Interview	2
10. WYNCA Ghana Limited	Primary	Interview	1
<i>B. Agricultural Groups</i>			
11. Poultry Farmers' Association of Ghana	Primary	FGDs	5
12. Ghana Aquaculture Association	Primary	Interview/FGDs	5

Table 8 Cont'D

13. Ghana Inshore Trawlers Association	Primary	Interview/FGDs	7
14. Agro-chemicals Retailers' Association	Both primary and secondary	Interview/FGDs	5
15. Ghana Meat Processors Association	Primary	Interview/FGDs	5
16. Importers of Chinese Livestock Agricultural Input	Primary	Interview	2
17. Importers of Chinese Agricultural Equipment	Primary	Interview	2
18. Agro-Chemical Producers	Primary	Interview	1
19. Peasant Farmers Association of Ghana		Interviews/FGDs	10
20. Commercial Farmers Association of Ghana	Primary	Interviews/FGDs	10
Total			67

Data Analysis

The primary data obtained were transcribed, “sorted, organized and indexed” (Mason, 1996, p.7) and classified into categories. Data extraction was carried out manually as relevant texts from the transcriptions were sorted, highlighted and marked with a label either as a threat or usefulness, or interpretation, an adaptation or a political narrative from which thematic framework was developed. Themes which were contained by similar responses and meaning from the multiple research participants (Ayres, Kavanaugh & Knafl, 2003) were developed to aid the structural formatting and presentation of the data obtained. The themes were not prearranged; they were generated based on the characteristic content of the data obtained.

Themes were then developed as fashioned out along the specific issues which emerged from the participants’ responses during the period of data collection. Afterwards the contents of the themes were used to explore the theoretical relevance of the responses derived from the participants. Certain social processes, social innovation contexts became central to the understanding of how the actors in the agricultural sector patronized Chinese agricultural inputs using insights from literature. This was carried out through the decontextualization process. Subsequently the texts with content which suggested threats or usefulness were further sub categorized into sub themes based on the nature, as discovered. Using the process of recontextualization, key sub themes discovered from the data which cut across as knowledge diffusion dynamics, interpretations, as well as the threats and usefulness were considered as economic, political, organizational, technical and social. For the

sake of validating claims, salient portions of the transcriptions which could be used as evidence to arguments on the critical issues were quoted verbatim. In this study, the analysis inputs were made to practically describe, decipher, translate, or in different ways, manage the meaning of more or less natural occurrences and interactions in the social and cultural world of the participants concerning capital mobility and knowledge diffusion from China into Ghana's agricultural sector (Van Maanen, 1983).

The framework included the content and the nature of knowledge as well as the means of transmission as they occurred among the various sub sectors of the agricultural sector. Subsequently the texts with content which showed the traces of knowledge diffusion were further categorized into sub themes based on the mode of knowledge diffusion, usability of the knowledge diffused, transferability of the diffused knowledge as were ascertained. In the course of the analysis key sub themes were discovered from the data and subsequently created using the process of recontextualization.

Drawing ideas from the theoretical framework of the study, certain social processes, cultural arrangements, economic conditions and political organizations became central to the understanding of how farmers and fishermen and other actors in the agricultural sector drew conclusions on the Chinese presence in Ghana's agricultural sector. For this reason, the study employed the *constant comparative analytic strategy* where the fundamental social processes which characterized their descriptions of the Chinese capital mobility and knowledge diffusion as either useful or a threat, within and among the subsectors were unearthed. It was also used as a frame through which the fundamental social processes which characterize mode of

adaptations exhibited by actors in the agricultural sector were analysed by drawing out similarities and differences in interpretations and mode of adaptations (Thorne, 2000).

In addition, the *phenomenological analytic strategy* was used to analyse the lived experiences of as many actors in the agricultural sector as people (Thorne, 2000) who are directly or indirectly affected by capital mobility and knowledge diffusion from China and how such experiences led them to admit whether the Chinese presence was a threat or beneficial. This strategy was also used to aid the ways that placed the interpretations of the actors within comprehensible experiential contexts.

Narrative analysis was also used as participants, especially members associations, were made to share and recount their experience or event that were closely connected to use of Chinese agriculture-related product in so far as it facilitated capital mobility and knowledge diffusion from China or not. As part of the analysis, I introduced reflexivity by situating myself socially, emotionally and intellectually in relation to responses (Mauthner & Doucet, 2003). This was to enable me gain and retain a grasp over the overlapping relationship between the participants' narratives and my interpretation. To gain and retain a grasp over the overlapping relationship between the participants' narratives and my interpretation, some amount of reflexivity was introduced in terms of which I associated myself socially and intellectually in relation to responses about how Chinese capital mobility has occasioned knowledge diffusion (Mauthner & Doucet, 2003).

Given the fact that the study relied on some quantitative secondary data drawn from the Ministry of Trade and Industry, Ministry of Finance and

Economic Planning, Ghana Investment Promotion Authority, Fisheries Commission and the Ghana Revenue Authority the study resorted to a univariate analysis. This involved the use of tables and graphs in terms of which average yearly spending as well as yearly average spending increase, government spending on the agricultural sector, foreign exchange earnings and internally generated receipts from the fish trawling industry were ascertained and presentation.

In this study, it is recognized that some of the actions associated the Chinese contributions to Ghana's agricultural regime may have some functions and dysfunctions, albeit unanticipated. On this score, inductive and abductive reasoning in which empirical findings and theoretical frameworks were applied and used to enhance the ability of the researcher to connect certain experiences to the conclusion they made about the outcomes of the Chinese involvement in Ghana's agricultural sector. These set of analytic reasoning were employed because of the high level of probabilities in terms of the relationship between knowledge transfer and capital mobility on the one side and their usefulness and threats on the other side which may not have been thought of as being apparently connected (Krauss, 2005; Pierce, 1955; Svennevig, 1997). Finally, as part of the analytic process, I drew on more than my capacity for logical reasoning; I relied on my imaginations, intuitions and several other types of thinking such as speculations and guessing (Swadberg, 2016) in the process of developing a conclusion from the data set.

Ensuring Trustworthiness in the Study

In this study efforts were made to ensure trustworthiness through credibility, dependability, transferability and confirmability (Guba & Lincoln, 1989). Credibility was achieved through prolonged engagement, persistent observation, peer debriefing, by refining ‘hypothesis’ to account for all known cases, by a change in my conceptions and member checks, by re-checking the data and interpretations with the participants (Guba & Lincoln, 1989). Credibility was also achieved by emphasizing teamwork and communication in manners that diffuse responsibility, authority and accountability to all members of the research team (Analoui, 2016).

Dependability was achieved by catering for new designs, hypotheses, concepts and focus (see Bitsch, 2001) by well documenting the new features in the research which were checked in the course of the presentation of the research results. Dependability was also achieved through systematic, rigorous and auditable analytical processes. Hence, the presentation of findings was articulated in a logical process in ways the critical reader would find convincing. The presentation was characterized by an explicit relationship between the actual data and the conclusions about the data.

Transferability was achieved through an interpretative description which clearly brought out the intentions of the actors in the agricultural sector (Geertz, 1973) and purposeful sampling of the target participants. Confirmability was achieved by integrating the interpretations of both the researcher and the participants from the data analysis and results presentation coupled with the explication of the values and contexts of the individual participants as the anchor to the research data, interpretation and findings.

Ethical Considerations

In this study, a number of ethical considerations were observed. First, informed consent was observed as research participants were giving prior notice about the nature and purpose of the study after which their willingness was sought to participate in the research. Confidentiality was also ensured as research participants were made aware of the fact that the information obtained would be strictly for academic purposes. Privacy was assured prior to the study as the researchers were made to decide on a suitable place where the interviews and focus group discussions could carry out. Anonymity was also ensured in manner which names of research participants were not used. In an attempt to balance the equities between the realism and nondisclosure the status of the officials, rather than their real names were used. In some cases, pseudonyms were used.

Summary

This chapter has highlighted the research orientation of this study. This chapter presented the pragmatic paradigm and its research approach implications. It highlights the use of mixed methods which integrates the qualitative and quantitative research approaches. The study was sequential in light of the fact that the quantitative data was the first to be gathered. Afterwards, it was further used as a reference point to interrogate the qualitative data. The study relied on a number of individuals, Ghanaian based Chinese agricultural commodity related business enterprises, associations and state institutions as sources of primary data. All such research participants were purposively selected. In addition, some state institutions were relied upon

for secondary data. The study used univariate analysis to analyse the quantitative data.

The study also used narrative, phenomenological and constant comparative analyses to analyse the qualitative data. The data, by way of theoretical analysis were matched with the political economy theories and the other conceptual and empirical literature. The seven successive chapters that follow discuss the findings of the study. Chapter four discusses the forms and trends of Chinese capital mobility into the agricultural sector and the political economy contexts thereof. Chapter five analyses the processes, forms and the success variations of knowledge diffusion from the China into Ghana's agricultural sector.

Chapter six highlights the interpretations associated with Chinese capital mobility and knowledge diffusion while chapter seven presents the various modes of adaptations which have emerged from the Chinese capital mobility and knowledge diffusion into Ghana's agricultural sector. Chapter eight discusses the benefits as chapter discusses the threats associated with Chinese capital mobility and knowledge diffusion. Chapter ten interrogates the political issues which have occasioned Chinese capital mobility and knowledge diffusion.

CHAPTER FOUR

FORMS AND TRENDS OF CAPITAL MOBILITY FROM CHINA INTO GHANA'S AGRICULTURAL SECTOR: POLITICAL ECONOMY CONTEXTS

Introduction

As established in the literature, fast-growing locations are not closed and independent economies, but rather they are, most likely, those areas hosting MNEs (Isaksson, 2001; McCann & Acs, 2009). In this regard this section established the extent to which Ghana has been able to host Chinese MNEs involved in agriculture.

By so doing, this chapter presents the forms and trends of capital mobility and knowledge diffusion from China into Ghana's food production sector. Even though the process of capital mobility and knowledge diffusion may occur simultaneously the two phenomena were separated for analytical purposes. This is because even though both phenomena are crystallized through trade, investment and inventor mobility (Almeida & Kogut, 1999; Aitken & Harrison, 1999; Bitzer & Geischecker, 2006; Coe & Helpman, 1995; Javorcik, 2004; Keller, 2002; Oettl & Agrawal, 2008) not all instances of capital mobility may be accompanied with knowledge diffusion (Kang, 2015).

This chapter therefore starts by presenting the forms and trends of capital mobility from China into Ghana's agricultural sector. This will be done by indicating the sub sectors into which capital mobility from China is taking place, the year-on-year add ups of Chinese FDI in terms of number of investments into Ghana's agricultural sector within a period of twenty years

and the geographical distribution of the Chinese business engaged in Ghana's agricultural sector. It highlights the main subsectors and industries in the agricultural sector where trade between Ghana and China occurred within a ten-year period. This chapter also provides the orthodox and heterodox political economy contexts within which the forms and trends could be explained making references to neo-liberalism and social innovation.

Forms and trends of Capital Mobility from China into Ghana's Agricultural Sector - FDI

The rationale for highlighting the forms and trends of Chinese investment-related capital mobility into Ghana's agricultural sector is to establish the industries in the agricultural sector within which the Chinese are contributing to the sector.

Capital Mobility in Ghana's Crop and Animal Husbandry Subsectors

Table 9 provides details of Chinese investments in the crop and animal husbandry subsectors

Table 9: Composite Profile of Chinese Companies engaged in Ghana's Agricultural Sector

Company Name	Date_Iss	Location	Region	Country	Ownership	Sector	Activity
Golden Fish Aquaculture Ltd	06/02/1997	Tema	Gr	China	F	Agric	Fish Farming And Aquarists
Meilong Poultry Ltd	22/04/1997	Tema	Gr	China	F	Agric	Poultry Complex
Eau Agricultural Company (Gh) Ltd	29/09/1999	Amasaman	Gr	China	Jv	Agric	Poultry Farming
Henz Poultry Ltd Now Dragon Farming Ltd	12/09/2001	Tema	GR	China	F	Agric	Poultry Production, Hatchery, Feed Manufacturing
Big Catch Fisheries (Gh) Ltd	17/10/2002	Tema	Gr	China	Jv	Agric	Tuna Fishing
Huang Jia Yi Limited	15/06/2007	Tema	Gr	China	Jv	Agric	Vegetable Farming: Chinese Cabbage, Lettuce, Green Pepper Etc.
Heyi Company Limited	28/06/2007	Kpong & Ahweras	Vr	China	Jv	Agric	Vegetable Farming
Tila Fish Limited	15/11/2007	Senchi	Er	China	Jv	Agric	Fish Farming
Jia Hua Agric & Technology Company Ltd	18/01/2010	Tema	Gr	China	F	Agric	Farming Of Vegetables

Table 9 Cont'D

Agriculture Technology Development Ltd	05/02/2010	Tamale	Nr	China	F	Agric	General Agric, Import and Export Og Agric Machinery, Manufacturing Agric Eqpt,
Infinity Company Limited	05/02/2010	Tamale	Nr	China	F	Agric	General Agric, Import and Export of Agric Machinery, Manufacturing Agric Eqpt,
Hu Nan Farms Limited	17/05/2010	Afiencya	Gr	China	Jv	Agric	General Farming. Company Will Grow Variety of Vegetables and Rearing Pigs
Gya Glorify Farms Limited	16/11/2011	Dentsaworme	Vr	China	Jv	Agric	Gen. Farming, Aquaculture Fish Farming
China Fujian Fishing (Gh) Ltd.	22/03/2016	Akosombo	Er	China	F	Agric	Fish Farming
Santa Fisheries (Gh) Ltd	19/05/1999	Tema	Gr	China/Tai wan	Jv	Agric	Fishing

Source: Ghana Investment Promotion Authority, 2017

Within a period of twenty years (1997-2016), fifteen companies had been registered in Ghana for agricultural purposes. These companies were either fully owned by Chinese companies or by a joint venture between Chinese and Ghanaian business enterprises. From Table 9, having fifteen registered companies within a period of 20 years suggests that the agricultural sector records an average of less than one Chinese company as compared to the manufacturing sector which recorded 179 registered companies as at 2015 with 70 of these coming from China (GIPA, 2017). Moreover, in 2013 when a total of 219 with an estimated investment value of US\$259.56 million had registered in Ghana (GIPC, 2013) none of these went into the agricultural sector. Figure 2 presents a pictorial representation of the narratives aforementioned.

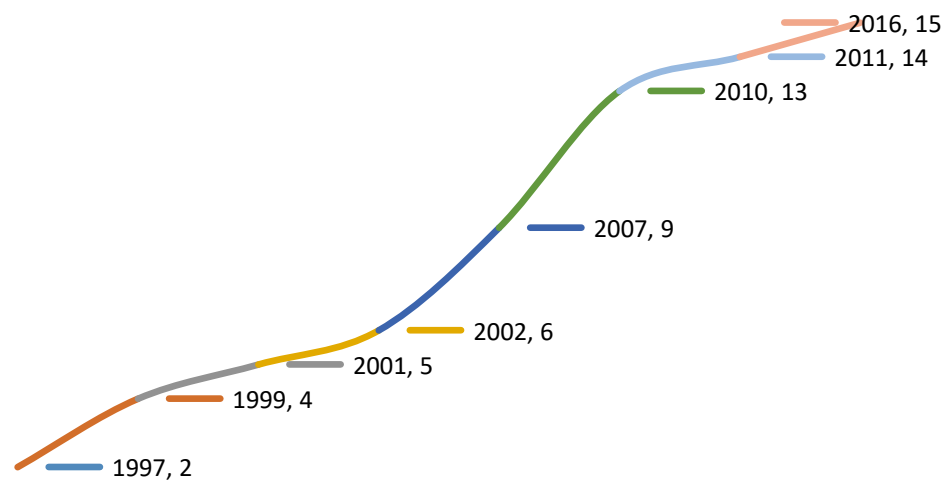


Figure 2: Number of Chinese Investments in Ghana's Agricultural Sector (1997-2016)

Source: Author's own construction, Sourced from GIPA, 2017

The low patterns of capital mobility are not any different from the generally low patterns of capital mobility into Ghana’s agricultural sector foreign direct investors from other countries. By the first quarter of 2017, as shown on Table 10, the following was the nature of capital mobility in terms of FDI into Ghana’s economy, among the sectors.

Table 10: FDI in Ghana as at First quarter of 2017

Sector	Number of Projects	Amount Invested (\$)
Manufacturing	13	2.50 billion
Service	12	10.62 million
General Trading	10	15.87 million
Building and Construction	5	6.4 million
Agriculture	1	6.91 million
Total	41	2.54 billion

Source: Author’s own construction, Sourced from GIPA, 2017

By way of policy, this trend means that agricultural development in Ghana would largely have to rest on the indigenization of capital investment. It is thus clear from Figure 2 and Table 10 that the attraction of Chinese investment into the land-based agricultural sector has not been encouraging. This situation is not different from general trends on the African continent. Indeed, this finding corroborates previous findings by Brautigam and Ekman (2012) as well as Brautigam and Tang (2012) that, in Africa, there are far fewer land-based investments than media houses have reported. This raises issues of policy and favourability of investment environment in the agricultural sector. As it stands, there are conditions which dissuade investors from investing in land-based agriculture. Generally, these are macro issues which relate with lack of infrastructure, distance to markets (see Scoones et al,

2016) and the decentralized and traditionally based land tenure administrative structure (Boamah, 2014; Schoneveld & German, 2014).

In spite of lower levels of Chinese land-based agricultural investments, its capital mobility into the agricultural sector, as indicated on Table 11, represents an apparently diverse array of engagement in that sector including activities such as general agriculture, tuna fishing, aquaculture, vegetable farming, poultry production and the distribution of agricultural machinery and agro-processing equipment.

Table 11 shows the number of Chinese investments in the subsectors in the agricultural sector which has attracted Chinese capital mobility.

Table 11: Agricultural Subsectors Attracting Chinese Capital Mobility between 1997 and 2016

Subsector	Number
Fish farming and Aquaculture	5
Vegetable production	4
Poultry production	3
General Agriculture	3
Trade of and Manufacturing of Agricultural Machinery	2
Tuna Fishing	1
Rearing of Pigs	1
Total	19

Source: Author's own construction, Sourced from GIPA, 2017

The predominantly primary-based nature of Chinese investment in the agricultural sector corroborates Amanor's (2013) finding which indicates that

China does not yet have significant agribusiness companies operating in the agricultural sector with just a number of small Chinese farmers operating in Ghana producing vegetables, cowpeas and *Jathropa* while some of these farmers are also involved in distributing Chinese agricultural machinery. This also raises policy issues and perhaps may lend credence to the widely held impressions by Chinese critics that Chinese presence in Africa is focused largely on natural resource extraction and manufacturing. It must also be noted, perhaps to buttress the arguments of the critics, that Chinese subsidiary in Ghana, known as WYNCA Sunshine (Ghana) Agric Products & Trading Company Limited has been engaged in the production of agro-chemicals. The brand name for the company's agro-chemical products is WYNCA. WYNCA Sunshine (Ghana) Agric Products & Trading Company Limited is engaged in the production of herbicides such as Rezim and Caritek as well as insecticides including Sunpyrifos and Lamdakin.

With the data obtained, it is also plain that unlike the discovery made by Brautigam and Tang (2012) about an interest in contract farming arrangements for key crops (including cotton and tobacco) in Africa, this observation cannot be held applicable to Ghana since the Chinese investment into the agricultural sector has not yet entered into key crops, particularly the cocoa subsector, as the data on the profile of Chinese companies engaged in Ghana's agricultural sector from GIPA (2017) suggest.

Capital Mobility in Ghana's Fisheries Subsector: A Focus on the Fish

Trawling Industry

In Ghana, the fisheries subsector consists mainly of marine fishery, inland (fresh water) fishery and aquaculture fishery and other related activities such as fish storage, preservation, marketing and distribution (GIPA, 2017). The fisheries sector's contribution to national economic development is evident in an estimated 3 percent of the total GDP and 5 percent of the GDP in agriculture. In terms of employment the fisheries sector employs 10 percent of the country's population is engaged in various aspects of the fishing industry (GIPA, 2017).

Notwithstanding the fact that land-based investment has been low with just about five of the seventeen in the fish farming and aquaculture industry, a significant amount of investment could be seen in the marine fishing sector, albeit largely limited to the fish trawling industry. Why is it so? A structural profile of the marine fisheries industries will provide an understanding to this phenomenon.

The marine fishing industry in Ghana can be categorized into four according to the nature of activity carried out. They include the artisanal, semi-industrial (inshore sector), industrial (deep sea) and tuna fleets. Marine fisheries account for over 80 percent of the fish consumed in Ghana. It has been realized, however, that freshwater fisheries including aquaculture is considerably increasing thereby contributing to a share of the supply and consumption trends (GIPA, 2017).

With regard to tuna fishing, it has not attracted many Chinese enterprises because most of the foreigners engaged in fish farming are largely

South Koreans. The tuna sector is about 98-99 percent Korean involvement. It is just about 1 percent being Chinese in the Tuna sector. Indeed, the Koreans were present in the fish trawling industry but moved away. In lieu of the fact that the Koreans had moved away from the trawling sector the Chinese took over.

Unlike the semi-industrial fish trawling sector, the artisanal fishing sector rarely attracts Chinese capital mobility. It is so because in Ghana about 90 percent of the outboard motors used by actors in the artisanal sector are YAMAHA and SUZUKI brands which are made in Japan. A few items such as the hook and the nylon lines originate from China thus contributing insignificantly to the Chinese capital mobility enterprise in Ghana. It is in this regard that the artisanal sector, just like the tuna fleet and the inshore fishing industry would not gain much attention in this study even though five Chinese companies were found to be involved in fish farming and aquaculture and one in tuna fishing. The attention is thus restricted to the fish trawling industry given the visible and ostensibly exclusive Chinese engagement in it. The dynamics of the Chinese engagement are as follow.

In Ghana, ownership of a trawling company is, by law, exclusively Ghanaian. However, the reality on the ground is that owing to lack of the ability on the part of Ghanaians to raise the need capital of about \$4 million to own a vessel they acquire the license to engage in trawling and partners Chinese who has the financial wherewithal to acquire the vessel for them to operate together. Thus, the trawling sector is about 100 percent Chinese holding in terms of vessel purchase financing, hence their engagement in that

sector. In terms of crew it is also heavily dominated by Chinese at the top management positions.

Currently, the main players in the fish trawling industrial sector includes the bottom trawlers who generally operate with a depth of up to 30 m Length Overall (LOA). The industries main target species include sparids, groupers, cuttlefish and snappers. Between 2008 and 2013 significant increase in fishing capacity was observed, mainly due to the importation of additional vessels (Ministry of Fisheries and Aquaculture Development, 2015). In 2014, the fisheries sub-sector comprised around 107 active vessels which contributed to an estimated annual catch of nearly 20,000 tonnes (Ministry of Fisheries and Aquaculture Development, 2015).

However, since some of the vessels had been operating in a very poor state, the Fisheries Commission removed them from the fisheries register which resulted in substantial reduction in fishing effort with the implementation of the Fisheries Management Plan (2015-2019). As at 2017, the register of vessels had records of 80 active vessels and each vessel costs an average of US\$4 million totalling an estimate US\$320 million as at 2017. Despite the reduction, in the number of vessels, there was an increase in the quantity produced from 20,000 tonnes in the years prior to 2015 to 53,100.30 in 2015 largely attributable to the sizes of the vessels and their technical efficiency. However, between 2015 and 2016 there was a slight increase in the quantity of fish produced to 53,750.31.

The Neo-Liberal Context and Political Economy Heterodoxies to Chinese Investment in Agricultural Sector

It is evident from Table 11 that Chinese capital mobility in the agricultural sector can be largely found in the fish farming and aquaculture, vegetable production and poultry production. In addition, the fish trawling industry has attracted Chinese Investment. It will be equally useful to point out that contrary to Mueller & Mueller's (2014) argument that China's increasing reliance on food and feed imports from Africa is directed at satisfying her growing demand, Ghana's case is an exception. Judging from the industries where the Chinese investments into the agricultural sector are being directed into it could, by and large, be understood within certain micro economic contexts. In the first place, the attraction of Chinese capital mobility into the vegetable production arena has been motivated by the need to meet the dietary needs of a growing number of Chinese nationals engaged in varied forms of economic activities who patronize restaurants and shops serving Chinese meals (see Cook, Tugendhat, & Alemu, 2016).

In terms of poultry production, it has also gained Chinese capital mobility attraction because of the increasing demand of poultry products evident in the increased importation of poultry products. Clearly, the attraction of Chinese investments has been largely motivated by an increasing demand in the products offered by Chinese investors. These rationalizations support the argument by Harvey (1975) that MNEs are attracted to host countries that will enable them have value for their financial capabilities ranging from their sales efforts to reduced turnover time on fixed capital. However, despite the Chinese presence in the poultry industry, the import levels are rising. As

indicated in Table 12 the quantum of imports rose from 120,000 tonnes in 2015 to 165,000 tonnes in 2017.

Table 12: Production and consumption and imports of poultry into Ghana (, 000 tonnes)

Year	Consumption	Local Production	Imports
2015	175	55	120
2016	205	55	150
2017	221	56	165
Total	601	166	435

Source: Ashitey (2017)

Hence, even though there is a level of local demand the investment has been low. Evidently the last time a Chinese company entered the poultry industry was in 2001. Clearly, the local conditions are not favourable for investment in the poultry industry. Consequently, the local producers and Chinese producers mentioned the market prices of local broiler meat are inclined to be higher than the imported ones. This corroborates Ashitey's (2017) observation that the prices of poultry meat increased by 30-40 percent margin, making local broiler meat uncompetitive. By way of policy, this trend means that agricultural development in Ghana would not only largely have to rest on the indigenization of capital investment but with favourable economic conditions.

Despite the unimpressive levels of investment, an examination of the patterns of distribution of Chinese investments across the sub sectors and the geographical areas clearly suggests that the sub sectors which are receiving attraction are areas with expanded markets. The Chinese are, by virtue of

rational actions, responding to market demands in the agricultural sector. Beyond the economic motivations is the fact that the availability of naturally endowed resources suitable for certain types of agricultural activities also attract Chinese Investments. While the availability of water bodies creates the ecological environment of fishing the arable lands are suitable for vegetable production. This then shows that capital mobility may be driven by the availability of natural resources in the geographical area where capital is becoming attracted to.

Apart from the specific rationalizations, it is also evident that the ecological conditions expressed through the availability of certain natural resources could equally serve as sources of attraction of Chinese into Ghana’s agricultural sector. This supports Storper’s (1997) assertion that the emergence of a ‘regional world’ is essentially underpinned by the spatially bounded localised forces, which are natural in essence. The geographical distribution of Chinese investment into Ghana’s agricultural sector is shown on Table 13

Table 13: Regional Distribution of Chinese Investment into the Agricultural Sector

Region	Number of Companies in the Agricultural Sector	Types of Agricultural Activity
Greater Accra	9	Fish farming and aquaculture, poultry farming, tuna fishing, vegetable farming, pig farming
Northern	2	Trade and manufacturing of agricultural machinery
Volta	2	Vegetable production and fishing
Eastern	2	Fish farming

Source: Author’s own construction, sourced from GIPA, 2017

It is apparent from Table 13 that Chinese investment into the agricultural sector is concentrated in only four out of the then ten regions of Ghana. Out of the four, there is a heavy concentration of the investments in the Greater Accra Region. The region has nine out of the 15 companies. The six remaining investments are evenly spread among the Northern, Volta and Eastern Regions with two companies each.

This demonstrates that the capital mobility patterns from China into Ghana's agricultural sector are skewed in favour of the Greater Accra Region. However, a closer look at the activities carried out in the various regions show that activities such as fish farming and vegetable production are equally being carried out in other regions such as Volta and Eastern Regions. This indicates that the attraction for investment is not only by virtue of the natural resources which are suitable for certain kinds of agricultural activity.

These ecological-oriented arguments notwithstanding, the picture about the location of Chinese investment is not limited to the availability of natural resources alone. Indeed, I argue that the geographical distribution of the Chinese investment in Ghana is a function of economic triggers such as market demands and infrastructural development and incentive conditions which correlate with the location of Chinese investment in Ghana's agricultural sector. This will be verified by demonstrating at the geo-political and economic imbalances that permeate Ghana's investment policy climate.

Appealing to the essence of political economy heterodoxy there are more conditions that will determine where an investment will be sited. Indeed, the Ghana Investment Promotion Authority has acknowledged this reality and has thus introduced some tax incentive packages for business. However, the

result after these incentive packages, have been the skewed geographical patterns of Chinese investment in the various regions of Ghana. It therefore begs the question of the role of infrastructure in promoting investment. Looking at the actual location in the Greater Accra Region where majority of the Chinese investments in the agricultural sector could be found they are actually located at Tema which has all the infrastructural facilities such as the Tema Port and the roads.

This is where the harbour is located hence the investors' quest to take advantage of proximity in order to reduce cost of transport influence them to site their investment locations in Tema. This resonates the assertion that improved economic infrastructure such as development of transportation and communication systems may influence the pace at which capital mobility may eventually affect regional economic development process (Marx, 1967; Rodrigue & Notteboom, 2017).

In the fisheries subsector, the level of investment is rationally motivated by the fact that there exists an appreciable market for fish and fish products. This is clearly elucidated by the Ministry of Food and Agriculture (2015) that fish remains the main and preferred animal protein food for Ghanaians with about 75 percent of the total domestic production of fish is consumed locally. The high local demand for fish is coupled with an appreciable demand for exports at the international markets to attract Chinese investment in the fish trawling sector. A financially unsupportive economic regime which makes it difficult for Ghanaians to raise capital and a flexible legal regime which allows Ghanaians to operate in partnership with foreign investors explains the high Chinese investment in the industrial fishing sector.

Forms and trends of Capital Mobility from China into Ghana's

Agricultural Sector: Trade

Capital mobility is accountable for the nature of items being spread on the altar of globalization. On this score the quest to establish how trade promotes capital mobility from China to Ghana's agricultural sector becomes critical. Capital mobility in the agricultural sector through trade, for the sake of this analysis, will be categorized into the agricultural sub sectors namely crop production and animal husbandry. This is to enable comparisons in trade in agricultural sector between the sub sectors to help shape trade-related agricultural policy.

It will be instructive to note that there are many other agricultural inputs from China into Ghana's animal production subsector. In the course of the data collection it was discovered that poultry feed supplement such as Joyvet and Ampivite were on the Ghanaian market for sale. This was because the importers of these products started importing them in 2017.

Imported Agricultural Inputs from China for Agriculture in Ghana

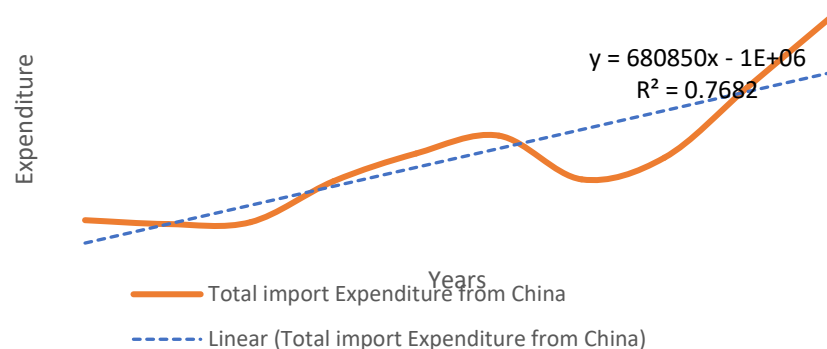


Figure 3: Total Expenditure from China

Source: Author's own construction, sourced from Ministry of Trade and Industry, 2017

The agricultural input import trends show an expenditure of GH¢369,379.8 in 2007. This figure dropped to GH¢230,286.9 and GH¢298,286.9 in 2008 and 2009, respectively. In 2010, however, the import expenditure increased over five times to GH¢1,769,731. Since then the expenditure had been increasing significantly over the years up to 2016 when it reached the tune of GH¢7,647,556, despite some noticeable drops in the expenditure from GH¢3,412,071 in 2012 to GH¢1,839,130 in 2013. It can be inferred from the data that, on the average Ghana had spent an amount of GH¢2,609,904.424 to import agricultural input from China, annually. The trend also represents an average year-on-year increase between 2007 and 2016 of GH¢727,817.64 representing a yearly average increase of 43.3 percent. This trend shows that the rate of influx of Chinese agricultural input increased at a high pace, especially between 2014 and 2016 given the fact that the trend exceeds the average rate of increase. A breakdown of this aggregate import into the crop and animal husbandry sub sectors are as follow.

