

The crucial role of agricultural development in economic growth and industrialization of Africa and the call for integrated services delivery

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Abstract

This paper explores how agricultural development is closely interconnected to economic development and industrialization, and how Africa could embrace this reality and develop agriculture, its economy, and industrialize. Africa boasts land masses with enormous agricultural potential across various agro-ecological zones. And, Africa is home to over 20% of the world's arable land, most of which is yet to be optimally utilized in agricultural production. This bestows the continent with an enormous potential to feed an ever-expanding world population, projected to reach 9 billion by 2050. Agriculture provides for the basic "physiological" needs. Without satisfying these basic needs, all other aspects of human development and endeavor are compromised. History reveals that agricultural development precedes economic growth, and wholesale industrialization. The world's most developed nations are cognizant of the crucial role that agriculture plays in economic growth and industrialization, and accordingly, they invest strategically. South Africa's dualistic agriculture provides a classical example of how agricultural development is inseparably intertwined to economic growth. Those regions of the country that have developed agriculture also have vibrant economies, and the opposite is true of former homelands areas, where agriculture is underdeveloped. Africa's industrialization and economic growth will be enhanced, if underperforming agriculture is developed. Also, to facilitate agricultural development on the continent, extension, research, and training need to be delivered in an integrated way. Countries that provide integrated agricultural services, such as the United States of America through its Land-grant system, have vibrant agriculture and agro-based industries and command robust economies. Therefore, African countries should consider investing in agricultural development, and adopting and adapting integrated services delivery models that meet each country's specific needs, if the continent is to industrialize.

Key words: Africa, South Africa, agricultural development, economic growth, industrialization, integrated services delivery.

Résumé

Cet article explore comment le développement agricole est étroitement lié au développement économique et à l'industrialisation, et la façon dont l'Afrique pourrait adopter cette réalité et développer l'agriculture, son économie et son industrialisation. L'Afrique a des terres dotées d'un énorme potentiel agricole à travers diverses zones agro-écologiques. De plus, l'Afrique abrite plus de 20% des terres arables de la planète, dont la majeure

partie reste encore à être utilisée dans l'agriculture de façon optimale. Ceci confère au continent un énorme potentiel de nourrir la population mondiale croissante, qui devrait atteindre d'ici 2050, 9 milliards. L'agriculture répond aux besoins «physiologiques» de base. Les autres aspects du développement et effort humain seront compromis sans une satisfaction des besoins fondamentaux. En général, le développement agricole précède la croissance économique et l'industrialisation. Les nations les plus développées de ce monde sont conscientes du rôle crucial de l'agriculture dans la croissance économique et l'industrialisation et, par conséquent, elles investissent stratégiquement. L'agriculture dualiste de l'Afrique du Sud est un exemple classique de comment le développement agricole est inséparablement lié à la croissance économique. Les régions du pays où l'agriculture est bien développée, connaissent aussi des économies dynamiques, et le contraire est tout autant vrai dans les anciennes régions où l'agriculture est sous-développée. L'industrialisation et la croissance économique de l'Afrique seront renforcées à condition que l'agriculture soit aussi développée. De même, pour faciliter le développement agricole sur le continent, la vulgarisation, la recherche et la formation doivent être assurées de façon intégrée. Les pays qui ont des services agricoles intégrés, tels que les États-Unis d'Amérique par le biais de son système d'octroi de terres, ont des industries agricoles et agro-industrielles dynamiques et des économies robustes. Ainsi, les pays africains devraient envisager investir dans le développement agricole, adopter et adapter des modèles intégrés de prestation de services qui répondent aux besoins spécifiques de chaque pays pour une industrialisation du continent

Mots clés: Afrique, Afrique du Sud, développement agricole, croissance économique, industrialisation, prestation intégrée de services.

Introduction

Literature shows a strong interdependency between the wellbeing of a county's agricultural and its industrial sectors. And, there are no examples of industrialized countries with sound economic health that have underdeveloped agriculture. Be that as it may, Koo and Lou (1997) found growth of Chinese agriculture to be dependent on its industrial sector, whereas growth of the Chinese industrial sector was not reliant on the agricultural sector. These authors reasoned that the demand for agricultural produce in China increases when the industrial sector thrives. That was especially so during the last two decades or so, when China experienced an unprecedented rapid industrial growth after liberalizing its economy. In addition, Koo and Lou (1997) found the country's foreign trade to have significant influence on the industrial and agricultural sectors, which they attributed to China's open door policy. They concluded that due to faster economic growth and higher labour productivity, exports from the industrial sector grew exports 20 fold, from 27 billion yuan in 1980 to 528 billion yuan in 1993. On the other hand, Africa's economic growth rates are far less than those of China, and the continent's agriculture is positively correlated to it economic development. Unfortunately, a majority of countries in Africa tend to have policies with an "urban bias" that disadvantages agricultural development in rural areas. Throughout the world, governments are obliged to provide agricultural extension, research, and training as "public good." This is because they have the responsibility to ensure food

and nutritional security of their citizenry. Extension involves, among others, transferring technology from research labs to the field (Omar *et al.*, 2011), and the discipline has its origins in the 1850s when Oxford and Cambridge universities brought knowledge to develop areas in which they are located (Jones and Garforth, 1997). In the United States, Senator Morrill brought universities to provide extension, research and training services through the Land-grant Bill of 1862 and 1890 (Rasmussen, 1989), and that integrated model of services delivery has shaped America's agriculture (Kerr, 1987).

