

The Success of Industrialization Depends on the Prior Success of an Agricultural Transformation

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ABSTRACT

The relationship between agriculture and industrialisation over the past years has been one of squeezing the former to expand the latter. Structural transformation, as key to economic growth and development, requires that labour and resources move from a 'low productivity' sector like agriculture to a 'high productivity' sector like industry. Thus, the quest for growth has led many developing countries to neglect their already weak agriculture sectors in pursuit of different kinds of industrialisation policies, from import substitution to export industrialisation with very little success for most of these countries. The result has been a rising food crisis and failing industrialisation efforts in many parts of the Third World.

INTRODUCTION

The relationship between agriculture and industrialisation over the past years has been one of squeezing the former to expand the latter. Structural transformation, as key to economic growth and development, requires that labour and resources move from a 'low productivity' sector like agriculture to a 'high productivity' sector like industry. Thus, the quest for growth has led many developing countries to neglect their already weak agriculture sectors in pursuit of different kinds of industrialisation policies, from import substitution to export industrialisation with very little success for most of these countries. The result has been a rising food crisis and failing industrialisation efforts in many parts of the Third World ^[1].

This has revived a discourse on the role of agricultural transformation in industrialisation. The debate centres on whether a successful agricultural transformation is a necessary precursor to an industrial transformation. Page ^[2] considers an agricultural-led industrialisation as irrelevant in contemporary developing regions like Africa for two reasons; globalization and low agricultural technology. The current paper, however, argues that these same two reasons provide a stronger impetus for an agricultural-led industrialisation in developing countries.

OVERVIEW OF THE LEWIS MODEL

The paper begins with an overview of the Lewis model and how it sharpened the 'agricultural-squeeze' ideology. This is followed by the discussion on how globalization and the lack of agricultural innovation bolster the argument for an agricultural-led industrialisation. Note however, that the success of industrialisation and agriculture in here are determined by their increasing share in GDP and total employment. Under industrialisation, the main focus is on manufacturing due to its unique features with regards to engineering growth ^[3].

Historically, economic growth in poor countries was held as only attainable by emulating the industrial growth process of the West. The western model became the development blueprint for many Third World countries, fostering a move towards rapid industrialisation and wage employment ^[4]. Different models emerged in the 1960s to explain how the change will happen and the 'Lewis Model' was one of the very influential contributions. Arthur Lewis in 1954 proposed a development model of a dualistic economy consisting of two large sectors; a traditional agrarian sector and an emerging modern industrial sector. Initially, the traditional sector employs majority of the labour force who are put to work on the land (which is a fixed resource). Given the available resource and the number of workers on the land, surplus labour and underemployment is created in the traditional sector as there are too many hands for the work that needs to be done. The modern industrial sector, on the other hand, consist of capitalists who set up industries initially financed by saving from other sectors of the economy (agriculture) or foreign investment. The industrial

sector draws surplus labour from the agriculture sector to produce relatively higher value goods and since they are surplus labour, their removal from the agriculture sector does not affect agricultural output. This keeps food prices low and capitalists only have to offer a little above the average 'subsistence wage' to attract more of the surplus labour. Capitalists' profits are reinvested into the further expansion of the industrial sector^[5].

The implication of this model is that, industrial expansion is dependent on continuous high profit realisation by capitalists, due to low industrial wage. The low industrial wage will also be possible if rural per capita incomes are kept constant and relatively lower. Thus, from this concept came the idea of squeezing agriculture and stagnating rural living standards in order to spur industrial development^[4]. Policies aimed at achieving this goal, usually ended up reducing investment in the agriculture sector which in turn affected agriculture output adversely^[4].

At its best, the Lewis model recognised the importance of agriculture in industrial transformation. According to Lewis^[5], industrial and agrarian revolution always go together so that economies with stagnant agriculture are less likely to successfully industrialize. Agriculture, in the model, therefore serves as the source of labour and cheap food for the industrial sector. Based on this, Diao et al.^[6] assert that, the Lewis model actually views agriculture as a precondition for industrialisation because, agriculture has to first exist and must have surplus labour to shed-off to the growing industrial sector whilst providing the initial capital investment through savings and enough food for both sectors.

However, it seemed as though with just unlimited labour supply in agriculture, industrial expansion could proceed without prior improvement in the former. To make matters worse, agriculture had to be kept less profitable to allow industries to expand. Again, there was no exact measure of what constitute an unlimited labour supply. Therefore, one cannot blame those developing countries, who right after independence saw the urgency to be self-dependent and thus begun discriminating against their agriculture sector in order to promote rapid industrialisation. Ghana, for example, showed a high level of discrimination against agriculture around the 1960s by heavily taxing agriculture while offering unfavourable domestic terms of trade through price fixing via monopoly marketing boards^[7]. In an attempt to shift down agriculture price levels, excess demand for agriculture products was created which pushed up food prices and hence raised industrial wages. In the end, both agriculture and industry were stagnated.