Agricultural Inputs Imported from China into Ghana’s Crop Sub Sector

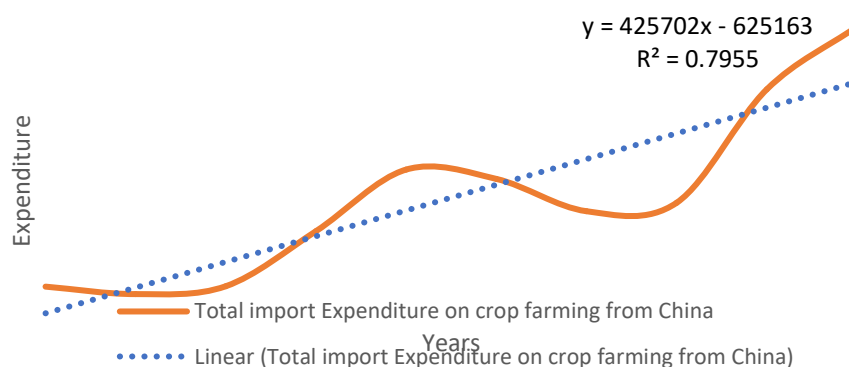


Figure 4: Total Import Expenditure on crop farming from China

Source: Author’s own construction, sourced from Ministry of Trade and Industry, 2017

The import expenditure on input into the crop farming from China shows an amount of GH¢242,364.2 in 2007. This figure dropped to GH¢118,810.79 in 2008 but appreciated to 249,613.50 in 2009. The import expenditure then increased significantly to 1,161,564.40 in 2010. Since then the expenditure level increased significantly over the years up to 2016 when it reached the tune of GH¢4,548,626.41, despite some noticeable drops in the expenditure from GH¢3,412,071 in 2012 to GH¢1,839,130 in 2013. It can be inferred from the data that, on the average Ghana had spent an amount of GH¢1,716,199.04 to crop farming input from China, annually. The trends denote an average year-on-year increase between 2007 and 2016 of GH¢430,626.21 representing a yearly average increase of 63.29 percent. This trend shows that the rate of influx of Chinese agricultural input is increasing at a high pace, especially between 2013 and 2016.

Total import Expenditure on Animal husbandry from China

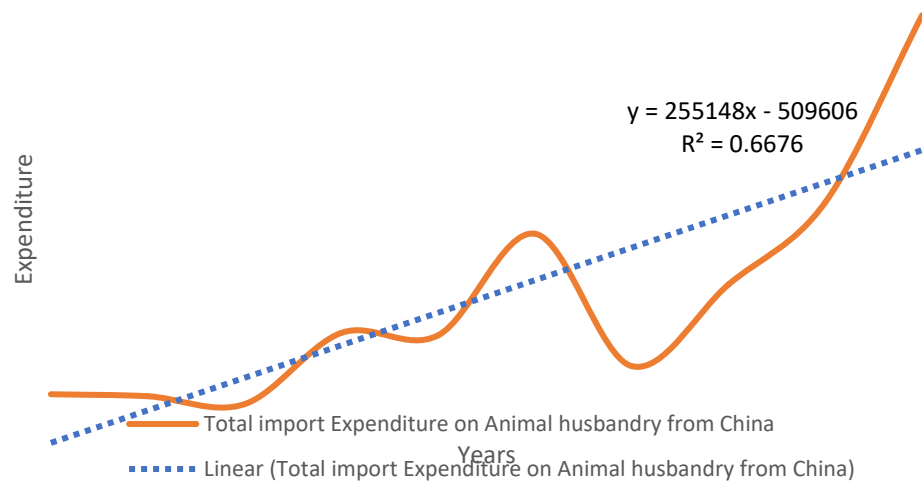


Figure 5: Total import Expenditure on Animal husbandry from China

Source: Author's own construction, sourced from Ministry of Trade and Industry, 2017

The agricultural input import trends in the animal husbandry industry show an expenditure of GH¢127,015.57 in 2007. This figure dropped to GH¢111,476.08 and GH¢49,195.43 in 2008 and 2009, respectively. In 2010, however, the import expenditure appreciated over the 2009 figure to 608,166.30. Even though it dipped to 589164.81, in 2011 it appreciated to 1385636.26 in 2012. The import pattern remained undulating till it reached a peak of 3,098,929.76 in 2016. It can be thus be established from the data that, on the average, Ghana had spent an amount of GH¢893,705.38 to import animal husbandry inputs from China, annually, between 2007 and 2016. The trend also denotes an average year-on-year increase between 2007 and 2016 of GH¢297,191.42 representing a yearly average increase of 146.45 percent. This trend shows that the rate of influx of animal husbandry input also increased at a high pace, especially between 2014 and 2016 just like the total Chinese agricultural input. A summary of the average spending and the yearly average increase are shown on Table 14

Table 14: Average spending and the rate of increase (2007-2016)

Subsector/Sector	Average Yearly Spending (GHS)	Yearly Average Spending Increase (%)
Crop	1,716,199.04	63.29
Animal Husbandry	893,705.38	146.45
Agricultural Sector	2,609,904.424	43.3

Source, Author's own construction, data sourced from Ministry of Trade and Industry (2017)

By way of policy, the increasing rate of importation of agricultural inputs from China is an opportunity for knowledge transfer and technological

adoption from China and search for less costly local substitutes given the foreign exchange threats on the local currency which constitutes a direct outcome of the importation of the agricultural inputs. However, beyond the policy implications, there is the need to understand the political economy context within which the high rate of influx of Chinese-produced agricultural input into Ghana's agricultural sector has taken place and perhaps draw some lessons in there.

The Neo-liberal Side of the Patterns of Imports of Chinese Agricultural Inputs

Before I situate the agricultural-related import patterns from China to Ghana within neo-liberal contexts it will be important to recognize that the influx of Chinese equipment in Ghana is a reflection of a general trend in Africa where trade in agricultural commodities have largely included processing machinery and input supply which, according to Kaplinsky (2013), represents a potential for investment along agricultural value chains. This also echoes the political economy perspective to capital mobility adduced by Agyei-Holmes (2013) who argues that the transfer of technology from China to Africa succeeds where there is a clear demand.

Over the years Ghanaian agricultural actors are becoming attracted to Chinese products. Key examples are vacuum sealers, temperature controllers and bone saws which a number of meat processors are using in Ghana. In the first place, the high rate of influx of Chinese agricultural inputs can be explained by making reference to Kang's (2015) argument that the flow of capital as expressed in technology transfer increases when the technological

portfolios of two countries are not similar. Hence, the high rate of influx of Chinese agricultural inputs is a function of an asymmetrical technological relationship between China and Ghana. Generally, Ghanaians in the agricultural sector are attracted to some Chinese agricultural inputs because there are no local substitutes for some of these inputs. This was clearly elucidated in the responses of two of the research participants (an aquaculturist and a meat producer) who argued that the absence of local substitutes for some Chinese agricultural inputs is a reason for which they imported Chinese goods. One indicated that

we'll go to China because when you look for local substitutes you don't get (52-year-old aqua culturist, Potsin, 15th August, 2017).

The influx of the Chinese agricultural input is attributed to the growing number of distributors of Chinese agricultural input. As it stands there are a number of private firms engaged in the importation of Chinese agricultural inputs. Notable private distributors include Motorking Company Limited and RST Company Limited. But within broader economic contexts, the presence of private firms engaged in the importation of Chinese agricultural inputs has been largely due to macroeconomic policies such as trade liberalization and privatization being pursued in Ghana. These issues affirm the arguments of Scoones et al. (2016) who noted that the rise of China's involvement in African agriculture with the flow of capital has coincided with the restructuring of most African economies with the introduction of neo-liberal economic policies.

It is enlightening, albeit, to note that even though this has been facilitated by certain macroeconomic policies such as trade liberalization and the proliferation of the virtual trading platforms, the Chinese products remain attractive to actors in the Ghanaian agricultural sector because of a number of reasons occasioned by the actors' experiences. One of the key reasons has been the high visibility of Chinese products on online platforms made possible by technological advancement expressed in advent of the information technology.

The evidence of the role of the virtual platforms in facilitating the influx of Chinese agricultural inputs was gathered when actors were made to convey complex knowledge through their stories about their use of Chinese agricultural products, and not merely their opinions. As a meat processor who makes special mention of one of the online platforms known as 'Alibaba' held,

we've imported a few things which all go to the smoking business and whenever we need an item, we source the country to compare and whenever we don't get what we want then we go and browse. There's everything on Alibaba. We go there trusting quality because Alibaba has its own quality checks and security checks. So, we do it, once you go to Alibaba it means you can complain to Alibaba, and the peoples their business is more important to them and their quite sincere (30-year-old meat processor, Winneba, 17th August, 2017).

This response makes it apparent that technological changes have revolutionized the trade patterns making it equally interactive and efficient even on virtual platforms thus reinforcing Rodrik's (2011) assertion on the role of technology in promoting economic activities.

But it will be instructive to note, perhaps indisputably, that in an arena where trade liberalization is encouraged and practiced, the issue of price falls at the epicentre of trade actors. Upon the interviews made it was discovered that the cost of the Chinese agricultural inputs served as a centripetal force to patronage among Ghanaians in the agricultural sector.

The Cost Factor

A key element in the understanding of the increasing level of patronage of Chinese-made agricultural input is the price factor which remains one of the basic foundations upon which economic actors compete in any liberal order. In the arena of neo-liberalism this economic variable remains key in all business endeavours. In the course of the interviews such an economic variable played out in the patterns of import of Chinese agricultural input. Indeed, the officials in state institutions and actors in the agricultural sector provided a unison response in this regard. A meat processor in Ghana's agricultural sector, for example, referred to one of the equipment he had acquired from China to rightly indicate that some Chinese products are relatively cheaper than the locally produced equipment in Ghana. He revealed it as follows:

We tried looking for VACUUM SEALERS here the value is like 10,000 Ghana cedis. You get the same equipment from

China at about...if you add duties and everything together; it doesn't go like beyond 3000 (52-year-old aqua culturist, Potsin, 15th August, 2017).

With regard to crop farming agricultural machinery imported from China, the cost factor played out visibly. As was mentioned by officials in the Agricultural Engineering Services Directorate when they were asked why Chinese agricultural inputs are preferred,

Of the top of my head I will say cost. Personally, it will be difficult to say that they Chinese ones were not good or they were good but at least what in know is that theirs is always the cheapest in most cases and that makes it attractive to people (Official from AESD, 3rd November, 2017)

The cost factor which occasioned the preference for crop farming agricultural input was corroborated by engineers of the Agricultural Engineering Services Directorate. One of them said:

It is nothing but the low cost of Chinese machinery which has made Government of Ghana accept to allow Chinese machinery to be imported (42 year-old engineer, AESD, 3rd November, 2017)

The importer of Chinese livestock drugs maintained the same position as he points out that

The China drugs appear to be cheaper but effectively they are same. They all serve the same purpose (official of Joeyeson Company, 17th November, 2017).

Then with regard to the crop farm agricultural equipment too, the operations manageress of RST, importer of Chinese agricultural equipment, indicated, in a similar fashion, that...

we look at the cost involved for the poor farmer to be able to afford it that is why we do source from there [China] first (official from RST, 4th December, 2017).

The operations manageress of RST was asked to provide the prices of equipment from China and those from other countries to authenticate her claims. The prices of the equipment are provided on Table 15.

Table 15: Prices of Equipment

Equipment	Price of Chinese origin (GH¢)	Price of Indian origin (GH¢)
Rice Thresher	17,000	21,000
Multi-purpose Thresher	11,000	23,000

Author's own construction, 2017

The operations manageress of RST went on further so say that

We [RST] have a power tiller one is from Vietnam and one is from China; the China one is complete with the trailer, cage wheels with the head is GH¢20,400 and for the Vietnam one only the head without trailer is GH¢23,000 (official from RST, 4th December, 2017).

It will be instructive to establish that even though all the participants made mention of the relatively lower prices of Chinese agricultural input there was

no consensus about whether the lower prices were coterminous with product efficiency. From the answers, some of the participants maintained that relatively lower prices were equally a guarantee for high quality and value for money. For example, the meat processor interviewed hinted that

They'll give you equipment that consumes less electricity and, equipment that is within your budget (30-year-old meat processor, Winneba, 17th August, 2017)

Another research participant, an aqua culturist, engaged in tilapia hatchery, responded in a similar fashion. His response was suggestive of the fact that Chinese agricultural inputs give value for money. He mentioned that:

They take you along in their system of development and productivity (44-year-old aqua culturist, Odwira, 18TH August, 2017).

Some of the participants, however, actually acceded to the reality that the relatively lower-priced Chinese agricultural input was rather matched with a relatively lower level quality. Making reference to the quality of poultry drinker the importer of Chinese poultry inputs who also started importing Italian made poultry equipment maintained that.

Actually, doing a comparison of the Chinese and the Italian equipment the Italian ones appear to be more durable when you feel the texture but there is also a price difference; the Italian one is 25cedis while the Chinese one is GH¢20 (Official from ErneJoyson Company, 17th November, 2017).

In this regard, a price difference of about GH¢5 relative to the quality difference was discovered. The RST official also mentioned that

but the quality of the Chinese equipment is not like the other countries". The quality of the other countries is better than what comes from China (official from RST, 4th December, 2017).

Despite the absence of uniformity in the participants' experiences which occasioned the quality of the Chinese agricultural inputs one observation stands out. Beyond doubt, these responses generally confirm the political economy perspective held by Agyei-Holmes (2013) about Chinese trade which holds the contention that in Africa the transfer of technology from China to Africa succeeds where there is a low cost.

It must, however, be emphasized that even though it has been mentioned in earlier sections of this analysis that actors in Ghana's agricultural sector are attracted by relatively low prices of Chinese products it is not applicable to all agricultural inputs. Indeed, some of the agricultural inputs from China were found to be relatively expensive than the local substitutes and that served as a deterring condition for the attraction.

Deterring Neo-liberal factors influencing Ghanaians' Attraction of Chinese Agricultural Inputs?

Relatively higher prices

Ironically, one of the key issues which emerged in the course of the research was also hinged on the issue of cost. In the first place there were some other products or Chinese origins which have relatively higher prices. A

typical example that could be drawn in this regard was gathered from a meat processor who shared his experience when he decided to purchase a Chinese oven and Chinese pork packaging polythene from China. With regard to the Chinese oven, he said

we have sailing machines from China, you know, they have smokers, ovens, we haven't bought the oven because we felt it's a expensive so the local oven that is what must be interesting to know. Their offer for oven was 6000 dollars as against a local not too good one for 2000 (36, year-old meat processor, Odwira, 18th August, 2017).

With regard to the pork packaging polythene, he narrated his experience as follows

later on, we imported some of their polythene sheets at the end of the day when we calculated it, we saw that it was expensive but the same sum we had we've been able to source (36, year-old meat processor, Odwira, 18th August, 2017).

This issue of high cost supports the observation made by Chichava et al. (2013) that some technology transfer programmes were challenged by farmers' inability to pay for services associated with the technology. Given the role of cost as an attractive and deterring factor it will be crucial to emphasize that the role of the cost is largely determined by the type of product. Nevertheless, the observation made about the cost being a discouraging force in the attraction of Chinese products may smack off rationality of the Ghanaian agricultural actors at the micro level; but much significantly, and at

the macro level, it signifies an opportunity for Ghana to develop the appropriate technology that could culminate in the production of similar products at relatively cheaper price. In this regard the local products would gain a competitive edge over the Chinese products.

Generally then, the responses and the analysis so far show that a combination of macroeconomic policies and privatization, trade liberalization and other associated neoliberal essentials such as pricing, increased local demand and absence of local substitutes of Chinese agricultural products have been responsible for the observably increasing pace of the influx of Chinese agricultural inputs into Ghana's agricultural sector. However, beyond the purely economic issues including demand and prices as key correlates of the attraction to Chinese agricultural inputs, there are some sociological issues which appeal to heterodox political economy which equally account for the attraction. These sociological issues are discussed the section which follows.

The Social Innovative Side of the Capital Mobility: Attractiveness of Chinese Agricultural Inputs to Ghanaian Agricultural Actors

Suffice to say that apart from the role of neo-liberal macroeconomic and technological advancement the Chinese manufacturing and trading firms have developed some organizational practices which make their agricultural inputs goods more preferable to agricultural products from other countries with details discussed in subsequent sections. These are issues which Agyei-Holmes (2013), Kamplinski (2013), Amanor (2013), Chichava et al. (2013) and Scoones et al (2016) neither observed nor talked about in their respective studies. Yet, it is important that these issues are brought to the fore because

they are of particular interest in political economy heterodoxies. Their main relevance stems from the fact that they serve as foundations for international economic relations and growth and as well as political dialogues and decisions. These issues by and large relate with how the Chinese generally handle their organizational practices and in particular, their customers. These issues are outlined subsequently.

Following are those practices which rendered the Chinese agricultural products attractive as expressed in the responses offered by actors in the Ghanaian agricultural sector who constituted the research participants to this study. They include customer-oriented practices such as timely delivery of products, effective communication mindset by Chinese input suppliers towards Ghanaian agricultural actors, door-to-door delivery and offering customer advice. Others include offer credit facilities, regular training for retailers and regular meeting with farmers.

Their customer-oriented care practices include the following based on the experiences some actors in the agricultural sector have had with Chinese companies in China and Chinese subsidiaries in Ghana, after comparing their experiences with the Europeans. For example, one of the participants, a meat producer said,

So, at the end of the day it is their culture; I don't get the same feel when I'm talking to Europeans. So, there is a culture bid, the culture of...er Chinese and their attitude to business is down to earth, friendly, thorough so it becomes a good choice (27-year-old Meat processor, Potsin, 15th August, 2017).

Beyond the general mode of attraction, the research participants brought out specific practices which attracts them to Chinese agricultural inputs discussed as follow. One of the customer-attractive elements that occasioned the sale of Chinese agricultural products as the myriad categories of actors in the agricultural sector was the fast pace with which the agricultural inputs were delivered. In a fast pace and competitive globalized economic order world where time is regarded as essential in any business endeavour, it was understandable how end users would find this act by Chinese firms a source of attraction. A meat processor, for example, did not mince words about his attraction to Chinese agricultural input on the altar of quick product delivery. He indicated that

It may take you shorter time to access and take delivery of this equipment and I will tell you how. You lie on your bed, and you go to Alibaba, you browse from company to company with the same equipment comparing prices and looks. Then you can interact with them directly on whatsapp or whatever means. If you bet by the end of the week the product is in your hand here because the moment you agree you transfer money, it can be by DHL, or through let's say... for us there is a Ghanaian agent in China so they will send the items to him, put it on the next plane and we know where to pick it from Accra or how it will be sent to us and we pay for it (52-year-old meat processor, Winneba, 15th August, 2017).

This effort smacks of high levels of competency and commitment as organizational innovation practices on the part of Chinese companies which resonates the ideas of Neumeier (2012). The timely delivery of products generates trust for the Chinese producers thereby enhancing the attractiveness of Chinese capital mobility confirms the arguments of Piore and Sabel (1984) trust is a fundamental requirement for regional economic success in an era of global economic expansion.

Chinese were also observed to be offering an effective method of communication with the end users of their products. This occurred in the context where trade relations between Chinese firms and Ghanaian end users involved virtual platforms. Another meat processor commented on his experience as follows:

You can even talk on phone which we do and there are people who speak English in every company now in China and they are more courteous and understand more business than some of the people we deal with in Ghana. Chinese and their attitude to business is down to earth, friendly, thorough so it becomes a good choice. Now before I sleep, they are ahead of us 7 hours. When I send a WhatsApp at 10pm here I'll get the response from them instantly. When I send a WhatsApp at 5am here I'll get the response. So, one day I was asking, don't you guys sleep? You decide on a product tonight, by the following morning you would have decided to order it or otherwise (52-year-old Meat processor, Potsin, 18th August, 2017).

From the responses it is quite remarkable to note that the Chinese suppliers exhibited creativity, commitment and competency in their communication endeavours by adapting to the learning of the English language coupled with the attitudes of courtesy and empathy as well as a timely response to requests as part of their quest to attract customers. The use of English language as a means of communication by Chinese promoted the degree of social relations between them and the Ghanaian end-users of their products, eventually promoting the attractiveness. This also corroborates Piore and Sabel's (1984) argument that social relations could also serve as a fundamental requirement for regional economic exchanges.

The Chinese have also become well noted for the delivery of products on a door-to-door basis. An agro-chemical retailer expressed his experience as follows

you know Chinese also what it makes it easy is that they bring it to our doorsteps. They bring vans and things. They have vans and things and they carry it along to supply their goods unlike CHEMICO (43-year-old agro-chemical retailer, Beraku, 4th September, 2017).

In a post-modern world where comfort and convenience are being sought for by customers the door to door delivery grants leverage to a producer and a service provider over a competitor (Howaldt & Schwarz, 2010). Just as it was discovered with regard to the effective communication mindset by Chinese input suppliers towards Ghanaian agricultural actors it can be mentioned that the door-to-door model reflects traits of organizational creativity, competency and commitment (Numeier, 2012). Apart from these organizational forms of

social innovation by Chinese firms, the deployment of door-to-door- services reflects the role of flexible specialization which, as Piore and Sabel (1984) contend, promotes capital mobility.

The Chinese producers had not made their products attractive by what they sell but they equally enjoyed attraction because they offered technical advice to customers as well. A meat processor shared his experience as in these words

you are taught about every item. For example, even selecting the 'BONE SAW', they could tell us no no don't go for this one, this one it heats too quickly. So, if you go for this one, this one is almost like domestic so if you go for this one, it takes longer time for it to heat so don't waste too much time waiting for the equipment to cool (48 year-old agro-chemical retailer, Beraku, 15th August, 2017)

Such an act of offering advice to customers did not only enable the customer to make rational choices but served as an avenue which latently fed into the knowledge diffusion process because the meat processor, per this experience, gained knowledge about the nature of a product and its suitability for a particular economic activity. Generally, then, it was apparent that ensuring timely delivery of products, having a communication mindset towards Ghanaian agricultural actors by Chinese input suppliers, offering door-to-door delivery, and offering customer advice were discovered as some of the key customer-oriented practices which gave leverage to Chinese agricultural products over other agricultural inputs. They have exhibited flexible specialization, face-to-face interaction (see Poire & Sabel, 1984) as well as

creativity, collaboration, commitment cooperation and competence (see Howaldt & Schwarz, 2010; Numeier 2012; Pot & Vass, 2008; Schumpeter, 2004;)

Following are other socially innovative practices which attracted Ghanaian agricultural actors. The data obtained from the interviews also indicated that the Chinese attracted patronage because they offered credit facilities to the end-users of the product. Using WYNCA as a case in point, the retailers in the agro-chemical industry mentioned the credit opportunities they received in the course of the interviews. The response of the one of them is as follows:

They also give us credit facilities. But that is on condition that the retailer is credit worthy (35 year-old-agro-chemical retailer, Kasoa, 4th September, 2017)

The conditions attached to the credit facilities corroborates Piore and Sabel's (1984) contention that trust, and face-to-face social relations are fundamental requirements for regional economic success in an era of global economic expansion. Acknowledging the critical role of retailers in the agro-chemical value chain system, Chinese firms, particularly the agro-chemical company, engaged in regular training of retailers. This, according to Chinese firms, happened especially when a new product was introduced. An agrochemical retailer provided a response in support of this claim

“Oh, if there is a new product, they summon us for a meeting then they show us so that we can also do the same thing for the farmers because they have realized that we the

dealers the farmers come to us than them” (42 year old, agro-chemical retailer, Beraku, 4th September, 2017)

This practice rested on the assumption knowledge about the availability and the efficacy of products could best be transferred by a retailer among whom farmers have frequent interaction. This effort indicates competency in terms of knowledge, commitment towards making retailers more efficient as well creating a platform for collaboration and cooperation within which ideas are transferred and the shared.

In addition to the training of retailers, the Chinese agro-chemical company found it necessary to meet the farmers directly. Interpreting this act in the minds of the farmers they mentioned that the regular training played an advantage of generating trust and feelings of respect for them as farmers

“So WYNCA also call you to their place at industrial area. At times too they do visit. ohh...some of these days they arrange with time because mostly they also want to meet farmers directly. So, we do the thing farmers, dealers. We mobilize the farmers and the dealers we all come together. We share ideas so some of the problems the farmers are facing concerning the product then they also tell them” (38 year old agro-chemical retailer, Kasoa, 4th September, 2017).

The regular meeting with farmers and regular training for retailers reflect a new and modernized type of entrepreneurial function which emphasises ‘cooperation’ with other stakeholders including distributors and users of products which has been largely considered as a key organizational efficiency

(see Pot & Vaas, 2008). Putting all the practices by the Chinese firms together they epitomize organizational innovations which are represented in high forms of dynamic management, skill development and competencies as well as smart work. This confirms Neumeir's (2011) argument that the usefulness of organizational endeavours become very visible and attractive since they have a high possibility of creating forms of technical and marketing innovations which could enhance the productive efficiency of the end users of the product.

This observation has also been well adduced by Harvey (1975) that fast-growing locations are not closed and independent economies, but rather they are, most likely, those area hosting MNEs having financial capabilities ranging from their sales efforts to reduced turnover time on fixed capital and Walker's (1978) argument that technical innovation and organizational change have the capacity to promote capital mobility.

Summary

In effect, it is evident that the Chinese capital mobility into Ghana's agricultural sector has been crystallized in forms of FDI and trade. Invariably, the various modes with which capital mobility is crystallized as mentioned is evident and applicable to Ghana as well. Hence, Ghana's naturally endowed resources have rendered it a part of the global economic integration process through capital mobility from China. Not only is Ghana getting attracted to Chinese agricultural business enterprises to engage in protein foods and vegetables but equally remarkable is the supply of a diverse array of Chinese equipment for agricultural purposes as well as Chinese agricultural experts.

As it stands, even though Ghana's open economy and the attractiveness of Chinese products by actors in the agricultural sector all of which allow trade in Chinese agricultural equipment to flourish, the Ghanaian economy remains unattractive to land-based agricultural investments and agribusiness from Chinese MNEs having financial capabilities of investing into Ghana's agricultural sector due to infrastructure and land tenure constraints. Generally, the responses and the analysis so far show that a combination of macroeconomic policies and privatization, trade liberalization and other associated neoliberal essentials such as pricing, increased local demand and absence of local substitutes of Chinese agricultural products have been responsible for the observably increasing pace of the influx of Chinese agricultural inputs into Ghana's agricultural sector.

From the data gathered and the discussions that followed, it is suggestive that beyond macro-economic trade policy opportunities and other opportunities offered through technological advancement, Chinese agricultural inputs remained attractive through some interactive efforts between the Chinese suppliers and the end users found in Ghana's agricultural sector. From political economy perspectives these could be seen as not just echoing the neo-classical argument which regards the interactive efforts as a reflection of the rational and creative methods essential at a sustained capital mobility for China but also as a reflection of political economy heterodoxies which appreciates organizational innovation including competency and commitment among the Chinese subsidiaries as well collaboration and cooperation between the Chinese subsidiaries on the one side and the retailers and the end users on the other side. In effect a combination of neo-liberal macroeconomic policies,

organizational innovation by Chinese firms and technological advancement has fostered the trade-like patterns of capital mobility from China to Ghana's agricultural sector.

Thus, capital mobility from China to Ghana's agricultural sector would not have to be understood within neo-liberal contexts alone. The capital mobility would also have to be understood within the context of technological advancement and the organizational novelties upon which the agricultural inputs are promoted and spread.

CHAPTER FIVE

KNOWLEDGE DIFFUSION FROM CHINA IN GHANA'S AGRICULTURAL SECTOR

Introduction

It should be emphasized that the knowledge being produced by China as evidenced in the products available in Ghana either by trade (ie importation) or by FDI is equally being produced by other countries. Cases in point are products in the agro-chemical industry as well as agricultural machinery being produced by China. Indeed, begging into Kang's (2015) that knowledge diffusion may accompany capital mobility it would suffice to anticipate that some of the products are becoming means through which knowledge is diffused from China into Ghana's agricultural sector. But critical questions remain which require answers are: Into which sub sectors and industries? Through which mediums the knowledge diffusion occurring? Which contexts are the knowledge diffusion succeeding or getting impeded? In the analysis mention is made about countries from which China obtained knowledge as far as the production of certain agricultural inputs is concerned.

Bringing the role of the other countries which produce similar products as the Chinese agricultural inputs into this analysis is useful because their inclusion would enhance the appreciation of the importance and understanding of knowledge diffusion in a globalized context. Besides, analyzing their roles will equally help situate the issue of Chinese product quality and its political economy implications thereof into proper context.

Knowledge Diffusion in the Food Crop Production Sub-Sector

China's engagement in the crop production sub-sector is found mainly in the agro-chemical industry and the farm equipment industry. In this regard the discussion on knowledge diffusion from China on crop production will be centred on these two industries.

Knowledge Diffusion Associated with Agro-Chemicals produced by Chinese Firm in Ghana

Data gathered from FGDs with an agro-chemical retailer led to the discovery that knowledge diffusion from China has been experienced in the agro-chemical industry. Evidence gathered from some reveals that some young Ghanaian entrepreneurs had gained considerable know-how about agro-chemicals particularly the chemical formula required for their production. As a follow up on an interview with the young entrepreneurs, they indicated, using the voice of one, that

We obtained the knowledge through constant interaction with the agro-chemical produced by the Chinese subsidiary in Ghana, known as Wynca Sunshine (Ghana) Agric Products & Trading Company Limited (Agro-chemical producer, Awutu, 25th September, 2017.

The brand name for the company's agro-chemical products is WYNCA. The young Ghanaian producers of agro-chemicals who produced goods similar to what Wynca Sunshine (Ghana) Agric Products & Trading Company Limited produces had actually brand named his agro-chemical as 'TSUNA'. As such unlike Polanyi (1967) who indicated that knowledge may be diffused through

personal and face-to-face contact, the process of knowledge diffusion to the agro-chemical producers show that knowledge may happen through virtual means.

Indeed, the point must be established in the understanding of knowledge diffusion within globalized contexts that the knowledge embedded in the agrochemical production found in the WYNCA products was obtained from the knowledge embedded in agro-chemicals produced from South Africa with a brand name, CHEMICO. It is in this sense that knowledge may be seen to be produced and transformed by multiple actors (Purwaningrum et al, 2009) in a linear fashion.

Given the fact that the young Ghanaian entrepreneur had produced a similar agro-chemical as that of Wynca Sunshine (Ghana) the knowledge derived from the South Africans by the Chinese could be seen to have equally been diffused into Ghana thus reinforcing the creation of knowledge, indirectly, (Hanusch et al, 2009; Rivera-Batiz & Romer; 1991) from South Africa. For example, as indicated from a retailer in the agro-chemical industry, he maintains that

Chinese agrochemicals started coming in 2002 but previously farmers had been exposed to only agro-chemical imported from South Africa and the WYNCA people were learning from the CHEMICO producers (45 year-old agro chemical retailer, Beraku, 4th September, 2017).

This was also visible in the fact that one could even find the similarities in the names of the products. This is outlined on Table 16.