This paper explores relationships among agriculture, economic growth and industrialization, and calls for a re-look on how best agricultural services could be delivery efficiently and effectively? The focus on "modern economic drivers" alone, without developing agriculture will not lead to sustainable economic growth and industrialization. Africa's fullest economic potential will only unfold, when the continent is able to feed itself and to export food for an ever-expanding world population.

Methods

Literature was reviewed extensively to try and understand how agriculture is closely interlinked to overall economic growth and industrialization, with specific reference to Africa. Parallels to agricultural development, economic growth and industrialization throughout the world were reviewed to grasp, what lessons can Africa learn in view of the call (G20 Meeting in Hangzhou, China 2016) to industrialize.

Maslow's Hierarchy of Human Needs and Agriculture. Food is a basic human need. As such, a country can hardly develop economically, if it cannot feed its population. After all, adequate nutrition is a prerequisite for healthy mental and physical development, especially during early formative years in each person's life. And, it is why Dethier and Effenberger (2012) suggest that increases in agricultural productivity must precede economic growth. Agriculture also provides subsistence livelihoods for millions of people throughout Africa and enables them to sustain themselves while satisfying their fundamental human needs: food, shelter and clothing. In the same vein, Binswanger *et al.* (1991), Johnson (1998) and Mellor (2001) suggest that a decrease in rural poverty is closely linked to periods of high agricultural growth. These authors ascribe strong agricultural growth to lead to (i) lower food prices, (ii) increase in income generating opportunities in rural farming economies, and (iii) to positive inter-sectoral spillover effects including migration, trade, and enhanced productivity.

Agriculture, culture and society. When humans gave up the hunter-gatherer life style some 10, 000 years ago, it was because agriculture had been borne and people could derive the premier basic human need, food, from growing and harvesting crops and animals. Fast forward, what people around the globe eat today, determines among others, their cultures. Even in a globalized world, cultural identities in different regions of the world are centered on societal cuisines *inter alia*. When Vasco da Gama discovered the seaway to India in 1497 he was in search of spices from the East, which are part of agriculture and of culinary idiosyncrasies in Asia. Similarly, when Jan van Riebeck landed at the Cape of Good in

1652, he was in search of spices for the Dutch East Asia Company. In America, slavery was initiated among others to exploit African labor in agricultural plantations in the south, where, due to adverse climatic conditions, Europeans succumbed when working in the fields. Agriculture is meshed with culture, history and societies around the globe.

Agriculture and economic factors. When James Watt invented the steam engine in the 1760s, the industrialization of Europe began, and later would be exported to different parts of the world. During the colonial era, the first industry to be established in a new colony was agriculture. Actually, failure of agriculture and famines in Europe prompted many then, to risk their lives and journey out of Europe to the new world(s). Similarly today, failure of agriculture and economic growth in Africa is at the core of the refugee crisis, what I term “agricultural-economic failure refugees” afflicting Europe. Suffice it to say, today’s industrialized countries have without exception, developed agriculture. Even the world’s only super power built its economic might around agriculture, by way of land-grant colleges that delivered efficient and effective integrated research, extension and training services. And, because of the importance of agriculture in America, farmers constitute only about 2% of America’s population, and yet, they are a most powerful industry lobbying group that makes the passing of the Land-Bill a non-negotiable, non-partisan part of US politics. If the most advanced and most industrialized country on Earth, values its agriculture and attendant agro-processing industries so much, why not Africa, where more than 75% of its population lives from agriculture?

Agriculture and bio-physical factors. By its very nature, agriculture is closely linked to the bio-physical factors including soil, water, air, climate, biodiversity and indeed, the total environment. With respect to global warming and climate change, agriculture contributes around 15% of the world’s greenhouse gas emissions into the atmosphere. And, paradoxically, underdeveloped agriculture in Africa is vulnerable to climate change. Therefore, any effort to address global warming and climate change for a sustainable planet Earth will not bear fruit, if those efforts do not start with sustainable agricultural practices that are economically viable, climate smart, and socially responsible. Universities in Africa must partner with all stakeholders, including their governments, to address this challenge, sooner rather than later.