One thing the Lewis model failed to make clear was how agriculture sometimes provided raw materials for certain industries. Ghana learnt this lesson the hard way. After neglecting agriculture, the then government led by Dr Kwame Nkrumah built a mango canning plant in 1965 and discovered upon completion of the plant that there were no wild mango trees in the region or its surrounding areas^[8].

After a huge agricultural crisis from 1959 to 1961 resulting in about 30 to 50 million deaths^[9], China became aware of the dangers of squeezing agriculture and made some reforms in its economy beginning with the agriculture sector. Soon agriculture output in the country rose by over 40% between 1978 and 1984^[4]. China was, thus able to maintain constant food prices and food supply, which in turn kept industrial wages low but competitive enough to fuel a massive industrial growth in the country.

Witnessing China's development, many developing countries have begun reversing their agricultural squeeze policies via new policy reforms. Ethiopia, provides a good example, where development and growth strategy of the country since 1993 has been built on 'an agricultural development-led industrialization'^[10]. Whilst some school of thought agree that agriculture transformation should lead industrialisation, others argue that this may not be necessary in contemporary developing countries due to globalization and the low level of technology in the agriculture sectors of developing countries.

GLOBALISATION FOR AN AGRICULTURE-LED INDUSTRIALISATION

Globalisation is said to vitiate the need for an agriculture-led industrialisation due to how it provides new markets opportunities for domestic industry and imports to substitute domestic agriculture production^[2]. Indeed, trade openness is an indispensable enabler of industrial growth. Through multilateral and bilateral trade agreements, developing countries together with their major markets have access to international markets which in turn increases productivity and innovation through competition. This is especially relevant for developing countries due to the small nature of their domestic market.

However, industries in many developing countries have not benefitted as much as others have, from global markets, hence the need for them to develop their domestic market by ensuring a successful agricultural transformation. Although, the share of world export of manufactures from developing countries have increased from 10% in 1980 to 45% in 2016, developing countries in Asia alone account for almost 90% of this amount^[11]. Free competitive global markets as promising as it sounds, have become subject to increasing concentration as those with the resources tend to gain control. The export markets have become much more crowded and competitive coupled with a fall in global demand. Competition, on the other hand, requires resources which are hardly available in most developing countries. In the end, weak industries, usually found in developing countries, are pushed out of the market, resulting in premature deindustrialisation in these countries. The rise of Global Value Chains (GVCs), although, facilitates a wider participation of developing countries in global trade of manufactures, it also generates more competition making it difficult for local producers to raise and stake out valuable market positions^[12].

Another challenge faced by developing countries in assessing global markets is the increasing technical barriers to trade and the lack of adequate and efficient infrastructure or resource to meet the health and safety requirements of international markets.

As tariffs continue to decline, governments around the world, especially those of advanced countries, are introducing more and more regulatory requirements which seem more like a trade barrier than its apparent aim of addressing health and safety or environmental concerns^[13]. Nonetheless, technical trade barriers are a big challenge to industrial exporters in developing countries due to the lack of infrastructure and the capacity to meet the specifications of export markets. This, therefore, limits the supply-side response of many developing countries. Moreover, meeting these requirements increases production cost which also hurts the competitiveness of industrial exporters in the Third World. Although the WTO Technical Barrier to Trade Agreement seeks to ensure some fairness in the adoption of this measure, it does not remove or undermine the right of governments to adopt this measure. It only makes sure the measures are applied in accordance to some basic principles to avoid discrimination^[14].

In effect, developing countries will be making a huge mistake, if they do not adopt measures to boost their own domestic markets, believing they could depend on global markets for their industrial growth. Over reliance on external markets renders domestic industries more vulnerable to external shocks such as appreciation in real exchange rate or decline in external demand. China is realizing this now and is making efforts to raise its domestic demand^[15]. Boosting domestic demand in developing countries, however, requires strategic investment in the agriculture sector, as the sector employs the largest share of labour in many developing countries. Ensuring a strong agriculture sector, will improve standards of living for the many citizens engaged in agriculture, which will ultimately raise demand for industrial goods. Moreover, those citizens in the non-agriculture sector will be able to save more on food due to low food prices, and the excess income will be freed to be spent on industrial goods. With a rise in demand for industrial goods, industrialist will have to increase production allowing them to enjoy economies of scale which in turn allows for continuous expansion.

Another critic of an agriculture-led industrialisation is the ability of countries to import from external markets to substitute domestic food production^[2]. It is true that certain foods are cheaper and more available in some countries than others. Soil types and climate can restrict what can be cultivated in a country. Thus, on the surface it may seem a good option to industrialize without a prior agriculture transformation. However, this presents an unsustainable path for an industrial growth process as Diao et al.^[6] advise. Despite low food prices in global markets, food cost continues to increase in many developing countries due to high transport and logistic cost. Transport and logistic cost are a significant determinants of food cost and food prices for importing countries accounting^[16]. The price of maize in Guatemala, is significantly more than it is in other Latin American countries, due to high transport cost^[16]. Escalating oil prices, coupled with other logistics and regulatory frameworks further increases the cost of food imports and also delays clearance, even for perishable foods leading to food wastage. High food prices in effect forces wages to go up which raises production cost and push some industries out of business while others are induced to use labour-saving technologies. Either ways, unemployment is the end result.