Table 16: Agro-chemicals from China and Substitutes from South Africa

Type of Agro-chemical	Chinese Brand	South African Brand
Herbicide	Rezim	Atrazim
Insecticide	Sunpyrifos	Dursban
Insecticide	Lamdakin	Pawa
Herbicide (for pineapple)	Caritek	Chemopax

Source: Author's Construction, 2017

Such knowledge from the South African agro-chemical firm can be regarded as what Polanyi (1967) describes as explicit knowledge because it is easily being articulated, transferred and saved and is often disembodied. This observation equally demonstrates that knowledge never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and frequently contradictory which all separate individuals possess (Hanusch et al, 2009; Rivera-Batiz & Romer, 1991)

Judging from the modes of knowledge diffusion in the agro-chemical industry from South Africa to China and subsequently to Ghana confirms the first assumption in knowledge diffusion which holds the view that knowledge diffusion spreads from a given source over space (Rogers, 1992). In this sense, knowledge about agro-chemicals first flows from the source to agglomerated areas such as South Africa and then with a certain delay to peripheral economic areas such as Ghana. Hence, knowledge creation and knowledge

diffusion are not only context or problem based dependent, but further have a time and a spatial dimension (Urmetzer et al, 2018).

However, knowledge diffusion from the Chinese to the Ghanaian could be observed to be taking place in a manner where the knowledge embedded in the production of agro-chemical was officially undisclosed by the knowledge producer. As rhetorically asked by an agro-chemical retailer,

You have been there before. So you see them processing...What do they teach you? Do they teach you anything at all about how they do their?...: That one dieer...they won't teach you. They don't teach you. Why should they teach you? (50 year-old agro chemical retailer, Beraku, 4th September, 2017).

Significantly, therefore, there is an indication that knowledge diffusion may happen without the consent of the knowledge producer. In this regard knowledge can be diffused unknowingly from the knowledge creator. As found in the case involving the young Ghanaian entrepreneurs who had produced an agro-chemical similar to that of the Chinese, they gathered knowledge about the Chinese agro-chemical without the consent of the Chinese agro-chemical Chinese industry.

I did biochemistry at the Kwame Nkrumah University of Science and Technology so when the Chinese products started coming in, I also gathered some knowledge and did my own analysis and saw some active ingredients that I needed (32 year-old agro chemical producer, Beraku, 4th September, 2017).

From the responses, the possession of a higher level of education by the Ghanaian who was able to produce an agro-chemical similar to the Chinese agro-chemicals played a role in his ability to adapt to the diffused knowledge. This shows regions involved in trade and other forms of production and distribution networks may benefit from channels of international knowledge diffusion which complements and enriches locally produced knowledge (Bathelt et al., 2004; Fujita & Thisse, 2002; MacGarvie, 2005; Kang, 2015; Tseng, 2007). This also resonates the view that the effectiveness of knowledge diffusion depends on the absorptive capacity of the recipient of the knowledge which are attained through, in the words of Agola (2016), “upgrading of skills and abilities at various levels” (p.8).

However, despite the unconsented nature with which the knowledge about agro-chemical production was diffused to the young Ghanaian agro chemical producer, it cannot be denied that the channels of international knowledge diffusion of WYNCA have worked to complement and enrich locally produced knowledge subject to high foundational knowledge which improved absorptive capacity.

Knowledge Diffusion Associated with Agricultural Farm Machinery from China

Unlike the agro-chemical industry in which knowledge diffusion took place without the direct contact and consent of the knowledge producer, the process of knowledge diffusion may occur through a direct contact with and the consent of the inventor suggestive of the fact that knowledge can be diffused through direct personal contact (Polanyi, 1967) though not the

implicit knowledge type. When the engineers at the Agricultural Engineering Services Directorate (AESD) were engaged in a focus group discussion, such a discovery was made. These engineers' main responsibility is to assemble imported agricultural machinery from countries such as Japan, the Czech Republic, India, Vietnam, Thailand and China clearly indicative of the Hayek's (1945) suggestion that knowledge exists but solely as the dispersed bits and incomplete of all entities. By extension, they perform another task by testing the suitability of foreign agricultural farm machinery to Ghana's topography and soil structure and make technical recommendations for their use by farmers. In this respect, it is not the knowledge production alone which could be seen be contextualized as suggested by (Urmetzer, et al, 2018) but the contextualization is found also in terms of its application (Rogers, 1992).

With the information obtained from officials at the Agricultural Engineering Services Directorate, through an interview, it was noted that the Chinese machines which were available, to the knowledge of the Ministry of Food and Agriculture, include foton harvesters, maize pickers and power tillers. Officially, the first Chinese agricultural machinery to be imported into Ghana under the auspices of the Ministry of Food and Agriculture was the Shanghai tractor which first arrived in Ghana in 1997. Since then, Ghana had also taken delivery of other machinery such as power tillers, tricycles and combined Yeu Han Gen combined harvesters. The last sets of new consignments of agricultural machinery arrived in 2010 and have been on the Ghanaian market since then.

It will be instructive to note that prior to the importation of Chinese agricultural machinery the Government of Ghana had been importing

agricultural machinery from other countries such as Brazil, Japan, the Czech Republic, India, Korea Thailand, Britain, United States of America and Poland. These represent clear indications that the structural foundations of knowledge diffusion involve country-switches in terms of which the origins of the agricultural equipment used in Ghana's crop farming are seen to be varied. Hence, knowledge is being generated by multiple actors (Purwaningrum et al, 2009). However, suffice to say that with regard to tricycles, China has been the sole distributor.

From a political economy point of view, the country-switches with regard to the origin of agricultural input which have been expressed as a political decision have been largely attributed to the cost of the machinery. In this regard, economic circumstances may limit the scope and options in terms of the multiplicity of origins of knowledge. This was clearly elucidated by the officials and engineers from the Agricultural Engineering Services Directorate as well as the importers of Chinese agricultural machinery, notably RST Company Limited.

An official in the Agricultural Engineering Services Directorate said,

Of the top of my head I will say cost. Personally it will be difficult to say that they Chinese ones were not good or they were good but at least what in know is that theirs is always the cheapest in most cases and that makes it attractive to people (AESD official, 3rd November, 2017)

The operations manageress of RST, importer of Chinese agricultural equipment also said

we look at the cost involved for the poor farmer to be able to afford it that is why we do source from there first (RST Official, 4th December, 2017)

Interviews with officials from AESD indicate that, importation and distribution of Chinese agricultural machinery has operated under two models. They indicated the first as the Government of Ghana (GoG)-supported model and the second being the private-importer distribution model. Under the GoG model, there is a bilateral arrangement between Ghana and China where Chinese machinery are imported by the Ministry of Food and Agriculture on behalf of the GoG and then distributed to farmers to buy on hire purchase basis.

Under the private-importer distribution model a private distributor imports the Chinese machinery. Notable private distributors include Motorking Company Limited and RST Company Limited. Under this model, the AESD's responsibility is to conduct tests and inspections to ascertain the suitability of the Chinese agricultural machinery for Ghana's topography and a soil structure. When the machines are found to be suitable, they are recommended to farmers to purchase. Practically, AESD provides the contact numbers of the importers which distributes the Chinese agricultural machinery which have been found suitable to farmers to use on their farms. In this regard the AESD serves as a medium through which the Chinese imported agricultural machinery are popularized. The role of AESD reflects the essence of state-directed developmentalism; that political economy trajectory which requires the state to provide technical support for private actors.

Zooming the analysis into the process of knowledge diffusion from China into Ghana's crop farming agricultural machinery industry it takes a form as recounted by an official of RST. She states,

what happens is, fortunately, when we are buying a machine and we know nothing about it, we bring the Chinese technologists and we all learn. We do some here we do some at the practical side especially the rice milling machines. We do the installation with Chinese and the Chinese train us to there (RST, official, 4th December, 2017).

In this case, in addition to the point as earlier on established that knowledge diffusion is taking place with the consent of the knowledge producer taking place within a face to face context, there is also a clear exhibition of inventor mobility accompanying trade as part of the knowledge diffusion enterprise from China into Ghana's agricultural sector. However, just like it occurred in the agro-chemical industry where local producers received knowledge from the knowledge producer in an unconsented way a similar phenomenon was observed in the agricultural equipment industry. Using some local artisans produce the parts of the Chinese-imported machinery for sale to farmers as reference points the RST official hinted that

They [local artisans] just looked at one and fabricated it and the people there prefer it because it is very affordable (RST, official, 4th December, 2017).

However, unlike the agro-chemical which was regarded as efficacious the same could not be said about the parts of the agricultural machinery. As the

RST official further indicated, making reference to experiences of the farmers

even back north in Tamale, there is a local manufacturer. People buy his 50 Ghana instead of buying this for 300 Ghana and in a day they can change the parts thrice or 4 times. It is just 50 Ghana as compared to this which costs 300 Ghana. But they claim they change it twice or thrice so that makes it GH¢150 Ghana. So when you buy this which lasts for more than a month at GH¢300...(RST, official, 4th December, 2017).

This could be as a result of the fact that the level of knowledge in the agricultural equipment required to produce its parts is higher than the level of knowledge required to produce a similar agro-chemical. Besides, the local agro-chemical producer had an advanced foundational knowledge unlike that of the local producer of the parts which was low. Hence, the difference in the degree of impact of the knowledge diffusion could be attributed to the varying levels of sophistication associated with the products and then to an extent the varying levels of foundational knowledge among the local producers.

From the responses, the acknowledgment of relevance of foundational knowledge for effective knowledge diffusion process was found to be visibly emphasized in this context. The official from the RST made it clear in her response as follows

We do go to the technical schools. And pick the final year students. When they come, we also train them on the job. With the on the job training, we travel with some and leave

some behind. We give them a year and if you are unable to pick up within a year we let you go but if you pick up, we maintain you. And when we maintain you, we give you the opportunity to do part time at the polytechnic (now technical university) (RST, official, 4th December, 2017)."

The decision to select students from the technical university could be seen as a rational decision given the fact, as raised by Ascani et al. (2012) that related local knowledge-base and the absorptive capacity determine the success of host regions in capturing the advantages of knowledge diffusion. Moreover, the Chinese decision to move their experts to train the technicians hauled from the technical universities could as a way of ensuring that the machines are efficiently to achieve optimum benefit thus could be regarded as conscious and strategic. This decision typifies Ernst's (2005) observation that firms rationally locate other firms in different geographical areas (host regions) where the activities of the former firms could be carried out effectively.

With specific reference to the process of knowledge diffusion offered to Ghanaian engineers in AESD two things spanned out. First, process of knowledge diffusion was found to be similar to the process offered to the technicians in RST. The second discovery which is of importance at this point was the process of knowledge diffusion offered to Ghanaian engineers in AESD, just as the technicians of RST, was fundamentally different from what the other countries did. For example, in the case of the Czech Republic, Ghanaian engineers were offered the factory floor type of training where they are given firsthand knowledge about how machinery is produced and assembled.

In the case of China, however, as one of the discussants mentioned, *We just go for seminars at China and so during the field demonstrations they will send you to local market so you will find the machines so they will explain it to you. This is that machine; this is how it works 36-year-old engineer, AESD, 3rd, November, 2017).*

Another discussant who corroborated this response indicated that

They will give you brochures. They have camps where teach mechanization (33-year-old engineer, AESD, 3rd, November, 2017).

One of the discussant further indicated that.

They have training programmes and when you go there they are now going to teach you how to plough and how to harrow and so those things (47-year-old engineer, AESD, 3rd, November, 2017).

The intentions of these training programmes were to equip the engineers with the needed skills to repair and further teach farm operators how to use the equipment and then aid in repairs of these machinery in the likely event of a breakdown.

An official from the AESD further indicated that the invitation of engineers from Ghana to China is also for marketing purposes, somewhat. She indicated

The trips were for the promotion of technology. They do invite our people to make them aware of the machines.

They do that because they want to want to penetrate African markets but not like training that is supposed to add value to what you know already (AESD Official, 3rd, November, 2107).

From the responses it is clear that the intentions of the process of knowledge diffusion from other countries particularly in case of the Czech Republic are broader than the intentions of the Chinese. The comparison shows how narrow the scope of knowledge offered by Chinese knowledge producers is and therefore shows how seemingly reluctant Chinese may be in the knowledge diffusion enterprise. It clearly shows the real economic interests that are associated with this knowledge diffusion enterprise as regards the Chinese agricultural machinery. This raises policy issues as regards the kinds of negotiations the Government of Ghana enters into as part of the bilateral agreement between Ghana and China and the need to consider the fact that what technicians and engineers learn from Chinese agricultural machinery is not sufficient to aid any industrial transformation relative to the crop farm subsector.

From the responses, it is also evident that even though Kang (2015) mentioned that knowledge diffusion may occur through inventor mobility, the case of Ghana's experience show that knowledge diffusion may also occur through trainee mobility. This was evident in the responses of the engineers in the Agricultural Engineering Services Directorate, one of the discussants mentioned.

In terms of the content of knowledge diffusion the discussants indicated that the knowledge obtained from the Chinese machinery is not

fundamentally different from the knowledge they obtained from the Japanese machinery.

The things I learnt in China when we visited were basic things. Before the person leaves here he is already highly knowledgeable in the on the equipment on how to use and assemble the equipment. Most of the things we are taught are already known by us. In some cases, some of us even become tutors in the sense that the person taught will rather end up teaching other people (40 year old engineer, AESD, 3rd November, 2017).

Hence, even though knowledge diffusion had taken place in the crop farming machinery industry it preceded the introduction of Chinese machinery. Much as the knowledge acquired by the engineers is high to the extent that they could assemble fully knocked-down and partially knocked-down machinery and then modify equipment to suit the Ghanaian soil conditions the knowledge was acquired by virtue of their exposure to Japanese machinery and Czech Republican machinery. On this note, one of the discussants openly expressed that:

“Our contact with Chinese equipment has not added any new knowledge to what we already know about the agricultural machinery which has been imported from either Japan or the Czech Republic” (47 year old engineer, AESD, 3rd, November, 2017).

Hence, the potential of Chinese machinery in enhancing knowledge diffusion into Ghana’s agricultural sector has been non-existent. This observation

contradicts the arguments by (Bitzer & Geischecker, 2006; Coe & Helpman, 1995; Keller, 2002) that knowledge diffusion would occur through trade. This is largely attributed to the fact that the technological ideas underpin the Chinese machinery is not any different from the Japanese machinery. As one of the discussants said,

In these you either employ hydraulics, mechanical or you combine both. So before you get to foton harvesters you would have experienced the mechanical linkage between the Chinese equipment (47 year old engineer, AESD, 3rd, November, 2017).

Indeed, the responses from the discussant even suggested that the Chinese adopted Japanese technology with regard to the agricultural technology. When they were asked to compare the quality of Japanese machinery and Chinese machinery one other discussant said, metaphorically, as follows:

When I compare the equipment coming from Japan and the ones coming from China I can say that it is like a father and a son. The Japanese equipment is higher than the Chinese. The Chinese learnt from the Japanese so the Chinese equipment cannot match the equipment from Japan (40 year old engineer, AESD, 3rd November, 2017).

It is thus obvious that though knowledge has been diffused from China its relevance to the agricultural sector in terms of promotion of technology was of no effect. Indeed, the Chinese technology is considered of lower standard than some of the other countries. This is also clearly evidenced in the fact that some products that have been produced by Ghanaian engineers at the AESD

and the Adaptive Trial Station were borne out of the knowledge they acquired from the machinery from the Czech Republic. An official provided evidence as follows

even in this workshop we have started producing our 'slashers' which we sell to the local market. Se we are not involved in buying and selling but they are mostly smaller machines; we haven't been too successful with bigger machines for example tractor. We do this with the adaptive trial station which is a bigger workshop. We are trying to build a local combined harvester; we have been producing the parts in bits but we are not done yet (Official from AESD, 3RD November, 2017).

The official from RST confirmed this truth. She indicated that, in some cases, RST is compelled to source the agricultural machinery from other countries in order to acquire high quality agricultural machinery. As evidence to this claim the official mentioned that

the Chinese you have to remove one part at a time so if you want thresh maize, even with the maize, the de husking it you have to remove certain parts, put in other parts to shell. The Indian one immediately you start, spark the machine it's like plug and play what you put in there is what it will produce for you (RST Official, 4th December, 2017)

Even in cases where equipment is considered as being of high standard, it only equals the quality of other countries; the quality is not higher than the quality

of other countries. Using Vietnam as a case in point, the official from RST maintained that

the quality of the rice milling machine maybe when you compare it to the rice mailing machine from India and Vietnam you can say that the quality is the same (RST Official, 4th December, 2017)

In all these narratives it seems that an economic motive with regard to cost is the driving force to the importation of Chinese agricultural machinery. Hence much as cost may serve as a source of attraction, the quest for effective knowledge diffusion for crop farming machinery may require the consideration of other origins with higher technical efficiency than the Chinese.

From all the analysis and as the AESD engineers have clearly established knowledge diffusion from Chinese has not added value to their existing knowledge. By implication, if RST, for example, had concentrated on agricultural machinery from other countries other than China, the knowledge acquired from the Chinese instructor would have equally been acquired. Hence, the Chinese are not essentially indispensable in the knowledge diffusion enterprise. Theoretically, knowledge diffusion becomes non-existent, through trade, when higher versions of the knowledge emanating from traded equipment have already been acquired from another source where similar equipment have been traded.

Notwithstanding these realities, the knowledge diffused from Chinese inventors to technicians of the Chinese agricultural machinery importers could be found useful and worthy of consideration. This is because the Chinese crop

farming inputs were their first point of contact as far as knowledge diffusion on agricultural machinery is concerned and not because the Chinese agricultural machinery introduces new technological insights. Moreover, acknowledging the role of the Chinese inventors will not be out of place given the fact that it creates wider options of agricultural machinery with lower cost and has created expanded opportunities for a greater number of technicians to acquire more knowledge about agricultural machinery.

Knowledge Diffusion in Ghana's Livestock Sub-sector

In this subsection emphasis will be given to the poultry and the meat production industries striking out some semblances and unique traits in these industries, where necessary, as knowledge is diffused.

Knowledge Diffusion in Ghana's Meat Production Industry

Experiences by the meat processors also show a great deal of knowledge diffusion from China into Ghana's agricultural sector. The research participants recounted their experiences about the knowledge he acquired from a Chinese firm on the appropriate thickness of the polythene and appropriate equipment they used to package their processed meat products. A meat processor accedes with his experience as follows

Chinese equipment helps you grow and their platform of seeing products opens your eyes, and gives you insight and you can even be educated on their storage polythene just corresponding or chatting with the Chinese company (42-year-old meat processor, Potsin, 15th August, 2017)

Another meat processor equally recounted his experience as follows

Yea you say I want something that can package my meat for me, if it's a packaging company they will look at it oh okay then you have to use polythene of this gauge... otherwise I don't even know who to talk to know the gauge of polythene I need (57-year-old meat processor, Potsin, 15th August, 2017).

Another meat processor further indicated that

I got the knowledge in China; they tell you choose this knife they use it for this (52-year-old meat processor, Potsin, 15th August, 2017)

The knowledge they have acquired is beneficial to them since it enables them to effectively store the meat to enhance its longevity. After learning about the appropriate thickness, he informed the local producers of polythene about it that is what they produced for him whenever wished to purchase local polythene for meat packaging. In this sense, knowledge has been dispersed.

In sum, it can be established that the knowledge the actors gathered about Chinese agricultural input cover a wide range of issues. From the responses offered by the actors found in the meat processing industry as compared to the responses provided by actors in the agro-chemical industry it is apparent that some of the actors in the agricultural sector have gathered knowledge which has emerged as an outcome of the encounters they have had about Chinese capital mobility.

From the responses provided by the research participants from the diverse industries in the agricultural sector, five key observations can be made

about the dynamics of knowledge diffusion from China into Ghana agricultural sector in the following regards:

- a. The suitable equipment for a particular agricultural endeavor
- b. The uses of an agricultural input
- c. How an agricultural input is produced, installed and repaired
- d. How to use an agricultural input
- e. The right specifications of a particular agricultural input

Knowledge Diffusion in Ghana's poultry drugs and feed supplement industry

Responses from actors in the poultry industry also that knowledge diffusion has been nonexistent. The organization (Enejoeyson) which imports Chinese poultry feed and drugs referred to the origin of the knowledge its experts acquired on poultry drugs from other countries other than China. One of its officials indicated that

Before I came to work here I was buying Chinese drugs I read more and I realized that they are all the same and what I see about drugs from China are not different from the drugs from Holland (Official from Enejoeyson Company, 17th, November, 2017)

This is similar to the experiences of the engineers at AESD who considered knowledge from China as non-existent because they have had exposure to other territorial origins of knowledge relative to traded products.

Knowledge Diffusion in Ghana's Fisheries Subsector

The level at which knowledge diffusion occurs in the fisheries subsector introduces some dynamics and complexities which require interrogations. This is because each industry in the fisheries sub-sector experiences its unique form and pattern relative to knowledge diffusion. However, given the fact that Chinese capital mobility into the fisheries subsector is very noticeable and dominant in the fish trawling industry issues about knowledge diffusion in the fisheries sub sector will be limited to that from China.

In this industry it is expected that knowledge diffusion could be taking place as the Ghanaians and the Chinese crew interact on board the fishing vessel. However, in the fish trawling industry, one fact remains; knowledge diffusion has been very minimal. This is evidenced by the response offered by all the stakeholders in the industry. On the part of an official of the fish trawling industry, for example,

So there is very little transfer of knowledge from the Chinese to the Ghanaian crew (Official, Fish Trawlers Association Ghana, 21st August, 2017).

This observation was corroborated by an official at the Marine Management Unit of the Fisheries Commission. She intimated that

so, when it comes to transferring the knowledge as in the techniques used for fishing, I will say on the personal level, you won't get a very high-level efficiency (official from Fisheries Commission, 6th November, 2017)

The apparently low level of knowledge diffusion from China into the trawling industry consequently leads to a lot of unsharpened human resource in the fish trawling industry thereby rendering Ghana technically incapacitated to manage the fish trawling industry. This was clearly mentioned by a fish trawling industry player. He said,

... we have a major problem of crew because we haven't built Ghanaian capacity to own and manage trawlers (51-year-old member, Fish Trawlers Association Ghana, 21st August, 2017)

The low level of knowledge diffusion is largely attributed to a wide knowledge inequality gap between Ghanaian working in the fish trawling industry and the Chinese crew members. Even though Ghanaians could occupy middle level positions on the vessel there is a deficit in terms of the number of people required to occupy that position. Furthermore, the implication of low level of knowledge diffusion and the absence of institutional efforts at building a formidable human resource base. This results in a growing degree of middle level and top-level human resource deficit in the industry. This deficit eventually reduces employment opportunities for the Ghanaians in the industry. Moreover, Ghanaians would not gain opportunities to occupy higher positions in the industry hence their ability to influence decisions, which could inure to their benefit, is inhibited and the benefits of knowledge diffusion adduced by Audretsch and Feldman (1996) well as Purwaningrum et al (2009) with regard to innovative performance become illusive.

The interview with the President of the Industrial Fish Trawlers Association of Ghana also disclosed that Ghana does not have a known gear technologist within the Marine Management Unit Ministry of Fisheries and Aquaculture. Thus, there was no knowledge foundational basis which could have allowed the complex, heterogeneous and diverse processes (Roeling & Fliert, 1994) of adapting knowledge to take place between the Ghanaian and the Chinese crew members. This was intimated by an official from the Fisheries Commission as follows,

we do have some of the Chief engineers which is like the third in command, most often being Ghanaians but they are just a few. Most Ghanaians are occupied are employed as dock workers so they do the sorting, they do all the...into brackets all the dirty work is done by the Ghanaians (official from Fisheries Commission, 6th November, 2017)

This knowledge inequality gap between the Ghanaians and the Chinese crew members for which knowledge diffusion is seen to be on a minimal scale is a function of institutional lapse. Supporting this claim with evidence a participant rightly indicated that and provided one of the myriad of reasons as follows

As a country we have a long time not developed the fisheries industry because the Regional Maritime University, I think, for lacks of subscription of their programs. Over a long period of time, Ghanaians have lacked the ownership of vessels and have not been trained too. And even those that are trained normally go for the

training at the Maritime University because they may have contracts abroad and not because they really want to fish in Ghana (48-year-old member, Industrial Fish Trawling Association of Ghana, 21st August, 2017).

In a broader political context, there seem not to be any deliberate plan which is motivating enough to ensure transfer of knowledge from the Chinese to Ghanaians. The lack of deliberate plan is expressed in three folds. The first is weak training regime. This is evidenced in the words of the Fisheries Commission officer in the Marine Management Unit

The Regional Maritime University likewise all other universities have not been able to produce enough technical people” (official from Fisheries Commission, 6th November, 2017)

The second is an absence of any enquiry to ascertain the degree of diffusion, if they so exist, to establish real knowledge gaps. The Fisheries Commission officer in the Marine Management Unit, once again, indicated that

No research has been done (official from Fisheries Commission, 6th November, 2017)

The third is the lack of enforcement on laws that could enhance knowledge diffusion. The Fisheries Commission officer in the Marine Management Unit, once again, indicated further that:

Although the law requires that Chinese should speak in English, it is not entirely so practically (official from Fisheries Commission, 6th November, 2017)

Indeed, from the responses, it is clear that low level of knowledge diffusion is a function of the lack of deliberate plan by state institutions resonating that argument that a successful knowledge diffusion regime relies on a more dynamic, participatory, collaborative system (Assefa et al, 2014) as well as fundamental and structural characteristics (Ascani et al, 2012) of the receiving society. It may be argued that under certain circumstances when there are no deliberate plans to ensure knowledge diffusion from China to actors in the fisheries sector, some informal methods could have been deployed to acquire the knowledge. One of these could have been the inscriptions on the equipment which could have enabled the actors to gain knowledge about the vessel. However, the inscriptions are in Chinese language. A fish trawling official hinted that:

“The inscriptions on the vessel are all in Chinese. Most of the equipment that came with the vessel too have their inscriptions in Chinese. And you realized that because China is not an English-speaking country, so the Ghanaians there could not even read” (45-year-old member, Fish Trawlers Association Ghana 21st august, 2017)

This was corroborated by an official of the Marine Management Unit of the Fisheries Commission

although the law requires that that the Chinese should speak English, or should be able to communicate or should have some English as the... some level of knowledge in English, er...practically that is not entirely so right? Yeah it

*is not entirely so; not all of them can speak English (official
from Fisheries Commission, 6th November, 2017)*

Hence, the lower depths in knowledge diffusion is also fostered by language barrier faced by Ghanaians who work as crew members in Chinese vessels used for fish trawling. This observation is consistent with the findings of Baah and Jauch (2009) and Shi, Chen and Hoebink (2017) which suggest that Chinese investments are usually associated with language barrier between Chinese managers and local employees in East Africa.

In addition to the language barrier, the administrative structure which puts the Chinese crew at the top management positions in the organizations which operate the vessels does not equally favour the diffusion of knowledge from China into the trawling industry. Essentially, the occupation of Ghanaians at the lower positions is attributable to the fact that the Ghanaian crew are not technically inclined. Expressed by an official from the fish trawling industry,

You can have a Ghanaian as a second officer, and second engineer and normally do the other things and then the decision making, so the decision making is normally lopsided. So you have a very heavy top Chinese management in the crew. So normally you have the captain, the first engineer, the chief officer all being Chinese (54-year-old member, Fish Trawlers Association Ghana, 21st, August, 2017)

Hence, from a political economy perspective Chinese knowledge diffusion into Ghana's agricultural sector may fail because the imported technologies

are not met with an appreciable level of knowledge by indigenous actors in the fish trawling sector. This buttresses the argument raised by Shaijumon (2014) on the role of knowledge diffusion that it depends on, among others, the level of knowledge and innovation performance.

Summary on Knowledge Diffusion from China into Ghana's agricultural sector

The dynamics of knowledge diffusion from China into Ghana's agricultural sector presents certain unique patterns upon which the process could be understood and applied. First, knowledge can be learnt through a deliberate effort of the knowledge producer. Secondly, knowledge can be learnt, albeit unplanned and unsolicited by the knowledge recipient; and third, knowledge can be learnt consciously but without the consent of the knowledge producer.

Knowledge as discovered is being diffused within various interactive processes. However, in all these contexts a key observable phenomenon is that arrays of mediums are being used to diffuse the knowledge from China into Ghana's agricultural sector. Some of the processes of knowledge diffusion are face to face in character while others are process of knowledge diffusion occurred through the use of mobile phone underpinned by the deployment of various social media platforms.

In such an instance the process of obtaining the knowledge using the mobile phone can occur either through calls or messaging. Hence, the linkages between the actors of knowledge diffusion are far more expressed with the introduction of ICT which does not only favour the process of knowledge

diffusion but also enforces the creation of knowledge, indirectly. Indeed, the mode of transmission is determined by the context within which knowledge is generated.

Besides, it can be argued clearly that when actors from different territories meet knowledge is likely to be shared in more relational and interactive terms. Clearly then knowledge diffusion happens when knowledge is communicated through certain channels from members of one social system to another social system who do not share the same national territorial boundary with asymmetrical levels of knowledge.

As manifested in the discussions, there are varied contexts within which the knowledge diffusion from China has been promoted which include the increasing spate of technological advancement, state-initiated policy arrangement, linguistic parity, foundational knowledge and innovative abilities.

The nuances in the knowledge diffusion patterns show a clear absence of uniformity in the knowledge diffusion patterns. Actors in the food crop production subsector seem to have acquired some useful knowledge than actors in the industrial fish trawling sector and poultry production industry. In all cases the varied degree of diffused knowledge shows that the involvement of the state could be the defining factor in ensuring knowledge diffusion. Besides the innovative and adaptive power of individuals could play a role.

Evidently, these patterns of knowledge diffusion have enormous implications for policy formulation which make take into considerations the functionality or otherwise of the knowledge diffusion, the patterns of non-uniformity and how these variations could be seen to be generating some

promising and challenging outcomes. By way of policy, it is apparent that Ghanaians, directly or indirectly involved in agriculture, are capable of adapting to diffused knowledge embedded in Chinese products. For that reason, there is the need to discover indigenes who can adapt to the diffused knowledge associated with Chinese products and introduce support systems and appropriate environment to enable them boost production of local substitutes. In addition, the lack of adequate training of Ghanaians which impeded their capacity to repair Chinese equipment and their opportunity to occupy top managerial position would require some attention by building the absorptive capacity of Ghanaians in the industrial fishing industry

CHAPTER SIX

GHANAIAN AGRICULTURAL ACTORS' INTERPRETATIONS OF CAPITAL MOBILITY AND DIFFUSED KNOWLEDGE FROM CHINA INTO THE AGRICULTURAL SECTOR

Introduction

In the early works of the study of human interpretations one obvious truth has been that “reality is socially constructed” (Guba & Lincoln, 1989). This follows from Hayek’s (1945) position that the study of society has to take as its raw material the ideas and beliefs of people in society. Applying this philosophical view to social development and political economy contexts, Scoones et al (2016) argue that development visions are socially constructed imageries and are promoted as policy narratives and they are usually contested at home society and these contests even expand when they get to destination.

Much as Scoones et al.’s (2016) argument cannot be ruled out from Chinese-Ghana development relations discourse, it is equally apparent that the reverse also occurs. That is, if these development visions from China are socially constructed then such development visions from China could also be treated as socially constructed imageries and promoted as policy narratives by host countries. The host country under discussion here is Ghana. In other words, development policy narratives would be influenced by the interpretations which actors in the agricultural sector may attach to the dynamics of capital mobility and knowledge diffusion in that sector. This chapter focuses strictly on the interpretations of the agricultural actors in the host country, Ghana.

The justification for the interrogation of these interpretations is that they confront actors and shape their decisions with as much power as brute observational facts (Chwieroth & Sinclair, 2008) and that they are useful for policy and strategies (Corden & Sainsbury, 2006; Jessop, 2010) in the agricultural sector. It is therefore imperative to unpack those socially constructed imageries of those in countries where the development visions of China are being concretized, using Ghana as a case in point.