Discussion

Crucial role of agriculture in economic development. Agriculture has different roles in various stages of a country’s economic development. The reallocation of labor from agriculture to other sectors of the economy is among the main drivers of economic growth in developing countries. In low income countries, as is the case in most countries in Africa, food production is strongly linked to good economic times and rapid economic growth. In addition, in middle income countries, agricultural technology appears to play a pivotal role for further economic development. While studying the role of agriculture in economic development, Alston and Pardey (2014) suggest that low incomes and slow economic growth in developing countries can be attributed to slow growth in the agriculture sector. Also Grabowski (2007) and Gollin (2010) found evidence of a positive relationship between agricultural productivity and economic growth, and Diao *et al.* (2010) concluded

that the increase in agricultural productivity is a prerequisite for economic growth. African governments however, emphasize industrial development as the main driver of economic growth and view agriculture as the antithesis of nation building. Recent developments in Zimbabwe can be used to highlight the importance of agriculture. If one looks at the Zimbabwe situation from a purely agriculture and economic growth perspective, one would conclude that when the country's agriculture did well, the economy boomed, and when agriculture failed, so did the economy. If Zimbabwe's agricultural development and economic growth circumstances were to be extrapolated across the continent, the crucial role of agriculture in economic growth and subsequent industrialization of Africa would be better understood.

Poor people derive most of their income from agriculture-related work in rural areas (Hull, 2009). And, growth in unskilled intensive sectors such as communal and smallholder-resources limited agriculture, contributes to poverty reduction (Loayza and Raddaz, 2006). For economic growth to impact the poor, the growth must happen in a sector where the poor are located, or to which they have access. Agriculture value chains have both "less productive" and "more productive" job sectors, because agriculture can be both employment-intensive and productivity-intensive. Loayza *et al.* (2009) argued that while employment-intensive growth in the secondary sector (manufacturing, construction mining and utilities) is correlated to poverty reduction, employment-extensive growth in agriculture is correlated with increases in the poverty headcount. On the other hand, productivity-intensive growth in agriculture is positively correlated to poverty reduction in most countries, and these authors found the secondary sector to be a repository of "more productive" jobs, while agriculture was associated with lower productivity. However, Gutierrez *et al.* (2007) found that sectors of the economy which constitute repositories of "more productive" jobs vary by region and country. Policies to incentivize farming to make use of local supplies and services, as well as to support of agro-business, agro-processing, and fisheries can strengthen non-farm employment (Hull, 2009). Further, strategies that boost productivity include among others, increasing investments in roads, irrigation, intensification of farming methods, and diversification into higher yield crops, and crops that generate commercial processing and export. Radwan (1995) noted that absorption of new technologies was not biased towards large producers, but by ensuring that small-scale farmers have access to credit and competent extension services, the discrepancies associated with reduced adoption and absorption of new technologies by these producer groups would be addressed.

The above illustrates the importance of agriculture in economic growth, development and industrialization. Hwa (1998) showed that the relation between agricultural development and economic growth was not only characterized by a causal relation from increases in agricultural productivity to economic growth, but that the relation is determined by interdependency and complementarity between other sectors in the economy and in agriculture. Agricultural development and its role in economic growth can be identified through different paths including (i) growth in total factor productivity, (ii) growth in total output, and (iii) the application of modern technology. In addition, Federico (2005) identified the three roles of agriculture in economic growth as follows: (1) the product role which refers to the food and fiber from agriculture, (2) the factor role that refers to

the supply of manpower and capital from agriculture to other sectors and, (3) the market role which refers to agriculture as an outlet for products from the manufacturing sector. This analysis underlines the interdependence among agricultural, economic, and industrial development.

How agriculture alleviates poverty, creates employment in Africa

An econometric analysis of data from China from 1952 -2007 showed a positive relationship between agricultural and economic growth and Xuezheng (2010) concluded that agriculture remained an irreplaceable driving force for economic growth. However, Xuezheng (2010) also noted that even when the share of agriculture in the Gross Domestic Product (GDP) has declined significantly over time, due to an expanding manufacturing sector, the contribution of agriculture maintained an upward trajectory. The author concluded that agriculture creates employment and has bi-directional links to the rest of the economy. In his support, Dethier and Effenberger (2012) noted that;

- Agriculture is crucial for economic development and industrialization in Africa, and policy makers should create conducive environments in their countries for this to happen;
- Improving access to nutritious food increases the learning capacity and school performance of learners, which leads to higher earnings in work life, longer work lives and to a more productive workforce. These factors are essential for economic growth;
- Investing in human capital in agriculture remains one of the most important keys to reduce poverty and bring about sustainable economic growth;
- Educated farmers get a higher return on their land and African farmers who completed 4 years of education produce on average 8% more than illiterate farmers (World Bank, 1990);
- Agriculture has multifunctional effects on economic growth and development including reducing poverty; creating jobs, increasing food and nutritional security, health, providing raw materials for processing, value chain addition and boosting agribusiness activities and investments in rural services;
- The “*silo model*” of services delivery adopted by most Ministries of Agriculture across Africa needs to be changed to more integrated services approaches that are more effective and more efficient. That will benefit the continent’s agriculture, its economic growth and concomitant industrialization.

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