This is certainly the case when a country refuses to improve its agriculture sector before it sets on the path to industrialise, hoping to be able to import cheap food to substitute domestic production. Aside forcing wages up, continuous high cost of food importation exerts pressure on a country's foreign exchange reserve and subject its Balance of Payment to a persistent deficit. Burundi, Cameroon and Zimbabwe are examples of countries with this kind of problem^[17]. A persistent deficit on the other hand reduces the value of a country's currency which discourages foreign investment into the country. All these can be avoided if there is first, a successful agricultural transformation making food increasingly abundant so that food prices are low, and wages are kept competitive enough to boost industrial transformation.

DISCUSSION

Lastly, critics of agriculture-led industrialisation argue that, developing countries do not have the technological innovation needed to transform their agriculture sector. Thus, making an agriculture-led industrialisation irrelevant in these countries. According to Oyelaran-Oyeyinka and Gehl Sampath^[18], the African continent is facing a collapse of agricultural innovation and extension systems. This is partly true for some, if not many, developing countries in Africa. The weak extension and agriculture innovation in these countries is mainly as a result of the many years of neglect of the sector. African governments continue to reduce their spending on agriculture, with 2012 reporting a spending of 2.5 % of the total expenditure instead of a minimum of 10%^[19]. The limited funding in the sector has prevented the development of research capacity and the provision of agriculture research support. Thus, it is not surprising to witness a collapse in agricultural innovation and extension systems in many African countries. However, the low agricultural innovation provides the impetus for an agriculture-led industrialisation as there can never be a successful industrialisation without a prior technological improvement in agriculture. Saying that an agriculture-led industrialisation is irrelevant due to low agricultural innovation is equal to saying that state of agriculture in many developing countries presently, is cast in stones.

Yet none of the agriculturally advanced countries today, such as China and the United States, can boast of having a strong agriculture innovation right at the developing stage of their economy. China's agriculture innovation began four decades ago when the country made some agricultural reforms which saw the government spending billions on improving technology in the sector^[20]. Large investments were made in developing good water systems, acquiring seeds, robots and data science all aimed at developing high-yield farms^[20]. It took China years of learning, researching and investing in agricultural technology to become the world's agriculturally advanced country. Similarly, it will take other developing countries a number of years to be able to develop a competitive agriculture sector which could potentially delay their industrialisation process.

However, it will be beneficial to wait and build the needed agriculture innovation for a successful transformation before embarking on the industrialisation journey. This is because, for many countries with low agriculture technology, there is a high possibility of having an equally low industrial technology, thus making their industries less competitive in the global market. Ensuring a technologically advanced agriculture sector will not only make food available but will also help to increase the capacity of domestic industries to respond quickly to shifts in global demand as they would have built the needed capacity in research and innovation ^[21]. This was what happened in China when upon creating a competitive agricultural sector through technology improvement, new Chinese industries became competitive enough to export after a short period of learning and skill acquisition ^[22]. Once they entered the global market, Chinese products quickly penetrated almost every corner of the market within a short time. In 2008, for example, 35% of the total value of imports to the U.S. and the EU market combined, came from China ^[21].

Many developing countries, especially in, Africa have begun expanding technology use in agriculture via new reforms and appropriate policies. New extension approaches are emerging based on research and adaptation to prevailing circumstances. Ghana, for instance, is currently deploying a new mobile technology called the 'Farmerline', aimed at bringing extension services and advice to farmers who are traditionally out of reach due to connectivity, literacy or language barriers ^[23]. Partnerships are being formed in different parts of the continent to provide integrated support. Ethiopia, Kenya, Tanzania and Uganda have joined hands to marshal the power of technology in boosting food production in the region under the aegis of the East Africa Agricultural Productivity Program (EAAPP) ^[24,25]. With these and other efforts being made by some developing countries, agriculture innovation may not be completely lacking as critics posit. A strategic investment and support is all that is needed to build the right technological innovation for a successful agricultural transformation, which will also lay the foundation for prosperous industrialisation.

CONCLUSION

In summary, this paper argues that a successful industrial transformation depends on the prior success of agriculture transformation due to globalisation and low agricultural innovation in many developing countries, the same two reasons Page ^[2] believes an agriculture-led industrialisation is irrelevant. Under globalisation, the paper argues that developing countries can no longer rely on external markets as viable market opportunities for their industries due to increased competition and the growing adoption of non-tariff barriers to trade. Again, due to high transport and logistic cost, importing food from external markets to substitute domestic production will only increase food prices, raise wages and hamper industrial growth. For this reason, there must first be an agricultural transformation which will raise food production, improve the standards of living of people in the country. This will boost domestic demand while keeping wages competitive enough for an industrial boom. With regards to the low agricultural innovation, a prior successful agricultural transformation will help build capacity for research and innovation which will go a long way to improve competitiveness of local industries in the global market.

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