In lieu of the fact that the sector under consideration is the agricultural sector this chapter unpacks the socially constructed imageries of actors in the agricultural sector of Ghana including policy makers and entrepreneurs. After all, as indicated by Polanyi (1967), the recipient interprets knowledge diffusion as depended from agglomeration phenomena.

Positive Interpretations

The interpretations from the actors in the agricultural sector bring some issues of useful sociological and political economy interests. Some research participants gave a positive interpretation about Chinese products. One of these research participants, a meat producer, indicated in a manner which suggests that he was not essentially bothered about the balance of payment impact of the importation of Chinese agricultural equipment on the Ghanaian economy in so far as the equipment could aid him in his business endeavours. The research participant said,

You see for us in business, the final outcome and the achievement of our expectations is more important to us than where the inputs or factor of production is coming

from. So long as we can trust quality, we are okay with price and communication that takes place before accessing the equipment or input etc. if it's okay with us we go along (52-year-old meat processor, Potsin, 15th August, 2017).

Another research participant, an aqua culturist, who also had a positive interpretation about Chinese inventors and distributors, expressed his encounter as follows

look the Chinese are making inroads everywhere just simply because they provide you with solutions you expect and they also delight you with things you don't expect so they send you beyond the expectation (52-year-old meat processor, Potsin, 15th August, 2017).

Indeed, the research participants views the Chinese agricultural inputs, based on his experience (Jessop, 2004; Jessop, 2010) in the use of such inputs, as useful for promoting the efficiency of business activities and eventually aiding the business to maximize profit. The positive interpretation is also born out of the favourable experiences of the research participant not with the product but with producers who display exceptional problem-solving capabilities.

With this case in point it is apparent that some businesses in the agricultural sector exhibit a clear instance of rationality given the fact that they make the choice to maximize their benefits irrespective of the origin of the product. In the context where the options of agricultural inputs abound, even from local sources, the rational choice of patronizing Chinese agricultural input is a tradeoff between best value for money for their businesses and unfavourable balance of payments for Ghana. The findings confirm the

findings of BBC World Service (2009) that perceptions about China were positive in Nigeria, Egypt and Ghana.

In this observation, a critical lesson of theoretical political economy interest is that that when people's rationality clashes with their patriotism the former is likely to predominate. In the light of the fact that such interpretations may influence policy (Jessop, 2010; Sum & Jessop, 2013), it will be prudent, for policy purposes, that the production of local substitutes, if it should be considered, may be hedged on the quality of the product rather than the personal attachment individuals may have for the product.

Negative Interpretations

However, there were some of the actors who had negative interpretations about the Chinese capital mobility. Generally, they regarded the Chinese capital mobility as detrimental to Ghana's agricultural sector owing to the poor quality of their agricultural inputs which the efficiency of the products. With regard to the agro-chemical produced by a subsidiary Chinese firm, for example, the peasant farmers as corroborated by the agro-chemical retailer described the Chinese agro-chemical as follows:

Oh! The quality is very poor (45-year-old male agro chemical retailer, Beraku 4th September, 2017).

The recognition of the poor quality agro-chemical as found in the response culminates the interpretation of the actions of the Chinese agro-chemical manufacturers as full of trickery and underhandedness. This conclusion was founded on their lived experiences in which they observed the Chinese

subsidiary as engaged in switching from the production of higher quality products to substandard products. The agro-chemical retailer states that

Initially when they came in, they presented a nice quality product but as time went on, they produced inferior ones. The Chinese agrochemical used to be good but what we have realized now is that the duration which we know that when you buy this and you apply it lasts for about three months or four months, this time it is not so. Yes, it was not so. They have deceived us, or they are also thinking about...you know producing (45-year-old male agro chemical retailer, Beraku, 4th September, 2017)

By virtue of the experiential encounter of the research participant he could assertively deduce the reduction in the level of quality from the reduced period within which the efficacy of the agrochemical would last. This finding corroborates the findings of the Ethics Institute (2014) that, generally, Africans have a negative perception of Chinese investment in Africa. These findings also corroborate the findings of China Daily (2013) from other countries such as Cameroon, Zambia, Nigerian, Egyptian and South African who tended to be more apprehensive with China than other countries due to issues related to unfavourable labour, health and safety. However, the findings contradict the findings of BBC World Service in 2009 that perceptions about China were positive in Nigeria, Egypt and Ghana (see Rebol, 2010). The responses ignite the anticipation that the patronage will fall when better substitutes are offered in the market. Within, an institutional context, the

reduction in quality of the Chinese agro-chemical producers shows that the compromising standards go unchecked by regulatory institutions.

Impressions about Chinese capital mobility and knowledge diffusion by the agricultural engineers in the Agricultural Engineering Services Directorate also produced some very interesting dynamics to their interpretations. The interpretations were much informed by their experience interspersed with their technical expertise which gave them the latitude to compare the Chinese machinery with the Japanese machines. Generally, the views, as gathered from the focus group discussion with agro-chemical retailers, were uniform. In unison they maintained the views which are similar to what were expressed by the retailers of Chinese agro-chemicals that Chinese are known for producing poor quality products. Juxtaposing their experiences with the Japanese-made and Chinese ‘maize pickers’ as an example, one of the AESD engineers, during a focus group discussion, commented on their levels of efficiency in this regard:

The maize picker from China uses tyre as a mode of transmission but the Yanma maize picker uses crawler making the latter more efficient than the former especially on rice plantations since the tyre are unable to move of wet soils as compared to the crawlers which can move of both wet and dry soils (37 year old male engineer, AESD, 3rd November, 2017)

Another discussant further mentioned, in addition to his earlier submissions that

The size of the machine is also an issue. The Yanma harvester is bigger than the foton harvester. The Yanma can harvest 10 acres before discharge; the Chinese harvester can discharge the crop after covering only 2 acres (45-year-old male engineer, AESD, 3rd November, 2017)

Another discussant gave his impression about Chinese products as items with low levels of reliability using his experiences of the unavailability of spare parts as reference points. He mentioned that

The Yanma combined harvester has a local representative which makes easy accessibility to spare parts as compared to the foton combined harvester (38 year old male engineer, AESD, 3rd November, 2017)

He further maintained, speaking about the quality of the parts of the Chinese machinery, that

Besides, the Yanma have quality parts. For example, the parts are belt driven and the type of the material used for the Yanma in terms of thickness and texture are far better than the Chinese equipment (38 year old male engineer, AESD, 3rd November, 2017)

In terms of longevity and durability, another discussant mentioned that

the Chinese products experience wear and tear just after one year of its use (42 year old male engineer, AESD, 3rd November, 2017)

Hence, in terms efficiency, availability of spare parts, longevity and capacity, the Chinese machinery were considered to be of less quality than the Japanese machinery. However, on these backdrops the participants did not give negative impressions about the Chinese capital mobility into Ghana's agricultural sector. When asked the discussants all the mentioned that they do not regard the poor-quality products as a means of ripping Ghana and the farmers off. Rather, some of the discussants regarded the poor nature of the quality of Chinese farm machinery as a reflection of a stage in the industrial development. Hence, in an indifferent style one of the discussants said, in simple terms, that *They are trying (45 year old male engineer, AESD, 3rd November, 2017)*

Such an interpretation would inspire empathy for their poor quality than dislike for the products. This interpretation varies sharply with the crop farmers and the poultry farmers who interpret the Chinese inputs as icons of deceit. From a different angle, some of the discussants regarded the influx of poor-quality Chinese products as a rational choice the Chinese have to make given the low purchasing power of the farmers as far as the acquisition of farm machinery are concerned.

From a conditional interpretative point of view, a research participant interpreted Chinese capital mobility and knowledge diffusion as phenomena that can be either useful or threatening depending on the structural arrangements put in place

So the issue is if you don't want the Chinese to be there, then you have to build Ghanaian capacity that cannot be build over time so you need to have a plan to phase off the

Chinese such that they will not feel used whereas the Ghanaians also get full benefit of working with the Chinese. That is what I think we need a policy to do” (36 year old male engineer, AESD, 3rd November, 2017)

Hence, the mere presence of Chinese capital mobility and its effect, as far as the interpretation of some actors in the agricultural sector is concerned, is not a conclusive one. In other words, the sheer introduction of Chinese capital would not serve as a direct precursor economic gains or losses, as far as the interpretations of the actors would present. They interpret the Chinese capital mobility as a phenomenon that would be beneficial or otherwise depending on the local conditions. Such an interpretation appeals to the essence of heterodox political economy perspective which argues that political institutions and other social arrangements determine how beneficial or otherwise capital mobility would be. Further, such an interpretation, once again, shows the relevance of the heterodox political economy perspective in development discourse. This is true in the sense that the perspective as regards the role of globalization expressed in capital mobility as a tool for reengineering regional economic processes only on condition that economic, political and social situations are favourable (Coe et al. 2004; McCann & Acs, 2009; Piore & Sabel, 1984).

The responses expressed were varied across the various sub sectors and the industries in the agricultural sector. Experience and knowledge matter in the interpretation. The unidirectional character of the interpretations is not conclusive; the interpretations were mixed. Some were negative, some were positive, some were neutral. Agricultural inputs produced locally by Chinese

subsidiaries are interpreted as negative. The imported goods were interpreted by some as positive others are interpreted as negative. Agricultural inputs imported via online platforms and used directly by the received positive interpretation while those imported by local agents or importers for onward distribution to end users are interpreted negatively. Some of the interpretations match with expert views while some did not correspond with expert views. For the knowledge diffusers, the producers of imported agricultural input, both in the crop and animal husbandry sub sectors are interpreted positively while knowledge producers in the fisheries sub sector are interpreted negatively.

The interpretations of actors in Ghana's agricultural sector depict that capital mobility and knowledge diffusion from could be promising, beneficial and optimistic as well as challenging and threatening. Indeed, these seemingly mixed interpretations expressed by actors in Ghana's agricultural are uniform across all industries and sub sectors of the agricultural sector. The reality, as established from the responses from actors in the agricultural sector is that any form of capital mobility presents optimism and challenges simultaneously. This is so due to the fact that the interpretations vary depending on the experiences and the interactions of agricultural actors which occasion the presence of agricultural inputs from China.

These are clear confirmations of Scoones et al's (2016) argument that capital mobility and knowledge diffusion can be both enriching and confusing for most Africans. These interpretations thus present an interesting picture which perhaps resonate experiences on all other sectors of the economy including trade, service and construction as China maintains its long march in Africa (See Rebol, 2010; Ethics Institute, 2014).

Summary

The responses gathered from the research participants also indicate that the interpretations emerged out of their direct experiences of the capital mobility and knowledge diffusion from China into Ghana's agricultural sector. The interpretations were also a product of the prior knowledge some of the actors had about products similar to what the Chinese introduced to the Ghanaian economy. It can be further noted that the Ghanaian experiences which have been translated into the interpretations as expressed by the actors in the sector are a microcosm of the interpretations which Africans have Chinese investments in Africa.

In the case of Ghana's agricultural sector, these seeming paradoxical encounters present a challenge to political actors who may have to take decisions to, as Ansah (2013b) said, consolidate the gains of Chinese long march to Ghana and reduce the stains which occasion it. Nevertheless, the quality and the appropriateness of decisions to be taken on the part of political actors in reaction to the interpretations will be very much enhanced if the interpretatively-defined modes of adaptations which agricultural actors have exhibited are taken into consideration.

CHAPTER SEVEN

CONNECTIONS BETWEEN THE INTERPRETATIONS AND THE MODES OF ADAPTATION OF CHINESE CAPITAL MOBILITY AND KNOWLEDGE DIFFUSION

Introduction

As expressed in earlier sections by Scoones et al. (2016) development visions are socially constructed imageries and are promoted as policy narratives and they are usually contested at home [China]. The interactive nature of globalization as expressed in capital mobility and knowledge diffusion suggests that the socially constructed visions are not limited to China alone. Hence, these socially constructed development narratives even expand when they get to Africa as varied interpretations emerge.

It will be equally instructive to note that, the socially constructed visions by Africans are not end in themselves. Rather they act as basis for human behaviour. Hence, since the interpretations are interrogated it will be equally useful to interrogate how the interpretations have informed the normative modes of adaptations by actors in the agricultural sector towards capital mobility and the diffused knowledge from China. Adaptations are the cultural values made up of behaviours, perceptions and attitudes which individuals exhibit in response to changes in the social structure

It is important to interrogate these, modes of adaptation because, as clearly established in the literature, although Chinese involvement in African agriculture is a reflection of China's own policy narratives and imperatives, its success or otherwise is driven by a range of factors (Scoones, et al., 2016)

particularly the modes of adaptation. Similarly, it is crucial to examine the modes of adaptation because they constitute an integral of the local cultural context which, as Liu (2014) argues, determine the nature and degree of impact of capital mobility on a country or local community's economic development. Besides, the extent to which Ghana would consolidate the gains from Chinese capital mobility will depend on the interpretations and the mode of adaptations of the agricultural actors.

Hence the issues to be analysed include the following. How do the interpretations of the capital mobility and knowledge diffusion intersperse with other economic variables to produce certain modes of adaptation? How varied are these modes of adaptation as they play out in the various subsectors of the agricultural sector? How do these modes of adaptation sustain the existing forms of capital mobility and knowledge diffusion? How are those modes of adaptations which threaten the sustenance of the capital mobility addressed?

Product efficacy knowledge, product price and interpretations of product quality: Their intersections in the Purchase of Agricultural Input from China into Ghana's Agricultural Sector

One of the modes of adaptations to Chinese capital mobility is purchasing behavior of the Chinese imported agricultural product. Interrogating the issues relating to interpretations and purchasing behavior of Chinese agricultural inputs it became apparent that the interpretations attached to the quality of Chinese products was not the only phenomenon that may inform with the purchasing behaviour by actors in the agricultural sector.

There were some key economic variables which interspersed with the interpretations attached to capital mobility from China by agricultural actors in Ghana to inform certain the patterns of purchasing behaviour. These variables were the knowledge on product efficacy and the price of the product. These economic variables produced particular forms of purchasing behaviour which could either facilitate or mar the sustainability of capital mobility from China into Ghana's agricultural sector.

It widely known in classical economic terrains that price and interpretations about the quality of a product may play a role in determining purchasing behaviour. These notwithstanding, it has been established, theoretically, that the place of knowledge in every economy is not just critical but forms the essence of the modern global economy (Hanusch et al, 2009; Hayek, 1945; Long, 2001; Polanyi, 1967) and the interviews with the research participants showed the complex interplay between knowledge of product quality, interpretations of product quality and the price of the product and how it informed the sustainability of purchasing behaviour or otherwise of Chinese commodities in the agricultural sector. I show this interplay using the agro-chemical industry, the livestock drug and feeding industry and the crop farming equipment industry as cases in point.

In the agro-chemical industry, an agro-chemical dealer did not mince words about this reality. He succinctly said,

The good ones are from CHEMICO (50 year-old agro chemical retailer, Beraku, 4th September, 2017).

The response showed that Chinese agro-chemicals were poorly patronized because of the interpretation attached to those products as being poor in

quality. Hence, even though the price of the CHEMICO (an agro-chemical from South Africa) agro-chemicals was relatively expensive their purchasing behaviour was higher than the Chinese agro-chemical. This was largely a result of the farmers' awareness of the higher quality of CHEMICO products. However, in the course of the interview with the agro-chemical importers, it was further discovered that prior to the introduction of Chinese agro-chemicals, a bottle of CHEMICO agro-chemicals was sold at GH¢45. However, because of the high prices of CHEMICO agro-chemicals the farmers also shifted purchasing behaviour to Chinese agrochemicals which were selling at GH¢30 per bottle. It was thus obvious that the price of the product was the main consideration by farmers in the purchase of agro-chemicals and not the knowledge of product quality. Hence, by the farmers' choice, since the Chinese agro-chemicals were sold at a relatively cheaper price they got inclined to patronize Chinese agro-chemicals. An agro-chemical retailer recounted this

it came to a time the China product became domineering and their price was also cheap for the farmers (45 year old male agro chemical retailer, Beraku, 4th September, 2017)

It may smack off rationality but, to an extent, it could also be attributable to the Ghanaian buying culture or economic behavior characterized by the preference for cheap commodities.

In a year, you can sell all about thousands of Chinese sprayer but this one (referring to CHEMICO product) will be here for a long while (50 year-old agro chemical retailer, Beraku, 4th September, 2017).

However, it was not clear whether or not knowledge of quality could play a role in the purchasing behaviour. To ensure the clarity, the issue of product was interrogated and the agro-chemical dealer provided information which presented the interplay between price and knowledge of the product quality. With such interplay there is an outlay of the supremacy of price over knowledge of product quality in choosing products among the end users. In other words, price informed the decision to patronize a particular product. During the interview he pointed to a product known as knapsack and said,

Look at some of their knapsack but when you buy from CHEMICO or some other places it lasts long though it is expensive but when you tell them they will buy Chinese products... Still the CHEMICO products are of high quality (45-year-old male agro chemical retailer, Beraku, 4th September, 2017)

Over time, nevertheless, the role of knowledge of product quality in changing the patterns of purchasing behaviour for agro-chemicals was brought to bare in the responses from the retailers in the agro-chemical products. One retailer recounted his observation as follows:

The Chinese product was moving very fast but now that they have realized about a year now. So the other products from CHEMICO are now gaining the attraction for purchase. The farmers have realized that the China products do not last long. So we are also going in for it. When you buy CHEMICO products they will be here for a long while but as time goes on CHEMICO also came in

much for the farmers (35 year old male agro chemical retailer, Beraku, 4th September, 2017)

The awareness of the poor quality of Chinese agro-chemical and shift in the purchasing behaviour patterns support the views of Hanusch et al (2009, p.1) that “knowledge can be recognized as one of the competitive advantages in a globalized economy”. As such the knowledge gained by the farmers about the poor quality Chinese product has served as an advantage them because they can select the best quality product from available options to improve their productivity.

Interrogating the issues further, it was discovered that knowledge about the lowering quality of Chinese products coupled with price reduction of competing products reduced purchasing behaviour levels for Chinese products. An agro-chemical retailer again recounted

But, the distributors of CHEMICO agro-chemicals reduced the price of their agro-chemical products but now they have realized (50 year old male agro chemical retailer, Kasoa 17th November, 2017)

It is therefore apparent that the change in purchasing behaviour was a product of lower prices for quality products and unchanged prices for poor quality products and knowledge about the quality of the Chinese products. From the data gathered it can be argued that knowledge of product quality would gain supremacy over product price in the decision to patronize a product when the price variation is subjectively defined by the end user as narrow. Hence capital mobility is sustained with high level of awareness of product quality within the context of a subjectively reasonable product price variation gaps.

With regard to imported poultry inputs, it was also apparent that knowledge about the efficacy of the product played a role in the purchasing behaviour. Based on expert response by the distributor of poultry drugs from various countries he could accede that the Chinese produced poultry drugs were as efficacious as the poultry drugs produced by other countries such as Holland and Belgium. He said that:

Basically, I am a veterinary technician myself and I use the drug myself and apparently there is no difference in the quality and I can testify to you that the Chinese drugs work exactly as the drugs from other countries (50 year-old agro chemical retailer, Beraku, 4th September, 2017).

Yet the purchasing behaviour was low, as the importer mentioned. Why? As clearly elucidated in his responses, the product price was not an issue here because there were price differentials between Chinese livestock drugs and the Dutch livestock drugs. In this case, the low purchasing behaviour was not the price. Rather, it was attributed to the lack of knowledge about the efficacy of the imported Chinese poultry inputs. Indeed, it was discovered from the interviews carried out that the purchasing behaviour of the Chinese products was still below the expectation of the importers despite the relatively lower prices of the Chinese products. What then are these other variables which played out with the price factor to influence the unexpectedly low purchasing behaviour?

From further interrogations two other variables which affected purchasing behaviour were seen to be playing out. They include the *length of stay of the product in the market* and the *trust for the product*. During the

interview it was revealed that the importer had just started importing the Chinese livestock drugs and injectables during the year (2017) when the interviews were conducted. In lieu of the perception the farmers had about the poor quality of the imported Chinese products they were adamant to purchase the drugs. However, as mentioned by the importer the purchasing behaviour increased, albeit gradually, as a result of intensified marketing strategy coaxing some farmers to shift purchasing behaviour from drugs from other countries to the Chinese drugs.

The importer of the livestock drugs showed the role of time and trust in enhancing the purchasing behaviour of Chinese livestock drugs as he said that

There are some [livestock farmers] I have convinced them to buy and compare and when they go and try it and it works, they become convinced so they come and buy the Chinese drugs. But when you convince them they buy; they do repeated buying (Official, Ernejoyson Company, 17th November, 2017).

Hence, with reference to the livestock drugs, it can be argued that the ability of imported products from China to attract purchasing behaviour is not a matter of price alone but the conviction of its efficacy by the end users. Indeed, if the price informed their purchasing behaviour, perhaps it influenced their interpretation that the Chinese livestock drugs were poor in quality.

Taking the poultry drinking trawl into consideration, the interpretation by the end users had about the poor quality of the Chinese poultry drinking trawl adversely affected the level of purchasing behaviour initially but the knowledge about product quality

We have some equipment - the drinking trawl - when we brought the Chinese-made people were complaining that because of the metal handle it was going break and all that. But when the goods got finished they began to ask for it. When they realized it was good they wanted buy some back (official, RST, 4th December, 2017)

Clearly, the end-users' lack of knowledge about the product quality and negative interpretations worked to produce poor purchasing behaviour. Indeed, the price factor did not inform the purchasing behaviour because the Chinese product was even GH¢5 lesser than the Italian made drinking trawl yet, due to the negative interpretation, the purchasing behaviour was low. When they had knowledge, it erased the negative interpretations which culminated into an increase in the demand. Using the same response, it can be established that in some other cases, the quality may be high but because knowledge about the optimum efficacy of the product does not exist the level of purchasing behaviour would be low.

In some cases, much as knowledge may exist about the relatively lower quality of Chinese products the purchasing behaviour of the products is still high. This was found to be apparent in the agricultural equipment industry. From the interviews carried out, the official for RST mentioned emphatically that

yes the Chinese products sell more in this house. We represent a lot of Chinese companies in Ghana" (50 year-old agro chemical retailer, Beraku, 4th September, 2017).

This is where price matters, but it is more than just the prices. Indeed, high purchasing behaviour of relatively low quality Chinese agricultural equipment is largely accounted for by the wide variation in prices between Chinese agricultural equipment and equipment from other countries such as India and Vietnam. Table 17 provides evidence to that effect.

Table 17: Price Variations between Chinese agricultural equipment and equipment from other countries such as India and Vietnam

Equipment	Price of Chinese- origin Equipment (GH¢)	Price of Non- Chinese origin Equipment (GH¢)	Price Variation (GH¢)
Rice Thresher	17,000	21,000 (India)	4,000
Multi-purpose Thresher	11,000	23,000 (India)	12,000
Power Tiller	20,400 (Head and trailer)	23,000 (Vietnam) (Head without trailer)	2,600*

Source: Author's own construction, data sourced from RST Company Limited, 2017.

From the data it is obvious that even though knowledge about the quality of the product may influence purchasing behaviour the degree of price variation may override the former in the end users' decision to patronize a product in some cases. From the responses given about the how knowledge and price may affect the sustainability of capital mobility from China a summary is presented on Table 18 as follow

Table 18: Patterns of purchasing behaviour of Chinese Agricultural Input: Price, interpretation and Knowledge Interfaces

	Low purchasing behaviour	High purchasing behaviour
Low Price:	Example: Chinese Poultry Drugs <i>Reason: No Knowledge about Drug Efficacy</i>	Example: Agricultural Machinery <i>Reason: High Price Differential</i>
High Price	Example: Vacuum Sealers: <i>Reason: Knowledge about high quality local substitutes</i>	Example: WYNCA Agro-chemicals <i>Reason: No knowledge about low quality</i>

From the facts gathered, a five-case scenario can be established. First, it can be inferred that when end users have a high level of knowledge about a highly efficacious product with an interpretation that the product quality is high and the price is low it may increase purchasing behaviour. Second, when end users are highly knowledgeable about a less efficacious product with an interpretation that the product quality is low, and the price is high it may reduce purchasing behavior. Third, when end users have a low level of knowledge about a less efficacious product with an interpretation that the product quality is high, and the price is high it may increase purchasing behavior. Fourth, when end users have a low level of knowledge about a highly efficacious product with an interpretation that a product quality is low, and the price is low it may not increase purchasing behavior. Fifth, in some

cases, when end users have a high knowledge about less efficacious products with the interpretation that the product quality is low, and the price is low it may increase purchasing behavior.

From the analysis it can be argued that just as knowledge and innovation may work together to influence corporate success through purchasing behaviour (Quinn, Anderson & Finkelstein, 1996) but they do operate in tandem with price and interpretations to product quality to inform the purchasing behaviour and, ultimately, the sustainability of capital mobility.

Adaptations of the Fish Trawling Industry

In the fish trawling industry, the actors in the industry have developed the following modes of adaptation which are discussed in subsequent subheadings. These modes of adaptations are the behavioural patterns and norms which have been exhibited and constructed, respectively, in the face of any phenomenon- in the case of this section, the Chinese investments in the fish trawling industry.

Partnership with Chinese Vessel Owners

Within the context of a high influx of vessels coupled with the current laws on fish trawling which allows a 100-percent Ghanaian ownership of a trawling enterprise Ghanaians in the industry, Fisheries Commission officials, in an interview, intimated that the Ghanaian fish trawlers have adapted by serving as frontlines for Chinese vessel owners. This was corroborated by an official of the Fisheries Commission of Ghana

“Er... concentrating on the industrial side, er... by law, the trawlers is supposed to be 100% Ghanaian and so

in our books we don't have any Chinese registered vessel, we don't have any Chinese registered manager. In our books they are all Ghanaians" (Official, Fisheries Commission, 6th November, 2017).

In that same interview with the Fisheries Commission officials, it emerged that this phenomenon of Ghanaians obtaining the license for Chinese vessel owners to operate in the fish trawling industry is largely due to the low capacity to raise capital by the Ghanaians and the lack of indigenous technical staff.

Offering Support for Chinese vessel operation by Industrial Fish Trawlers Association

Since the inception of Chinese capital mobility and knowledge diffusion, Ghanaians in the fish trawling industry have offered needed support to the Chinese vessel owners. One of the classic cases in point where Chinese actors received enormous support from the Ghanaians in the fish trawling industry was a court issue between the Fisheries Commission (FC) and Kenbonad Company Limited, a private Ghanaian-owned fishing company, who were in two different courts over two separate issues with each of the parties levelling accusations against the other on each of the issues. This legal tussle occurred in 2017. The first issue was an accusation against the Fisheries Commission for refusal to grant fishing license. The second issue was an accusation against Kenbonad Company Limited for illegal fish transfer from one boat to the other in Ghanaian waters without authorisation, and unqualified captain operating the vessel.

As the legal tussle ensued, the President of the Trawlers Association offered enormous support to the private Ghanaian-owned fishing company which took many forms. The President of the Trawlers Association of Ghana, in an interview, indicated that the association offered a support by advocating for the fairness and justice in the enforcement of laws on fishing which bars illegal fish transfer from one boat to the other in Ghanaian waters without authorisation, and unqualified captain operating the vessel. This was a mode of adaptation which could ensure the sustenance of the Ghanaian business and the employment that has been generated, thus representing a sense of rationality among the actors in the fisheries sector.

Agreement on and the declaration of “no fishing’ days and ‘fishing-free’ periods

In the light of the detection the fish trawling is contributing to the depletion of the fish stock in Ghana, the actors in the fish trawling industry have recognized that there is the need to allow fish restocking by declaring some days ‘no fishing days’. Not only have some of the days been declared as no fishing days, but some periods in the year declared ‘fishing free periods’. In the response of a member of the Fish Trawlers Association of Ghana, he mentioned the periods

Yes. Nobody was fishing in February and March this year, we respected it (54-year-old member, Fish Trawlers Association of Ghana, 21st August, 2017).

This was also corroborated by an official from the Marine Management Unit of the Fisheries Commission. She said that

yeah and then from that we've been to establish close season and so for the trawlers, I think we started in er...2015 no 2016. Yeah we started that last year for last year we had all our trawlers not fishing for the month of November. And so the whole of November the... all our trawlers did not fish and then this year, we had it run for two months; for February and March (Official, Fisheries Commission, 21st August, 2017)

This decision, from the sustainable development point of view, is to ensure ecological balance and to ensure the avoidance of fish stock depletion for sustained economic activities for the vessel owners. These efforts by the government were meant to ensure the collective interest of the citizens and the actors in the fish trawling industry. While citizens gained the assurance for fish supply, the actors in the industry gained the assurance for adequate fish catch.

Showing some political commitments, the state has remained proactive to the debilitating outcomes of the introduction of 'no fishing periods' in the industry. A notable outcome of the 'no fishing periods' which the state responded to was the apparent disruptions in the fishing activities leading to reductions in the production volumes of the vessel operators. Certainly, this was to adversely affect their incomes. As an exhibit of the proactiveness, the state provided some legal and administrative support to vessel owners which allow them fish beyond the hydro-territorial boundaries of Ghana. The official from the Marine Management Unit mentioned the support as follows:

... within this we have ermm... regional collaboration and er...some MOUs we could fish in neighboring waters. So although these periods, it was closed, they could purchase license here and then purchase the license in maybe Cote d'Ivoire and go and fish there. yeah and so we do have that regional collaboration and regional sharing of data in that regard yes yes ... because before vessels fly a particular flag so if you are a Ghanaian-flag vessel you should have obtained a license from your flag state before you move to another state and the state will have to contact the flag state to make sure that really indeed you have the registered also particularly because of the issues of IUU (Official, Fisheries Commission, 21st August, 2017).

The support offered by the state serves some security imperatives. Indeed, the collaboration serves to keep the vessel owners that are registered in Ghana from arrest by security agencies of neighboring countries. The economic ends cannot be equally overemphasized in the light of the fact that the collaboration enabled the vessel owners to maintain stable production patterns throughout the year.

Establishing ties with Chinese Embassy by Industry Players

Over the years, the consolidation of Chinese capital mobility in Africa has been occasioned with state-level China-Africa engagements as well as deep-profiled diplomatic and business ties between China and Africa (Gu et al., 2016). As Gu et al further established that there have been triannual meetings in 2000, state visits, trade missions, and a growing development

cooperation programme, significantly run from the Ministry of Commerce (MOFCOM), since the Forum on China–Africa Cooperation (FOCAC). Using the Ghanaian fish trawling industry as a case in point, there has been a discovery of new forms of actor-oriented networks occurring not between the Government of Ghana and the Chinese embassy but rather between industry players and the Chinese embassy without necessarily involving the state representatives.

Notwithstanding the fact that Government of Ghana has not been practically involved in these engagements, all the instances of the industry-embassy engagement show traces of partnership, cooperation and mutual support between Ghanaians and Chinese investors. These results back up the contentions of Scoones et al (2016) that investments in into the agricultural sector by foreign companies including China generate conditions through which accommodations, friendships and new relations are struck.

However, the engagement does not emerge in a vacuum. Clearly these are motivated by the benefits which accrue to the Ghanaian owners of the fish trawling companies particularly given the fact that it serves as means profits, employment generation and other forms of exposure. Indeed, these partnerships and support by Ghanaians can also be understood given the context that the Chinese have become integral elements in the capital mobility and knowledge diffusion regime, which according to Tugendhat and Alemu (2016) has been dominated by the Western countries with their texture of capital mobility.

Teething Problems Related to the Mode of Adaptations in the Fish

Trawling Industry

Even though some of the modes of adaptations such as high patterns of purchase for Chinese agricultural input, partnerships between Chinese and Ghanaians in the fish trawling industry, and the declaration of no-fishing days, are very integrative and purposeful, Ghana's agricultural sector is faced with some teething issues which occasion the capital mobility and knowledge diffusion which require attention through legal or policy responses. These teething problems constitute some of the range of factors which may adversely affect success of Chinese involvement in Ghana's agricultural sector.

A major teething problem is the absence of official legal frameworks needed to regulate the relationship between Ghanaians and the Chinese vessel owners among whom certain working relationships already exist. As hinted by a member in the fish trawling industry.

They are no proper contract guiding their working relationship, so the Ghanaians tend to be working more for the Chinese because then they have to make all the operational decisions and they have a system in China that trains them so even when they are in Ghana, They are trained as to how to manage their industry both as crew and also as owners of trawling firms(47 year old member, Fish Trawlers Association of Ghana, 21st August, 2017)

In addition to the experiences shared by actors in the trawling industry, even though Chinese agricultural inputs are gaining increased purchasing behaviour by actors in the Ghanaian agricultural sector there is a teething challenge

which relates with unavailability of an indigenous human resource base which can engage in repairs of Chinese agricultural inputs. A meat processor, made this observation as follows:

Yes, you'll worry about the possibility of repair etc just in case something goes wrong (52 meat processor, Potsin, 15th August, 2017)''

This issue raises a disjunct between the capital mobility and knowledge diffusion. The disjunct is expressed in the forms of knowledge diffusion does not accompany the traded product in the Chinese capital mobility. This has the potential of derailing the ability of the actors in the agricultural sector to secure the optimal benefits of the money spent on the procurement of Chinese imported agricultural input.

Further, the partnership with Chinese vessel owners as a mode of adaptation also comes with some problems as recounted by an official in the Fisheries Commission. She mentioned that the partnership is a hire purchase type where Ghanaian partners are given the opportunity to pay for the vessel by installments after which they would own the vessel. However, the teething problem which emerges in this context is that Ghanaians assume ownership of the vessels at a time when they have become obsolete.

The context within which these teething problems occur is one that can be defined as an economically unsupportive one. In this regard, the context of the teething problem suggests that the development of an industry like that of the fish trawling requires certain legal and political imperatives but economic imperatives as well. In practice, creating a sustainable and viable industry

demands that law formulation must operate in tandem with economic opportunities, and human resource development.

Some Modes of Adaptations as Social and Cultural Impediments to Efficient use of Chinese agricultural input

As established in the works of Chichava, Duran, Cabral, Shankland, Buckley, Tang and Yue (2013); Alden (2013) and Brautigam and Tang (2012), Chinese capital mobility in Africa's agricultural sector has been challenged by a number of social, cultural and political conditions. These included include political instability, poor management of projects, poor agreements, farmers' inability to pay for services and local actors' inability to fulfil aspects of bilateral agreements. Interrogating some of the challenges which impede capital mobility and knowledge diffusion as found in the case of Ghana' agricultural sector introduces some new realities of socio-cultural conditions which impede the success of Chinese capital mobility into her agricultural sector as discussed in the four subsequent sub sections. They include poor attitude towards Chinese agricultural machinery, poor perceptions about Chinese goods and pilfering parts of Chinese machinery.

Poor attitude towards the usage of Chinese agricultural machinery

A glaring teething challenge embedded in the socio-cultural conditions that impede the efficient use of Chinese agricultural input is primarily concerned with the poor attitude towards the usage of Chinese agricultural machinery. A typical example is the experience shared by a Chinese distributor of tricycles which some actors in the agricultural sector use in the

pursuit of her economic activities. The distributor recounted her experiences with the drivers of the tricycle as follows:

Ghanaian riders don't ride the machines well, so they should take their time to ride it they are not happy with the way we use equipment badly and then turn around to complain (official, Motorking, 5th December, 2017)

Such an attitude smacks off a sheer lack of knowledge about some of the agricultural inputs. The lack of knowledge leading to the inefficient use of Chinese equipment will not only reduce the life span of the tricycle but lead to an increase the production cost of the agricultural actors in the long run. This may then derail the capital formation capacity of the actors in the agricultural sector.

With regard to the socio-cultural constraints associated with the efficient use of Chinese food crop machinery, the AESD official also raised the issue of farmers' ignorance about the mechanics of the agricultural equipment as a key impediment to the smooth usage of the machinery. The official indicated that,

"Most of the time the operators too don't have knowledge to operate the new machines from China. Sometimes, when the equipment come they think that because they have been operating some machines already they can still operate the new ones. But the machines can have different specifications even though they are might be similar so when they breakdown easily it is because they don't know

*how best to use the machines” (Official AESD, 3rd
November, 2017)*

Fundamentally, as the responses suggest, lack of knowledge about the mechanical structure may derail the possibility of ensuring the efficient use of Chinese machinery.

Perceptions about Quality of Chinese Goods as Inferior

The responses emanating from the importer of livestock drugs suggests that the Chinese imported drugs receive low purchasing behaviour because of the poor perception about the quality of Chinese products. In his response, he recounts that

*“There are others with the fixed mind that I want a Holland drug so even if you convince him his mind is tied to the Holland drug so it is a little difficult penetrating with the Chinese drug though it is effective because in China people produce inferior goods so people have the notion that the livestock drugs are inferior” (Official, ErneJoyeson, 17th
November, 2017).*

Just like the issue of poor attitude, the responses about the poor perceptions about the livestock drugs also suggest a lack of knowledge about the efficacy of the livestock drugs.

Making ‘Unfounded’ Claims about Quality of Chinese Equipment by Farmers

One of the negative expressions of adaptations by the farmers is the unfounded claims about quality of Chinese agricultural equipment. In an instance

“he will intentionally park the machine and claim that they don’t have the part or the machine is not good” (Official, RST, 4th December, 2017)

In some cases, the end users of the Chinese machinery refuse to purchase the required parts of the machinery. This then works to create an impression in the minds of the distributors of products of the farmers that the Chinese agricultural machinery is of inferior quality. In one instance, as hinted the official at RST, she mentioned that

“we have a customer at the moment at AKUSE who has a complete rice mill. He doesn’t come to buy parts and do you know when he mills, there is husk in the rice. So, one of the customers took the initiative to come and buy a winnower. So, after milling he has to go and winnow it before it can be fit for the market” (Official, RST, 4th December, 2017)

To buttress the claims of the official from RST hinted

“Even that particular customer we invited him and he admitted. So we told him in order not to mar the name of our Company, he should buy the winnower so that when he mills he winnows for them so that they won’t blame our company when they find husk in the rice. So we forced him to buy the winnower. So we suggested that he buys the winnower to prevent the individual customers from buying it themselves. He should buy it

*so that after milling he winnows for them...” (Official,
RST, 4th December, 2017)*

For sociological purposes, it is important to recognize that each actor may have a valid claim given the subjectivities and contextual interactions that surround their definitions of Chinese equipment. In other words, each actor’s claim is a product of their lived experiences with the Chinese equipment. However, whether these claims made about the quality of the Chinese machinery by the farmers are technically and scientifically true or false, they show that the trust in the quality of the Chinese agricultural machinery by the farmers is inherently low and the shallow trust would have to be erased. In other words, it can be inferred, using abductive analysis, that the exhibitions of the socio-cultural modes of adaptations which impede the efficient use of Chinese agricultural equipment are connected to the negative interpretations about Chinese equipment as being poor in quality. Other negative modes of adaptations connected to the negative interpretations include:

Pilfering by Operators of Chinese Machines

Another negative mode of adaptation closely linked with the act of making ‘unfounded’ claims about the quality of the Chinese machinery is the act of pilfering by the operators of the agricultural machinery. It was apparent from the responses that the operators created an impression as though the Chinese agricultural machinery is of poor quality. This impression was used as a justification to their refusal to operate the machinery.

Meanwhile, interview response from commercial farmers suggest that when the owner who invested in the machine was not present, the operators

worked with equipment and spent the money. Some commercial farmers hint that the operators would be paid ahead of providing operator services. However, in their quest not perform their services for which they have been paid, they would intentionally complain that the machines were properly functioning. This is a reflection of the creeping culture of materialism in the Ghanaian society. Some of the commercial farmers indicated that, they, consequently, get discouraged and abandon the farming enterprise. The seeming display of helplessness leading to the abandonment of the machines by the farmers is rationalized as follows

“if you should invest about 130, 000 in a rice milling machine and operators are giving flimsy excuses you the investors will get discouraged and stay out of business”

(Commercial farmer, Akuse, 4th December, 2017)

From the responses given, it is apparent that the abandonment of the farming enterprise is considered as the best option towards the avoidance of further economic losses. In this case it may be regarded as a rational decision. However, these modes of adaptations are likely to reduce the potential of the agricultural sector from benefiting from the influx of the Chinese agricultural machinery because they ruin the investors’ desire to sustain their investments.

Actors Responses to Some Social and Cultural Impediments to Efficient use of Chinese agricultural input

Given the negative modes of adaptations and their potential to derail the benefits which Ghana’s agricultural sector may accrue from China’s capital mobility and knowledge diffusion, some of the importers in the

agricultural sector did not remain passive to these negative modes of adaptations by some crop and poultry farmers as well as operators. They developed some responses to the negative modes of adaptation by importers in the agricultural sector.

Aggressive Marketing Strategies and Insistence on High Quality Goods by Importers

Within the context of the fact that Chinese products in-fluxed the Ghanaian economy after some similar products had been imported and distributed the importers of Chinese products had to adapt by embarking on aggressive marketing strategies to enhance the penetrability of Chinese agricultural inputs.

When they come, I explain to them; there are some I have convinced them to use it and compare so after they use it they come back for it; and so we have cases of repeated buying (official, ErneJoyeson, 17th November, 2017)

According to him, their aggressive marketing strategies were motivated by their desire to keep a market size that will guarantee a reasonable level of returns for their investments.

In addition to the aggressive marketing strategies, the importers also insisted upon highest Chinese quality standards in terms of the specifications on the quality of products being produced. By the experiential knowledge of the official at RST, she maintained that RST's decision to insist on quality is premised on the impressions by the Chinese that Africans prefer cheap

products culminating into their production of inferior products goods for the African market. The Chinese, according to her, behave in this

“Because when you ask of quality, they ask you that do you want Africa quality or Europe quality”? (Official, Ernejoyeson, 17th, November, 2017)

To ensure that that such impressions are not translated into reality by the Chinese, the RST official that

We don't go there to buy, we sit here, source the products from the internet, make their payments, they export to us, we clear and then we sell but it is of good quality. They have the quality contract that they sign with us. So, we go for the Europe quality and they also look at the prices. We are very much particular about the quality of the product (official, RST, 4th December, 2017)

Therefore, what makes the difference in the quality variations may depend on what the importers will request and insist upon. These responses show that the role of the distributor is critical in ensuring higher quality of products which may result in higher purchasing behaviour. Thus, the sustainability of capital mobility also depends of the value orientations and the negotiation commands of the intermediary actor between the producer of the product and the end user. This observation confirms Liu's (2014) argument that the nature and degree of impact of capital mobility on a country or local community's economic development are largely determined by the negotiation processes between actors and the content of investment contracts.

This also supports the arguments of Hanlon and Mosse (2010) that China's engagement in Africa's agriculture will result in new forms of 'developmentalism' or stimulate corrupt patronage politics depending on local negotiations. Indeed, a new form of 'developmentalism' has been discovered. This has been expressed in forms where the importers insist on high-quality standards of Chinese imported goods.

Examining the reactive and proactive modes of adaptations from both orthodox and heterodox political economy points of view, it is clear that they could culminate into some expanded economic opportunities for the actors in the agricultural sector. This is so given the fact that they may be assured of quality products with reasonable pricing in respect of the agro-chemical products. In addition, some of the modes of adaptations have equally provided assurance of sustainability in fish supply the fisheries industries in those regards.

Summary

On grounds of the information gathered about the mode of adaptations exhibited out of interpretations attached to China's capital mobility and knowledge diffusion there are obvious grounds to contend that Ghanaians in the agricultural sector have given clear exhibition of rationality in the interactions with Chinese investors. The rational tendencies are coupled with traits of reasonability among actors in the agricultural sector. This has been spawned by the availability of knowledge about the promising and challenging character of the capital mobility and knowledge diffusion from China into Ghana's agricultural sector. These are explanations which appeal to the liberal

and neo-liberal political economy persuasion which regard rationality as the guiding force of any economic action.

All the same, even though these modes of adaptation which are fundamentally useful for productive efficiency, business growth and employment generation, there are some critical legal, social, cultural, educational issues which would have to be addressed to ensure that the gains the actors in the agricultural sector seem have made on the capital mobility and knowledge diffusion will be sustained.

These teething issues, expressed in poor attitudes, behavior and perceptions if not well addressed may derail the countries potential to make full gains in the face of capital mobility and knowledge diffusion from China. In this regard, it is thus obvious that the political institution will be the game changer because most of the efforts needed to address these teething challenges will require strong political decisions with specific emphasis on monitoring and maintaining high regulatory standards.

CHAPTER EIGHT

USEFULNESS OF CAPITAL MOBILITY AND KNOWLEDGE DIFFUSION TO THE ECONOMIC ACTIVITIES IN THE VARIOUS SUB-SECTORS OF AGRICULTURE

Introduction

This chapter will bring out those issues which appeal to the Afro-optimists and the Afro-pragmatists with a discussion on the processes with Chinese capital mobility and knowledge diffusion could be seen as useful to Ghana's agricultural sector. Discussions which follow subsequently bring to the fore the usefulness of Chinese capital mobility and knowledge diffusion.

Competitive Pricing and Reduced Cost of Production

The introduction of Chinese products has been useful to the agricultural sector in many regards. In some industries within the agricultural sector, the Chinese capital mobility and knowledge diffusion have essentially reduced the cost of production for farmers which has been largely as a result of competitive pricing. The first case in point can be found in the agro-chemical industry. From the interviews with actors in the agro-chemical industry, as established in chapter five, there was a clear indication that an agro-chemical production firm known as CHEMICO exhibited some amounts of laxity in the marketing of the agro-chemical products. Specifically put, the prices at which they sold the agro-chemical products were higher than they sold their products at the time of the interview.

This was largely as a result of the monopoly CHEMICO enjoyed prior to the introduction of agro-chemicals produced by Chinese agro-chemical

manufacturing subsidiary located in Ghana. The monopoly CHEMICO enjoyed fostered the absence of competition and innovation particularly in terms of pricing. An interviewee in the agro-chemical industry indicated the nature of the monopoly enjoyed by CHEMICO prior to the introduction of Chinese agro-chemicals. As an agro-chemical retailer expressed his observation to the monopoly-influenced laxity. He said:

They were just relaxed because they were getting big market. All the agro-chemical products they have been importing and selling to the government to distribute. So, they had a ready market (45-year-old male agro chemical retailer, Beraku, 4th September, 2017).

Furtherance to the interviews carried out, the competition reduced the cost of production. In other words, it was discovered that the competition which occasioned the introduction of the Chinese agro-chemical products compelled CHEMICO to significantly reduce the prices of its agro-chemical products. The retailer indicated that

Because of that CHEMICO had to reduce their prices to be equilibrium to China products so that they can also sell. Along the line CHEMICO saw their product was not moving all because of price rise so they have to come down (37-year female agro chemical, Kasoa, 17th November, 2017)

In terms of specific pricing the retailer indicated that the prices of the agrochemicals produced by CHEMICO reduced from GH¢45 to GH¢30

representing a 33.3 percent reduction. At the time of the interview both WYNCO and CHEMICO agro-chemicals were all sold at GH¢30.

This observation also supports the widely held points of view of the neo-liberals who argue that capital mobility within a highly liberalized global economic order promotes vibrant competition. The competition has had implications for financial mobilization capacities for the agricultural actors, particularly the farmers. Besides, the financial mobilization capacities are actually improved because the actors in the agricultural sector are able to save and therefore likely to use their savings for other economically productive purposes and expand their agricultural activities. By and large, the agricultural sector also stands to benefit since farmers will be able to increase the number of agro-chemicals they purchase for effective plant protections and optimum output. This discovery about reduced cost supports the view raised by Storper (1995), Isaksson (2001) and Levy (2013) that capital mobility promotes financial efficiency. This usefulness appeals to the Afro-optimists that Chinese capital mobility is progressive tool towards Africa's development.

However, it was found out that the price factor could not act as either the sole or direct precursor to the enhancement of competition and reduced cost of production for actors in the agricultural sector. This was found to be evident in the livestock subsector. In that subsector, prices of Chinese agricultural inputs, particularly livestock drugs were found to be cheaper than similar drugs from countries other than China. Yet, the level of purchasing behaviour for Chinese livestock drugs did not increase, as mentioned by the importer. As shown on Table 19, the evidence of the noticeable price

differences which existed between poultry drugs from China and Holland was established.

Table 19: Price Differentials of Chinese and Dutch Products

Product	Holland-made (GH¢)	Chinese-made (GH¢)
Oxytetracycline	18	13
Keproceryl	21	15
Iron	10	13

Author's own construction, 2017

The importer's response to verify the absence of the increased purchasing behaviour despite lower prices of Chinese livestock drugs is as follows. He said,

The price of product coming from Holland called limoxyn hasn't reduced even though the prices of similar ones imported from China are cheaper (Official, Ernejoyson, 17th November, 2017).

The response suggests that the lower prices of Chinese livestock drugs did not enhance any competitive edge for the Chinese products. This, as indicated in chapter six, is accounted for by the interpretations attached to Chinese products as inferior. This is indicated in the conceptual shows how interpretations may affect a country's ability to benefit from capital mobility from another country. In this case the interpretation about Chinese products being inferior has derailed the chances of making the gains which occasion Chinese capital mobility in the poultry industry.

Product Innovation

The exposure to the forms of Chinese capital mobility and knowledge diffusion has been found to be enhancing product innovation. With the experiences of the agro-chemical industry it can also be mentioned that Chinese capital mobility and knowledge diffusion has been useful to the agricultural sector because the knowledge diffusion from China has enabled some Ghanaian agro-chemical producers to improve upon their product quality. The agro-chemical producer hinted that he has been able to ascertain the knowledge from the Chinese agrochemicals and has combined it with his knowledge as a biochemist to produce an agro-chemical making reference to a herbicide.

To corroborate this reality an agro-chemical was asked about the quality of local agro-processing. By virtue of the retailer's technical expertise he confirmed that the local agro-chemical is even more potent than the WYNCA and CHEMICO agro-chemical products.

The influence of Chinese capital mobility and knowledge diffusion in promoting product innovation was also observed among the technicians in the agricultural equipment industry. For example, RST, the importer of the Chinese agricultural equipment indicated that

Because those people come to train us, we dismantle a new machine and fix it. The parts are there they (technicians) can put them together. Even last week, a mill got finished. You won't believe it but we fabricated one by ourselves. We will bring it down as knock down parts to the assembling base. Most of the time, some of the machines we

import do not fit our terrain. So, we have to do one or two things on them before we sell them out (RST official, 4th December, 2017)

Invariably, the training received by the technicians for assembling the parts of the agricultural equipment latently generates their capacity for a highly advanced activity (the fabrication of agricultural equipment) and make them fit for the Ghanaian ecological conditions. Apart from the recruited technicians the local artisans also exhibited the influence of Chinese knowledge diffusion on the production of some parts of the agricultural equipment. The local artisans indicated

oh, a lot of the parts, we try to fabricate them an example is the DRUM BLOWER (42 year old local artisan, Winneba, 17th August, 2017)

Judging from the responses given, it will be instructive to note the context within which the knowledge diffusion has enhanced product innovation. The facts found among all the participants whose responses led to discovery show one truth. Indeed, the knowledge obtained from the Chinese agro-chemicals and the agricultural machinery by the locals was used to supplement an already existing knowledge on the products the knowledge to improve upon. In the case of the agro-chemical industry, the local entrepreneur had knowledge about the production of agro-chemicals, as a bio-chemist. In the case of the local artisans they had been producing some metal ware prior to the inception of the Chinese machinery. This suggests that the usefulness of knowledge diffusion for product innovation requires some foundational knowledge from the recipients of the new knowledge.

The patterns of knowledge diffusion from China to Ghana in the agro-chemical industry corroborates the arguments by Bathelt et al.(2004) and Kang (2015) that regions involved in trade and other forms of production and distribution networks may also benefit from channels of international knowledge diffusion which complements and enriches locally produced knowledge. The narratives also show a clear case where knowledge is being adapted through a social process of product availability and product usage and this constitutes an appreciable opportunity for local content product development.

Augmenting Food Supply

It is apparent that the investments made by Chinese entrepreneurs in Ghana's agricultural sector provide basis for argument that the Chinese presence has augmented food supply in Ghana. Such a claim may be true, albeit circumstantial. Indeed, attempts to establish the evidential basis was difficult due to unavailability of data from the Ministry of Food and Agriculture whose data about domestic food production concentrated on staple foods alone without recourse to data on vegetable production which some Chinese agricultural firms produce.

However, some evidential basis for the above-mentioned assertion was found in the fisheries subsector; data gathered from the fish trawling sector provides a much vivid basis to lay claim to the fact that Chinese presence has augmented food production. Data gathered from the fish trawling industry have provided basis to contend that Chinese capital mobility and knowledge diffusion have augmented the fish supply stock in Ghana. From the interview,

it was discovered that the contribution of the fish trawling sector, which involves Chinese vessels, to Ghana's total fish production stock was 8 percent. That notwithstanding, it is worthy of note that the issues relating to fish supply and the contribution of China to the fisheries subsector are not merely limited to the fact that it contributes 8 percent to the total fish production stock of Ghana. It is also about the near indispensability of the contribution of the eight percent stock level from the fish trawling industry to the total fish stock produced in Ghana. The point is that without the Chinese presence in the fish trawling industry the quantity of fish it produced would not have been realized. Consequently, the fisheries sub sector would have seen a lower fish stock level than the current stock level. This is so in the light of the fact that the eight percent quantum of the total fish stock being produced in the Chinese-dominated fish trawl industry cannot be substituted by the activities of the other industries in the fisheries sector. An active member of the fish trawling industry expressed this that in his response as follows:

Well, we can say it's been useful for the Ghanaian economy no two ways about that. Where they trawl, their artisanal fleet cannot go there. And so, there is availability of fish for your table (47-year-old male member. Fish Trawlers Association of Ghana, 21st August, 2017)

This is because of the capital intensity and the depth of activities in the fish trawling industry which cannot be carried out by other industries in the fisheries sub-sector, particularly the artisanal industry. From the responses, it is apparent that the absolute figures which are represented by the 8-percentage

point indicated earlier are a function of the indispensable role of the fish trawling sector which is fully dominated by the use of Chinese vessels.

Therefore, there is an indication that the absence of the fish trawling industry could have caused some shortfalls in the fish production sector. It shows logically that the presence of Chinese vessels has augmented the fish production stock in Ghana. Following the analysis made from the data gathered it seems to suggest that capital mobility and knowledge diffusion from China into Ghana's agricultural sector has resulted in an increase in productive efficiency among in the fisheries sub-sector given the fact that a fish trawling activity largely involving the use of Chinese vessels has become an integral component of the fisheries subsector. These observations thereby rightly support the views earlier alluded to by such other researches as Isaksson, (2001) and Levy (2013) who argue that capital mobility produces positive economic outputs.

Employment creation

Just like many foreign direct investments the Chinese capital mobility generates employment for Ghanaians. In the fish trawling sector alone a total of at least 1,875 Ghanaian workers have been employed, upon an interview with the President of the Ghana Fish Trawlers Association. A narrative about the employment creation opportunities offered by the introduction of Chinese vessels are offered as follows.

they end up employing some people and they've been paying them (52-year-old male member. Fish Trawlers Association of Ghana, 21st August, 2017)

The narrative shows Chinese capital mobility in the fish trawling industry has increased agriculture's absorptive capacity in terms of employment. The narrative also shows that the gains accruing to the agricultural sector transcends employment. It also boosted the income generating opportunities for the locale engaged in the fish trawling industry.

Economic growth

There is gain saying that the Chinese presence in Ghana's agricultural sector has contributed to economic growth. The economic growth is composed of the product of the investments made in Ghana's agricultural sector by Chinese entrepreneurs. The fisheries sector produces quite significant revenue for the state. Following are tables which show the contribution of the sector to economic growth.

Table 20: Annual License Fees Collected for 2014 and 2015

Year	Amount (Gh¢)	Contribution to Total Receipts (%)
2014	1,136,063.00	27.21
2015	749, 946.00	24.4

Source: Fisheries Commission, 2016

Data obtained from the Fisheries Commission indicates that the state, through its neo-liberal policies in the fish trawling industry, has made some financial gains. Inferring from Table 20, the annual license fees for 2014 dropped by Gh¢ 386,117.00 in 2015. This drop represents close to a third of the 2014 amount. This drop was largely attributed to reduction in the number of fishing vessels from 120 as at 2014 to 80 as at 2015. Just like the amount of fees collected, the drop in the number of registered vessels as at 2015 represents a third of the number of registered vessels in 2014. The match in the drop of the

number of vessels and the amount of fees collected show a high level of administrative efficiency by the Fisheries Commission in ensuring strict processes towards the collection of vessel license fees.

Foreign exchange through exports

Table 21: Revenue Generated from Chinese Vessel Fish Export for 2015 and 2016

Year	Quantity Produced	Amount (US\$)	Contribution to GDP (%)
2015	53,100.30	309,790,723.90	0.8
2016	53,750.31	N/a	N/a

Source: Author's Construction, data sourced from Fisheries Commission, 2017

In 2015 alone the industry raked in US\$ 309,790,723.90 as export revenue. The fish trawling industry alone was, thus, contributing close to 1% to Ghana's GDP. This was happening at a time when the entire agricultural sector was contributing 19.7% to GDP (Ghana Statistical Service, 2015). This shows the potential in the fisheries subsector which Chinese capital mobility and knowledge diffusion has enabled the subsector to realize.

Improved Knowledge on Production and Processing of Agricultural Products

The responses from actors in the agricultural sector also depict the fact that capital mobility and knowledge diffusion improve knowledge on production and processing of agricultural products. Using a meat processor, he as an example recounted his experience with two inputs namely *packaging*

polythene and bone saw from which he gained an improved knowledge on how to produce and process his meat products. He said,

.... their equipment helps you to be productive. First of all, you know the use of the equipment before you go for it (52-year-old male meat processor, Potsin 15th August, 2017)

The response suggest that knowledge about the use products in actual fact precedes the quest to acquire a product. But what lacked was knowledge about the right specifications of the polythene he needed to package his meat products. His interactions with the Chinese enabled him to know that the polythene used to package meat products should be 2mm thick. The meat producers made reference to the knowledge he gathered from his engagement with Chinese producers of the packaging polythene in the following words:

... we imported some of their polythene sheets.....so to be able to know what I needed, I got the knowledge from China and applied it in Ghana otherwise I don't even know who to talk to know the gauge of polythene I need (52 year old male meat processor, Potsin, 15th Agust, 2017)

To buttress the claim about how capital mobility and knowledge diffusion could improve their productive efficiency. The research participant narrates his engagement with the Chinese producers of bone saw in this way.

I got the knowledge in China. Every item for example even selecting the BONE SAW, they could tell us no no don't go for this one, this one it heats too quickly. So if you go for this one, this one is almost like domestic so if you go for this one, it takes longer time for it to heat so don't waste

too much time waiting for the equipment to cool. The other day they tell you no no choose this knife they use it for this (43-year-old male meat processor, Odwira, 17th August, 2017)

Much as the Chinese may use this as a marketing strategy it is an opportunity of improving locally manufactured products based on the information gathered.

The improved knowledge on production and processing of agricultural products does not emerge in a vacuum. One of the circumstances which have fostered the improved knowledge of production has been the political decisions to increase degree of trade liberalization in Ghana which fundamentally curtails market restrictions leading to the influx of foreign goods. In addition, interview with the President of the meat processors showed that the improved knowledge has been facilitated by advancement in technology with particular regards to information highway facilities which find expression on various social media platforms. Through these facilities the acquisition of improved knowledge on agricultural production and processing inputs from China into Ghana's agricultural sector has been realized.

The role of technological advancement is evidenced by the response of the meat processor who mentioned that the improved knowledge he had acquired was through the use of mobile phone technology which has indeed revolutionized international communications in recent times. One of the changing circumstances is the technological changes evident in the introduction of social media platforms upon which information is shared;

another facilitator to the improved knowledge for actors in the agricultural sector.

These observations about the political economy contexts and the dynamics of technological changes occasioning knowledge diffusion corroborates the assertion of Purwaningrum et al (2009) that changes in economic situations as well as political and social structures may aid the acquisition of new knowledge. Even though they mentioned ecological circumstances as those circumstances which may enhance improved knowledge nothing of such sort was observed in the study.

In addition, the observations about the process of knowledge diffusion and its adaptation thereof also corroborates Long's (2001) argument that the process of adapting knowledge, as a social process, is transforming and individuals or groups may alter and adapt their knowledge in response of the changing intentions, opportunities and circumstances which, in the case of this study, are found in changing economic policies and technology.

These findings also corroborate Shaijumon's (2014) argument that diffused knowledge reduced information inequality. Even though Shaijumon (2014) saw the reduced inequality occurring among farmers, this study saw the reduced knowledge inequality as occurring among producers of agro-chemical products and, to an extent, producers of agricultural metal ware. The findings also corroborate the argument by Cohen and Levinthal (1990); Ascani, Cresenzi and Iammarino (2012) that diffused knowledge, in the case of meat processing industry, could be expressed in improved product quality leading high meat products.

The usefulness of knowledge in promoting improved production and processing substantiates Hayek's (1945) neo-liberal conclusion that the utilization of knowledge could generate ideas, inform decisions among actors in any economic order and construct a rational economic order. In this regard, the findings validate the arguments of Rodríguez-Pose and Crescenzi (2008) and Shaijumon, (2014) that knowledge-intensive activities become fundamental for efficiency and economic performance. These emerge from the distinctive patterns of geographical distribution of commodities and ideas from China to Ghana and contributing to generate localised sources of competitive advantage for the sub sectors and industries in the agricultural sector.

Integration of Ghana's Agricultural Products into the Global Fish Value Chain System

The global value chain system is, in essence, characterized by movement of goods from one geographical area to another geographical area either for direct consumption or processing. An integration of an industry into the global value chain system creates enormous opportunities for foreign exchange earnings. In the face of the Chinese presence in Ghana's industrial fishing industry, these opportunities have been realized. By getting integrated into the global fish value chain system the industrial fishing industry becomes an integral part of the production base from which fish is supplied into the global economy either to the industrial fish processors or to distributors and finally to the end users in its raw state for domestic processing and consumption.

According to the Ghana Export Promotion Authority (2010) Ghana's fish exports comprise frozen fish, tuna, dried or smoked fish and cuttlefish, and they are usually exported to European Union countries. The largest tuna resources in Ghana is the Yellowfin. The three sectors in the fishing industry of Ghana namely the artisanal (small scale units), the semi industrial and the industrial are all involved in the production of the exported fish. However, the exports of fish from Chinese vessels alone look economically functional as indicated on Table 22.

Table 22: Revenue Generated from Chinese Vessel Fish Export for 2015 and 2016

Year	Quantity Produced	Amount (US\$)
2015	53,100.30	309,790,723.90
2016	53,750.31	N/A

Source: Fisheries Commission, 2017

It is thus clear that Chinese capital mobility has contributed to fish exports from Ghana, hence its contribution to Ghana's integration into the value chain system in the fishing industries cannot be underestimated given the fact that some of the exported fish is from the industrial sector its contribution to the fish production stock solely involving Chinese vessels.

Improvements in Business Attitudes

Studies about the relationship between attitudes and business growth abound. In the studies carried out by Weber (1971), McClelland (1961) Behrendt (1968) and Aryeetey (2005), a positive nexus between the right business attitudes and business growth exists. Despite the general consensus the writers provide different sets of attitudes that are characteristically crucial

for business growth. They argue that business orientations do not just act as the ‘spirit’ for business growth but, by extension, for economic development at the national level, especially in times when a considerable number of entrepreneurs are seen to be in possession of and exhibiting such business orientations.

The attitudes of hard work, savings, investment, and the avoidance of leisure and pleasure (Weber, 1971) high need achievement (McClelland, 1961) commitment and rationality (Behrendt, 1968) self-reliance, risk taking and initiative (Ministry of Employment and Social Welfare cited in Graphic Business, November, 10th to 16th, 2009) as well as transparency and honesty (Aryeetey, 2005) have been emphasized over the years largely based on Ghana’s interactions with European countries. It is within these contexts that the exposure and adoption of business orientations from China will be presented and understood. On the score of the attitudes aforementioned, it became necessary to interrogate during the interviews, whether or not new business attitudes have been formed by the actors in the agricultural sector from the Chinese capital mobility and knowledge diffusion.

In the course of the interviews, one of the research participants offered rich information about how the Chinese presence in Ghana’s agricultural sector has influenced his business value orientations. One of the research participants shared the adopted business orientation from China. He maintained that:

dealing with the Chinese you get a more practical way of understanding and dealing with new situations. You get a better understanding of sustainability in business. You get a

*better understanding of growing together in business (52
year old male meat processor, Potsin, 15th August, 2017)*

An animal drug importer indicated that

*The Chinese stick to the agreement they have with you.
When you tell them that you want this drug specifications,
they go by it...and I have learnt much from that Official,
Ernejoyson, 17th November, 2017).*

The responses from the research participants show that his exposure to the Chinese capital mobility and knowledge diffusion has enabled him to adopt the attitude of adaptability to changing conditions in the global business environment. His exposure to the Chinese has also enabled him develop the spirit of cooperation with other actors with whom his industry could be networked.

Finally, his responses signify that he has developed a spirit of pragmatism where he could view events more realistically than abstractly. In effect the existing patterns of trade between actors in the Ghana's agricultural sector and China firms are fostering the adaptation of new forms of attitudes essential for business growth by actors in Ghana's agricultural sector.

Summary on the usefulness of capital mobility and knowledge diffusion to the economic activities in the various sub-sectors of agriculture

Indeed, within the Ghanaian economic context, the evidence available suggests that capital mobility and knowledge diffusion from China into Ghana's agricultural sector have generated enormous capacity to generate employment and enhance the acquisition of improved knowledge. From the

data gathered it is apparent that capital mobility and knowledge diffusion from China into Ghana's agricultural sector have been useful not only have they enhanced economic growth, investment, specialization and production services, but it has also promoted financial efficiency just as it has increased productive efficiency and growth as mentioned by neo-liberalists like Storper (1995); Isaksson (2001); Levy (2013). In addition, the Chinese capital mobility and knowledge diffusion also nurtures attitudinal diffusion which are essential for business growth and economic development.

It is equally fundamental for political economy analysis that these benefits have been accrued within the contexts of changing political, economic and technological circumstances which have expanded the opportunities for the actors in the agricultural sector to improve their modes and frequencies of interaction with Chinese business actors ultimately culminating into enhanced productive efficiency and improved knowledge.

CHAPTER NINE

CAPITAL MOBILITY AND KNOWLEDGE DIFFUSION FROM CHINA AS A THREAT TO GHANA'S FOOD PRODUCTION SECTOR

Introduction

The context within which the threats which could be associated with Chinese capital mobility and knowledge diffusion would be interrogated equally stems from the arguments of Hanusch, Maußner, and Rahmeyer (2009) establish that knowledge diffusion might have effect in territorial spaces. Even though they did not specify the actual effects and the institutional areas where these effects could occur, Philip's (2015) provides elaborate picture on how the effects of knowledge diffusion and *[capital mobility]* would occur in a manner which could produce development or underdevelopment within specific regions of the modern world [*see Walker, 1978*]. In a unidirectional manner, the Afro-pessimists (Bond & Garcia, 2015; Lumumba-Kasongo, 2011; Mpahlwa 2008) including the European Union and the United States of America express concerns about Africa's vulnerability to the machinations of Chinese investors describing African countries as the creators of the avenues for exploitation thereby describing China as "The New Colonialists". This developmental orientation makes the need to interrogate the threats even further. It is on these scores that this chapter of the study seeks to look at the Afro-pessimists view. This chapter brings out some of the threats of underdevelopment that have arisen as outcomes of capital mobility and knowledge diffusion from China into Ghana's agricultural sector. Some of the threats, as discovered during interviews, are discussed as follow

Threats of Increased Cost of Production due to Poor quality goods

One of the observable threats associated with capital mobility from China into Ghana's agricultural sector is the relatively poor-quality products rolled out by Chinese firms. This was clearly evidenced by the responses by actors in the agro-chemical industry.

WYNCA agro-chemicals are produced in Ghana but the quality is not as high as the CHEMICO products (45 year male agro chemical retailer, Beraku, 4th August, 2017)

To prove his claims about the poor nature of the agro-chemical products the participant indicated that

what we have realized now is that the duration which we know that when you buy this and you apply it lasts for about three months or four months, this time it is not so. Yes it is not so. Normally when you buy the quality ones, the price is expensive but it lasts long before the weeds will start coming again but this time because they spoil the thing immediately you buy after one and half months... you see that the weeds have started growing again but first it will last for three months, the quality ones (45 year old male agro chemical retailer, Beraku, 4th August, 2017)

From the responses, the poor quality of the agro-chemical is expressed in the reduced longevity of efficacy of the products. To a retailer, his efforts to persuade farmers to change the type of agro-chemical being used were unsuccessful. He remarked that:

I have to convince some farmers to use it and some too on trial basis. It was challenging. So on every plot for them to come and observe and from there they see the difference so they started (45 year male agro chemical retailer, Beraku, 4th August, 2017)

With the benefit of hindsight, this smacks of conservatism among the farmers in terms of taste and a lack of willingness to adapt to new products as well as the absence of rationality in the choices they make in their purchasing behaviour of agro-chemicals but from the statement of the retailer, it is a function of lack of knowledge about the declining quality of the Chinese agro-chemical products

Similar responses about the poor quality of Chinese products found in the agricultural sector were given by users of the Chinese agricultural machinery. Monitoring activities carried out by the Agricultural Engineering Services Directorate brought the truth that Chinese agricultural machinery was of poorer quality compared to machinery from other countries. Evidence of the poor quality was presented in the words of the official as he sums up the grievance of the farmers.

Through monitoring services with the foton combined harvesters some farmers say that the machines breakdown quickly (Official, AESD, 3rd November, 2017)

As a consequence, farmers are likely to experience a high cost of production since, as the responses from the agro-chemical retailer mentioned, some of the farmers who use agro-chemicals were still patronizing some of the agro-processing products from China.

In this regard the increase in the cost of production is likely to happen since they were compelled to use close to a double of the quantities of Chinese agro-chemical for a same period for a similar agro-chemical product from South Africa. Declines in profits become the outcome Africa (Alden, 2013). This is therefore likely to jeopardize the financial efficiency born out of the competition which occasioned the introduction of Chinese agro-chemicals into the Ghanaian agricultural sector thereby contradicting the arguments of Isaksson (2001) and Levy (2013) that capital mobility produces financial efficiency.

Threats of Increased Cost of Production through Expensive and Unavailable Spare Parts

Another economic threat with Chinese capital mobility is expressed in increased cost of production but, in this instance, through expensive yet unavailable parts. This claim is founded on encountered views expressed by farmers in the food crop production subsector. A participant, during a focus group discussion, said this

Spare parts are difficult to come by because they are usually in fewer quantities. They are also expensive because the prices of the spare parts are not subsidized unlike the composite machinery in its original state (65-year-old male commercial farmer, Afram Plains, 4th April, 2018)

This was corroborated by the importer of agricultural machinery, using the drum blower as reference point, she mentioned that

This one for instance is 300 Ghana (RST Official)

In lieu of the high cost of the spare parts farmers had become unwilling to buy the Chinese made spare parts. As the importer intimated,

But depending on the usage at least you will use it for a longer time before it wears out but most of the people are reluctant to buy (62-year-old male commercial farmer, Agogo, 4th April, 2018,)

Incidentally, the options available for the farmers, as provided by local artisans, are less efficacious and that makes the cost of repairs much higher in the long run. An exhibition of the options used by the farmers was found among farmers in the northern part of Ghana. This was initially mentioned by the RST official, corroborated by the northern farmers, in these words,

even back north in Tamale, there is a local manufacturer. People buy his at 50 Ghana cedis instead of buying this for 300 Ghana cedis and in a day they can change the parts thrice or 4times. So when you buy this which lasts for more than a month (RST Official, 4th December, 2017)

Eventually, as mentioned by them, the farmers recline to the purchase of Chinese made spare parts, because they found the option of using the locally manufactured parts as irrational. However, the use of the Chinese spare parts was not essentially rational either. It was because they had no suitable option.

Given these economic constraints endured by farmers it raises issues whether or not the state should extend the scope of subsidy to cover the spare parts. Much as it may not be a dreadful option, it may be a short term one. In

the long term, however, the expensive nature of the spare parts may serve as an opportunity for Ghana to develop its technology in the production of spare parts at a reduced cost to promote operational efficiency for farmers.

Repatriation of Profit

Repatriation of profit occurs when capital surplus or profits appropriated from the operations of a foreign direct investor are, as guaranteed by law, expropriated from the country where the investments are made (i.e the host country) to the country from where the investment originated (i.e the home country) (Aarsnes & Pöyry, 2006). The bane with repatriation of profit, as many structural political economists would argue, is the apparent economic inequality it generates among nations (Aarsnes & Pöyry, 2006; Amin, 1976; Frank 1971).

In the fish trawling sector such enormous threats relative to repatriation of profit exist. The actors mentioned that the capital mobility from China into the fish trawling sector has constituted grounds for repatriation of profit. An official of the fish trawling industry, on his part, intimated that,

The basic challenge people have with it is the fact that the bulk of money go to China and they over fish our resources (45 year old male member, Ghana Fish Trawlers Association, Ghana, 21st August, 2017)

Interrogating the issue of repatriation of profit further shows that it is not a mere function of the economic interest of Chinese owners of the vessels. From an institutionalist political economy point of view, as Rodrick (2007) would suggest, repatriation of profit is also a function of the absence of a clear legal

regime of Ghana which could plainly stipulate the actual percentage of the profit to be repatriated to China. In 2015 alone, Chinese vessel owners raised \$309, 790,723.90, yet the laws allow foreign firms to expropriate their capital surplus from Ghana. The magnitude of the profit repatriation associated with Chinese capital mobility in the fish trawling industry alone does not only show the extent of economic losses. It also clearly represents a case of political inertia as far as the legal and contractual responses of the economic vagaries of Chinese capital mobility are concerned (Bonizzi, 2013; North, 2005). In 2017, the public expenditure on fisheries as allocated to Ministry of Fisheries and Aquaculture only amounted to GH¢62 million yet a \$320 million investment reaped \$309, 790,723.90 in a year. By implication there is a clear case of lack of preparedness by the state in investing in the fish trawling sector. Eventually, the Chinese dominance would persist, and the repatriation of profit would remain unchanged.

Hegemonic Power and Economic Relations

Apart from the phenomenon of profit repatriation, there was a clear exhibition of hegemonic power relations between the Chinese vessel owners and the Ghanaian owners of the private fish trawling company. In the fish trawling sector, ownership of a trawling company is, by law, solely Ghanaian. However, the reality on the ground is that owing to lack of the ability on the part of Ghanaians to raise the need capital of averagely \$4 million to own a vessel they acquire the license to engage in trawling and partner Chinese who can have the financial wherewithal to acquire the vessel and they operate together. In this regard, the trawling sector is about 100 percent Chinese-

controlled in terms of vessel ownership. However, in the legal statutes, a Ghanaian can, in due course, own a fishing vessel but that is only after 10-15 years depending on the agreement.

As an effect of have a Chinese-controlled industrial fish trawling industry, the Ghanaian partners in the fish trawling industry complained that there were instances where decision making was limited to top management positions most of whom were Chinese exhibiting the Gramscian form of political hegemony. Many of the Ghanaians were found to be occupying lower human resource portfolios in the fish trawling industry. Hence, as was clearly expressed by an official of Ghana's fish trawling industry,

Ghanaians have very little control in how decisions are made and how monies are managed but even with that there are a number of companies who have control (62-year-old male member, Ghana Fish Trawlers Association, Ghana, 21st August, 2017)

Besides these hegemonic power relations skewed to benefit the Chinese, there are traces of hegemonic economic relations.

from the Ghanaian counterparts; that's those who go into the hire purchase agreement, sometimes they are cheated and you know the Chinese are not straight forward with them. Well, that's what they say. Yeah that is what they say that er... sometimes the Chinese try to cheat them and they are not privy to all information pertaining to the vessel"
(57-year-old male member, Ghana Fish Trawlers Association, Ghana, 21st August, 2017)

According to the official at the Marine Management Unit of the Fisheries Commission, the claims of cheating from the Ghanaian counterparts of the vessel pertain to the catch they land, the catches they export and the revenue they generate from the export. Judging from the responses the hegemonic economic relations could be seen to be hinged on issues bordering on lack of transparency and absence of honesty. Such acts of alienation, in Marxian terms, serve as bedrock for exploitation in terms of which the investment in the industrial fish trawling industry will dialectically reduce “room for maneuver” and decrease “upward mobility” for developing regions (Li, 2016) such as Ghana.

It also turns out from the responses that Ghanaians are losing out of information because they do not occupy top positions. Hence, in a broader perspective, there are political economy issues here. The responses demonstrate that the hegemonic economic relationship between the Chinese vessel owners and their Ghanaian counterparts is a function of the hegemonic power relations between the same parties which is consistent with the arguments that the building block of the hegemonic process is found on the level of the individual corporations (Mintz & Schwartz, 1986) reflecting the uneven distribution of global power (Agnew, 2010).

Another trace of exploitation was found in the agreement Chinese vessel owners enter into with Ghanaian entrepreneurs. By virtue of the agreement and the financial strength of the Ghanaians entrepreneurs, they could be able to pay off for the vessel. However, they were mostly unable to make adequate economic returns from the use of the vessels given the obsolete nature of the vessel after it had been used for the 10 years maximum period.

Indeed, at the time when the vessel would be acquired, they would have been worn out. Looking at the nature of the agreement in terms of periodicity, the Ghanaian entrepreneurs said that by the time they assumed ownership of the vessels they found them expensive to maintain in terms of repair and fuelling. These findings on the threats which occasion the Chinese presence in Ghana's agricultural sector support the arguments of the neo-Marxists who regard capital mobility as a phenomenon which may run down the economies of countries which Palley (2009) describes as a "race to the bottom" (p.11). A theoretical explanation to what the economic threats which corroborates Palley's (2009) submission was offered by other neo-Marxists namely Frank (1971) and Amin (1976) and whose submissions suggest that repatriation of profit is a function of political leaders' indecision to develop a regulatory regime which could influence the patterns with which profits are sent back to China from Ghana.

Summary on the threats of capital mobility and knowledge diffusion to the economic activities in the various sub-sectors of agriculture

In sum, it cannot be gainsaid that the threats associated with the Chinese capital mobility and knowledge diffusion have been expressed and appeared in forms of threats of increased cost of production due to poor quality goods, threats of increased cost of production through expensive and unavailable spare parts, capital flight and hegemonic power and economic relations. Given these threats the call to search for the net aggregate factor as mentioned by Robert Merton could be considered.

However, looking for the net aggregate factor may not be easily ascertained in quantifiable terms because some of the aftermaths can only be measured in qualitatively. Therefore, for the sake of policy and strategies to be developed in response to Chinese growing presence into Ghana's agricultural sector, the responsibility of the state may be to alter the context within which the threats occur and solidify the contexts within which the usefulness occurs.

CHAPTER TEN

IMPLICATIONS OF CAPITAL MOBILITY AND KNOWLEDGE DIFFUSION FROM CHINA FOR THE POLITICS OF FOOD SECTOR DEVELOPMENT STRATEGIES IN GHANA

Introduction

One fundamental sociological reality is that the simultaneous operations of capital mobility and knowledge diffusion, just like all other social phenomena, are not ends in themselves. Indeed, their operations significantly impacts not only on the development process of the host countries but also the political processes, decisions, discussions and maneuverings among state actors, industry players and other players in the state arena. In no uncertain terms the simultaneous operations of capital mobility and knowledge diffusion also calls for some political responses from the host country in a manner which positions it to appropriate and consolidate the gains that occasion the processes of capital mobility and knowledge diffusion from other countries.

The relevance of capital mobility and knowledge diffusion for politics is intellectually contextualized as rightly expressed by Scoones et al (2016). They argue that the analysis of capital mobility and knowledge diffusion must look at the “dynamic and uncontested politics of engagement as new forms of capital and technology enter the African context” (p.1). Further, the quest to interrogate these indissoluble links between politics and capital mobility knowledge diffusion from China to Ghana’s agriculture sector is motivated by other existing contestations in the literature apart from Scoones et al’s. As

argued by Shaijumon, (2014) translation of the knowledge into visible outcomes in terms of productivity depends on how properly the knowledge is diffused to the recipient or, in this case, the host country. In actual fact, the current understanding and best practices in scientific knowledge diffusion, according to Assefa et al, (2014) and Adekunle et. al (2012) demands political methods like multi-stakeholder and a multi-disciplinary approach in an integrated framework coupled with a more dynamic, participatory and collaborative systems in so far as they engage the end-user in the process. These intellectual contexts provide bases to interrogate the inextricable links between politics on the one side and capital mobility knowledge diffusion from China to Ghana's agriculture sector on the other side.

Within international political economy contexts, the political orientation of China's capital mobility and knowledge diffusion agenda to engage African countries, including Ghana, was clearly established. This is expressed in the new political economy forms of development cooperation known as 'state developmentalism'. In presenting the political narratives of China's development cooperation, Scoones et al. (2016) argue that the imaginaries of particular places and contests over development solutions are associated with the introduction of technologies which are exported as part of the development encounter which produces intense domestic politics. By interpretation China's capital mobility and knowledge diffusion would have implications for Ghana's domestic politics in the arena of food sector development where development strategies such as 'planting for food and jobs', 'premix fuel subsidization', food production credit schemes from the Micro Finance and Small Loans Centre (MASLOC) and Venture Capital Trust

Fund could be found. It is important to situate the implications of the Chinese capital mobility and knowledge diffusion within the food sector development strategies because their implementation is not and will not be devoid of the usage of Chinese agricultural input.

Against these intellectual and political economy (both international and domestic) contexts upon which the implications of Chinese capital mobility and knowledge diffusion for Ghana's law and politics for the food sector will be interrogated, the following questions may then require attention in this chapter.

They include, (a) how are the domestic politics in the food production arena contested and organized in the wake of Chinese capital mobility and knowledge Ghana's agricultural sector? (b) what have been the notable institutional responses to consolidate gains associated with the Chinese engagement in Ghana's agricultural sector? And (c) what traces of political inertia are observable in the wake in Chinese engagement in Ghana's agricultural sector?

Domestic Politics in Ghana's Agricultural Sector within the context of Capital Mobility and Knowledge Diffusion from China

Domestic politics is conceptualized as the political processes, engagements decisions and political actions, and inactions, organized and exhibited by internal political actors as means of responding to or initiating a social, economic or legal activity.

Domestic Politics in the Fish Trawling Industry

Using the fish trawling industry as a case in point, it can be established that the politics of engagement between the industry players and state institutions in the wake of Chinese investment in the fish trawling industry has been organized through cooperation. As indicated by the official of the Marine Management Unit of the Fisheries Commission of Ghana mentioned

I think the relationship between the Fisheries Commission and the Fish Trawlers association is cordial, we have the policy makers come out with the policy which is also guided by input from us (Official, Fisheries Commission, 6th November, 2017).

The Commission and the industry players in the fish trawling industry have regular consultative meetings, on a quarterly basis so meetings are held in Tema regularly because about 98 percent of the vessels are in Tema, and just some few of them in the Takoradi Port. The main issues raised include issues of license fees, issues of how they treat sea ferries and crew as well as issues of best practices in terms of the engagement and the prevention of juveniles in fishing activities. In some instances, training programmes are provided for the industry players on sanitation requirements and the maintenance of proper sanitary conditions on board vessels and fish handling.

Furthermore, findings of previous studies on a perspective on development cooperation and investment has been portrayed as a series of negotiated knowledge encounters between external investors and experts, local bureaucrats, technicians and agricultural actors upon which different worldviews and visions are shared (Fetcher, 2012; Lewis & Mosse, 2006).

Such knowledge encounters, as suggested by Long (2001) and Scoones et al. (2016) have connotations and implications for technology moldings, management practices and agronomic routines. In Ghana, the negotiated encounter has been occurring between agricultural actors and political actors. This negotiated encounter is typified in the configurations of political engagement by industry players with political actors. In the fisheries sector, for example, the Chairman of the Fish Trawlers' Association has indicated that some attempts have been made to meet state officials for negotiated knowledge encounters

I have written the letter, so that they go to parliament, so that we go and discuss with them, explain what is happening in the industry to them. We need people to understand where we are, where we have come from, and what we need to do collectively to go forward (47 year old male member, Fish Trawlers Association of Ghana, 21st Augyst, 2017).

From the responses, it can be argued that the meanings and implications for technology moldings, management practices and agronomic routines based on these negotiated knowledge encounters as mentioned by Scoones et al. (2016) and Long (2001) have been clearly expressed in the fish trawling industry. Consequently, the acquired knowledge would help shape policy and law within the sphere of political reorganization. Under circumstances where current political arrangements could be anticipated as unfavourable to the industry players in the agricultural sector they planned to reconfigure their political engagement. By this the industry players start engaging the Chinese. As indicated by the official from the trawling industry

very soon I would arrange a meeting with the Chinese who are in the industry; the section of the Chinese embassy responsible for fisheries, to discuss some of these things (47 year old male member, Fish Trawlers Association of Ghana, 21st August, 2017).

However, using the fish trawling industry as an example again, the political processes on how to improve that industry could be seen as characterized by an emphasis on the non-economic functions of the Fisheries Commission. Practically, the state's effort, through the Ministry of Fisheries and Aquaculture and the Fisheries Commission, towards an efficient fisheries sector has been characterized by the enforcement of fisheries law. The responses by the industry players about the realities in the fish trawling industry substantiate this claim. The responses indicate that there are a lot of challenges in the fisheries sector that have not been addressed which include the lack of start-up capital and lack of personnel. The response from an operator in the trawling industry reads as follows

Where we have shifted our focus on is enforcement and now people are fishing illegally, people are creating problems and it is let's enforce the laws, let's bring in financial punitive measures against them but nobody is financially and technically helping develop the industry (52 year old male member, Fish Trawlers Association of Ghana, 21st August, 2017).

The over concentration on law promulgations and enforcement was spawned by a lack of appreciation of the dynamics of the fish trawling industry, by

members of the legislative arm of government, as an industry which could contribute to economic growth not only through law enforcement. This was rightly indicated by an actor in the fish trawling industry. He indicates that,

Some of us [the legislative arm of government] are concerned about the sizes that are landed as by catch. But you see... fisheries management is not just about sitting in an office or a ministry and saying I am going for a workshop here, I am doing a program here and you say you are managing...and then you put in a policeman and say I'm enforcing laws. Fisheries management is not law enforcement (47-year-old male member, Fish Trawlers Association of Ghana, 21st August, 2017).

In addition to the above-mentioned political process it can also be observed that the politics of knowledge diffusion in the fisheries sector has been contested on conflict and some other traces which smack of a lack of cooperation between industry players and political actors. This was also rightly indicated by a Ghanaian fish trawler in the fish trawling industry. To him,

“there is a select committee responsible for fisheries, you go there and make decisions. But they have never involved themselves with the industry so what decisions are they making? (45-year-old male member, Fish Trawlers Association of Ghana, 21st August, 2017).

Ghana's domestic politics of conflict which has occasioned the intricacies of Chinese capital mobility has been contested on wrong impressions about the

industry by political actors. One of the wrong impressions which were highlighted by an actor in the fish trawling industry has to do with the skewed view that fish trawling depletes fish stock without the impression that fish trawling is also an investment. In the first place, as a research participant noted,

the issue has to do with the fact that everybody thinks that they are over fishing our stock and they are too many of their vessels and trawlers in our system but generally it is an investment in the sector and what we need to do is to regulate the investment and the activities of the investors (47-year-old male member, Fish Trawlers Association of Ghana, 21st August, 2017).

Upon further interrogations it was discovered that the wrong impressions have been influenced by the fact that the political actors are not industry players thus lack an experiential understanding of the dynamics of the fish trawling industry. This fundamentally renders the political actors ill-informed about goings-on of the fish industry and, in essence, reducing the sense of empathy attached to political decisions related to the fish trawling industry. As one of the research participant hinted:

They call it management meeting and they meet. Most of the people who meet and make management decisions don't own vessels, they've never own vessels, they don't go fishing, they've never been fishing, they don't know what really happen but they make the management decisions for people who are in the industry (47-year-old

male member, Fish Trawlers Association of Ghana, 21st August, 2017).

These practices imply political exclusion amidst a lack of knowledge about the industry. Consequently, the practice virtually introduces a paradox in the decision-making process as far as the fish trawling industry is concerned characteristically presented in a form where the ill-informed takes the decision for the knowledgeable ones who are excluded in the decision-making process. Hence, taking the fisheries subsector in particular, into consideration, the act of political exclusion creates grounds for wrong decisions by political actors. The concomitant effect of the political exclusion is the creation of gaps in policy and law formulation.

The patterns of domestic political contestations between the political actors and the industry players in their responses to Chinese capital mobility and knowledge diffusion in the fisheries subsector puts Ghana in an unfavourable position in terms of benefiting from the new forms of capital and technology and human resource. This is because the orientations, practices and actions of political actors which dispose the industry players to adapt favourably to the Chinese capital mobility and knowledge diffusion have served as precursors to an unusual pattern of development cooperation which does not involve the state. This is a type of development cooperation which is an aberration of its ideal forms manifested on the global scene.

Domestic Politics in the Agricultural Equipment Industry

Domestic politics in the agricultural equipment industry as found in the crop sub sector is characterized by coordinated linkages between the importers

of the Chinese agricultural equipment, the AESD, and the commercial farmers. The importation and distribution of Chinese agricultural machinery has operated under two models. The first is the Government of Ghana (GoG)-supported model and the second being the private-importer distribution model. Under the GoG model, there is a bilateral arrangement between Ghana and China where Chinese machinery are imported by the Ministry of Food and Agriculture on behalf of the GoG and then distributed to farmers to buy on hire purchase basis. The private-importer model aptly contains the patterns with which the coordinated linkages play out as shown on Figure 6.

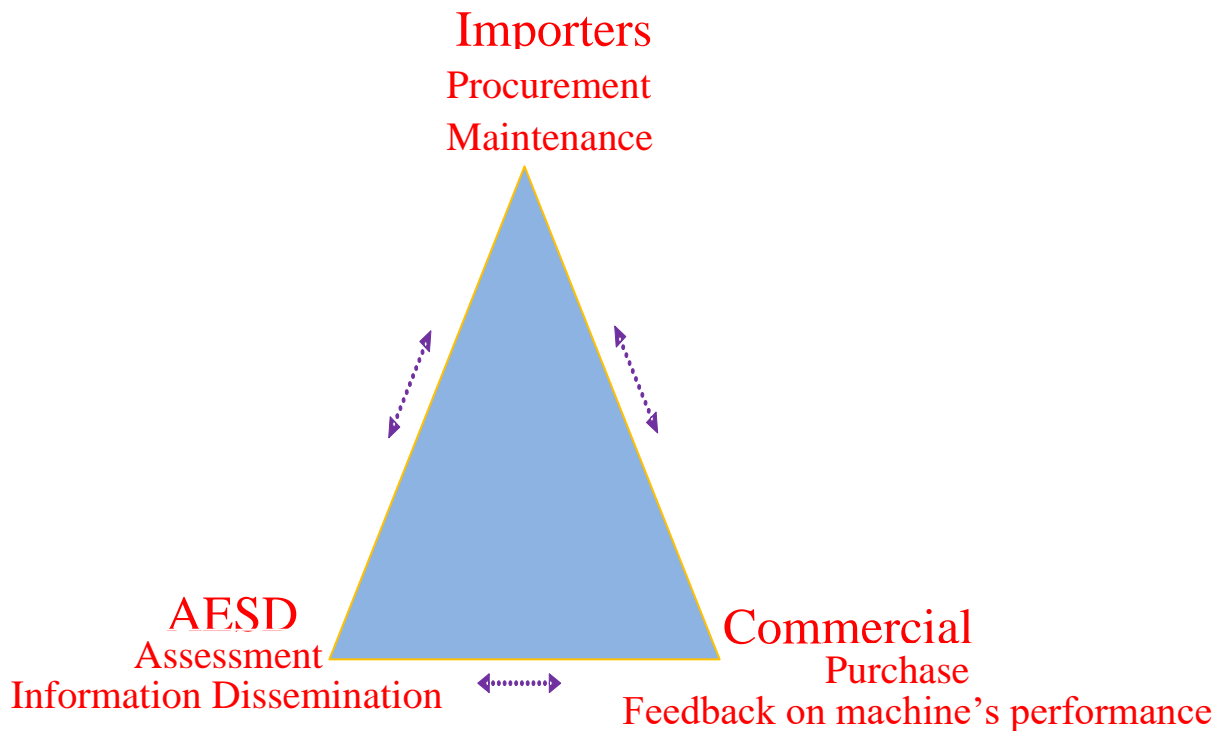


Figure 6: Coordinated Linkages in the Agricultural Equipment Industry

Under the private-importer distribution model a private distributor imports the Chinese machinery. Notable private distributors include Motorking Company Limited and RST Company Limited. Under this model, the AESD's responsibility is to conduct tests and inspections to ascertain the

suitability of the Chinese agricultural machinery for Ghana's topography and a soil structure. When the machines are found to be suitable, they are recommended to farmers to purchase. Practically, AESD provides the contact numbers of the importers which distributes the Chinese agricultural machinery which have been found suitable to farmers to use on their farms. In this regard the AESD serves as a medium through which the Chinese imported agricultural machinery are popularized. The role of AESD reflects the essence of state-directed developmentalism; that political economy trajectory which requires the state to provide technical support for private actors.

With the present nature of domestic politics of engagement in Ghana within the context of Chinese CMKD which may potentially facilitate or derail Ghana's opportunity to consolidate the associated benefits there is the need to interrogate the institutional responses and their implications thereof. The details of the institutional responses are discussed as follow.

Institutional Responses to Capital Mobility and Knowledge Diffusion from China into Ghana's Agricultural Sector

Interrogating the institutional responses to Chinese capital mobility and knowledge diffusion into Ghana's agricultural sector has become imperative in the light of the crucial role the state is expected to play in modern forms of "development cooperation". This form of development cooperation introduces a hybrid-actor trajectory involving the state and businesses where the state plays two crucial functions. The first is the provision of funding support. Secondly, the state offers guidance to business (Gu et al., 2016; Lee, 2014).

Xu et al. (2016) aptly elucidate the practical relevance of such ‘state-directed developmentalism’ to capital mobility and knowledge diffusion in Ghana’s agricultural sector. They argue that the hybrid-actor relationship between the state and business unravels the paths on which finance, expertise and technology could be organized for agricultural development. Invariably, the state cannot be extricated from current efforts towards agricultural development within the contexts of increased forms of globalization. It is in this light that the state’s responses to China’s capital mobility and knowledge diffusion from China into Ghana’s agricultural sector would be analysed starting from the fish trawling industry.

Institutional Responses to Chinese Presence in the Fish Trawling Industry

In the wake of the dominant presence of Chinese in the fish trawling industry and the emerging issues thus far, numerous laws have been enacted to regulate and govern the fisheries sector, and the fish trawling industry in particular. The official in the trawling industry, as corroborated by an official in the Fisheries Commission lays the fact on one of the key laws as follow

The law is explicit that it is 100 percent Ghanaian beneficial ownership for trawling any other fishing apart from Tuna fishing (Official, Fisheries Commission, 6th November, 2017)

In line with this, successive governments have set up institutions tasked with the responsibility of developing fisheries. In addition, there has been the development of the aquaculture policy aimed at, among others, directing and establishing research priorities. The Fisheries Commission is the

key state institution established for these responsibilities. The essence of the state's legal response to the Chinese dominance in the trawling industry is to provide a protectionist method for Ghanaian entrepreneurs in the fisheries sector to gain the commanding heights of the industry.

In order to ensure that Ghanaians gain better employment opportunities in the fish trawling industry, the Government of Ghana has, by law, insisting that the labour force composition on every Chinese trawling vessel is supposed not more than 25 percent foreign crew. This forms part of the grand local content policy of Ghana which is supposed to allow citizens and local business to enjoy quotas in specific industries. However, the high numbers of Ghanaians working on the vessel do not translate into greater influence because, as the official of the trawling industry mentioned,

... the Chinese... they make the decisions and the... most technical issues are handled by the Chinese (45-year-old male member, Fish Trawlers Association of Ghana, 21st August, 2017)

By implication, current laws and policies are yet to adequately respond to a noticeable trend of power hegemony between Ghanaian businessmen and employees on the one side and Chinese owners on the other side. Inching more on other forms of institutional responses in the fish trawling industry, it can be held that the state has also played mediating and advocacy roles for the indigenous actors in the industry. For example, when there are complaints about non-disclosure of information about profits by Chinese partners the Fisheries Commission gets involved. As narrated by the official,

if along the line an individual or a Ghanaian company feels they have not been treated well or fairly by a foreign counterpart then they should report formally. On some occasions where they have been formal complaint, the commission together with the ministry had they called both parties positive interventions (53 year old male member, Fish Trawlers Association of Ghana, 21st AUGUST, 2017)

With regard to the advocacy role of the state the official at the Marine Management Unit of the Fisheries Commission indicated that,

we had to bring in the legal issues and so from the state we had to bring in the attorney general to help them if they need to redraft the agreement again (Official, Fisheries Commission, 6th November, 2017)

The Fisheries Commission also provides infrastructural projects as well as safety services to the vessel operators. With the exception of the provision of a good harbour, safety at sea is usually offered with the presence of the Fisheries Enforcement Unit of the Fisheries Commission which contributes to curbing issues of piracy, through the provision of a Vessel Monitoring System (VMS) on board the vessels.

However, these monitoring activities are usually misinterpreted by the industry players. As mentioned by the official from the Fisheries Commission,

Usually the vessel owners think we are trying to monitor them against fishing illegally but it's also to monitor wherever they are. I mean should you run into trouble you can easily be located and so I think that those are what we

doing for them (Official, Fisheries Commission, 6th November, 2017)

These misinterpretations smack of a lack of understanding between the industry players and the Fisheries Commission and could be engendered by the mode of the enforcement and the nature of political communication which ensues between the industry players and the Fisheries Commission. These misinterpretations notwithstanding, the roles mentioned by the official represent a significant expansion in the characteristically regulatory traditional functions of the state institutions found in a purely neo-liberal environment. This would then have the potential of inspiring confidence and enhance deeper cooperation between the industry players and the state institution because the industry does not just feel coerced but feel protected by the state institution.

Institutional Response to the Usage of Chinese Agricultural Equipment in the Crop Farming Subsector

With regard to the influx and usage of Chinese agricultural machinery there have been some useful institutional responses. First, as part of the bilateral agreement between Ghana and China, the Chinese supplier of the machinery is required to set up a local retail enterprise to distribute spare parts and provide after-sale service. These are aimed at ensuring the availability of parts and accessibility to repair services. The suppliers are also required to embark on training exercises for the owners of the machinery. It will be instructive to note, as an interview with AESD, that these requirements came on the back of strong negotiation processes between the Government of Ghana on the one side and the Chinese agricultural equipment producers and the

importers of Chinese agricultural equipment on the other side ultimately culminating into the final content of the bilateral agreement.

The underpinning logic to all these requirements stipulated in the bilateral agreement is to ensure maximum utilisation and optimum satisfaction with the equipment. This then makes good judgment of Liu (2014) who argues that the nature and degree of impact of capital mobility on a country or local community's economic development are largely determined by formulation and negotiation processes.

First, repair services are offered to farmers by the Agricultural Engineering Services Directorate (AESD) engineers in the event of a breakdown of Chinese machinery. Practically, the repair works are carried out in collaboration with a private agency which supplies the Chinese machinery. This collaboration is applicable to both the GOG model and the private-importer distribution model of the popularisation of Chinese machinery. Monitoring activities are carried out to ascertain the farmers' response to the machinery on the performance of the machinery. Usually, when repair works on the machinery are needed, engineers are deployed at the regional level to assess the nature of the problem and offer the appropriate technical support.

There have been some forms of economic support by the state including subsidies and tax exemptions. These work to reduce the production cost for the farmers. From a political economy point of view such institutional responses are largely tied to trade and even more specifically to the importation of Chinese products and not tied to production of the machines. This was clearly indicated by the Technical Director of the AESD.

We can produce but sourcing for funds is the bigger problem (Official, AESD, 3rd November, 2017)

The functions performed by the Fisheries Commission and the AESD for their respective ministries are generally expected to aid the sustainability of Chinese CMKD and their economic impact thereof. These functions are clear manifestations of good governance which, according to Liu (2014), determines the degree of impact of capital mobility on a country or local community's economic development.

Generally, the institutional responses in the wake of Chinese capital mobility and knowledge diffusion have been expressed in forms of legal statutes, training programmes and technical support. Placing these within the framework of state developmentalism, it can be said that the state has been appreciably reactive yet the economic support is still insufficient and narrow scoped.

Patterns of Political Inertia in the response to Chinese Capital Mobility and Knowledge Diffusion

Despite these institutional responses and their relative strengths and weaknesses, there have been some traces of political inertia by the internal organizations of the state. Given the extent to which political economists agree that political inertia may derail a country's prospects towards economic development (Agola, 2016; Ansa-Asamoah, 2001; Frimpong-Ansah, 1991) these traces of political inertia which would require some attention are discussed in subsequent subsections. These include the traces of political

inertia as they exist in the fish trawling industry, crop farming equipment industry and the agro-chemical industry.

Patterns of Political Inertia in the Fish Trawling Industry

Poor Coordination between Industry Players and State Actors

The essence of coordination is the creation of a networked activity directed toward the achievement of a collective objective. It is a means for knowledge sharing and complementary actions by actors devoid of acrimony. With experiences in the fish trawling industry which show that quite a number of challenges exist in the fish trawling industry. The key challenge among them, as indicated by the Chairman of the Fish Trawlers' Association, was the manner with which law and order was maintained by the security agencies on Chinese vessels on the high seas. Yet, efforts to address them linger on as uncoordinated among the key stakeholders. Hence, this idealized political endeavour of coordination has remained an illusion. Indeed, if the coordination was good it would have provided enough knowledge about the legality or otherwise of fish transfer from a vessel to another. Yet this was not the case. The poor nature of the coordination between state actors and industry players was expressed by the fish trawlers' Chairman who hinted that,

We genuinely have problems that need genuine solutions.

We don't need politically made solutions. So we need to manage the security issues together with any management decision you are making. Unfortunately, that is not what is happening (47 year old male member, Ghana Fish Trawler Association of Ghana, 21st August, 2017).

Indeed, a typical happening which rather iconizes the poor coordination was the arrest and seizure of the Chinese vessel into which fish from another vessel was transferred. This occurred in August, 2017.

Information gathered suggested that, even though such an act was a legal act, the Ghana Police Service impounded the vessel for unwarrantedly transferring fish from one vessel to the other. This represents a lack of information sharing and trust between law enforcement agencies and the industry players. In the final analysis the issue ended up in court riddled with many misrepresentations by both parties. Such misrepresentations which have arisen out of the absence of coordination between the parties raise critical issues since they have implications for the availability of vessels for fish harvesting and its supply thereof.

Lopsided Decisions towards Promoting Knowledge Diffusion in the Fish Trawling Industry

In the fish trawling industry, it is expected that knowledge diffusion could be taking place as the Ghanaians and the Chinese crew interact on board the fishing vessel. However, in the fish trawling industry, one fact remains; knowledge diffusion has been very minimal and the skills to repair are not being transferred. This is evidenced by the response offered by all the stakeholders in the industry. On the part of a co-owner of a fish trawling company, for example,

So, there is very little transfer of knowledge from the Chinese to the Ghanaian crew (53-year-old male member, Ghana Fish Trawler Association of Ghana, 21st August, 2017).

This observation was corroborated by an official at the Marine Management Unit of the Fisheries Commission. She intimated that

so, when it comes to transferring the knowledge as in the techniques used for fishing, I will say on the personal level, you won't get a very high-level efficiency (Official, Fisheries Commission, 6th November, 2017)

The apparently low level of knowledge diffusion from China into the trawling industry consequently leads to a lot of unsharpened human resource in the fish trawling industry thereby rendering Ghana technically incapacitated to manage the fish trawling industry as clearly mentioned by a fish trawling industry player

But we have a major problem of crew because we haven't built Ghanaian capacity to own and manage trawlers (47 year old male member, Ghana Fish Trawler Association of Ghana, 21st August, 2017).

The low level of knowledge diffusion is largely attributed to a wide knowledge inequality gap between Ghanaian working in the fish trawling industry and the Chinese crew members. Even though Ghanaians could occupy middle level positions on the vessel there is a deficit in terms of the number of people required to occupy that position. The interview the Fisheries Commission officials also disclosed that Ghana does not have one known gear technologist within the Ministry of Fisheries and Aquaculture. Thus, there is little interaction between the Ghanaian and the Chinese crew members. This was intimated by an official from the Fisheries Commission as follows,

we do have some of the Chief engineers which is like the third in command, most often being Ghanaians but they are just a few. Most Ghanaians occupied are employed as deck

hand officers so they do the sorting, they do all the...into brackets all the dirty work is done by the Ghanaians (Official, Fisheries Commission, 6th November, 2017).

This knowledge inequality gap between the Ghanaians and the Chinese crew member for which knowledge diffusion is seen to be on a minimal scale is a function of institutional lapse. Supporting this claim with evidence a key informant who is a consultant in the fish trawling industry rightly indicated that and provided one of the myriad of reasons as follows

As a country we have a long time not developed the fisheries industry because the Regional Maritime University, I think, for lacks of subscription of their programmes. Over a long period of time, Ghanaians have lacked the ownership of vessels and have not been trained too. And even those that are trained normally go for the training at the Maritime University because they may have contracts abroad and not because they really want to fish in Ghana (53-year-old male member, Ghana Fish Trawler Association of Ghana, 21st August, 2017).

The implication of low level of knowledge diffusion and the absence of intuitional efforts at building are the creation is a growing degree of middle level and top-level human resource deficit thereby reducing employment opportunities for Ghanaians. Moreover, Ghanaians would not gain opportunities to occupy higher positions in the industry hence their ability to influence decisions which could inure to their benefit is inhibited. This was

buttressed by the submission made an official of the Marine Management Unit of the Fisheries Commission during an interview.

In the midst of this reality of knowledge diffusion being low a question is asked: why then is the knowledge diffusion from China into the fish trawling industry still low leading to the apparent human resource gaps in that sector at a time when the Chinese who can be a valuable source of knowledge are still operating in Ghana as vessel owners and vessel crew? This question may equally raise issues not only of political inertia but it also raises questions of how the politics of knowledge diffusion is contested and organized in Ghana. Nevertheless, in a broader political context, there seem not to be any deliberate plan which is motivating enough to ensure transfer of knowledge from the Chinese to Ghanaians. This was indicated by an official from the Fisheries Commission.

We currently don't have any programme to make the Ghanaians tap knowledge from the Chinese (Official, Fisheries Commission, 6th November, 2017)

It may be argued that under certain circumstances when there are no deliberate plans to ensure knowledge diffusion from China to actors in the fisheries sector, some informal methods could have been deployed to acquire the knowledge. One of these could have been the inscriptions on the equipment which could have enabled the actors to gain knowledge about the vessel. However, as already indicated in earlier chapters, the inscriptions are in Chinese language.

As the situation depicts, the patterns with which knowledge diffusion from China into the fish trawling industry is contested in Ghana is quite

questionable as it is riddled with lopsidedness at the expense of the industry. In the course of the study, it was discovered that the Chinese were offering scholarships to Ghanaians to go to China, on a regular basis, for further studies. It was hinted by an official in the fish trawling industry that sometimes 10-15 people obtained the scholarship. He further noted that in fact the last time he visited at the Ministry of Fisheries and Aqua culture he was informed that some people had come to sign their scholarship forms to go to China for further studies.

Yet, paradoxically, he expressed that nobody from the industry had ever been invited to go to China to pursue further studies which could boost their capacities and eventually bridge the human resource gaps in the industry. Besides, the students who travel to China would either engage in a different programme or would not return to Ghana. These represent lack of clear-cut structures and signs of disinterest in the state in bridging the human resource gaps through knowledge diffusion. The display of the state's disinterest in promoting knowledge diffusion sounded very worrisome to the Chairman of the Fish Trawlers Association of Ghana in the fish trawling industry. In his words, he expresses the worry by questioning issues rhetorically, as follows,

Nobody, not a single person from industry. Where are they from? What are they doing? What do they go to learn? How is that applicable to industry? (47-year-old male member, Ghana Fish Trawler Association of Ghana, 21st August, 2017).

These concerns raise issues relative to the content of what studied and its relevance to the industry. Inherently, there is an indication of misplaced focus

in terms of the programmes to be studied and these are the fundamental precursors to the human resources gaps in the fish trawling sector. Judging from the response of the official in the fish trawling industry it becomes quite ironic that the economic support which the state seems to be offered to the fish trawling industry is not yielding the required effect in terms of human resource efficiency. From the analysis there is a clear case where political decisions seem not to be having the desired economic effect. Even though the situations may reflect the internal contradictions in the educational sector, the deficiency could be seen to be largely woven on the altar of politics. On this score, the political problem is about poor decision regarding those selected, poor implementations in terms of poor monitoring of those who receive the knowledge and the lack of drive in insisting on their return.

Political Inertia in the Agricultural Equipment in the Crop Farming

Subsector

Absence of Collaboration between State Institutions

The need to interrogate the level of collaboration between the state institutions is influenced by many sociological and political economy imperatives. The essence of the sociological imperative is the orientation that stability and change are a function of institutional interdependency. The fundamental nature of the political economy imperative is carved on the orientation that political decisions and the economic conditions are inseparably interconnected (Serrat, 2011). Thus all the economic benefits which will be accrued from the capital mobility and knowledge diffusion from China require deliberate political decisions and actions by state institutions

and political actors in a functionally supporting approach. These imperatives are synthetically echoed in the works of Assefa et al. (2014), as indicated earlier, who maintain that a successful knowledge diffusion regime relies on a more politically dynamic, participatory and collaborative system.

Taking a cursory look at the nature of products being studied (Chinese agricultural inputs), the sector under consideration (the agricultural sector) and the phenomenon being studied (capital mobility and knowledge diffusion) four key Ghanaian state institutions among whom collaboration would be required assume critical relevance in this regard. These include the Ministry of Trade and Industry, the Ministry of Food and Agriculture, the Ministry of Science Technology and Innovation as well as the Ministry of Finance and Economic Planning. However, there exists no collaboration between the state institutions as a macro political response to the influx of Chinese agricultural inputs into Ghana's agricultural sector. Responses from the officials in the various ministries showed the absence of collaboration. An official in the Ministry of Food and Agriculture puts his more succinctly as follows:

We don't collaborate, when the equipment come from China, we assess them and if they good we give them out to the farmers. There is no collaboration. Even in this Ministry when something new is introduced we are supposed to work with other ministries but we don't
(Official, MoFA, 12th October, 2017)

Judging from the argument of Assefa et al. (2014) the possibility of Ghana's ability to benefit from the influx of Chinese agricultural input through knowledge diffusion is not likely to be realized due to poor collaboration

between the key stakeholders mentioned earlier. The eventual outcomes are that the actions among the institutions become single, dispersed and uncoordinated.

Meanwhile, if the needed collaboration was encouraged, the Ministry of Food and Agriculture could operate in sync with the Ministry of Science, Technology and Innovation to find ways of adopting the technology as found in the Chinese imported agricultural machinery and replicating similar technology. Certainly, this could be done in close collaboration with the Ministry of Finance and Economic Planning which would be the financier of this endeavour.

The Ministry of Trade and Industry could then serve as a useful source of information on the kinds of Chinese agricultural machinery on demand by actors in the agricultural sector so that the knowledge embedded in these inputs could be adapted and replicated. Such functionally supportive efforts, if decided and acted upon by political actors, would influence the economic choices of actors in the agricultural sector and address some of the issues relative to trade imbalances between Ghana and China. Certainly, this is not to suggest that there would not be teething problems. Indeed, such teething problems may require some equally useful exhibits of collaboration between these same state institutions.

Absence of clear policy response towards Chinese CMKD

Formulating policy has been recognized as a standard practice for enhancing a country's potential to gain advantage of economic opportunities in any bilateral relations between states. Using China as a case in point, her involvement in African agriculture is a reflection of some policy narratives

and imperatives (Scoones et al., 2016) the content of which is espoused, shared and implemented at the Forum on China-Africa Cooperation (FOCAC) meetings. It therefore stands to suggest that all Chinese engagements in the agricultural sector are couched within and informed by policy frameworks with stated objectives. What then has been the case in Ghana's political space as Chinese CMKD assumes dominance in the agricultural sector?

At the Ministry of Food and Agriculture, an interview to establish whether or not Ghana had a specific policy on Chinese capital mobility and knowledge diffusion into Ghana's agricultural sector was carried out. This was asked to ascertain Ghana's preparedness to take advantage of Chinese investments and technology transfer which could be done through a policy framework in which plans could be developed. However, in the course of the interviews, the response from an official from the MoFA suggested that,

We don't have a specific policy on China. The policies that exist are general policies on agricultural mechanization (MoFA official, 12th October, 2017)

With such a response, it suggests that there is no clear-cut policy relative Chinese capital mobility and knowledge diffusion into Ghana agricultural sector. This observation corroborates arguments of Scoones et al (2016) that, in Africa, the policy models associated with process of technology transfer, technologies are rather usually enfolded in wider visions of what agriculture and development should look like.

The absence of a specific policy on technology adoption from China represents Ghana's lack of preparedness to take advantage of the Chinese capital mobility and knowledge diffusion. The implication of the absence of a

specific policy is that state institutions are likely to adopt short term and delayed approaches when events relative to Chinese capital mobility and knowledge diffusion occur. Some of these short-term approaches include the quest to insist on price reasonability and adequate supply of spare parts of Chinese farming inputs as indicated by an official of the AESD on 3rd November, 2017. Consequently, it is either the real benefits which occasion the Chinese capital mobility and knowledge diffusion may not be consolidated or the potential benefits may not be realized at all. Besides, the absence of a clear-cut policy would also mean that some of the threats that occasion the Chinese CMKD may not be well addressed. Even they would, they might have become deeply rooted in the long-term economic considerations.

Political Inertia in the Agro-Chemical Industry

Political inertia in the agro-chemical industry in the wake Chinese CMKD has played out in the following forms

Poor Regulatory Regimes by State Institutions

In a typical neo-liberal economic set up, one would expect some level of regulatory interventions of business activities by state regulatory authorities. These regulatory interventions are directed at averting some of the inherent contradictions and market failures in a neo-liberal system much of which may be largely driven by liberty, rationality, selfishness and creative freedom (Hayek, 1945; Rodrik, 2007). Practically, therefore, the essence of the regulation is to ensure the discouragement of poor-quality goods and insist on the adherence to high quality standards all with the aim of protecting citizens from economic exploitation, high transaction cost and the vestiges of

power hegemony as well as information asymmetries. As found in Ghana, one of these inherent contradictions associated with Chinese capital mobility is the production of poor-quality goods, especially with regard to agro-chemicals and a rather relaxed legal regime which encourages power hegemony. Indeed, one of the major threats that have occasioned the Chinese capital mobility has been the production of poor-quality goods by Chinese agro-chemical subsidiary firms in Ghana.

However, it was apparent from the data gathered that there were poor modes of regulating the quality of Chinese products in Ghana. This was found to be very apparent in the agro-chemical production industry where many of the agricultural actors complained about the poor quality of Chinese products. As testified by an agro-chemical seller, the poor nature of the Chinese agro-chemical products by Chinese manufacturers in Ghana had lingered on for some years. Offering a solution, one of the actors indicated,

There should be some continuous checking (45 year old female agro chemical retailer, Kasoa 17th November, 2017)

This solution offered by the actor in the agro-chemical retailing industry was not different from what actors in the fish trawling industry. He intimated that

generally it is an investment in the sector and what we need to do is to regulate the investment and the activities of the investors (42 year old male member, Ghana Fish Trawler Association of Ghana, 21st August, 2017).

These recommendations, as offered, have been emphasized to show that the level of regulation is not up to the level to be appreciated by actors in the various industries in the agricultural sector.

On this observation, the regulatory planning role which the state has carved for itself in Ghana has been lacking and it constitutes an aberration to the character and essence of the neo-liberal political economy persuasion. At this point, the Chinese agro-chemical firm is taking advantage of the weak regulatory mechanisms to produce poor quality products. On this score one may then extend the argument of Scoones et al (2016) about the contexts which encourage Chinese to invest in Ghana. Even though Scoones et al have suggested that Chinese are taking advantage of the free market conditions in Ghana, it is not exhaustive of all the realities that encourage Chinese to invest in Ghana. It will rather be crucially adequate to observe that Chinese capitalism is further taking advantage of Ghana's weak regulatory regime. They are encouraged to invest in a Ghana with a poor regulatory regime in the light of the data gathered from the retailers of the agro-chemical products which indicate that even though the prices at which they sell their agro-chemical products had not reduced by any measure the quality has been compromised. He said,

When they came the quality was high and they were selling it at 30 cedis. Now the quality has reduced they are still selling it at 30 cedis (45 year old male agro chemical retailer, Beraku, 4th September, 2017)

The political economy analysis carried out, using the case of the agro-chemical industry in Ghana as a reference point brings to fore how weak

regulatory interventions may engender economic exploitation and market failures expressed in the sale of poor-quality goods at relatively higher prices. In this sense, the role of the law in promoting economic development, as mentioned by the neo-political economist (Cypher & Deitz, 2009; Sachs & Warner, 1995) and moderate institutionalists (Krueger, 1988; Rodrik, 2007) is being undermined in the Ghanaian context. In this particular instance the role of the law is not undermined by the quality of the legal statutes but by the quality of enforcement.

Low Level of State Support for Indigenous Entrepreneurs

The subject matter of state support for local entrepreneurs has also been brought to the fore and subjected to much intellectual analyses. Despite all the arguments raised either in support or against the state's active engagement in economic activities and its implications thereof, one fact remains on the table. The fact is that the state's active engagement in economic activities is no longer an ideological issue; indeed, it is a matter of pragmatism. This position agreed upon by a number of political economists has been rightly summarized by Lee (2014). Using countries such as Brazil, China, the US and European countries as reference points, Lee observes that "development cooperation" efforts has taken a new form known as state-directed "developmentalism" which serves as an extension of capital and markets, now with new roles for the state including managing, financing of enterprises as well as encouraging private entities with profit seeking intentions to operate.

On this count the support of the state for local businessmen in the face of globalization is non-negotiable. Indeed, the state's role is expected, in

specific terms, to permeate all aspects of the economy. For example, in the arena of trade, the state can sustain its trade relevance if only it can provide, expand and preserve infrastructure as an imperative for guarding domestic economic interest (Rodrik, 2011). Within this framework, there was a test case of Ghanaian state 'developmentalism' endeavours, using some experiences in the agricultural sector as cases in point. The test case produced some information worthy of political economy analysis.

The data gathered in the form of the experiences shared by some of the actors in the Ghanaian agricultural sector show one truth. This truth is expressed in the fact that the level of support from the Government of Ghana for the actors in the agricultural sector has been low in certain industries in the agricultural sector. The evidence to support this claim was gathered from some local producers of agro-chemicals who produced goods similar to what a Chinese agro-chemical subsidiary produces in Ghana. Another set of evidence was first gathered from indigenous actors in the fish trawling industry who operate with Chinese vessel owners. The narratives of the expressed experiences of the actors depicting the low level of support are argued out as follow.

In the agro-chemical industry, a young Ghanaian entrepreneur was discovered as having the chemical formula of chemical production yet at the time of the research he had not yet obtained a certificate to legally manufacture the herbicides and in commercial quantities. Besides, the retailers claimed they could not display the agro-chemicals on the shelves. This was because he had not yet satisfied certain legal requirements leading to the commercial production of the herbicide and for the fear of being apprehended

by regulators and law enforcement agencies. Yet, as the retailers further claimed, the potency of the agro-chemical is expressed in the words of some of the end-users – farmers and household heads that,

it lasts a relatively longer period than WYNCA and CHEMICO agro-chemicals (47-year-old male agro chemical retailer, Beraku, 4th September, 2017)

The responses came from the stories of other actors who had used the product suggested that the products are deemed to be of high quality and were initially bottled an agro-chemical with a high aesthetic value in terms of branding and labelling even though he had not been given him the certificate to operate. In addition, they claimed as well that the agro-chemical had a multi-crop function as it could be used on various crops including cassava, pineapple cocoyam, pepper and plantain.

Beyond the high product quality and the high aesthetic value, the price of the agro-chemical gives it a competitive edge over similar products. Further enquiries led to the discovery that the agro-chemical by the Ghanaian was for sale at GH¢25² which was found to be cheaper than the WYNCA and CHEMICO products. Incidentally, due to lack of capital and the fear of been apprehended for selling unapproved agro-chemical the Ghanaian producer is unable to procure bottles in which he could store his products for sale. As a result, the young Ghanaian entrepreneur was reduced to storing his product in already used WYNCA bottles. As rightly mentioned by an agro-chemical retailer,

² Dollar Equivalent - \$5.20

the problem is to even get the money to make his own bottles. So, what he is also doing is to fill the used WYNCA bottles with his agro-chemical (45-year-old male agro chemical retailer, Bearku, 4th September, 2017)

In this regard, there are indications that the Ghanaian producer is engaged in a deviant act. However, placing the deviant act in context, it becomes observable that such an act of deviant happens when there are strict means for achieving cultural goals. Interrogating the issues further, it was also discovered, at the time of collecting the data, that the young Ghanaian producer, as part of receiving certification to produce, was required to pay an enormous amount of money in dollars to obtain a certificate of authorization which remains an arduous task for him. This challenge experienced by the Ghanaian agro-chemical producer is a reflection of the general problem associated with raising capital among entrepreneurs in Ghana, especially those in agricultural sector. A simple expression from the agro-chemical retailer was

They are not helping him (45 year old male agro chemical retailer, Beraku, 4th September, 2017)

In lieu of his inability to meet strict legal requirement due to the lack of economic support needed for the certification he became disadvantaged as compared to the Chinese agro-chemical company which the financial wherewithal to observe the legal standards with regard to certification. Consequently, he was operating illegally. Because he was operating illegally, he was unable to produce the less costly agro-chemical in large quantities due to the over insistence on the legal requirement which demands certification before commercial production. With the lower price agro-chemical on sale

farmers would have been able to reduce their cost of production in the long term but this remains an illusion in so far as the commercial production does not take place because of the strict legal requirement. With these realities afore discussed it stands to reason, in political economy discourse, that when political decisions are harsh economic choices become less beneficial to the masses.

The narratives presented about the young Ghanaian entrepreneurs suggest clearly that the state's support for encouraging innovative indigenous entrepreneurs who could adequately compete with Chinese multinationals has been absent. The lack of state support could be largely considered not just as economic but also regulatory in character. Indeed, not only are the opportunities for raising capital limited but the regulators are equally fixated to enforcement than locating the entrepreneur's seeming act of breaching the laws within certain-socio-economic contexts. One of the socio-economic contexts include the unappreciable nature of financial intermediation activities among the banks in Ghana rendering it difficult for entrepreneurs to raise capital through credit (see Bank of Ghana, 2015). This is coupled with the diversion of MASLOC loans, a proportion of which is supposed to be disbursed to indigenous Ghanaian business in the agricultural sector, to unqualified beneficiaries with high payment default rate ("Graphiconline", 2017). This diversion, practically, makes it very difficult for actors in the agricultural sector to access credit to finance their operations.

These economic and regulatory hurdles faced by the young Ghanaian entrepreneur amidst his potential to favourably compete in the agro-chemical industry are symptomatic of an obvious lack of support from state institutions

to technical innovations which have arisen out of the knowledge diffusion from China. Hence, the lack of state support may thwart technical innovation prospects for a host country irrespective of the quantum and quality of knowledge being diffused from an external actor. This reality also makes sense of Liu's (2014) argument that the degree of impact of capital mobility on a country or local community's economic development is largely determined by support from third parties, including the state.

But perhaps, stretching the arguments into certain legally substantive contexts it stands to reason that allowing young entrepreneur to produce without certification may also lead to some market failures since he may end up producing unwholesome agro-chemicals. In this score, merely calling for state's economic support for the local producer of agro-chemicals may put the state in a dilemma. This is because while the state may have to plug the existing policies to promote locally made products it would equally have to be enforcing laws that require certification before commercial production is carried out. Yet, the enforcement of the law may delay the process of implementing existing support systems which promote the products of indigenous entrepreneurs. The answer in this case lies in balancing the equities between market failures and the breaches in the law relative to production of goods. This requires the Weberian prescription of legal rationality by introducing laws that could identify Ghanaians and enable them enjoy the ease of acquiring certification on credit basis, using MASLOC and the Venture Trust Capital Fund as mediums.

The experiences shared by the actors in the agro-chemical industry are not fundamentally different from the actors in the fish trawling industry. As the official of the trawling industry in Ghana indicated

Government doesn't support the industry. We even raised questions about what is happening to the fisheries development fund. There's absolutely no support from government to the ministry (45-year-old male President, Ghana Fish Trawlers Association of Ghana, 21st August, 2017)

The Fisheries Development Fund the research participant made reference to was a World Bank facility which was to support the building of a site for the repair of in-shore vessels.³ During the period of the research the actors in the fish trawling industry claimed they had not been able to access the \$3million World Bank facility given to Ghana. The only things the industry had received, as the research participant said, were

a Pick Up vehicle, a computer each to the various sectors and some minor items (47 year old male member, Ghana Fish Trawlers Association of Ghana, 21st August, 2017).

What remained intriguing as the responses were offered was that though the money has not been accessed the loan interest is expected to be paid. This certainly has some dire economic implications because this is a loan that will be repaid with interest by the industry even though they might not have had

³ The in-shore vessels are in between the artisanal fleet and the industrial vessels. We call them semi industrial.

the economic value of its availability. Even in some cases some trained and potential experts leave the shores on Ghana. The phenomenon of labour migration in the fish trawling sector after training is symptomatic of the lack of interest which is largely attributable to lack of adequate state support for the trawling industry to flourish. The reason lies in the fact that even though there is a legal support, the economic support is lacking. Evidence of the lack of economic support is expressed by a member of the Fish Trawlers Association of Ghana as follows.

but as a country we have also not done anything to encourage Ghanaian entrepreneurship within the fisheries sector. So it is struggle and survival of the fittest” (54-year-old male member, Ghana Fish Trawlers Association of Ghana, 21st August, 2017)

In the fisheries industry the apparent lack of support would not only limit the capacity of indigenous businessmen to actively engage in capital intensive and highly productive economic activities but would also serve as a disincentive to some of the knowledgeable actors in the industry. In addition, their ability to compete with foreign actors would not be enhanced by any measure. Invariably, an opportunity is created for external actors which are being supported by their states to become active participants in these economic activities. This has culminated in the inability to attract human resources to fill the human resource gaps in the fish trawling industry. Even though there are human resource gaps in the fish trawling sector, there was a clear sign of deficiency by the Regional Maritime University expressed in its inability to train human resources to fill the technical positions reserved for Ghanaians.

This was clearly indicated by the official of the Marine Management Unit of the Fisheries Commission and corroborated by the President of the Fish Trawlers Association of Ghana. He said:

The challenge has been that the Ghana Maritime, Regional Maritime University has not been able to produce enough likewise all other universities enough technical people to assist on the running of the vessel (54-year-old male member, Ghana Fish Trawlers Association of Ghana, 21st August, 2017)

An official from the fish trawling industry expressed similar sentiments as follows

you need to build the Ghanaian capacity to be able to manage activities at sea. You need to train efficient skippers, engineers, officers, clerk officers and all that. So nobody is able to even tell us the efficiency of the gear that we use in our system whether we need to modify the gears. (45 year old male member, Ghana Fish Trawlers Association of Ghana, 21st August, 2017)

What is the external undercurrent of this inability to attract human resource to fill the human resource gaps in the fish trawling industry? This is because the proactiveness does not yield results. This is evidenced through an interview with an official from the Ghana Maritime Authority. He indicates that people do not subscribe to the marine-related programmes introduced by the Regional Maritime University. This, to the official, is largely linked to the lack of state involvement in the industry thereby leaving the industry to be controlled by

Chinese expatriates occasioned by an economic motivation regime which neither prods current indigenous crew members to upgrade their status nor attracts prospective crew members. Using the case of Britain and Scotland for example Ghanaians are actually being attracted to their fish trawling industry because it pays well hence very motivating so some Ghanaians migrate.

In these regards, if the incidents spoken about earlier as threatening aftermaths of Chinese capital mobility including capital flight and hegemony are anything to go by then the absence of state support in terms of finance and knowledge to indigenous businessmen is likely to derail the country's chances of addressing these threats associated with the current patterns of globalization which China presents Ghana's agricultural sector. The experience of the actors in the agro-chemical industry and the fish trawling industry show clear signs of similarities in terms of the inadequacy of the needed economic support by actors in the industries.

Analysis of Political Inertia within Neo-liberal and Statist Political

Economy Contexts

The new wave of state-directed 'developmentalism', as mentioned earlier, substantially deviates partly from the traditional statist form of economic planning with some injections of liberal and rational tendencies combining with minimalist policies and institutionalist commitments (Cypher & Dietz, 2009; Rodrik, 2007). Owing to this, it becomes a lopsided venture to analyse the role of the state within one ideological spectrum. It is on this score that the state's role would have to be analysed within a hybrid political economy context – statism and neo-liberalism – also referred to as the 'New

Political Economy'. However, for analytical purposes, the role of the state will be discussed within each ideological spectrum after which they will be synthesized. This is to test the strength of the state in each of these ideological spectra.

Within the remits of statism it can be observed, as established earlier, that the state has displayed a lack of interest for the promotion of knowledge diffusion coupled with a low level of support for indigenous entrepreneurs as well as the absence of a clear and specific policy on Chinese capital mobility and knowledge diffusion. Within the same statist context, it is observable that the state has showed signs of poor coordination in relative terms with Chinese capital mobility and knowledge diffusion. This is happening at a time when the globalized and financialized regime is taking a form where the state is seen to be taking an active part in economic activities hence as these efficiencies are being exhibited they cannot be justified on the grounds of economic neo-liberalism which encourages the state to play a secondary role in economic development process.

At the centre of all the patterns of political inertia with respect to the Chinese CMKD is a clear manifestation of the failure of government to provide adequate financial commitment to the areas where the CMKD are taken place. This is evident in some gathered facts when this study was underway. It was discovered that the Government of Ghana's already meager allocation to the Ministry of Food and Agriculture as well as the Ministry of Fisheries and Aqua culture for 2017 was GH¢ 822 million⁴ representing 3.67 percent to total government development expenditure had reduced to GH¢656

⁴ Dollar Equivalent - \$171,250,000 (Exchange Rate: \$1: ¢4.78)

million⁵ representing 2.68 percent of the budgeted total development expenditure in 2018 (Ministry of Finance and Economic Planning, 2016; Ministry of Finance and Economic Planning, 2017).

From the figures, it remains clear that government had been uncommitted to the Maputo declaration on agriculture in 2003 because it falls below the 10 per cent minimum mark of total government expenditure to which all African countries agreed to commit to the agricultural sector. In the face of this reduction in the budgetary allocation to the agricultural sector it gives an indication that the status quo expressed in the lack of economic support to the industries where Chinese capital mobility and knowledge diffusion are occurring would remain. This is so given the fact that the idea of providing economic support to actors in the industries where the mobility and diffusion has not been thought of by the state institutions which have oversight responsibilities over the industries the CMKD are occurring. These assertions were, in unison, mentioned by officials from the Fisheries Commission, the AESD and the Regional Maritime Authority.

What was even found quite ironic in the data was the fact that while the reduction in the allocation of development expenditure to agriculture had taken place there had been an increase in the total development expenditure for the Government of Ghana in the same year. Table 23 shows a breakdown of the expenditure allocation for the various state ministries.

⁵ Dollar Equivalent - \$136,666,667 (Exchange Rate: \$1: ₵4.78)

Table 14: Expenditure allocations to Ministry of Food and Agriculture and the Ministry of Fisheries and Aquaculture Development

Year	Food and Agriculture (Million GH¢)	Percentage of expenditure to total development expenditure	Fisheries (Million GH¢)	Percentage of expenditure to total development expenditure (%)	Total Development Expenditure (Billion GH¢)
2017	760 ⁶	3.4	62 ⁷	0.28	22.5
2018	599 ⁸	2.45	57 ⁹	0.23	24.5

Source: Author's own construction (data obtained from the Ministry of Finance and Economic Planning, 2016, 2017).

This failure to commit enough funds to the Ministry of Food and Agriculture and the Ministry of Fisheries and Aquaculture is a clear recurrence of the unwise distribution of government revenues towards agriculture exhibited among all the governments between 1957 and 2010 as observed in the works of Ansa-Asamoah (2001); Frimpong-Ansah (1991); Killick (2010) and Seini (2002). In addition to the failure of financial commitment, it is apparent that the Government of Ghana had exhibited failure as regards the establishment of institutional linkages between the agriculture sector and other institutional areas. These have been coupled with inappropriate spending of agricultural funds. In the case of Chinese CMKD,

⁶ Dollar Equivalent - \$158,333,333 (Exchange Rate: \$1: c4.78)

⁷ Dollar Equivalent - \$124,791,667 (Exchange Rate: \$1: c4.78)

⁸ Dollar Equivalent - \$12,916.666.7 (Exchange Rate: \$1: c4.78)

⁹ Dollar Equivalent - \$11,875,000 (Exchange Rate: \$1: c4.78)

the state has largely been unable to deliberately plan to ensure absorption of the knowledge which accompanies the mobility of capital.

In this regard the “Chinese characteristics”— that involves a sturdy responsibility of the state in financing and managing enterprises as well as encouraging business men to operate as commercial, profit-seeking entities which were discovered by Bremmer (2009) and Huang (2008) as key to China’s global economic dominance could be seen to be virtually absent in Ghana’s political economy of agricultural development. Without a doubt, the state seems to remain practically less engaged in agricultural activities through unimpressive legal and economic support coupled with unorganised policy directions relative to the Chinese CMKD into Ghana’s agricultural sector.

Within the realm of neo-liberalism, the state’s deficiency, as discovered from the data, is expressed in the absence of collaboration between state institutions and industry players and poor regulation towards ensuring higher product standards by Chinese foreign direct investors. From the observations made it is also apparent that capital mobility from China into Ghana’s agricultural sector has not in essence created a politically competitive market sanity that improves the quality of governance thereby contradicting Tiebout’s (1956) argument. In other words, Ghana has not been able to significantly improve upon the quality of governance even though it is apparent that capital is entering into the agricultural sector from a country with better system of governance. Besides, capital mobility from China has not significantly ensured governmental discipline in Ghana’s political space.

In addition, the existence of capital has not been able to confer power to governments. Invariably, the flow of capital from China could not also

produce changes in the policy structure of economy unlike what Crotty and Epstein (1999) had earlier said about the influence of capital on political governance. Even though the political climate characterised by the sustenance of multi-party democracy has been favourable for Chinese CMKD (Amanor, 2012) the internal organisations made up of the ministries, authorities and commissions of Ghana, as a state, remain highly non adaptive to these processes thereby rendering Ghana unable to take advantage of the full opportunities which are contained in the Chinese presence in the agricultural sector, despite some impressive institutional responses.

By all indication the neo-liberal political economy ideas are not applicable because they failed to take into consideration some socially-constructed conditions which may influence the political institution not to respond to the economy the manner the neo-liberal political economists would anticipate. The non-applicability of the neo-liberal political economy perspective to Ghana's experience with Chinese CMKD also helps to appreciate the new trajectories of development analysis with which development analysts move beyond "structural analysis of political interest and geopolitics to a more textured, nuanced understanding of projects and investments" (Scoones et al., 2016, p.8).

Situating these findings into a synthesised political economy context, one would realise that the findings expose some deficiencies in the arguments of the neo-liberal political economy perspective; hence its assumptions and arguments cannot be found applicable in the case of the political outcomes associated with Chinese CMKD. This is because the expected political efficiency which should have occasioned CMKD from China was not

exhibited in all cases, albeit some useful institutional responses which were legal in nature.

Summary

In sum, the domestic politics of engagement between the industry players and state institutions in Ghana within the context of CMKD from China particularly in the fish trawling and agricultural equipment industry has been organised with a cooperative and coordinated spirit. However, the political processes on how to improve that fish trawling industry have been characterised by an emphasis on the non-economic functions of the Fisheries Commission. In addition, the politics of knowledge diffusion in the fisheries sector has been contested through conflict and a lack of cooperation between industry players and political actors.

As regards institutional responses to CMKD from China into Ghana's agricultural sector numerous laws had been enacted to regulate and govern the fish trawling industry and create greater employment opportunities for Ghanaians. This was coupled with establishment of institutions tasked with the responsibility of developing fisheries through policy formulations, ensuring the security of industry players, providing infrastructural projects as well as playing mediating and advocacy roles for the indigenous actors in the industry.

Institutional responses to the influx and usage of Chinese agricultural machinery have been useful. First is the insistence of the setting up a local retail enterprise to distribute spare parts and provide after-sale service to ensure availability of parts and accessibility to repair services as part of the bilateral agreement between Ghana and China. Secondly, offering repair

services to farmers by the AESD engineers in the event of a breakdown of Chinese machinery as well as monitoring activities are carried out to ascertain the farmers' response on the performance of the machinery coupled with some subsidies and the tax exemptions.

However, there have been some patterns of political inertia in the response to Chinese CMKD. These include poor coordination between industry players and state actors, absence of collaboration between state institutions, absence of clear policy response towards Chinese capital mobility and knowledge diffusion, poor regulation towards ensuring higher product standards, low level of state support for indigenous entrepreneurs, lopsided decisions towards promoting knowledge diffusion, inability to attract human resource to fill the human resource gaps in the fish trawling industry. An analysis of the deficiency of the state from two political economy ideological orientations shows clear signs of state inertia in her response to Chinese CMKD.

In effect which ever political economy trajectory and context Ghana seeks to embark upon or positions her, there are apparent political deficiencies being exhibited. Therefore, if the strength of the state is analysed within each of the political economy lenses – 'statism' and neo-liberalism – there remains a clear indication that the state's role in ensuring that the Ghanaian agricultural sector and the economy, in general, would benefit from Chinese CMKD has been dented by traces of political inertia.

CHAPTER ELEVEN

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Introduction

In the six chapters preceding this chapter this work has discussed and analysed the political economy contexts within which the Chinese capital mobility and knowledge diffusion have taken place, the interpretations attached to them and their connectivity with modes of adaptation by agricultural actors as well as the political and economic outcomes of the diffused knowledge and capital invested. This chapter provides a summary of the entire work but giving prime attention to the major findings of the empirical study undertaken. This section also includes the main conclusions drawn from the study and the policy recommendations drawn from the analysis of the data. Suggestions for further studies are also presented as final summary of this chapter is presented.

Summary

The background of this study acknowledged the relevance of agriculture as the real foundation of every country's economic development the enormous potential in Africa's agricultural sector. Significantly, the study recognized agriculture's attraction to foreign investments particularly from China with her '*going out*' policy which encourages Chinese firms including agricultural parastatals to invest in a host of countries with myriad of incentives offered through the China Africa Development Fund.

The study also recognised that current intellectual discourse on Ghana's agricultural regime have concentrated on the internal contradictions

in the sector and the role of internal actors in the improvement of the sector. Other studies also interrogated China's role in African agriculture, it was without an exclusive focus on China and Ghana.

The study then located the role of China, as an external actor; in Ghana's agricultural sector on the altar of three concepts namely knowledge diffusion, capital mobility and territorial development couched within political economy frameworks given the argument by Scoones et al. (2016) that politics of engagement becomes more dynamic and uncontested as new forms of capital and technology enter the African context. The study was largely exploratory and descriptive employing mixed methods drawn from both primary and secondary sources using purposive sampling technique. With these in focus, this study has been guided by six specific objectives. They include:

- To provide the political economy contexts within which the forms and trends of capital mobility and knowledge diffusion from China to the sub sectors in agricultural sector will be understood
- To establish how the interpretations have influenced modes of adaptation of the capital mobility and diffused knowledge from China
- To analyse the usefulness of capital mobility and knowledge diffusion to the economic activities in the various sub-sectors of agriculture
- To interrogate the threats associated with capital and knowledge diffusion from China into Ghana's food production sector
- To examine the implications of capital mobility and knowledge diffusion from China for the law and politics of food sector development strategies in Ghana

Findings

The data gathered on the trends and forms of capital mobility and knowledge diffusion could be summed up as follow:

Chinese capital mobility into the agricultural sector is found in sub-sectors including general agriculture, industrial fishing, tuna fishing, aquaculture, vegetable farming, poultry production and the distribution of agricultural machinery and agro-processing equipment. It is apparent that Chinese investment into the agricultural sector is concentrated in only four out of the ten regions of Ghana. Out of the four, there is a heavy concentration of the investments in the Greater Accra Region. The region has nine out of the 15 companies. The six remaining investments are evenly spread among the Northern, Volta and Eastern Regions with two companies each.

In terms of trade of Chinese agricultural inputs into Ghana's agricultural sector, it was found out that, on the average Ghana, had spent an amount of GH¢2,609,904.424 to import agricultural input from China, annually, between 2007 and 2016. Neo-liberal economic policies such as trade liberalization coupled with relatively lower price, absence of local substitutes for some Chinese agricultural inputs, as well as and socially innovative practices such as timely delivery of products, effective communication mindset by Chinese input suppliers towards Ghanaian agricultural actors, door-to-door delivery, offering customer advice, regular training for retailers, and regular meeting with farmers have served as sources of attraction for Chinese agricultural inputs.

In terms of knowledge diffusion, it was apparent in the agro-chemical production, the crop production agricultural equipment industry and the meat

processing industries but absent in the livestock and the industrial fishing subsector

With regard to agricultural actors' interpretations while some of the actors had interpreted the Chinese capital mobility as detrimental to Ghana's agricultural sector owing to the poor quality of their products which reduces the efficiency of the products some research participants gave a positive interpretation about Chinese products.

In terms of efficiency, availability of spare parts, longevity and capacity, the Chinese machinery were considered to be of less quality than the Japanese machinery. From a conditional interpretative point of view, interpreted Chinese capital mobility and knowledge diffusion were interpreted as phenomena that can be either useful or threatening depending on the structural arrangements put in place. For some of the actors, these interpretations were much informed by the technical expertise while the interpretations by some other actors were informed by experiential encounters which gave them the latitude to compare the Chinese machinery with the Japanese machines.

Data gathered on the connections between the interpretations and the mode of adaptation of the capital mobility diffused knowledge from China, can be summed up as follow. In the agro-chemical and the agricultural equipment industries as well as the livestock subsector, it can be observed that intersections between interpretations about product quality, price and knowledge about product efficacy have produced five unique modes of adaptations with regard to purchasing behaviour of Chinese agricultural input.

In the fish trawling industry, actors adapted by engaging in partnership with Chinese vessel owners, supporting Chinese vessel operation by industrial

fish trawlers, association, agreement on the declaration of “no fishing’ days and ‘fishing-free’ periods, establishing ties with Chinese embassy by industry players.

Despite the integrative and functional nature of the modes of adaptations, there is a teething problem related to the mode of adaptations for the actors in the fish trawling industry. This is constituted by the absence of official legal frameworks that regulate the relationship between Ghanaians and the Chinese vessel owners among whom certain working relationships exist.

Some modes of adaptations served as social and cultural impediments to efficient use of Chinese agricultural input were exhibited. They include poor attitude towards the usage of Chinese agricultural machinery, perceptions about quality of Chinese goods as inferior, making ‘unfounded’ claims about quality of Chinese equipment by farmers, pilfering by operators of Chinese machines and a low desire for training by lower ranked crew members in the fish trawling industry. These were connected to the negative interpretations actors had about Chinese capital mobility and knowledge diffusion.

However, some actors in the agricultural sector have responses to some of these social and cultural values which acts as impediments to efficient use of Chinese agricultural input. They include an increase in the monitoring of farmers’ equipment and aggressive marketing strategies and insistence on high quality goods by importers from Chinese producers of agricultural equipment.

The usefulness of capital mobility and knowledge diffusion to the economic activities in the various sub-sectors of agriculture have been expressed in competitive pricing and reduced cost of production, product innovation, augmenting food supply and employment creation. Chinese capital

mobility and knowledge diffusion have also ensured improved knowledge on production and processing of agricultural products, integration of Ghana's agricultural products into the global value chain system and improvements in business attitudes. However, data on capital mobility and knowledge diffusion from China shows some economic threat to Ghana's food production sector including threats of increased cost of production due to poor quality goods, threats of increased cost of production through expensive and unavailable spare parts, capital flight, hegemonic power and economic relations.

Domestic politics engagement between the industry players and state institutions in Ghana within the context of capital mobility and knowledge diffusion from China have been particularly in the fish trawling industry have been organized on the altar of cooperation. However, the political processes on how to improve that fish trawling industry have been characterized by an emphasis on the non-economic functions of the Fisheries Commission. In addition, the politics of knowledge diffusion in the fisheries sector have been contested on the altar of conflict and a lack of cooperation between industry players and political actors. On the issue of institutional responses to capital mobility and knowledge diffusion from China into Ghana's agricultural sector numerous laws had been enacted to regulate and govern the fish trawling industry and create greater employment opportunities for Ghanaians. This is coupled with establishment of institutions tasked with the responsibility of developing fisheries through policy formulations, ensuring the security of industry players, providing infrastructural projects as well as playing mediating and advocacy roles for the indigenous actors in the industry. Institutional responses to the influx and usage of Chinese agricultural

machinery there have been useful. First is the insistence of the setting up a local retail enterprise to distribute spare parts and provide after-sale service to ensure availability of parts and accessibility to repair services as part of the bilateral agreement between Ghana and China and secondly, offering repair services to farmers by the AESD engineers in the event of a breakdown of Chinese machinery as well as monitoring activities are carried out to ascertain the farmers' response on the performance of the machinery coupled with some subsidies and the tax exemptions. However, there have been some patterns of political inertia in the response to Chinese capital mobility and knowledge diffusion. These include poor coordination between industry players and state actors, absence of collaboration between state institutions, absence of clear policy response towards Chinese capital mobility and knowledge diffusion, poor regulation towards ensuring higher product standards, low level of state support for indigenous entrepreneurs, lopsided decisions towards promoting knowledge diffusion, inability to attract human resource to fill the human resource gaps in the fish trawling industry.

Conclusions

From the findings, the following conclusions can be drawn. Chinese capital mobility which has been crystallized in investments, trade and inventor mobility into the Ghanaian agriculture have been significant to but limited with promising and threatening outcomes. Chinese capital mobility has been occasioned with diverse patterns of knowledge diffusion. From the evidence gathered it is apparent that quality of the product may not necessarily affect the knowledge to be diffused and that knowledge in both high quality and

inferior could be diffused. In all these regards, when knowledge is diffused it can lead to innovation and improvement in the quality of local products. It can also be contended that that the degree of knowledge diffusion is not uniform across the agricultural subsectors.

It became evidently clear in the analysis that knowledge diffusion may not have the expected economic impact if the political system is not supportive of the indigenes who use diffused knowledge to produce commodities similar to the products from which the knowledge was diffused. Lack of institutional support for knowledge diffusion as well as language barrier impedes the process of knowledge diffusion thereby creating human resource gaps and knowledge inequality.

In terms of the contexts within which knowledge diffusion from China to Ghana is concerned, it has been promoted by such conditions as rising levels of technological spread, state-initiated policy arrangement, quality of state support, linguistic parity and foundational knowledge regarding the use of the agricultural input and innovative ability. The difference in the degree of impact of the knowledge diffusion could be attributed to the varying levels of sophistication associated with the products and then to an extent the varying levels of foundational knowledge among the local producers.

Judging from the fact that capital mobility and knowledge diffusion from China into Ghana's agricultural sector have enormous capacity to generate employment. Chinese CMKD has also enhanced the acquisition of improved knowledge, economic growth, investment, specialization and production services. In addition, CKMD has promoted financial efficiency, increased productive efficiency and growth improved attitudes. It can

therefore be safely contended that the benefits accrued could be understood within the contexts of changing political, economic and technological circumstances which have expanded the opportunities for the actors in the agricultural sector.

However, it is apparent that the Chinese presence in Ghana's agricultural sector disposes agricultural actors and Ghana's economy to face threats of exploitation, capital flight and increased cost of production, hence the Chinese presence has adaptive and non-adaptive effects each of which happens within political, economic, and interpretive contexts and the net aggregate factor of the benefits and the threats of which cannot be established.

The analysis conducted could equally lead to the point where it can be safely contended that the actors in Ghana's agricultural sector interpret the capital mobility and knowledge diffusion from China as promising, beneficial and optimistic as well as challenging and threatening simultaneously. The interpretations attached to the presence of Chinese goods show some mixed signs of adaptability in the various sub sectors and the industries in the agricultural sector.

The mode of adaptations in terms of purchasing behaviour is a function of the interactive relationship between price, quality, interpretations and the knowledge associated with a product from China. Additionally, the quality of products as part of the capital mobility enterprise may be determined by the mode of acquisition and not necessarily the sector into which Chinese products are being deployed. The purchasing behaviour of Chinese agricultural inputs was not only determined by price but decided upon by the end users on the altar of the length of stay in the market and *trust for the*

product about its effectiveness. Hence the ability of imported products from China to attract purchasing behaviour does not hinge on price alone but the conviction of its efficacy by the end users.

After analyzing the implications of the process of Chinese capital mobility and knowledge diffusion for Ghana's domestic politics within political economy trajectories and perspectives it can be safely contended that Ghana's agricultural sector is puzzled with apparent political deficiencies in terms of which the states responses to economic opportunities from China into the agricultural sector have been marred by traces of political inertia.

Generally, it can be concluded that capital mobility and knowledge diffusion may produce development or underdevelopment in host countries but the occurrence of either of these effects largely depends on how the state directs these processes (capital mobility and knowledge diffusion) in a manner that benefits the host country through institutional support and regulatory policies. These policies may be spawned by the objective outcomes of the patterns of capital mobility and knowledge diffusion, the interpretations as well as the mode of adaptations of the actors to these phenomena which they are at their receiving end.

Policy Recommendations

First, the current tax-incentive regime could be reviewed by the Ministry of Finance as the infrastructure should also be provided at a speedy pace for an expansion of investment in land-based agriculture by the Ghana Investment Promotion Authority and the Ministry of Roads and Highways.

The parliament of Ghana should consider a review of sections of the Fisheries Act to effectively regulate the business relationships between Ghanaian entrepreneurs and Chinese vessel owners which, as they stand, limit the opportunities for indigenous fish trawlers to benefit from the fish trawling industries.

A state-initiated collaboration between the Ministry of Food and Agriculture, Ministry of Trade and Industry, Ministry of Education as well as the Ministry of Science and Technology and Innovation should be established towards the formulation of a specific policy on Chinese capital mobility and knowledge diffusion.

Contribution to Knowledge

This thesis makes several contributions to capital mobility and knowledge diffusion by introducing some insights on its developmental outcomes. The thesis also brings how the developmental outcomes may be influenced by some sociological, political and organizational contexts. By studying Chinese capital mobility and knowledge diffusion, this has filled some research gaps.

Previous research on China was limited on investment in the agricultural sector in terms of focus. But this study looked beyond investments and trade and inventor mobility as a composite whole – capital mobility – and how they intersperse with knowledge diffusion. Besides, the previous research on knowledge diffusion has been concentrated on the deliberately created ones but this study discovered the unconsciously and unintentionally created one and the unconsented ones.

Previous studies have emphasized the role of neo-liberal contexts as fertile grounds for the promotion of Chinese trade and investments, but this study extends the argument by emphasizing the role of both neo-liberal and social innovative contexts as reference points through which Chinese capital mobility and knowledge diffusion may be promoted

Previous studies did not consider the subjective interpretations of actors in the agricultural sector, but this study analysed not the just the interpretations but the mode of adaptations which resulted out of the interpretations. With this the study showed the complex matrices associated with the interpretations and the mode of adaptations. These are useful issues for policy formulation.

Previous research on China's engagement on Ghana's agriculture overlooked how these have influenced the dynamics of Ghana's domestic politics in Ghana's patterns with which politics is contested, institutional responses and traces of political inertia.

Previous research findings discovered by Amanor (2013) that Chinese investment thrives on positive political climate, but this research shows that Chinese capital mobility may also thrive on negative political climate. Knowledge diffusion is also made possible through trainee mobility and not only through inventor mobility as mentioned by Kang (2015).

Limitations to the Study

A couple of limitations in this study need attention. In the first place, it is apparent that some critical empirical findings have been made which have had theoretical implications. However, the use of qualitative methods deprives this paper from making generalizations from the data obtained. In this regard,

the conclusions were limited to the industries which were selected for the study. Besides, there is no doubt that the data presented and analysed were systematically biased. The study may have limited its target to the agricultural machinery and the fish trawling industries, leaving out the agrochemical industry where Chinese investment is also visible. The data overload called for non-inclusion of data from other subsectors apart from the selected ones. Nevertheless, this did not compromise the fundamental argument that the Chinese CMKD have some subjective, behavioural and developmental outcomes. It has not equally compromised the argument that political interactions and the institutional responses have been bereft of economic support to the local actors who show potential of drawing meaningful benefits from Chinese CMKD.

Implications for Further Studies

The cost-quality trade-offs could be given attention using some quantitative methods and techniques to ascertain the context within which either cost or quality would have to be given premium over the other, given certain time frames.

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APPENDICES

APPENDIX A

Interview Schedule

Ministry of Trade and Industry, Ghana Investment Promotion Authority, Ghana Exports Promotion Authority

1. What policies have been enacted in response to capital mobility and knowledge diffusion from China?
2. What is the level of collaboration and forms of engagement between the farmers with regard to the importation of Chinese agricultural products?
3. What has happened to the governance structure (new laws, setting up of institutional arrangements, revamping old institutions) with the introduction of Chinese products into the Ghanaian food production sector?
4. What have been the expressions of capital mobility and knowledge diffusion from China into Ghana's food production sector (find out issues related to trade, FDI and inventor mobility)?
5. What is the net aggregate factor of the imports of agricultural inputs from China and the exports of food to China?
6. What financial liberalization policies have been deployed to ensure smooth transfer of knowledge and capital?
7. Does this institution support the food producers in the acquisition of the inputs from China?

8. Are there plans to make this institution support the food producers in the acquisition of the inputs from China?
9. What arrangement do you put in place for Ghanaian food producers to acquire agricultural inputs from China?
10. What negotiation processes do you in place to ensure farmers accessibility for agricultural inputs from China into the food production sector?
11. Are there cultural contexts (*beliefs, behavioural patterns, perceptions and attitudes*) at the local level which facilitate or impede the transfer of knowledge and capital mobility of Chinese agricultural inputs into the food production regime of Ghana?
12. Which of the production systems (*farming, fishing or animal husbandry*) do you transfer knowledge into?

APPENDIX B

Interview Schedule

Ministry of Food and Agriculture and Agricultural Engineering Services Directorate, Fisheries Commission

1. What have been the expressions of capital mobility and knowledge diffusion from China into Ghana's food production sector (find out issues related to trade, FDI and inventor mobility)?
2. What is the level of collaboration and forms of engagement between the farmers with regard to the importation of Chinese agricultural products?
3. What has happened to the governance structure (new laws, setting up of institutional arrangements, revamping old institutions) with the introduction of Chinese products into the Ghanaian food production sector?
4. What is the net aggregate factor of the imports of agricultural inputs from China and the exports of food to China?
5. What financial liberalization policies have been deployed to ensure smooth transfer of knowledge and capital?
6. Does this institution support the food producers in the acquisition of the inputs from China?
7. Are there plans to make this institution support the food producers in the acquisition of the inputs from China?
8. What arrangement do you put in place for Ghanaian food producers to acquire agricultural inputs from China?

9. What negotiation processes do you in place to ensure farmers accessibility for agricultural inputs from China into the food production sector?
10. Are there cultural contexts (*beliefs, behavioural patterns, perceptions and attitudes*) at the local level which facilitate or impede the transfer of knowledge and capital mobility of Chinese agricultural inputs into the food production regime of Ghana? *If yes, ask for experiences*
11. Which of the production systems (*farming, fishing or animal husbandry*) knowledge transfer into?
12. What policies have been enacted in response to capital mobility and knowledge diffusion from China?

APPENDIX C

Interview Schedule

Varied Food Producers' Associations and Retailers in Ghana

1. Which of your agricultural inputs (equipment, fertilizer, and seedlings) are coming from China?
2. Are there substitutes of such products produced in Ghana?
3. If yes, why do you purchase those from China?
4. Before then, which where were the inputs you were using coming from?
5. Have you been able to develop and new input which is similar to what is imported from China?
6. How is the equipment being introduced affecting your food production activities?
7. How well did you trust the input and the distributors of inputs before procuring them for your food production activities?
8. Which mechanism was used to diffuse the knowledge? Is it face-to-face social relations or other means?
9. Who suggests the use of the input (self, leader, any other)
10. Have the imported inputs from China increased your productivity and how?
11. Have the imported inputs from China increased your innovativeness and how?
12. Have the imported inputs from China increased your level of knowledge and how?

13. Have the imported inputs from China decreased your productivity and how?
14. Have the imported inputs from China decreased your innovativeness and how?
15. Have the imported inputs from China decreased your level of knowledge and how?
16. How is the knowledge transferred?
17. Does government support you in the acquisition of the inputs from China?
18. What have been the expressions of capital mobility and knowledge diffusion from China into your food production activities (find out issues related to trade, FDI and inventor mobility)?
19. Have you refused the use of some agricultural inputs from China? If so, why?
20. What is the mode of payment of agricultural inputs from China?
21. Are there cultural contexts (*beliefs, behavioural patterns, perceptions and attitudes*) at the local level which facilitate or impede the transfer of knowledge and capital mobility of Chinese agricultural inputs into the food production regime of Ghana?
22. Have you had an encounter with the inventor of the Chinese-imported technology you are using? *If yes, interrogate issues about longevity and mode of contact between inventor and food producers and issues related to content assimilation*
23. Generally, what are your interpretations about Chinese agricultural products which you procure? *Probe this issue further*

24. What benefits have you accrued from the Chinese capital mobility and knowledge diffusions
25. What are some of the threatening or negative outcomes about your encounter with Chinese capital mobility and knowledge diffusion?